

WESTGROVE CENTER PROJECT TRAFFIC STUDY & PARKING ANALYSIS City of Garden Grove, California

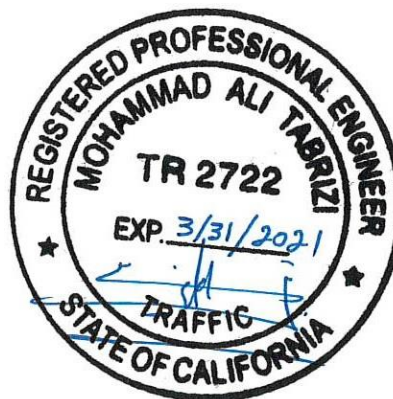
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Executive Summary

The purpose of this traffic impact analysis is to evaluate the proposed Westgrove Center Project (hereinafter referred to as project) from a traffic and circulation standpoint and determine whether the proposed project will have a significant traffic impact. This study has been conducted pursuant to the *City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (May 2020)*, and the California Environmental Quality Act (CEQA) requirements.

It should be noted, previously, a traffic study (*Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*) was prepared for the site in 2018.

This traffic study has been prepared in accordance with the scope of work set forth prior to initiating the analysis. The scope of work was prepared to be consistent with the previous traffic study prepared for the site in 2018. The scoping agreement is provided in Appendix A.

This report also evaluates the project on-site parking capacity requirements per the City of Garden Grove Municipal Code.

The existing Westgrove Center site is located south of Chapman Avenue and west of Valley View Street in the City of Garden Grove.

The Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Both properties will function as an integrated site for parking and access.

The proposed project is planned to modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Land Use Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Supermarket	12,245 SF	0	0	0
Fast Food Restaurant With Drive Through	1,665 SF	1,665 SF	1,665 SF	1,665 SF
Fast Food Restaurant Without Drive Through	5,549 SF	5,549 SF	5,549 SF	5,549 SF
Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

It should also be noted, the movie theater will not be modified with this project. The plans currently being reviewed and considered by the city are for the uses proposed in Alternative 1. While the applicant proposes to consider three other alternatives to assist with the change of uses in the future, Alternative 1 uses are the uses that are analyzed and evaluated in all technical studies and those considered as part of the land use approval.

Trip Generation Summary:

Project Alternative 1 is forecast to generate approximately 5,654 daily trips which include approximately 399 AM peak hour trips and approximately 343 PM peak hour trips.

Project Alternative 2 is forecast to generate approximately 4,830 daily trips which include approximately 352 AM peak hour trips and approximately 296 PM peak hour trips.

Project Alternative 3 is forecast to generate approximately 4,766 daily trips which include approximately 368 AM peak hour trips and approximately 313 PM peak hour trips.

Project Alternative 4 is forecast to generate approximately 4,431 daily trips which include approximately 356 AM peak hour trips and approximately 277 PM peak hour trips.

Project Alternative 1 is forecast to result in the most number of daily and peak hour trips.

Since project Alternative 1 is forecast to result in the most number of daily and peak hour trips, per the approved scoping agreement, this traffic study evaluates project Alternative 1 for level of service and Vehicle Miles Traveled (VMT) impacts.

Level of Service Analysis Summary:

Based on the agency-established level of service performance thresholds, the proposed project is forecast to not be required to contribute a fair share to improving the study intersections for Existing Plus Project Conditions.

Left-Turn Pocket Queue Analysis:

The following left-turn movements would require additional left turn capacity:

1. Valley View Street / Chapman Avenue:
 - Southbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 150 feet
 - Required Left-Turn Capacity: 200 feet
 - Eastbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 80 feet
 - Required Left-Turn Capacity: 130 feet
3. Valley View Street / Cinema Driveway:
 - Northbound Left-Turn (deficient with the project):
 - Existing Left-Turn Capacity: 115 feet
 - Required Left-Turn Capacity: 120 feet
5. Valley View Street / Lampson Avenue:
 - Eastbound Left-Turn (deficient without and with the project):

- Existing Left-Turn Capacity: 150 feet
- Required Left-Turn Capacity: 255 feet
- Westbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 120 feet
 - Required Left-Turn Capacity: 200 feet

6. Valley View Street / Cerulean Avenue:

- Westbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 100 feet
 - Required Left-Turn Capacity: 120 feet

With the exception of the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficient left-turn storages are forecast to occur both without and with the proposed project. Hence, the proposed project is not required or responsible to improve the identified left-turn storage deficiencies at these locations.

In regards to the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficiency is forecast to be very nominal (approximately five feet). Based on discussions, with City staff, since the deficiency is nominal, no improvements are required at this left-turn storage.

CEQA Vehicle Miles Traveled (VMT) Analysis:

The proposed project and its various alternatives are **not** expected to result in a significant VMT impact.

Active Transportation & Public Transit Analysis:

The proposed project is forecast to not have a significant active transportation and public transit impact.

Parking Analysis:

- The project is planned to provide a total of 123 parking spaces. This includes capacity provided in the drive through aisles

However, as previously noted, the Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Therefore, a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

After accounting for the 123 parking spaces which will be provided by the proposed project, the two parcels will have a combined parking capacity of 318 parking spaces and a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

- Based on the City Municipal Code:
 - The proposed project is required to provide 166 parking spaces.
 - The overall required parking for the integrated development (the two parcels) is 295 parking spaces.
- Since the development will provide a total of 318 parking spaces, the combined parking capacity is forecast to be more than adequate to serve the two parcels. A reciprocal parking agreement would be required to ensure that the parking for the Project remains available for the life of the Project.

If other land use alternative and mix aside Alternative 1 is proposed, the parking calculations need to be updated to reflect the updated land use mix and provided to the City for review.

1.0 Introduction

1.1 Purpose of Report and Study Objectives

The purpose of this traffic impact analysis is to evaluate the proposed Westgrove Center Project (hereinafter referred to as project) from a traffic and circulation standpoint and determine whether the proposed project will have a significant traffic impact. This study has been conducted pursuant to the *City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (May 2020)*, and the California Environmental Quality Act (CEQA) requirements.

It should be noted, previously, a traffic study (*Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*) was prepared for the site in 2018.

This traffic study has been prepared in accordance with the scope of work set forth prior to initiating the analysis. The scope of work was prepared to be consistent with the previous traffic study prepared for the site in 2018. The scoping agreement is provided in Appendix A.

This report also evaluates the project on-site parking capacity requirements per the City of Garden Grove Municipal Code.

1.2 Site Location

The existing Westgrove Center site is located south of Chapman Avenue and west of Valley View Street in the City of Garden Grove.

The project site location map is shown on Exhibit 1-1.

1.3 Project Description

The Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Both properties will function as an integrated site for parking and access.

The proposed project is planned to modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Land Use Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Supermarket	12,245 SF	0	0	0
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Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

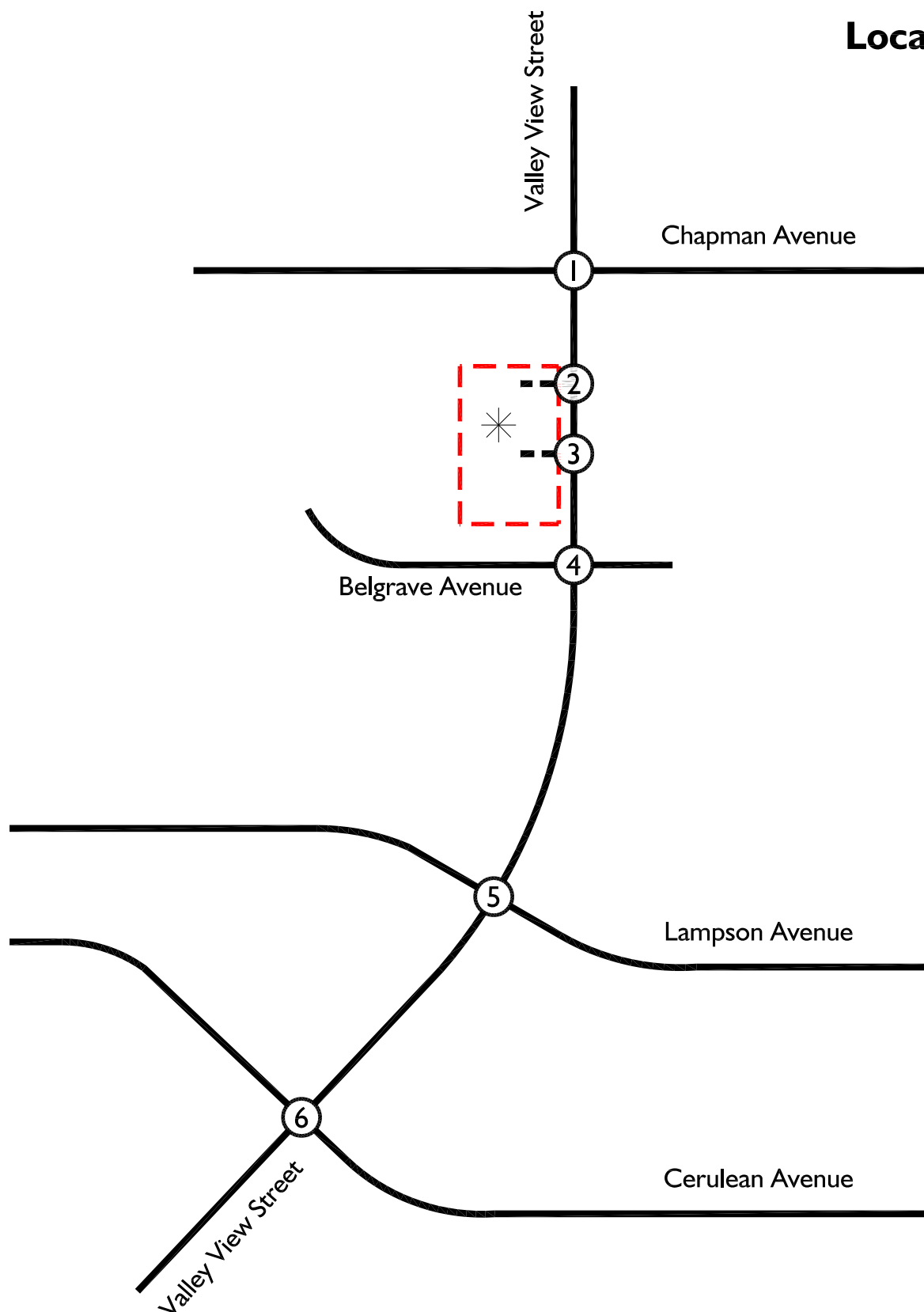
It should also be noted, the movie theater will not be modified with this project. The plans currently being reviewed and considered by the city are for the uses proposed in Alternative 1. While the applicant proposes to consider three other alternatives to assist with the change of uses in the future, Alternative 1 uses are the uses that are analyzed and evaluated in all technical studies and those considered as part of the land use approval.

Access to the project site will be provided via the following:

- One (1) right-in/right-out driveway on Valley View Street (unsignalized);
- One (1) full access driveway on Valley View Street (signalized); and
- Right-in/Right-out access to Valley View Street via the alley on the south side of the site (unsignalized).

The project is planned to open in 2022 and will be evaluated in one (1) single phase.

The project site plan is shown on Exhibit 1-2.

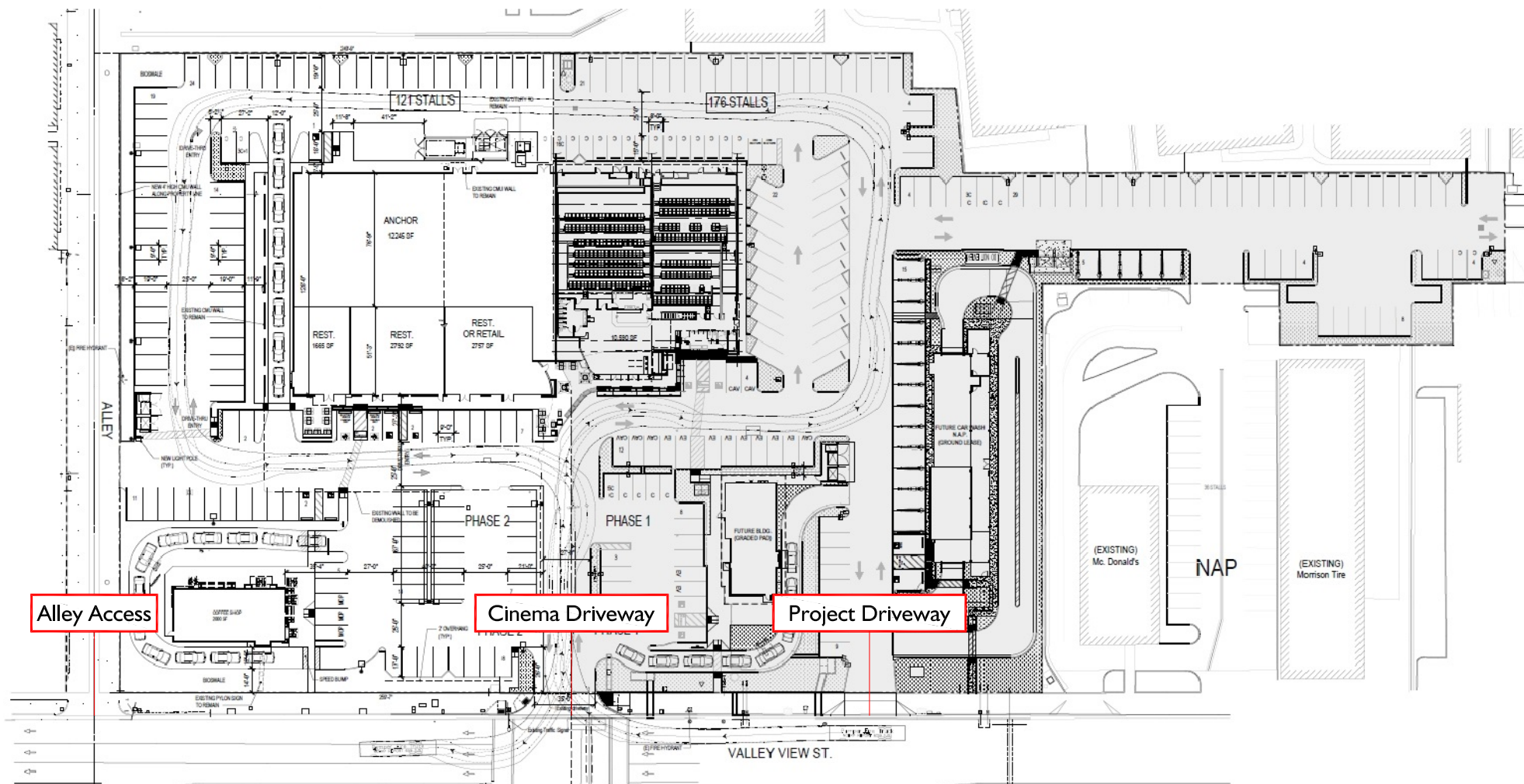


Legend:

- ① = Study Area Intersection
- * = Project Site
- = Project Access Driveway
- = Project Site Boundary



Exhibit I-2 Site Plan



2.0 Study Area and Analysis Methodology

This section of the report presents the analysis study area and the methodologies used to perform the traffic analyses summarized in this report in accordance with the City of Garden Grove requirements. This section also discusses the agency-established applicable performance criteria and thresholds of significance for the study facilities.

2.1 Study Area Intersections

The study area included in this analysis has been determined based upon existing and future transportation facilities within the vicinity of the site where the project may contribute a significant amount of traffic. Consistent with the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*, the traffic study evaluates the following study intersections:

1. Valley View Street / Chapman Avenue;
2. Valley View Street / Project Driveway;
3. Valley View Street / Cinema Driveway;
4. Valley View Street / Belgrave Avenue;
5. Valley View Street / Lampson Avenue; and
6. Valley View Street / Cerulean Avenue.

The analysis evaluates traffic conditions for the following scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak hours:

- Existing Conditions;
- Existing Plus Project Conditions;
- Project Opening Year Without Project Conditions; and
- Project Opening Year With Project Conditions.

2.2 Intersection Capacity Utilization (ICU) Methodology (Signalized Intersections)

The Intersection Capacity Utilization (ICU) methodology is used for analyzing level of service (LOS) at signalized intersections within the City of Garden Grove. To calculate the ICU, the volume of traffic using the intersection is compared with the capacity of the intersection; this is referred to as the volume-to-capacity (V/C) ratio. The V/C ratio represents the portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity.

A saturation flow value of 1,700 vehicles per lane per hour for all lanes is used, per the City of Garden Grove TIA Guidelines. A clearance interval factor of 5% is applied to the ICU calculations.

The Table below shows the level of service criteria based on the V/C ratio of an intersection.

ICU Level of Service - Volume to Capacity (V/C)

Level of Service (LOS)	Critical V/C Ratio
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	> 1.00

2.3 Highway Capacity Manual (HCM) Methodology (Unsignalized Intersections)

HCM methodology is used to calculate level of service at unsignalized study area intersections. For intersections with stop control on the minor street only, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street, and the level of service is determined based on the vehicle delay of the worst individual movement or movements sharing a single lane.

The Table below shows the level of service criteria based on the HCM methodology.

HCM Level of Service - Vehicle Delay

Level of Service (LOS)	Vehicle Delay (Seconds)
A	0.00 - 10.00
B	10.01 - 15.00
C	15.01 - 25.00
D	25.01 - 35.00
E	35.01 - 50.00
F	>50.01

2.4 City of Garden Grove Study Intersection Level of Service Performance Criteria

The following is a summary of the performance standards adopted by the City of Garden Grove.

Performance Criteria:

The acceptable LOS for intersections in the City of Garden Grove is LOS D or better as established in the City's General Plan. An intersection operating at a LOS E or F is considered deficient.

Significant Impact Criteria:

Signalized intersections will require improvements if **one** of the following conditions is met:

- The addition of project traffic to an intersection results in the degradation of intersections operations from acceptable operations (LOS D or better) to unacceptable operations (LOS E or F); **OR**
- The project-related increase in volume-to-capacity (V/C) ratio is equal to or greater than 0.010 at an intersection that is already operating at LOS E or F.

Unsignalized intersections will require improvements if **both** of the following conditions are met:

- The addition of project traffic to an intersection results in the degradation of intersections operations from acceptable operations (LOS D or better) to unacceptable operations (LOS E or F); **AND**
- The intersection meets peak hour signal warrants either caused by project volumes, or project volumes are added at an intersection that meets peak hour signal warrants in the baseline scenario(s). Peak hour signal warrants should be determined based on the latest *California Manual on Uniform Traffic Control Devices (CA MUTCD)*.

2.5 City of Garden Grove Active Transportation & Public Transit

A significant impact occurs if the project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

3.0 Existing Traffic Volumes & Circulation System

This section provides a discussion of existing study area conditions and traffic volumes.

3.1 Existing Traffic Controls and Intersection Geometrics

Exhibit 3-1 identifies the existing roadway conditions within the study. The number of through traffic lanes for existing roadways and the existing intersection controls are identified. The type of traffic control and number of lanes at an intersection are key inputs for the calculation of level of service.

3.2 Existing Traffic Volumes

Due to the COVID-19 pandemic, collection of new and valid traffic counts is not feasible. To derive existing (2020) traffic volumes at the study intersections for use in this study, RK utilized the 2018 traffic volume data from the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street*, Albert Grover & Associates, August 2018. An annual growth rate of two percent (2%) per year is applied to the 2018 volumes to derive existing (2020) traffic volumes.

The morning peak hour of traffic was counted from 7:00 AM to 9:00 AM and the evening peak hour of traffic was counted from 4:00 PM to 6:00 PM.

Existing (2020) traffic volumes within the study area are shown on Exhibit 3-2.

3.3 City of Garden Grove Circulation Element

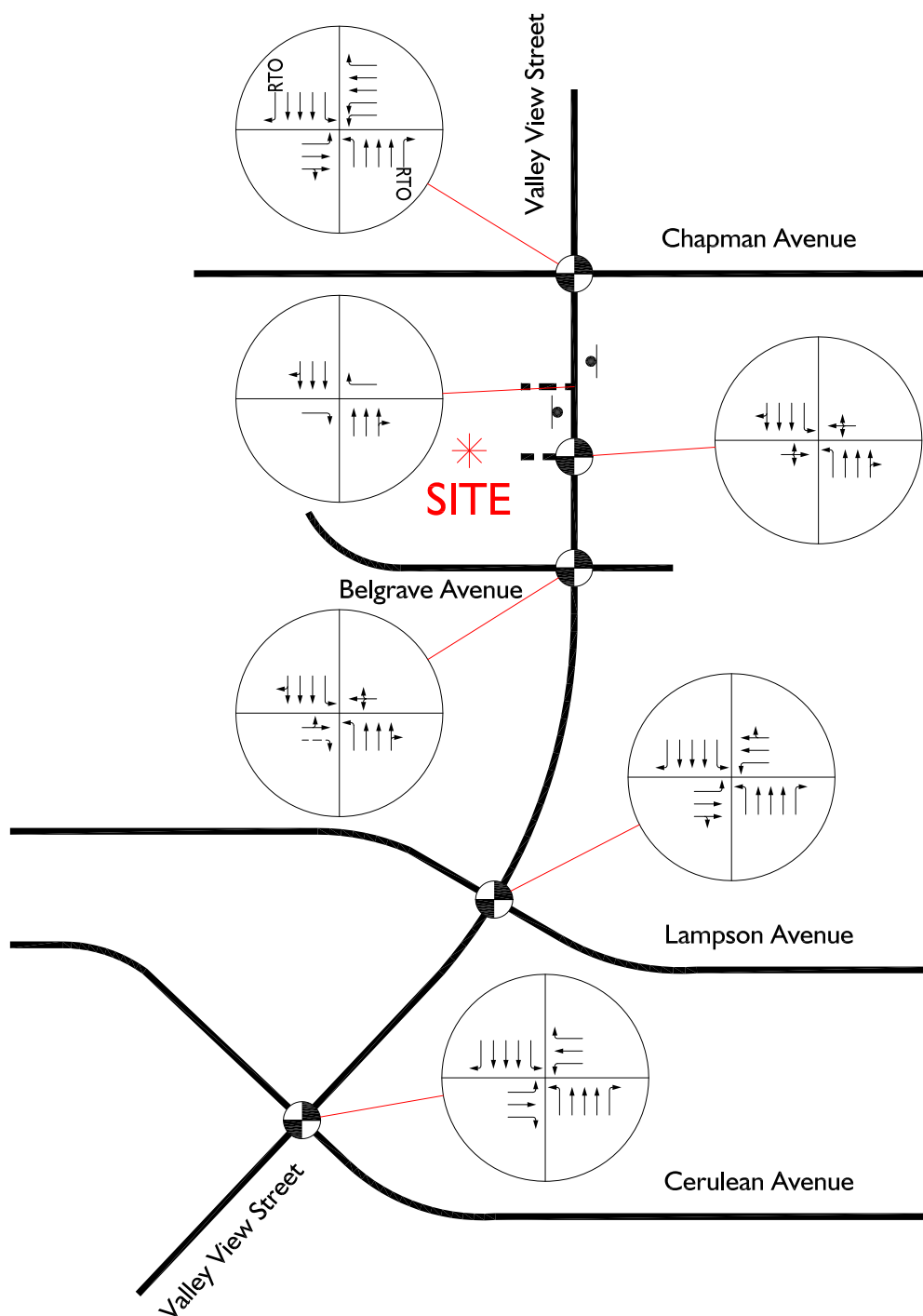
The City of Garden Grove General Plan Master Plan of Streets and Highways is shown on Exhibit 3-3.

The City of Garden Grove General Plan Typical Roadway Cross-Sections are shown on Exhibit 3-4.

The City of Garden Grove General Plan Existing Transit Routes are shown on Exhibit 3-5.

The City of Garden Grove General Plan Master Plan of Bikeway Facilities is shown on Exhibit 3-6.

Existing Lane Geometry & Traffic Controls



Legend:





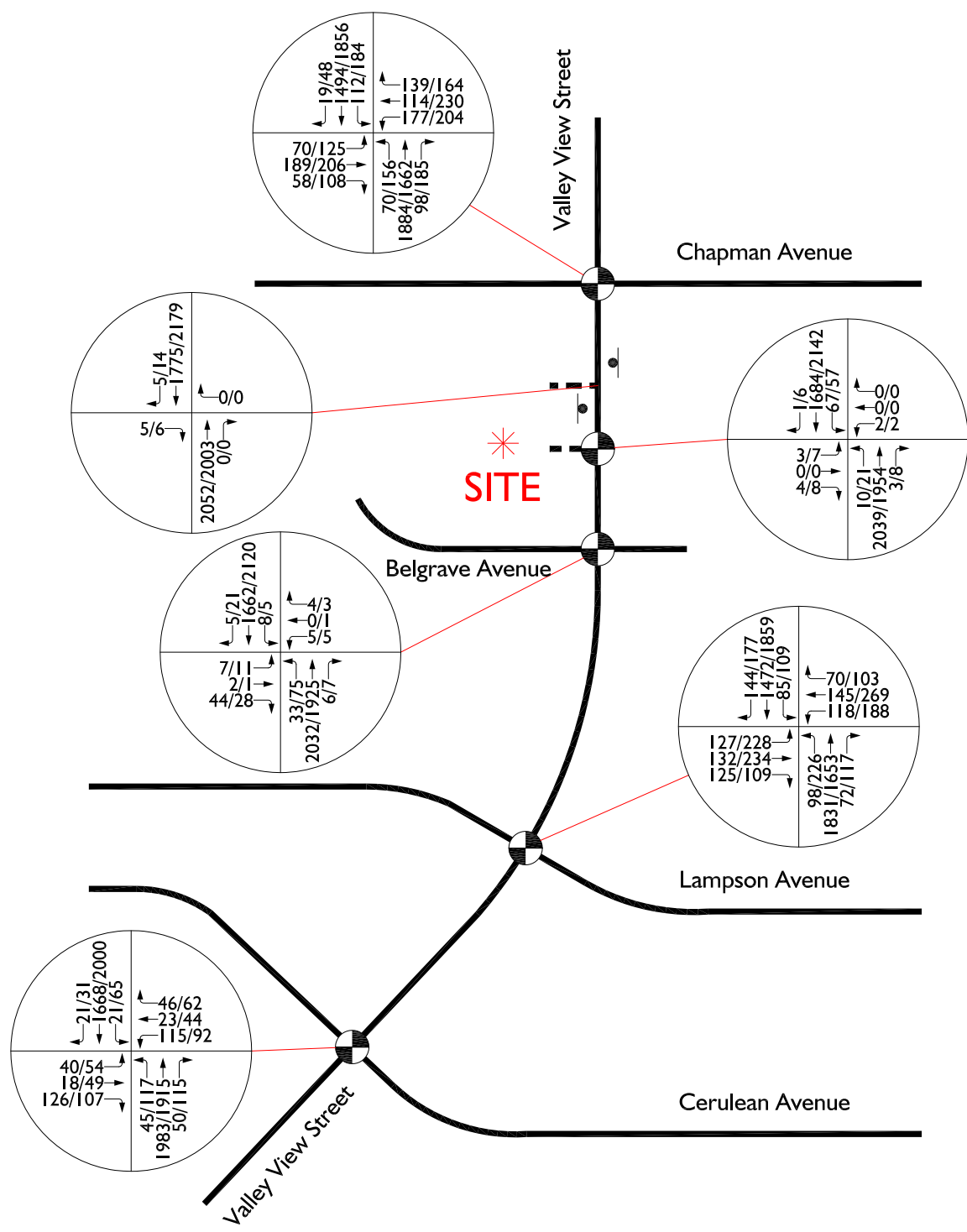
-  = Traffic Signal
-  = Stop Sign
-  RTO = Right Turn Overlap
-  = Defacto Right Turn



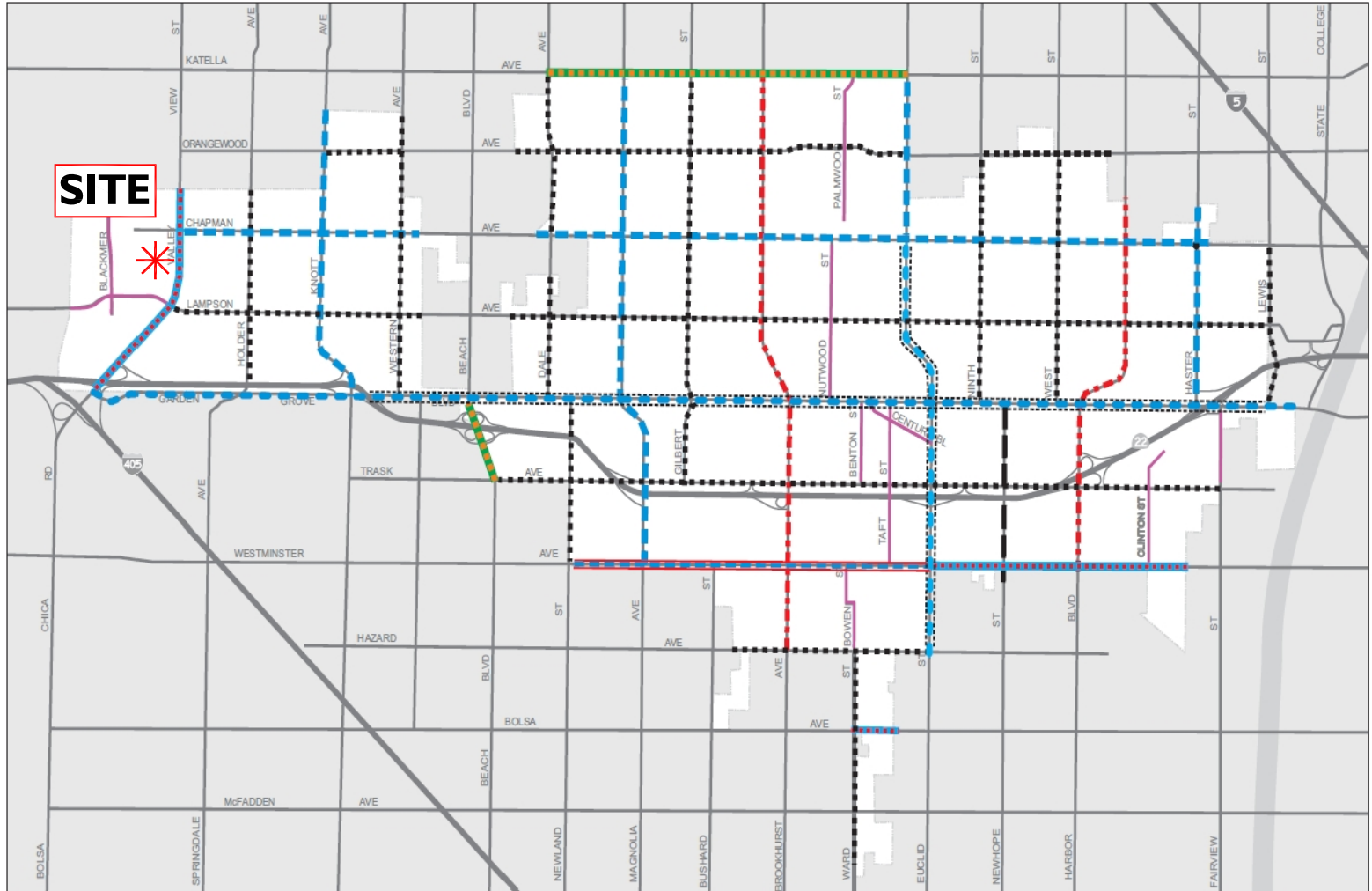
Exhibit 3-2 Existing Traffic Volumes



Legend:
 10/20 = AM/PM Peak Hour Volumes



Exhibit 3-3 Garden Grove General Plan 2030 Master Plan of Streets and Highways

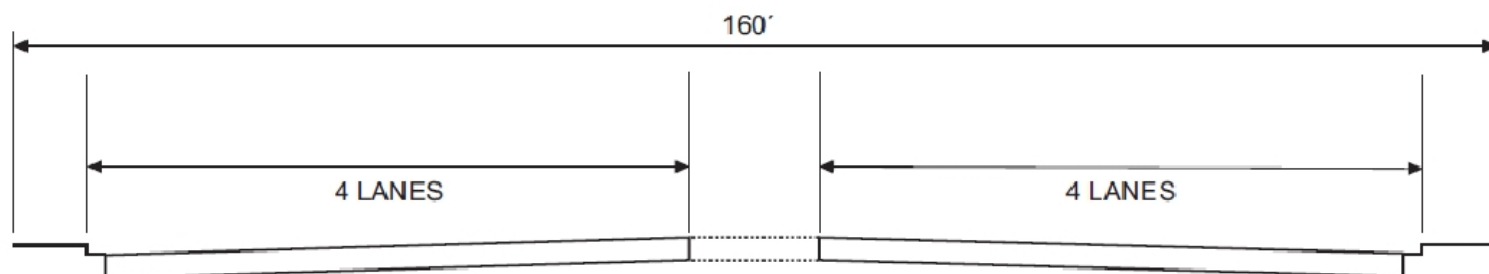


LEGEND

- Principal Arterial & OCTA Smart Street (8-lane divided roadway)
- Major Arterial (6-lane divided roadway)
- Major Arterial & OCTA Smart Street (6-lane divided roadway)
- Primary Arterial with 6 Lanes
- Primary Arterial (4-lane divided roadway)
- Primary arterial & OCTA Smart Street (4-lane divided)
- Secondary 4-lane undivided roadway (Secondary arterial)

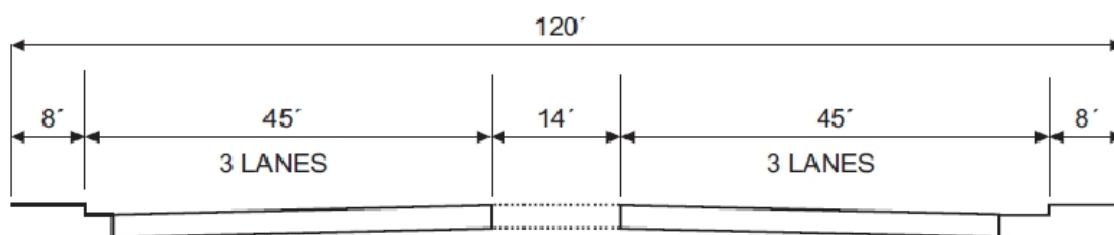


Garden Grove General Plan 2030 Typical Roadway Cross-Sections



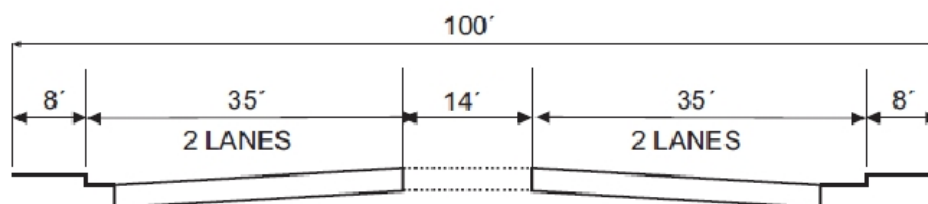
PRINCIPAL

8-LANE DIVIDED ROADWAY
ACCOMMODATES 72,000 ADT AT LOS 'E'



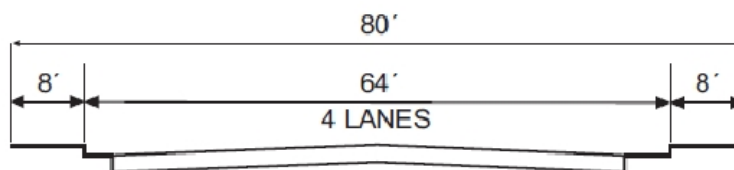
MAJOR

6-LANE DIVIDED ROADWAY
ACCOMMODATES 56,300 ADT AT LOS 'E'



PRIMARY

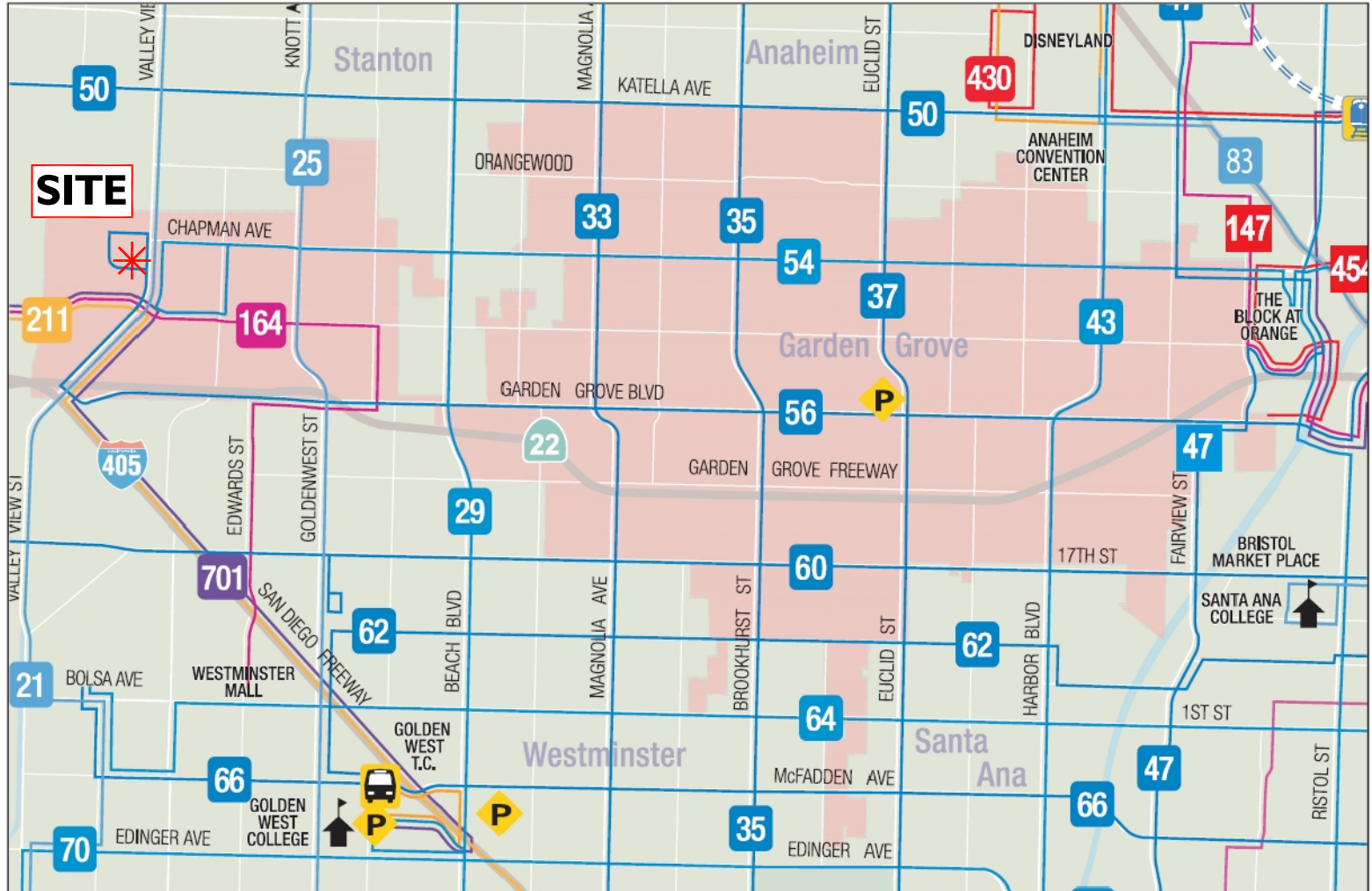
4-LANE DIVIDED ROADWAY
ACCOMMODATES 37,500 ADT AT LOS 'E'



SECONDARY

4-LANE UNDIVIDED ROADWAY
ACCOMMODATES 25,000 ADT AT LOS 'E'

Exhibit 3-5
**Garden Grove General Plan 2030
 Existing Transit Routes**



LEGEND



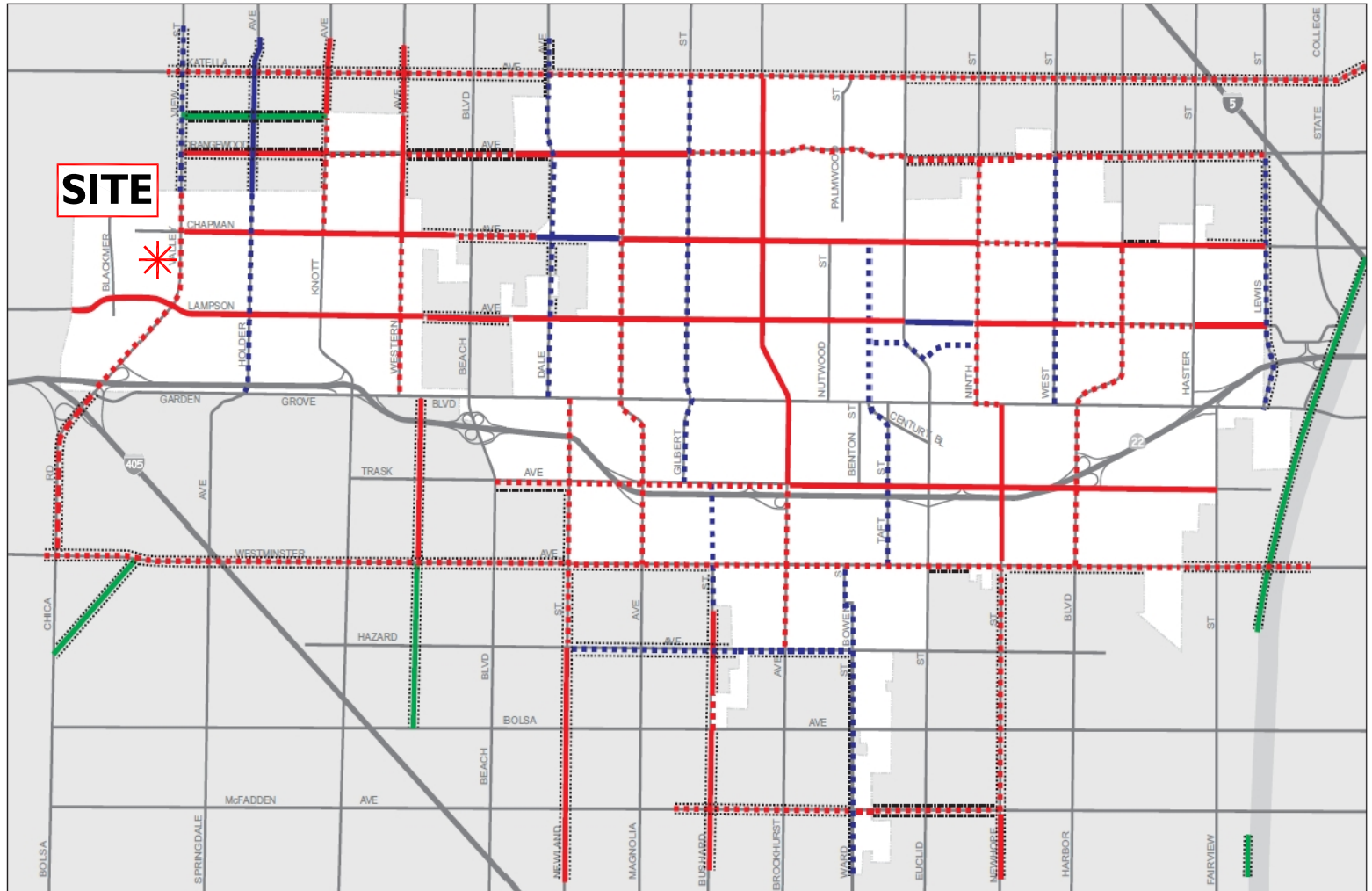
Transit Centers



Park-and-Rides



Exhibit 3-6
Garden Grove General Plan 2030
Master Plan of Bikeway Facilities



LEGEND

City of Garden Grove

Existing	Proposed	
		Class I Bike Trail (Off Street Trail)
		Class II Bike Lanes (On-Street Striped Lanes)
		Class III Bike Route (On-Street Signed Route)

County of Orange and Adjacent Cities

Existing	Proposed	
		Class I Bike Trail (Off Street Trail)
		Class II Bike Lanes (On-Street Striped Lanes)
		Class III Bike Route (On-Street Signed Route)



4.0 Projected & Future Traffic Volumes

This section of the report provides a discussion on methodologies utilized to derive future traffic volumes for the study area.

4.1 Project Traffic Conditions

4.1.1 Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development. The trip generation for the project is based upon the specific land uses that have been planned for this development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017)*. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

As previously noted, the proposed project is planned to modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Land Use Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Supermarket	12,245 SF	0	0	0
Fast Food Restaurant With Drive Through	1,665 SF	1,665 SF	1,665 SF	1,665 SF
Fast Food Restaurant Without Drive Through	5,549 SF	5,549 SF	5,549 SF	5,549 SF
Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

Table 4-1 shows the ITE trip generation rates for various land uses, which are utilized for the trip generation analysis of the proposed project and its various alternatives.

Trip Generation of Project Alternative 1:

Table 4-2A shows the trip generation for project Alternative 1 utilizing the trip generation rates shown in Table 4-1.

As shown in Table 4-2A, Project Alternative 1 is forecast to generate approximately 5,654 daily trips which include approximately 399 AM peak hour trips and approximately 343 PM peak hour trips.

Trip Generation of Project Alternative 2:

Table 4-2B shows the trip generation for project Alternative 2 utilizing the trip generation rates shown in Table 4-1.

As shown in Table 4-2B, Project Alternative 2 is forecast to generate approximately 4,830 daily trips which include approximately 352 AM peak hour trips and approximately 296 PM peak hour trips.

Trip Generation of Project Alternative 3:

Table 4-2C shows the trip generation for project Alternative 3 utilizing the trip generation rates shown in Table 4-1.

As shown in Table 4-2C, Project Alternative 3 is forecast to generate approximately 4,766 daily trips which include approximately 368 AM peak hour trips and approximately 313 PM peak hour trips.

Trip Generation of Project Alternative 4:

Table 4-2D shows the trip generation for project Alternative 4 utilizing the trip generation rates shown in Table 4-1.

As shown in Table 4-2D, Project Alternative 4 is forecast to generate approximately 4,431 daily trips which include approximately 356 AM peak hour trips and approximately 277 PM peak hour trips.

Below is a summary of the ITE-based trip generation for each project alternative.

Summary of Project Alternatives Trip Generation based on ITE Rates

Project Alternative	AM Peak Hour			PM Peak Hour			Daily Trips
	In	Out	Total	In	Out	Total	
Alternative 1 – Supermarket	220	179	399	173	170	343	5,654
Alternative 2 – Movie Theater	192	160	352	150	146	296	4,830
Alternative 3 – Health Club	200	168	368	160	153	313	4,766
Alternative 4 - Church	194	162	356	139	138	277	4,431

Notes: Maximum trip generation show in **bold**.

As shown in the table above, project Alternative 1 is forecast to result in the most number of daily and peak hour trips.

Since project Alternative 1 is forecast to result in the most number of daily and peak hour trips, per the approved scoping agreement, this traffic study evaluates project Alternative 1 for level of service and Vehicle Miles Traveled (VMT) impacts.

4.1.2 Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of retail, employment, and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses and highways within the study area.

The project trip distribution is based on the trip distribution previously assumed in the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street*, Albert Grover & Associates, August 2018.

The inbound and outbound project trip distributions are shown on Exhibit 4-1 and Exhibit 4-2, respectively.

4.1.3 Modal Split

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic-reducing potential of public transit and other modes is significant. However, the traffic projections in this study are conservative in that public transit and alternative transportation may be able to reduce the traffic volumes, but, no modal split reduction is applied to the projections. With the implementation of transit service and provision of alternative transportation ideas and incentives, the automobile traffic demand can be reduced significantly.

4.1.4 Project Traffic Volumes/Assignment

The assignment of project traffic to the adjoining roadway system is based upon the project's trip generation, trip distribution, and proposed arterial highway and local street systems that would be in place by the time of initial occupancy of the site.

Project traffic volumes are shown on Exhibit 4-3.

4.2 Existing Plus Project Conditions Traffic Volumes

Existing Plus Project Conditions traffic volumes consist of the summation of the existing traffic volumes shown in Exhibit 3-2 and the project traffic volumes shown in Exhibit 4-3.

Existing Plus Project Conditions traffic volumes are shown on Exhibit 4-4.

4.3 Background Traffic

4.3.1 Method of Projection

To assess future conditions, project traffic is combined with existing traffic and area-wide growth. As directed by City staff, to account for area-wide/ambient growth in the study area, an annual growth rate of 2% per year has been applied to existing (2020) traffic volumes over a 2-year period from 2020 for opening year (2022).

4.3.2 Cumulative Projects Traffic

Information on future projects in the vicinity of the study area has been provided by the City of Garden Grove staff for inclusion in this analysis.

The list of projects provided by the City are for projects that have been officially submitted for land use review, are waiting public hearing approval or have been approved by the public hearing body.

Table 4-3 shows the proposed land uses, and daily and peak hour trip generation for the nearby cumulative projects provided by the public agencies.

A location map of the cumulative projects is shown on Exhibit 4-5.

Cumulative projects traffic volumes are shown on Exhibit 4-6.

In reality, some of the cumulative projects may be downsized or may not be developed by project opening year (2022). In addition, many of the related projects have been or will be subject to a variety of mitigation measures that will reduce the potential environmental impacts associated with those projects. However, those mitigation measures have not been taken into accounts in projecting the environmental impact of the related projects.

Therefore, the cumulative analyses set forth below are conservative and could result in greater impacts than actually anticipated. Additionally, the analysis utilizes a growth rate of 2% per year for project opening year (2022) conditions, which would already capture and account for most projects in the area. The growth rate

methodology is considered conservative since it is applied to all movements in the study intersections.

4.4 Project Opening Year Without Project Conditions Traffic Volumes

Project Opening Year Without Project Conditions traffic volumes consist of two (2) years of annual growth on top of existing (2020) traffic volumes at 2% per year, plus the traffic generated by the cumulative projects.

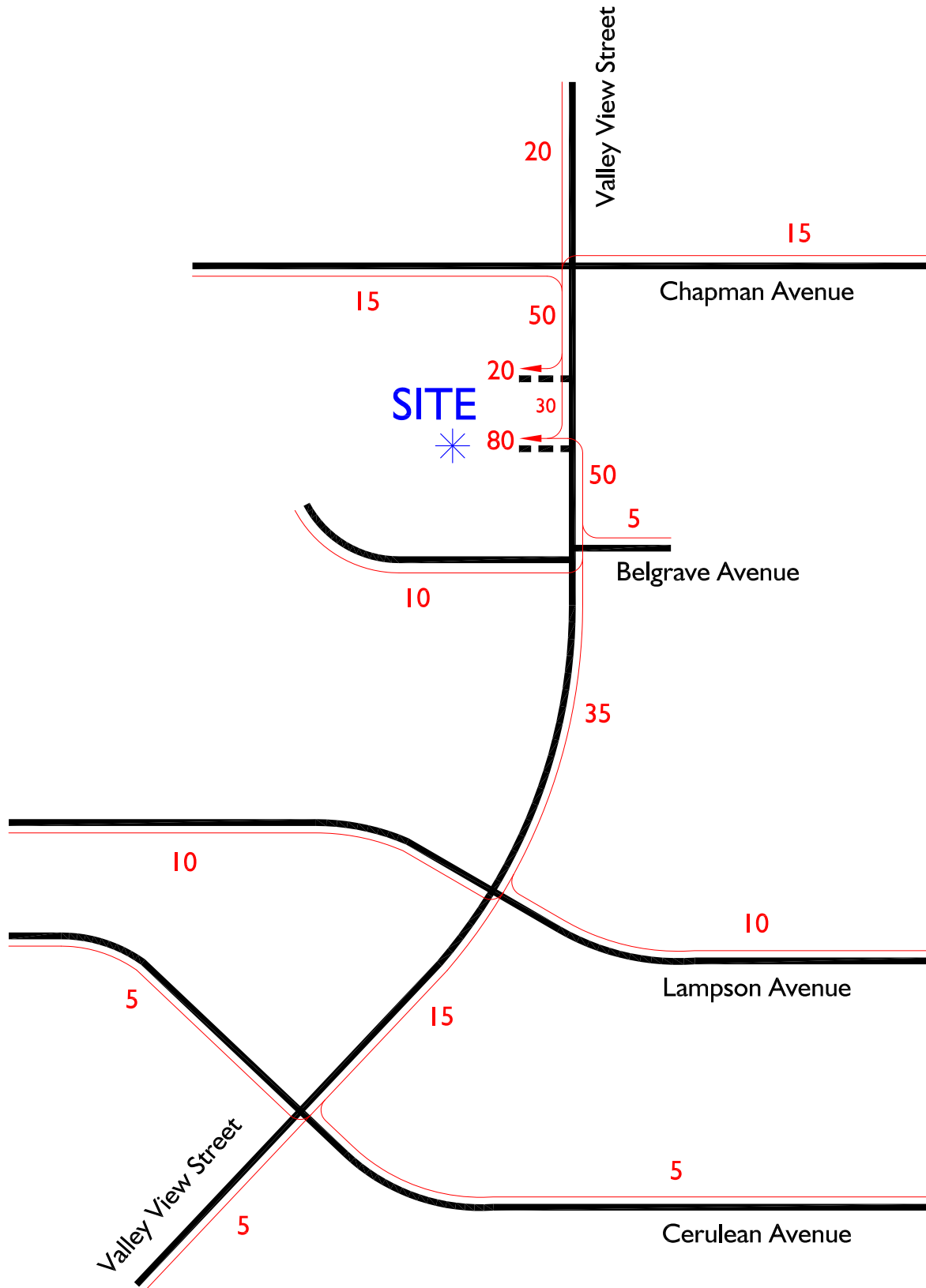
Project Opening Year Without Project Conditions traffic volumes are shown on Exhibit 4-7.

4.5 Project Opening Year With Project Conditions Traffic Volumes

Project Opening Year With Project Conditions traffic volumes consist of two (2) years of annual growth on top of existing (2020) traffic volumes at 2% per year, plus the traffic generated by the cumulative projects and the traffic generated by the proposed project.

Project Opening Year With Project Conditions traffic volumes are shown on Exhibit 4-8.

Inbound Project Trip Distribution

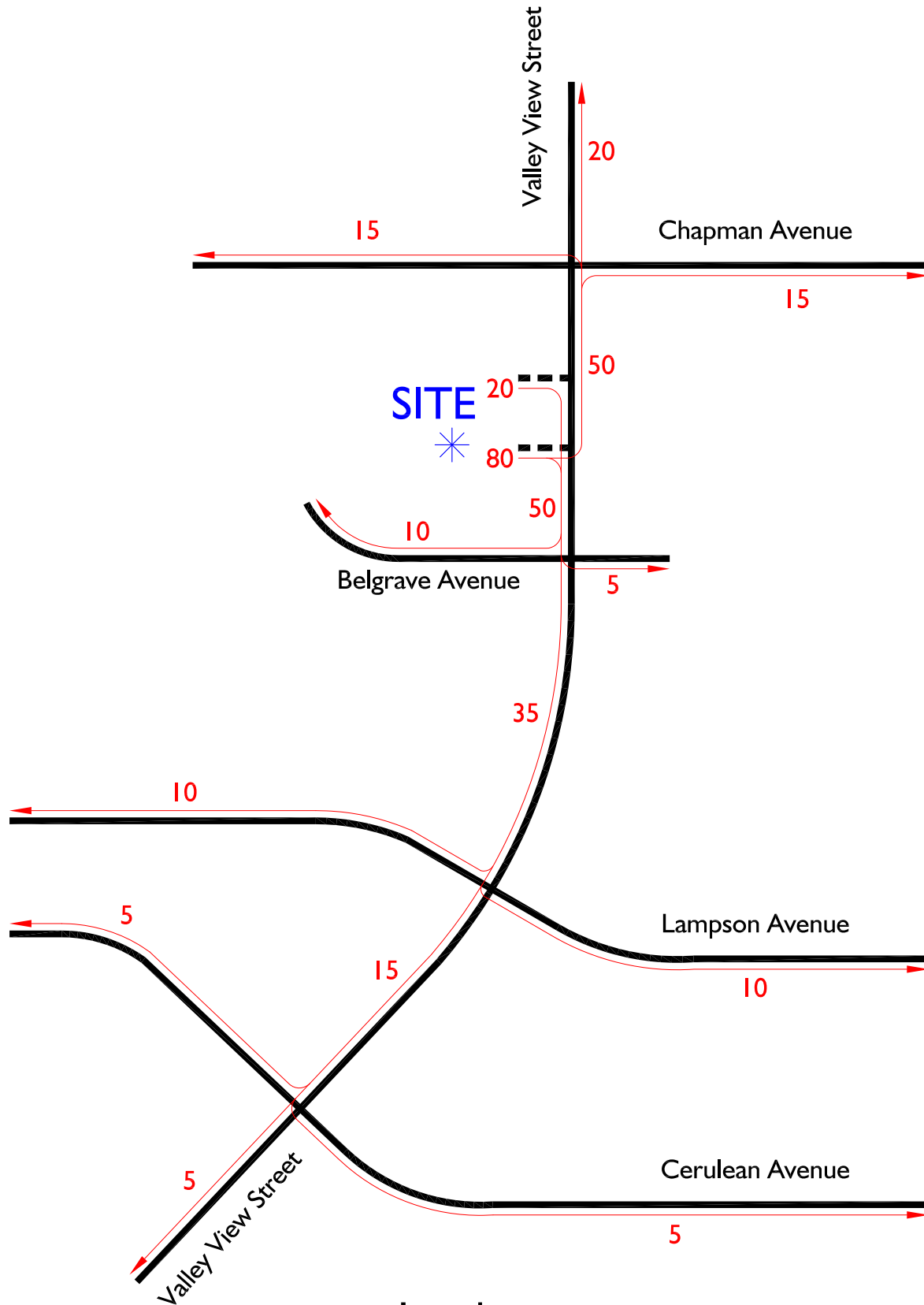


Legend:

10 = Percent in Project



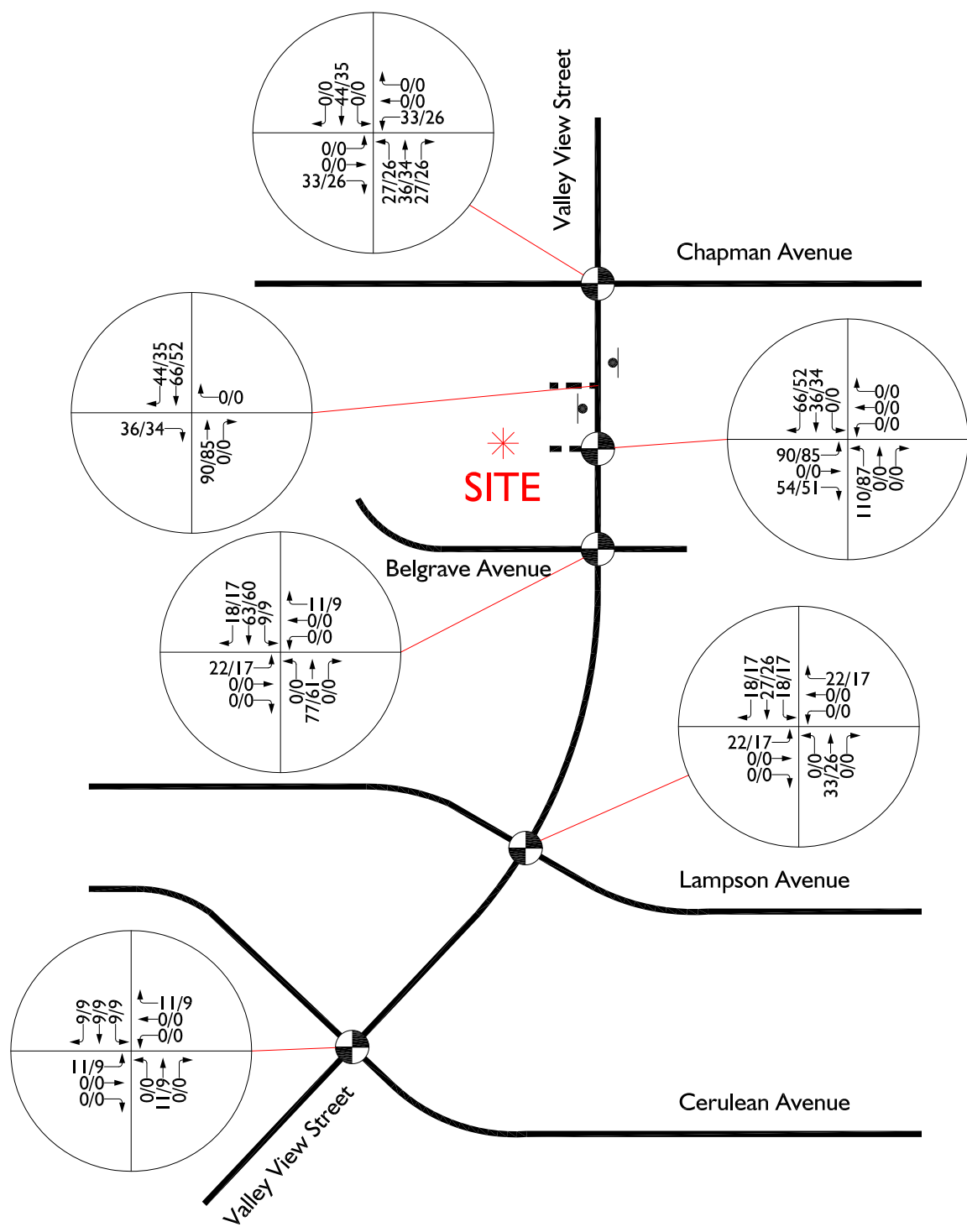
Outbound Project Trip Distribution



Legend:

10 = Percent from Project



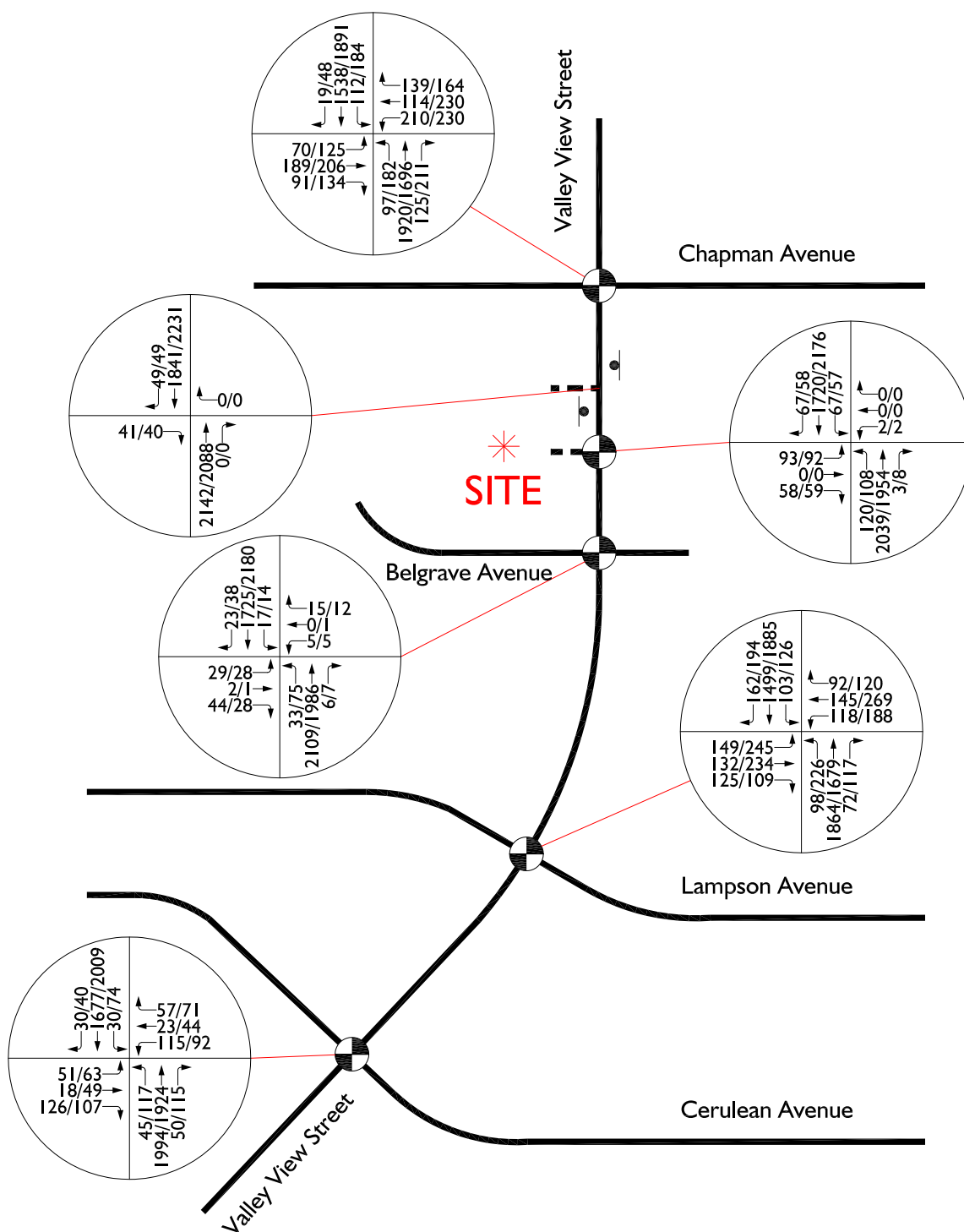


Legend:

10/20 = AM/PM Peak Hour Volumes



Existing Plus Project Conditions Traffic Volumes

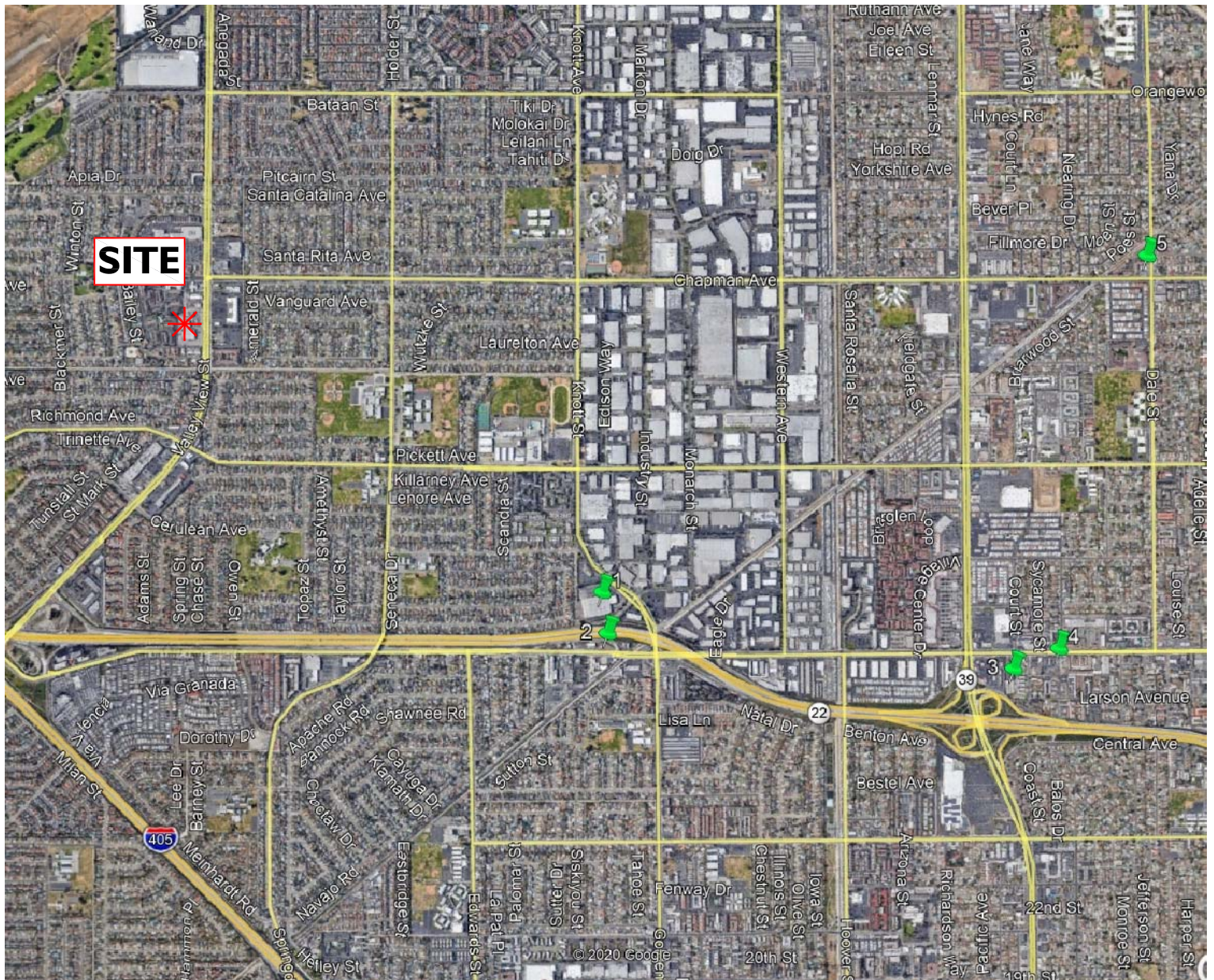


Legend:

10/20 = AM/PM Peak Hour Volumes



Exhibit 4-5 Cumulative Projects Location Map



NOTE: See report for full list of cumulative projects and traffic analysis zones (TAZ).

Legend:

● = City of Garden Grove Cumulative Project

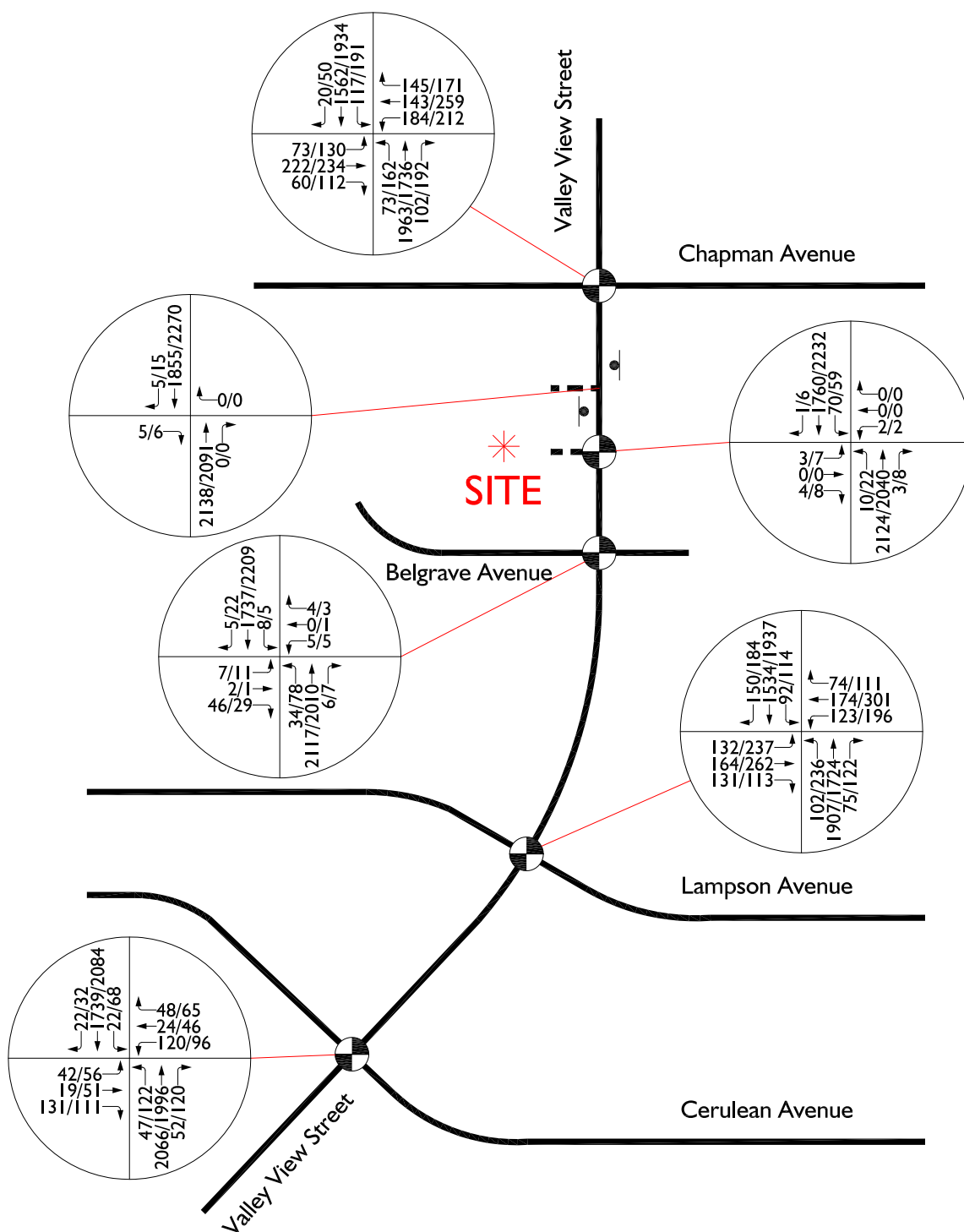




10/20 = AM/PM Peak Hour Volumes



Project Opening Year Without Project Conditions Traffic Volumes



Project Opening Year With Project Conditions Traffic Volumes

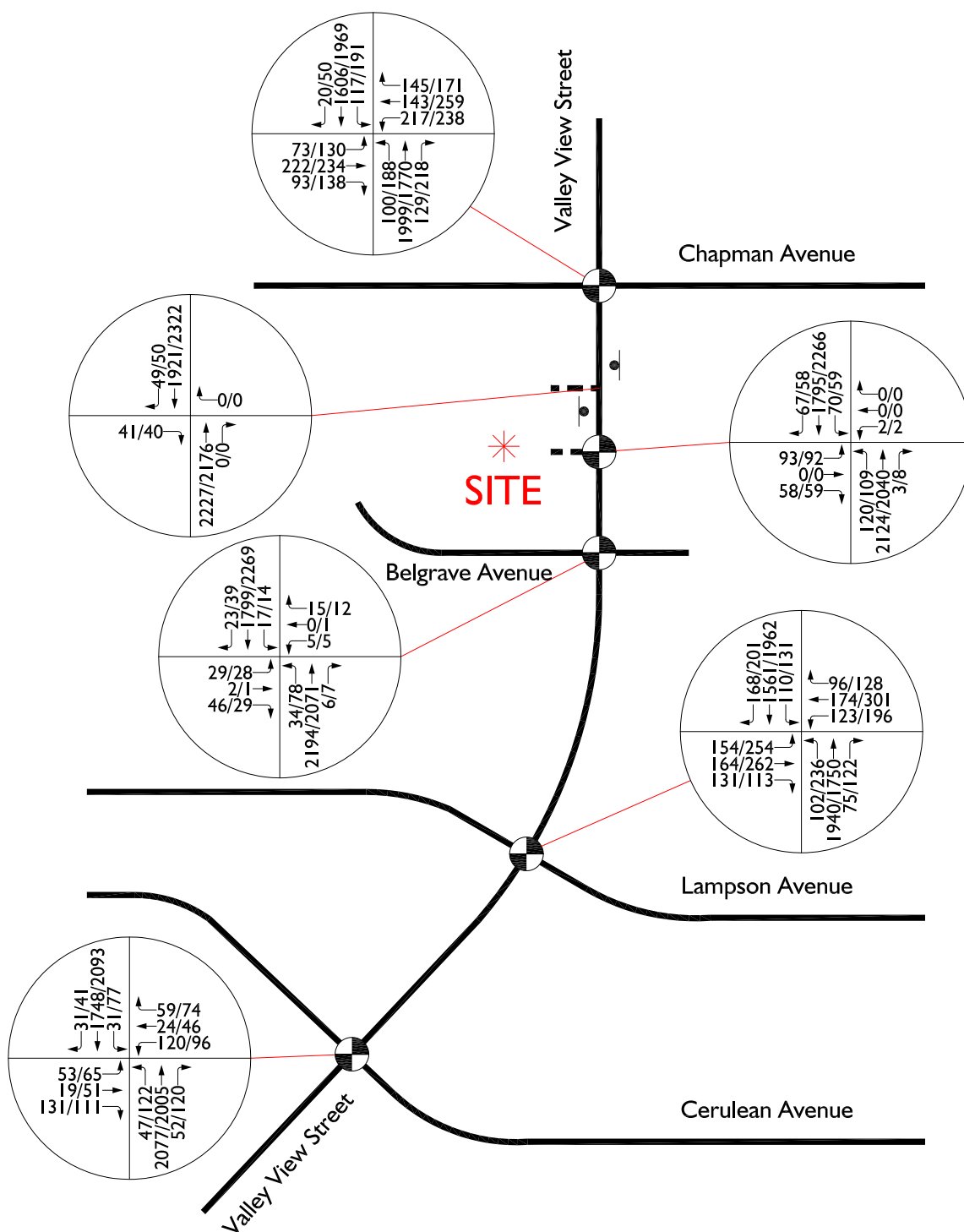


Table 4-1
ITE Trip Generation Rates¹

Land Use	Units ²	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Supermarket	TSF	850	2.29	1.53	3.82	4.71	4.53	9.24	106.78
Fast Food Restaurant Without Drive Thru	TSF	933	15.06	10.04	25.10	14.17	14.17	28.34	346.23
Fast Food Restaurant With Drive Thru	TSF	934	20.50	19.69	40.19	16.99	15.68	32.67	470.95
Coffee/Donut Shop w/ Drive Thru	TSF	937	45.38	43.61	88.99	21.69	21.69	43.38	820.38
Movie Theater	Seats	444	0.00	0.00	0.00	0.05	0.04	0.09	1.76
Health/Fitness Club	TSF	492	0.67	0.64	1.31	1.97	1.48	3.45	34.50
Church	TSF	560	0.20	0.13	0.33	0.22	0.27	0.49	6.95

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

Table 4-2 A
Project Trip Generation¹
Alternative 1 - Super Market Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Supermarket (850)	12.245	TSF	28	19	47	58	55	113	1,308
<i>ITE Pass-by Adjustment³ (0% AM, 36% PM)</i>			0	0	0	-21	-20	-41	0
Subtotal			28	19	47	37	35	72	1,308
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			220	179	399	173	170	343	5,654

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 4-2 B
Project Trip Generation¹
Alternative 2 - Movie Theater Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Movie Theater (444)	275	Seats	0	0	0	14	11	25	484
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			192	160	352	150	146	296	4,830

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 4-2 C
Project Trip Generation¹
Alternative 3 - Health Club Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Health/Fitness Club (492)	12.245	TSF	8	8	16	24	18	42	420
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			200	168	368	160	153	313	4,766

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 4-2 D
Project Trip Generation¹
Alternative 4 - Church Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Church (560)	12.245	TSF	2	2	4	3	3	6	85
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			194	162	356	139	138	277	4,431

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 4-3
Cumulative Projects Trip Generation¹

ID No.	Jurisdiction	Project Name / Case Number	Land Use	Quantity	Units ²	Peak Hour						Daily
						AM			PM			
						In	Out	Total	In	Out	Total	
TAZ 1												
1	City of Garden Grove	PUD 104-70	General Light Industrial	45.335	TSF	28	4	32	4	25	29	225
TAZ 1 Total						28	4	32	4	25	29	225
TAZ 2												
2	City of Garden Grove	CUP 106-2017	Coffee/Donut Shop w/ Drive Thru	2.685	TSF	122	117	239	58	58	116	2,203
			Serv.Station w/ Conven.Mkt	12	VFP	76	73	149	86	82	168	2,464
TAZ 2 Total						198	190	388	144	140	284	4,667
TAZ 3												
3	City of Garden Grove	CUP 188-2020	University/College	164	STU	19	5	24	8	17	25	256
TAZ 3 Total						19	5	24	8	17	25	256
TAZ 4												
4	City of Garden Grove	LLA 020-2019	Multifamily Housing (Low-Rise)	46	DU	5	16	21	16	10	26	337
TAZ 4 Total						5	16	21	16	10	26	337
TAZ 5												
5	City of Garden Grove	CUP 180-2020	Serv.Station w/ Conven.Mkt	8	VFP	51	49	100	57	55	112	1,643
TAZ 5 Total						51	49	100	57	55	112	1,643
Total Cumulative Projects Trip Generation						301	264	565	229	247	476	7,128

¹ Cumulative Projects information provided by the City of Garden Grove

² TSF = Thousand Square Feet
VFP = Vehicle Fueling Positions
STU = Students
DU = Dwelling Units

5.0 MUTCD Traffic Signal Warrant Analysis

The following unsignalized study intersection has been evaluated for signalization based on the peak hour signal warrants and procedures contained in the *California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition*:

2. Valley View Street / Project Driveway (existing right-in/right-out unsignalized access).

Table 5-1 summarizes the results of the *MUTCD* peak hour signal warrant analysis at the unsignalized study intersection noted above for all analysis scenarios evaluated in this study.

Detailed *MUTCD* signal warrant analysis sheets are included in Appendix B.

The following is a summary of the traffic signal warrant analysis:

2. Valley View Street / Project Driveway (existing right-in/right-out unsignalized access):
signal warrants are not satisfied for any of the analysis scenarios.

Table 5-1
MUTCD Peak Hour Signal Warrant Analysis Summary

Analysis Scenario	Warrant	Signal Warrant Satisfied?
		Intersection #2: Valley View Street / Project Driveway
Existing Conditions	AM Peak Hour	No
	PM Peak Hour	No
Existing Plus Project Conditions	AM Peak Hour	No
	PM Peak Hour	No
Project Opening Year Without Project Conditions	AM Peak Hour	No
	PM Peak Hour	No
Project Opening Year With Project Conditions	AM Peak Hour	No
	PM Peak Hour	No

6.0 Study Intersection Peak Hour LOS Analysis

This section of the report provides a discussion on the study intersection peak hour level of service analysis and findings.

6.1 Existing Conditions Level of Service

Existing Conditions level of service (LOS) calculations for the study intersections are shown on Table 6-1 and are based upon the existing (2020) traffic volumes shown on Exhibit 3-2, and the existing geometry shown on Exhibit 3-1.

As shown on Table 6-1, all study intersections are currently operating at an acceptable LOS (LOS D or better) during the peak hours for Existing Conditions.

Detailed LOS analysis sheets for Existing Conditions are contained in Appendix C.

6.2 Existing Plus Project Conditions Level of Service

Existing Plus Project Conditions level of service (LOS) calculations for the study intersections are shown on Table 6-2 and are based upon the Existing Plus Project Conditions traffic volumes shown on Exhibit 4-4, and the existing geometry shown on Exhibit 3-1.

As shown on Table 6-2, all study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Existing Plus Project Conditions, with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS E or F):

2. Valley View Street / Project Driveway (PM peak hour only).

It should be noted the deficient intersection operation for the Valley View Street / Project Driveway intersection is related to the vehicles exiting the project and waiting for a gap in the traffic to exit the site. All other movements of the intersection and the traffic on the public roadway is forecast to experience nominal delays with an overall intersection delay of 0.3 seconds (LOS A). Additionally, as shown in Section 5.0 of this report, this study intersection does not satisfy the MUTCD peak hour volume traffic signal warrants for installation of a traffic signal.

Based on the agency-established level of service performance thresholds, the proposed project is forecast to not be required to contribute a fair share to improving the study intersections for Existing Plus Project Conditions.

Detailed LOS analysis sheets for Existing Plus Project Conditions are contained in Appendix D.

6.3 Project Opening Year Without Project Conditions Level of Service

Project Opening Year Without Project Conditions level of service (LOS) calculations for the study intersections are shown on Table 6-3 and are based upon the Project Opening Year Without Project Conditions traffic volumes shown on Exhibit 4-7, and the existing geometry shown on Exhibit 3-1.

As shown on Table 6-3, all study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year Without Project Conditions.

Detailed LOS analysis sheets for Project Opening Year Without Project Conditions are contained in Appendix E.

6.4 Project Opening Year With Project Conditions Level of Service

Project Opening Year With Project Conditions level of service (LOS) calculations for the study intersections are shown on Table 6-4 and are based upon the Project Opening Year With Project Conditions traffic volumes shown on Exhibit 4-8, and the existing geometry shown on Exhibit 3-1.

As shown on Table 6-4, all study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year With Project Conditions, with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS E or F):

2. Valley View Street / Project Driveway (PM peak hour only).

It should be noted the deficient intersection operation for the Valley View Street / Project Driveway intersection is related to the vehicles exiting the project and waiting for a gap in the traffic to exit the site. All other movements of the intersection and the traffic on the public roadway is forecast to experience nominal delays with an overall intersection delay of 0.4

seconds (LOS A). Additionally, as shown in Section 5.0 of this report, this study intersection does not satisfy the MUTCD peak hour volume traffic signal warrants for installation of a traffic signal.

Based on the agency-established level of service performance thresholds, the proposed project is forecast to not be required to contribute a fair share to improving the study intersections for Project Opening Year With Project Conditions.

Detailed LOS analysis sheets for Project Opening Year With Project Conditions are contained in Appendix F.

6.5 Project Alternatives Level of Service

As previously shown, when compared to the various project Alternatives considered in this report, Project Alternative 1 is forecast to result in the most number of daily and peak hour trips.

Since project Alternative 1 is forecast to result in the most number of daily and peak hour trips, per the approved scoping agreement, the level of service analysis contained in this report evaluated project Alternative 1 for level of service impacts and the results of the analysis show that based on the agency-established level of service performance thresholds, the proposed project Alternative 1 is forecast to not be required to contribute a fair share to improving the study intersection for any of the analysis scenarios evaluated as part of this report.

Hence, it can be concluded that Project Alternatives 2, 3, and 4 are also forecast to not be required to contribute a fair share to improving the study intersections based on the agency-established level of service performance thresholds

Table 6-1
Study Intersection LOS Analysis Summary
Existing Conditions

Intersection		Traffic Control ³	ICU (V/C) / Delay (Secs) ^{1,2}		Level of Service	
			AM	PM	AM	PM
1.	Valley View Street (NS) / Chapman Avenue (EW)	TS	0.589	0.659	A	B
2.	Valley View Street (NS) / Project Driveway (EW)	CSS	21.9	29.4	C	D
3.	Valley View Street (NS) / Cinema Driveway (EW)	TS	0.465	0.467	A	A
4.	Valley View Street (NS) / Belgrave Avenue (EW)	TS	0.456	0.501	A	A
5.	Valley View Street (NS) / Lampson Avenue (EW)	TS	0.583	0.780	A	C
6.	Valley View Street (NS) / Cerulean Avenue (EW)	TS	0.572	0.608	A	B

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 2010 Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to Capacity Ratio.

³ TS = Traffic Signal
CSS = Cross-Street Stop

Table 6-2
Study Intersection LOS Analysis Summary
Existing Plus Project Conditions

Intersection		Traffic Control ³	Existing Conditions				Existing Plus Project Conditions							
			ICU (V/C) / Delay (Secs) ^{1,2}		Level of Service		ICU (V/C) / Delay (Secs) ^{1,2}		Increase in (V/C) / Delay (Secs)		Level of Service		Requires Improvement?	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1.	Valley View Street (NS) / Chapman Avenue (EW)	TS	0.589	0.659	A	B	0.617	0.679	0.028	0.020	B	B	No	No
2.	Valley View Street (NS) / Project Driveway (EW)	CSS	21.9	29.4	C	D	28.2	40.8	6.3	11.4	D	E	No	No
3.	Valley View Street (NS) / Cinema Driveway (EW)	TS	0.465	0.467	A	A	0.558	0.623	0.093	0.156	A	B	No	No
4.	Valley View Street (NS) / Belgrave Avenue (EW)	TS	0.456	0.501	A	A	0.477	0.533	0.021	0.032	A	A	No	No
5.	Valley View Street (NS) / Lampson Avenue (EW)	TS	0.583	0.780	A	C	0.614	0.801	0.031	0.021	B	D	No	No
6.	Valley View Street (NS) / Cerulean Avenue (EW)	TS	0.572	0.608	A	B	0.579	0.610	0.007	0.002	A	B	No	No

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 2010 Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.
ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to Capacity Ratio.

³ CSS = Cross-Street Stop
TS = Traffic Signal

Table 6-3
Study Intersection LOS Analysis Summary
Project Opening Year Without Project Conditions

Intersection		Traffic Control ³	ICU (V/C) / Delay (Secs) ^{1,2}		Level of Service	
			AM	PM	AM	PM
1.	Valley View Street (NS) / Chapman Avenue (EW)	TS	0.622	0.686	B	B
2.	Valley View Street (NS) / Project Driveway (EW)	CSS	23.1	31.4	C	D
3.	Valley View Street (NS) / Cinema Driveway (EW)	TS	0.484	0.486	A	A
4.	Valley View Street (NS) / Belgrave Avenue (EW)	TS	0.475	0.522	A	A
5.	Valley View Street (NS) / Lampson Avenue (EW)	TS	0.618	0.820	B	D
6.	Valley View Street (NS) / Cerulean Avenue (EW)	TS	0.595	0.634	A	B

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 2010 Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to Capacity Ratio.

³ TS = Traffic Signal
 CSS = Cross-Street Stop

Table 6-4
Study Intersection LOS Analysis Summary
Project Opening Year With Project Conditions

Intersection		Traffic Control ³	Project Opening Year Without Project Conditions				Project Opening Year With Project Conditions							
			ICU (V/C) / Delay (Secs) ^{1,2}		Level of Service		ICU (V/C) / Delay (Secs) ^{1,2}		Increase in (V/C) / Delay (Secs)		Level of Service		Requires Improvement?	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1.	Valley View Street (NS) / Chapman Avenue (EW)	TS	0.622	0.686	B	B	0.650	0.709	0.028	0.023	B	C	No	No
2.	Valley View Street (NS) / Project Driveway (EW)	CSS	23.1	31.4	C	D	30.3	44.7	7.2	13.3	D	E	No	No
3.	Valley View Street (NS) / Cinema Driveway (EW)	TS	0.484	0.486	A	A	0.577	0.642	0.093	0.156	A	B	No	No
4.	Valley View Street (NS) / Belgrave Avenue (EW)	TS	0.475	0.522	A	A	0.496	0.554	0.021	0.032	A	A	No	No
5.	Valley View Street (NS) / Lampson Avenue (EW)	TS	0.618	0.820	B	D	0.648	0.841	0.030	0.021	B	D	No	No
6.	Valley View Street (NS) / Cerulean Avenue (EW)	TS	0.595	0.634	A	B	0.603	0.636	0.008	0.002	B	B	No	No

¹ Deficient operation shown in **Bold**.

² HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 2010 Edition, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.
ICU Analysis Software: Traffix, Version 8.0. V/C = Volume to Capacity Ratio.

³ CSS = Cross-Street Stop
TS = Traffic Signal

7.0 Left-Turn Pocket Queue Analysis

As requested by City staff, an analysis of the left-turn storage capacity for the study intersections has been performed to determine if adequate storage is currently provided to accommodate the left-turn vehicular queues at the study intersections for each analysis scenario.

The analysis assumes one foot of storage to be required per left-turning vehicle.

Table 7-1 shows the results of the left-turn queue analysis.

As shown in Table 7-1, the following left-turn movements would require additional left turn capacity:

1. Valley View Street / Chapman Avenue:
 - Southbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 150 feet
 - Required Left-Turn Capacity: 200 feet
 - Eastbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 80 feet
 - Required Left-Turn Capacity: 130 feet
3. Valley View Street / Cinema Driveway:
 - Northbound Left-Turn (deficient with the project):
 - Existing Left-Turn Capacity: 115 feet
 - Required Left-Turn Capacity: 120 feet

5. Valley View Street / Lampson Avenue:

- Eastbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 150 feet
 - Required Left-Turn Capacity: 255 feet
- Westbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 120 feet
 - Required Left-Turn Capacity: 200 feet

6. Valley View Street / Cerulean Avenue:

- Westbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 100 feet
 - Required Left-Turn Capacity: 120 feet

With the exception of the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficient left-turn storages are forecast to occur both without and with the proposed project. Hence, the proposed project is not required or responsible to improve the identified left-turn storage deficiencies at these locations.

In regards to the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficiency is forecast to be very nominal (approximately five feet). Based on discussions, with City staff, since the deficiency is nominal, no improvements are required at this left-turn storage.

Table 7-1
Study Intersection Left-Turn Pocket Analysis

Intersection		No. of Lanes	Storage per Lane (feet)	Total Storage (feet)	Existing Conditions						Existing Plus Project Conditions						Project Opening Year Without Project Conditions						Project Opening Year With Project Conditions					
					Traffic Volume		Required Storage (feet)		Adequate Storage Provided?		Traffic Volume		Required Storage (feet)		Adequate Storage Provided?		Traffic Volume		Required Storage (feet)		Adequate Storage Provided?		Traffic Volume		Required Storage (feet)		Adequate Storage Provided?	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1.	Valley View Street (NS) / Chapman Avenue (EW)																											
	Northbound Left-Turn	1	200	200	70	156	70	156	YES	YES	97	182	97	182	YES	YES	73	162	73	162	YES	YES	100	188	100	188	YES	YES
	Southbound Left-Turn	1	150	150	112	184	112	184	YES	NO	112	184	112	184	YES	NO	117	191	117	191	YES	NO	117	191	117	191	YES	NO
	Eastbound Left-Turn	1	80	80	70	125	70	125	YES	NO	70	125	70	125	YES	NO	73	130	73	130	YES	NO	73	130	73	130	YES	NO
	Westbound Left-Turn	2	125	250	177	204	177	204	YES	YES	210	230	210	230	YES	YES	184	212	184	212	YES	YES	217	238	217	238	YES	YES
3.	Valley View Street (NS) / Cinema Driveway (EW)																											
	Northbound Left-Turn	1	115	115	10	21	10	21	YES	YES	120	108	120	108	NO	YES	10	22	10	22	YES	YES	120	109	120	109	NO	YES
	Southbound Left-Turn	1	110	110	67	57	67	57	YES	YES	67	57	67	57	YES	YES	70	59	70	59	YES	YES	70	59	70	59	YES	YES
4.	Valley View Street (NS) / Belgrave Avenue (EW)																											
	Northbound Left-Turn	1	90	90	33	75	33	75	YES	YES	33	75	33	75	YES	YES	34	78	34	78	YES	YES	34	78	34	78	YES	YES
	Southbound Left-Turn	1	85	85	8	5	8	5	YES	YES	17	14	17	14	YES	YES	8	5	8	5	YES	YES	17	14	17	14	YES	YES
5.	Valley View Street (NS) / Lampson Avenue (EW)																											
	Northbound Left-Turn	1	250	250	98	226	98	226	YES	YES	98	226	98	226	YES	YES	102	236	102	236	YES	YES	102	236	102	236	YES	YES
	Southbound Left-Turn	1	150	150	85	109	85	109	YES	YES	103	126	103	126	YES	YES	92	114	92	114	YES	YES	110	131	110	131	YES	YES
	Eastbound Left-Turn	1	150	150	127	228	127	228	YES	NO	149	245	149	245	YES	NO	132	237	132	237	YES	NO	154	254	154	254	NO	NO
	Westbound Left-Turn	1	120	120	118	188	118	188	YES	NO	118	188	118	188	YES	NO	123	196	123	196	NO	NO	123	196	123	196	NO	NO
6.	Valley View Street (NS) / Cerulean Avenue (EW)																											
	Northbound Left-Turn	1	175	175	45	117	45	117	YES	YES	45	117	45	117	YES	YES	47	122	47	122	YES	YES	47	122	47	122	YES	YES
	Southbound Left-Turn	1	150	150	21	65	21	65	YES	YES	30	74	30	74	YES	YES	22	68	22	68	YES	YES	31	77	31	77	YES	YES
	Eastbound Left-Turn	1	65	65	40	54	40	54	YES	YES	51	63	51	63	YES	YES	42	56	42	56	YES	YES	53	65	53	65	YES	YES
	Westbound Left-Turn	1	100	100	115	92	115	92	NO	YES	115	92	115	92	NO	YES	120	96	120	96	NO	YES	120	96	120	96	NO	YES

¹ Deficient storage shown in **Bold**.

8.0 CEQA Vehicle Miles Traveled (VMT) Analysis

In response to Senate Bill (SB) 743, the California Natural Resource Agency certified and adopted new CEQA Guidelines in December 2018 which now identify Vehicle Miles Traveled (VMT) as the most appropriate metric to evaluate a project's transportation impact under CEQA (§ 15064.3).

Effective July 1, 2020, the previous CEQA metric of level of service (LOS), typically measured in terms of automobile delay, roadway capacity and congestion, generally will no longer constitute a significant environmental impact.

The City of Garden Grove has updated their transportation impact guidelines *City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (May 2020)* to provide recommendations in the form of thresholds of significance and methodology for identifying VMT related impacts.

Based on the *City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (May 2020)*, the following uses are considered local-serving and are exempt from VMT analysis. This presumption is based on the substantial evidence provided in the OPR Technical Advisory supporting SB 743 implementation or is related to projects that are local-serving, which, by definition, would decrease the number of trips or the distance those trips travel to access the development (and are VMT-reducing trip).

1. Projects located in a Transit Priority Area (TPA)
2. Projects located in a low-VMT generating area
3. K-12 schools
4. Local parks
5. Day care centers
6. Local-serving retail uses less than 50,000 square feet, including:
 - a. Gas Stations

- b. Banks
 - c. Restaurants
 - d. Shopping Center
7. Local-serving hotels (e.g. non-destination hotels)
 8. Student housing projects on or adjacent to a college campus
 9. Local-serving assembly uses (places of worship, community organizations)
 10. Community institutions (public libraries, fire stations, local government)
 11. Local-serving community colleges that are consistent with the assumptions noted in the Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS)
 12. Affordable, supportive, or transitional housing
 13. Assisting living facilities
 14. Senior housing (as defined by the U.S. Department of Housing and Urban Development (HUD))
 15. Projects generating less than 110 daily vehicle trips

The proposed project can be considered local-serving with non-significant VMT impacts.

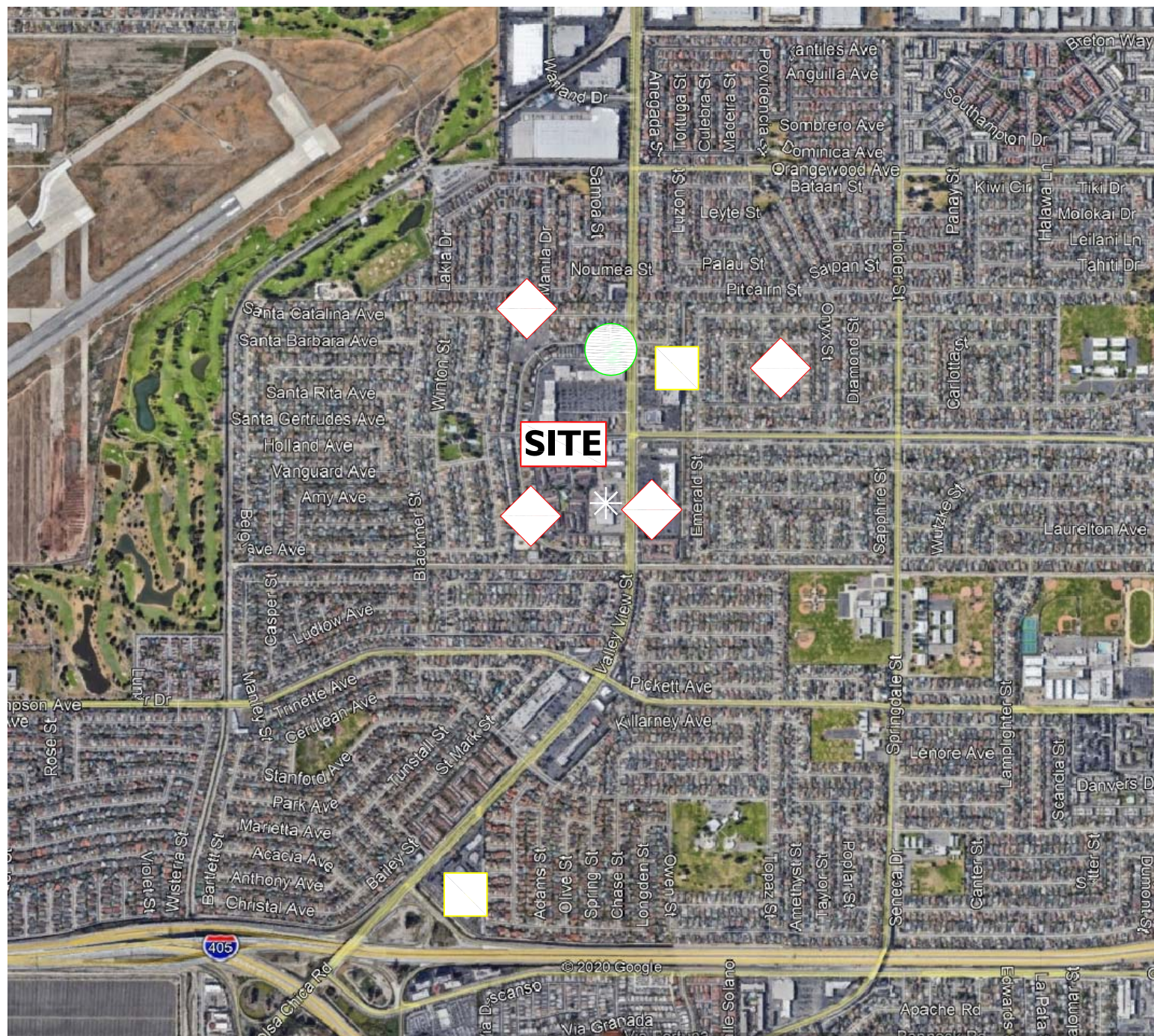
All of the proposed uses being considered for the various project alternatives are local-serving type. For instance, gyms and grocery stores typically serve the local neighborhood. Patrons are not expected to come from far distances to access these uses.

In reality, the proposed uses could actually help in reducing VMT by providing a closer alternative to patrons. For instance, if residents of the area are currently required to travel 10 blocks to access a supermarket, fast food restaurant, coffee shop, movie theater, church, or gym, the proposed project will now provide these services to the residents at a closer location which now requires them to travel only 5 blocks to access these services, reducing the travel distances.

Research has been conducted to determine the existing similar uses within a one-mile radius of the site. Exhibit 8-1 graphically shows the proximity of similar land uses to those of the proposed project that are located within one (1) mile from the proposed project.

*In conclusion, the proposed project and its various alternatives are **not** expected to result in a significant VMT impact.*

Similar Land Uses within One Mile Proximity to Project



Legend:

- = Supermarket within one mile of project site
- = Gym within one mile of project site
- ◇ = Church within one mile of project site



9.0 Active Transportation & Public Transit Analysis

Per the City of Garden Grove adopted thresholds, a significant active transportation and public transit impact occurs if the project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities.

The propped project is not planned to significantly change or modify any of the existing public transit or pedestrian facilities or make any modification that could conflict with adopted policies, plans or programs, or modify the safety of such facilities.

Hence, the proposed project is forecast to not have a significant active transportation and public transit impact.

10.0 Parking Analysis

The purpose of this parking analysis is to determine the number of parking spaces required for the existing and proposed land uses for the Westgrove Center Project, as well as to evaluate if there is an adequate amount of on-site parking spaces to accommodate both the existing and proposed land uses. The parking analysis calculations are based on the parking rates from the City of Garden Grove Municipal Parking Code, which is contained in Appendix G.

The existing land uses are the following:

- 10,590 square feet of Movie Theater (251 seats);
- 2,070 square feet (1,870 SF plus 200 SF patio) of Fast Food Restaurant With Drive Through; and
- 4,241 square feet of Automatic Car Wash.

The project is planned to provide a total of 123 parking spaces. This includes capacity provided in the drive through aisles

However, as previously noted, the Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Therefore, a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

After accounting for the 123 parking spaces which will be provided by the proposed project, the two parcels will have a combined parking capacity of 318 parking spaces and a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

As previously noted, the proposed project is planned to modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Land Use Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Supermarket	12,245 SF	0	0	0
Fast Food Restaurant With Drive Through	1,665 SF	1,665 SF	1,665 SF	1,665 SF
Fast Food Restaurant Without Drive Through	5,549 SF	5,549 SF	5,549 SF	5,549 SF
Fast Food Patio Area	1,200 SF	1,200 SF	1,200 SF	1,200 SF
Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

It should also be noted, the movie theater will not be modified with this project. The plans currently being reviewed and considered by the city are for the uses proposed in Alternative 1. While the applicant proposes to consider three other alternatives to assist with the change of uses in the future, Alternative 1 uses are the uses that are analyzed and evaluated in all technical studies and those considered as part of the land use approval.

Table 10-1 shows the required number of parking spaces based on the City Municipal Code for the project site uses assuming Land Use Alternative 1 (supermarket anchor building).

As shown in Table 10-1:

- The project is planned to provide a total of 123 parking spaces. This includes capacity provided in the drive through aisles

However, as previously noted, the Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Therefore, a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

After accounting for the 123 parking spaces which will be provided by the proposed project, the two parcels will have a combined parking capacity of 318 parking spaces and a portion of the project's required parking spaces would be

accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

- Based on the City Municipal Code:
 - The proposed project is required to provide 166 parking spaces.
 - The overall required parking for the integrated development (the two parcels) is 295 parking spaces.
- Since the development will provide a total of 318 parking spaces, the combined parking capacity is forecast to be more than adequate to serve the two parcels. A reciprocal parking agreement would be required to ensure that the parking for the Project remains available for the life of the Project.

If other land use alternative and mix aside Alternative 1 is proposed, the parking calculations need to be updated to reflect the updated land use mix and provided to the City for review.

Table 10-1
Parking Analysis - Land Use Alternative 1 (Supermarket)
City of Garden Grove Municipal Parking Code (9.18.140.030 Parking Spaces Required)¹

Land Use	S.F.	Percent of Gross Floor Area	Parking Code ¹	Number of Spaces Required
Phase 1 (Existing Land Uses)				
Movie Theater (251 seats)	10,590	26.77%	0.3 per seat	75.30
Fast Food Restaurant With Drive Through (Includes 200 SF of Patio Area)	2,070	5.23%	1/100	20.70
Automatic Car Wash	4,241	10.72%	-- ²	33.00
Phase 1 Subtotal Required Parking	16,901	42.72%		129
Phase 2 (Proposed Project Land Uses (Including 1,200 SF of Total Patio Area for the Two Fast Food Restaurants))				
Supermarket	12,245	30.95%	1/200	61.23
Fast Food Restaurant With Drive Through	1,665	4.21%	1/100	16.65
Fast Food Restaurant Without Drive Through	5,549	14.03%	1/100	55.49
Total Patio Area for the Two Proposed Fast Food Restaurant Uses	1,200	3.03%	1/100	12.00
Coffee/Donut Shop With Drive Through	2,000	5.06%	1/100	20.00
Phase 2 Subtotal Required Parking	22,659	57.28%		166
Total Parking Spaces Required (Phase 1 + Phase 2)	39,560	100.00%		295
Total Parking Spaces Provided On-Site (Phase 1 + Phase 2)³				318
Number of Surplus Parking Spaces Per Municipal Code				23
Percent Surplus Parking Per Code				7.80%

¹ Parking rates obtained from City of Garden Grove Municipal Parking Code Section 9.18.140.030 - Parking Spaces Required.

² Required parking for Automatic Car Wash is five (5) times the internal washing capacity for stacking and drying, plus one (1) space per employee based on the maximum shift, not less than three (3), per the City of Garden Grove Municipal Code Section 9.18.140.030 - Parking Spaces Required.
Parking Required = 5 x (120/20) + 3.

³ Includes drive through spaces counted towards parking capacity.

11.0 Findings, Conclusions & Recommendations

The purpose of this traffic impact analysis is to evaluate the proposed Westgrove Center Project (hereinafter referred to as project) from a traffic and circulation standpoint and determine whether the proposed project will have a significant traffic impact. This study has been conducted pursuant to the *City of Garden Grove Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (May 2020)*, and the California Environmental Quality Act (CEQA) requirements.

It should be noted, previously, a traffic study (*Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*) was prepared for the site in 2018.

This traffic study has been prepared in accordance with the scope of work set forth prior to initiating the analysis. The scope of work was prepared to be consistent with the previous traffic study prepared for the site in 2018. The scoping agreement is provided in Appendix A.

This report also evaluates the project on-site parking capacity requirements per the City of Garden Grove Municipal Code.

The existing Westgrove Center site is located south of Chapman Avenue and west of Valley View Street in the City of Garden Grove.

The Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Both properties will function as an integrated site for parking and access.

The proposed project is planned to modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Land Use Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Supermarket	12,245 SF	0	0	0
Fast Food Restaurant With Drive Through	1,665 SF	1,665 SF	1,665 SF	1,665 SF
Fast Food Restaurant Without Drive Through	5,549 SF	5,549 SF	5,549 SF	5,549 SF
Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

It should also be noted, the movie theater will not be modified with this project. The plans currently being reviewed and considered by the city are for the uses proposed in Alternative 1. While the applicant proposes to consider three other alternatives to assist with the change of uses in the future, Alternative 1 uses are the uses that are analyzed and evaluated in all technical studies and those considered as part of the land use approval.

Access to the project site will be provided via the following:

- One (1) right-in/right-out driveway on Valley View Street (unsignalized);
- One (1) full access driveway on Valley View Street (signalized); and
- Right-in/Right-out access to Valley View Street via the alley on the south side of the site (unsignalized).

The project is planned to open in 2022 and will be evaluated in one (1) single phase.

11.1 Intersection Level of Service Study Area

The study area included in this analysis has been determined based upon existing and future transportation facilities within the vicinity of the site where the project may contribute a significant amount of traffic. Consistent with the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*, the traffic study evaluates the following study intersections:

1. Valley View Street / Chapman Avenue;

2. Valley View Street / Project Driveway;
3. Valley View Street / Cinema Driveway;
4. Valley View Street / Belgrave Avenue;
5. Valley View Street / Lampson Avenue; and
6. Valley View Street / Cerulean Avenue.

The analysis evaluates traffic conditions for the following scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak hours:

- Existing Conditions;
- Existing Plus Project Conditions;
- Project Opening Year Without Project Conditions; and
- Project Opening Year With Project Conditions.

11.2 Project Trip Generation

Project Alternative 1 is forecast to generate approximately 5,654 daily trips which include approximately 399 AM peak hour trips and approximately 343 PM peak hour trips.

Project Alternative 2 is forecast to generate approximately 4,830 daily trips which include approximately 352 AM peak hour trips and approximately 296 PM peak hour trips.

Project Alternative 3 is forecast to generate approximately 4,766 daily trips which include approximately 368 AM peak hour trips and approximately 313 PM peak hour trips.

Project Alternative 4 is forecast to generate approximately 4,431 daily trips which include approximately 356 AM peak hour trips and approximately 277 PM peak hour trips.

Project Alternative 1 is forecast to result in the most number of daily and peak hour trips.

Since project Alternative 1 is forecast to result in the most number of daily and peak hour trips, per the approved scoping agreement, this traffic study evaluates project Alternative 1 for level of service and Vehicle Miles Traveled (VMT) impacts.

11.3 Traffic Signal Warrant Analysis Summary

The following unsignalized study intersection has been evaluated for signalization based on the peak hour signal warrants and procedures contained in the *California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition*:

2. Valley View Street / Project Driveway (existing right-in/right-out unsignalized access).

Table 5-1 summarizes the results of the *MUTCD* peak hour signal warrant analysis at the unsignalized study intersection noted above for all analysis scenarios evaluated in this study.

Detailed *MUTCD* signal warrant analysis sheets are included in Appendix B.

The following is a summary of the traffic signal warrant analysis:

2. Valley View Street / Project Driveway (existing right-in/right-out unsignalized access):
signal warrants are not satisfied for any of the analysis scenarios.

11.4 Study Intersection Level of Service Analysis Summary

Existing Conditions:

All study intersections are currently operating at an acceptable LOS (LOS D or better) during the peak hours for Existing Conditions.

Existing Plus Project Conditions:

All study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Existing Plus Project Conditions, with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS E or F):

2. Valley View Street / Project Driveway (PM peak hour only).

It should be noted the deficient intersection operation for the Valley View Street / Project Driveway intersection is related to the vehicles exiting the project and waiting for a gap in the traffic to exit the site. All other movements of the intersection and the traffic on the public roadway is forecast to experience nominal delays with an overall intersection delay of 0.3 seconds (LOS A). Additionally, as shown in Section 5.0 of this report, this study intersection does not satisfy the MUTCD peak hour volume traffic signal warrants for installation of a traffic signal.

Based on the agency-established level of service performance thresholds, the proposed project is forecast to not be required to contribute a fair share to improving the study intersections for Existing Plus Project Conditions.

Project Opening Year Without Project Conditions:

All study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year Without Project Conditions.

Project Opening Year With Project Conditions:

All study intersections are forecast to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year With Project Conditions, with the exception of the following study intersection which is forecast to operate at a deficient LOS (LOS E or F):

2. Valley View Street / Project Driveway (PM peak hour only).

It should be noted the deficient intersection operation for the Valley View Street / Project Driveway intersection is related to the vehicles exiting the project and waiting for a gap in the traffic to exit the site. All other movements of the intersection and the traffic on the public roadway is forecast to experience nominal delays with an overall intersection delay of 0.4 seconds (LOS A). Additionally, as shown in Section 5.0 of this report, this study intersection does not satisfy the MUTCD peak hour volume traffic signal warrants for installation of a traffic signal.

Based on the agency-established level of service performance thresholds, the proposed project is forecast to not be required to contribute a fair share to improving the study intersection for Project Opening Year With Project Conditions.

Project Alternatives Level of Service:

As previously shown, when compared to the various project Alternatives considered in this report, Project Alternative 1 is forecast to result in the most number of daily and peak hour trips.

Since project Alternative 1 is forecast to result in the most number of daily and peak hour trips, per the approved scoping agreement, the level of service analysis contained in this report evaluated project Alternative 1 for level of service impacts and the results of the analysis show that based on the agency-established level of service performance thresholds, the proposed project Alternative 1 is forecast to not be required to contribute a fair share to improving the study intersection for any of the analysis scenarios evaluated as part of this report.

Hence, it can be concluded that Project Alternatives 2, 3, and 4 are also forecast to not be required to contribute a fair share to improving the study intersections based on the agency-established level of service performance thresholds

11.5 Left-Turn Pocket Queue Analysis

As requested by City staff, an analysis of the left-turn storage capacity for the study intersections has been performed to determine if adequate storage is currently provided to accommodate the left-turn vehicular queues at the study intersections for each analysis scenario.

The analysis assumes one foot of storage to be required per left-turning vehicle.

Table 7-1 shows the results of the left-turn queue analysis.

As shown in Table 7-1, the following left-turn movements would require additional left turn capacity:

1. Valley View Street / Chapman Avenue:
 - Southbound Left-Turn (deficient without and with the project):
 - Existing Left-Turn Capacity: 150 feet
 - Required Left-Turn Capacity: 200 feet

- Eastbound Left-Turn (deficient without and with the project):

- Existing Left-Turn Capacity: 80 feet
- Required Left-Turn Capacity: 130 feet

3. Valley View Street / Cinema Driveway:

- Northbound Left-Turn (deficient with the project):

- Existing Left-Turn Capacity: 115 feet
- Required Left-Turn Capacity: 120 feet

5. Valley View Street / Lampson Avenue:

- Eastbound Left-Turn (deficient without and with the project):

- Existing Left-Turn Capacity: 150 feet
- Required Left-Turn Capacity: 255 feet

- Westbound Left-Turn (deficient without and with the project):

- Existing Left-Turn Capacity: 120 feet
- Required Left-Turn Capacity: 200 feet

6. Valley View Street / Cerulean Avenue:

- Westbound Left-Turn (deficient without and with the project):

- Existing Left-Turn Capacity: 100 feet
- Required Left-Turn Capacity: 120 feet

With the exception of the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficient left-turn storages are forecast to occur both without and with the proposed project. Hence, the proposed project is not required or responsible to improve the identified left-turn storage deficiencies at these locations.

In regards to the northbound left-turn movement at the Valley View Street / Cinema Driveway intersection, the identified deficiency is forecast to be very nominal (approximately five feet). Based on discussions, with City staff, since the deficiency is nominal, no improvements are required at this left-turn storage.

11.6 CEQA Vehicle Miles Traveled (VMT) Analysis Summary

The proposed project can be considered local-serving with non-significant VMT impacts.

All of the proposed uses being considered for the various project alternatives are local-serving type. For instance, gyms and grocery stores typically serve the local neighborhood. Patrons are not expected to come from far distances to access these uses.

In reality, the proposed uses could actually help in reducing VMT by providing a closer alternative to patrons. For instance, if residents of the area are currently required to travel 10 blocks to access a supermarket, fast food restaurant, coffee shop, movie theater, church, or gym, the proposed project will now provide these services to the residents at a closer location which now requires them to travel only 5 blocks to access these services, reducing the travel distances.

Research has been conducted to determine the existing similar uses within a one-mile radius of the site. Exhibit 8-1 graphically shows the proximity of similar land uses to those of the proposed project that are located within one (1) mile from the proposed project.

*In conclusion, the proposed project and its various alternatives are **not** expected to result in a significant VMT impact.*

11.7 Active Transportation & Public Transit Analysis Summary

The proposed project is not planned to significantly change or modify any of the existing public transit or pedestrian facilities or make any modification that could conflict with adopted policies, plans or programs, or modify the safety of such facilities.

Hence, the proposed project is forecast to not have a significant active transportation and public transit impact.

11.8 Parking Analysis Summary

- The project is planned to provide a total of 123 parking spaces. This includes capacity provided in the drive through aisles

However, as previously noted, the Westgrove Center consists of two separate parcels, the Project, which is currently improved with a vacant bowling alley building (12141 Valley View) and the property to the north currently improved with a 251 seat movie theater, a pad drive-thru restaurant for Jack-in-the Box and an automatic car wash (12111 and 12101 Valley View Street). Therefore, a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

After accounting for the 123 parking spaces which will be provided by the proposed project, the two parcels will have a combined parking capacity of 318 parking spaces and a portion of the project's required parking spaces would be accommodated and shared with the parcel to the north at 12101 and 12111 Valley View Street.

- Based on the City Municipal Code:
 - The proposed project is required to provide 166 parking spaces.
 - The overall required parking for the integrated development (the two parcels) is 295 parking spaces.
- Since the development will provide a total of 318 parking spaces, the combined parking capacity is forecast to be more than adequate to serve the two parcels. A reciprocal parking agreement would be required to ensure that the parking for the Project remains available for the life of the Project.

If other land use alternative and mix aside Alternative 1 is proposed, the parking calculations need to be updated to reflect the updated land use mix and provided to the City for review.

Appendices

Appendix A

Scoping Agreement with
City of Garden Grove

**Westgrove Center Project
Traffic Study & Parking Analysis
Scoping Agreement**

September 22, 2020

The following provides information on the proposed project, summarizes the analysis scope, parameters, and assumptions for review and approval, and also includes request for information on items related to the study.

A. Project Description: The existing Westgrove Center site is located south of Chapman Avenue and west of Valley View Street in the City of Garden Grove.

The site currently contains existing land uses including the Starlight Cinema. The proposed plans to modify the existing Starlight Movie Theater site of 251 seats, which will continue to exist along with the proposed land uses.

Previously, a traffic study was prepared for the site in 2018.

A copy of the traffic study (*Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*) is attached to this scope for reference. This scope has been prepared to be consistent with the 2018 traffic study and scope as much as possible.

The proposed project is planned modify the existing site to add new uses. Four (4) land use alternatives are being considered as follows depending on various options being considered for the larger project building:

Project Alternatives

Land Use	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Super Market	12,245 SF	0	0	0
Fast Food Restaurant Without Drive Through	1,665 SF	1,665 SF	1,665 SF	1,665 SF
Fast Food Restaurant With Drive Through	5,549 SF	5,549 SF	5,549 SF	5,549 SF
Coffee/Donut Shop With Drive Through	2,000 SF	2,000 SF	2,000 SF	2,000 SF
Movie Theater	0	275 seats	0	0
Health/Fitness Club	0	0	12,245 SF	0
Church	0	0	0	12,245 SF

Access for the project is planned via the following:

- One right-in/right-out driveway along Valley View Street (unsignalized);
- One full-access driveway along Valley View Street (signalized); and
- One full-access driveway along the alley on the south side of the site (unsignalized).

The project is planned to open in 2022 and will be evaluated in one (1) single phase.

Exhibit A shows the location of the proposed project. Exhibit B shows the proposed site plan.

B. Project Trip Generation: Trip generation represents the amount of traffic that is attracted and produced by a development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual*. The latest and most recent version (10th Edition, 2017) ITE Manual has been utilized for this scoping agreement. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Evaluation of trip generation has been prepared for all four project alternatives. Table 1 shows the ITE trip generation rates utilized for the trip generation analysis of the proposed project land uses.

Table 2-1 shows the trip generation for project Alternative 1 utilizing the trip generation rates shown in Table 1.

As shown in Table 2-1, Project Alternative 1 is forecast to generate approximately 5,654 daily trips which include approximately 399 AM peak hour trips and approximately 343 PM peak hour trips.

Table 2-2 shows the trip generation for project Alternative 2 utilizing the trip generation rates shown in Table 1.

As shown in Table 2-2, Project Alternative 2 is forecast to generate approximately 4,830 daily trips which include approximately 352 AM peak hour trips and approximately 296 PM peak hour trips.

Table 2-3 shows the trip generation for project Alternative 3 utilizing the trip generation rates shown in Table 1.

As shown in Table 2-3, Project Alternative 3 is forecast to generate approximately 4,766 daily trips which include approximately 368 AM peak hour trips and approximately 313 PM peak hour trips.

Table 2-4 shows the trip generation for project Alternative 4 utilizing the trip generation rates shown in Table 1.

As shown in Table 2-4, Project Alternative 4 is forecast to generate approximately 4,431 daily trips which include approximately 356 AM peak hour trips and approximately 277 PM peak hour trips.

The Table below summarizes the trip generation for each project alternative.

Summary of Project Alternatives Trip Generation based on ITE Rates

Project Alternative	AM Peak Hour			PM Peak Hour			Daily Trips
	In	Out	Total	In	Out	Total	
Alternative 1 – Supermarket	220	179	399	173	170	343	5,654
Alternative 2 – Movie Theater	192	160	352	150	146	296	4,830
Alternative 3 – Health Club	200	168	368	160	153	313	4,766
Alternative 4 - Church	194	162	356	139	138	277	4,431

Notes: Maximum trip generation show in **bold**.

As shown in the table above, project Alternative 1 is forecast to result in the most number of daily and peak hour trips. Hence, the traffic study will evaluate project Alternative 1 for level of service and Vehicle Miles Traveled (VMT) impacts.

C. Project Trip Distribution: Exhibit C shows the trip distribution for the proposed project. This strip distribution is based on the trip distribution previously assumed in the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*.

D. Study Intersections: Consistent with the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover & Associates, August 2018*, the analysis will evaluate the following study intersections:

1. Valley View Street / Chapman Avenue
2. Valley View Street / Cinema Driveway
3. Valley View Street / Belgrave Avenue
4. Valley View Street / Lampson Avenue
5. Valley View Street / Cerulean Avenue
6. Project Driveway / Valley View Street

E. Analysis Scenarios: The analysis will evaluate traffic conditions for the following scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak hours:

- Existing Conditions;
- Existing Plus Project Conditions;
- Project Opening Year Without Project Conditions; and
- Project Opening Year With Project Conditions.

F. Traffic Analysis Parameters: The analysis will utilize the following parameters in accordance with the *City of Garden Grove Traffic Impact Analysis (TIA) Guidelines for Vehicles Miles Traveled (VMT) and Level of Service Assessment (May 2020)*:

Signalized Intersections

- Traffic analysis software and the Intersection Capacity Utilization (ICU) methodology.
- A minimum clearance interval of 0.05 of green time.
- Lane capacities of 1,700 vphpl for through and turn lanes.

Unsignalized Intersections

- Synchro analysis software and the Highway Capacity Manual 10th Edition (HCM 2010) methodology.
- A peak hour factor (PHF) based on observed conditions will be used for existing conditions. A PHF of 0.92 will be used for future conditions.

G. Existing Traffic Counts: Due to the COVID-19 pandemic, collection of new and valid traffic counts might not be feasible. To derive existing (2020) traffic volumes at the study intersections, RK will utilize the 2018 traffic volume data from the *Traffic Impact Study for the proposed Starlight Cinema Plaza Expansion on Valley View Street, Albert Grover &*

Associates, August 2018 and grow the 2018 volumes by a factor of 2 percent per year to derive 20202 traffic volumes.

H. Forecast Opening Year (2022) Conditions Traffic Volumes: Opening year (2022) background traffic volumes will be derived by applying an annual growth rate of two percent (2%) per year to existing traffic volumes and addition of traffic associated with specific cumulative projects in the area provided by the City.

I. LOS Performance Criteria: Acceptable LOS of D or better.

J. LOS Significant Impact Criteria:

Signalized intersections will require improvements if one of the following conditions is met:

- The addition of project traffic to an intersection results in the degradation of intersection operations from acceptable operations (LOS D or better) to unacceptable operations (LOS E or F).
- The project-related increase in volume-to-capacity (V/C) ratio is equal to or greater than 0.010 at an intersection that is already operating at LOS E or F.

Unsignalized intersections will require improvements if both of the following conditions are met:

- The addition of project traffic to an intersection results in the degradation of overall intersection operations from acceptable operations (LOS D or better) to unacceptable operations (LOS E or F); and
- The intersection meets peak hour signal warrants either caused by project volumes, or project volumes are added to an intersection that meets peak hour signal warrants in the baseline scenario(s). Peak hour signal warrants should be determined based on the latest California Manual on Uniform Traffic Control Devices (CA MUTCD).

I. Vehicles Miles Traveled Analysis: Effective July 1st, 2020, the longstanding metric of roadway level of service (LOS), which is typically measured in terms of vehicle delay, roadway capacity and congestion, will no longer be considered a significant impact under

the California Environmental Quality Act (CEQA). Pursuant to CEQA Guidelines, Section 15064.3, VMT is now the most appropriate measure of transportation impacts.

The City of Garden Grove has updated their transportation impact guidelines, *City of Garden Grove Traffic Impact Analysis (TIA) Guidelines for Vehicles Miles Traveled (VMT) and Level of Service Assessment (May 2020)* to provide recommendations in the form of thresholds of significance and methodology for identifying VMT related impacts.

Based on the City guidelines, several project screening steps have been implemented to effectively screen certain projects from conducting project-level VMT assessment. Projects screened through this process may be presumed to have a less than significant impact absent substantial evidence to the contrary.

The proposed uses for the project can be all considered, local-serving. Local serving uses are not expected to result in high VMT and can actually help in reducing existing VMT by providing the neighborhood with closer and alternative retail and entertainment options.

Based on the local-serving nature of the proposed uses, the study will conclude that the project is not expected to have a significant VMT impact and will be screened out.

L. Parking Analysis:

RK will also prepare a parking analysis to determine the number of parking spaces required for the proposed land uses based on the City of Garden Grove Municipal Code. This task does not include an Urban Land Institute (ULI) shared parking analysis, or collection of any parking count data.

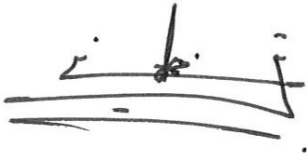
M. Request for Items: Please provide information on the following for use in the study:

- Information on cumulative projects that need to be included in the traffic analysis (location, land use type(s), and land use quantities will be requested from the planning department;
- Information on future roadway and circulation system modifications/improvements that are planned within the study area and would potentially affect the analysis.

If you have any questions, or would like further review, please call us at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

A handwritten signature in dark ink, appearing to read 'Alex Tabrizi', written over a horizontal line.

Alex Tabrizi, PE, TE
Associate Principal

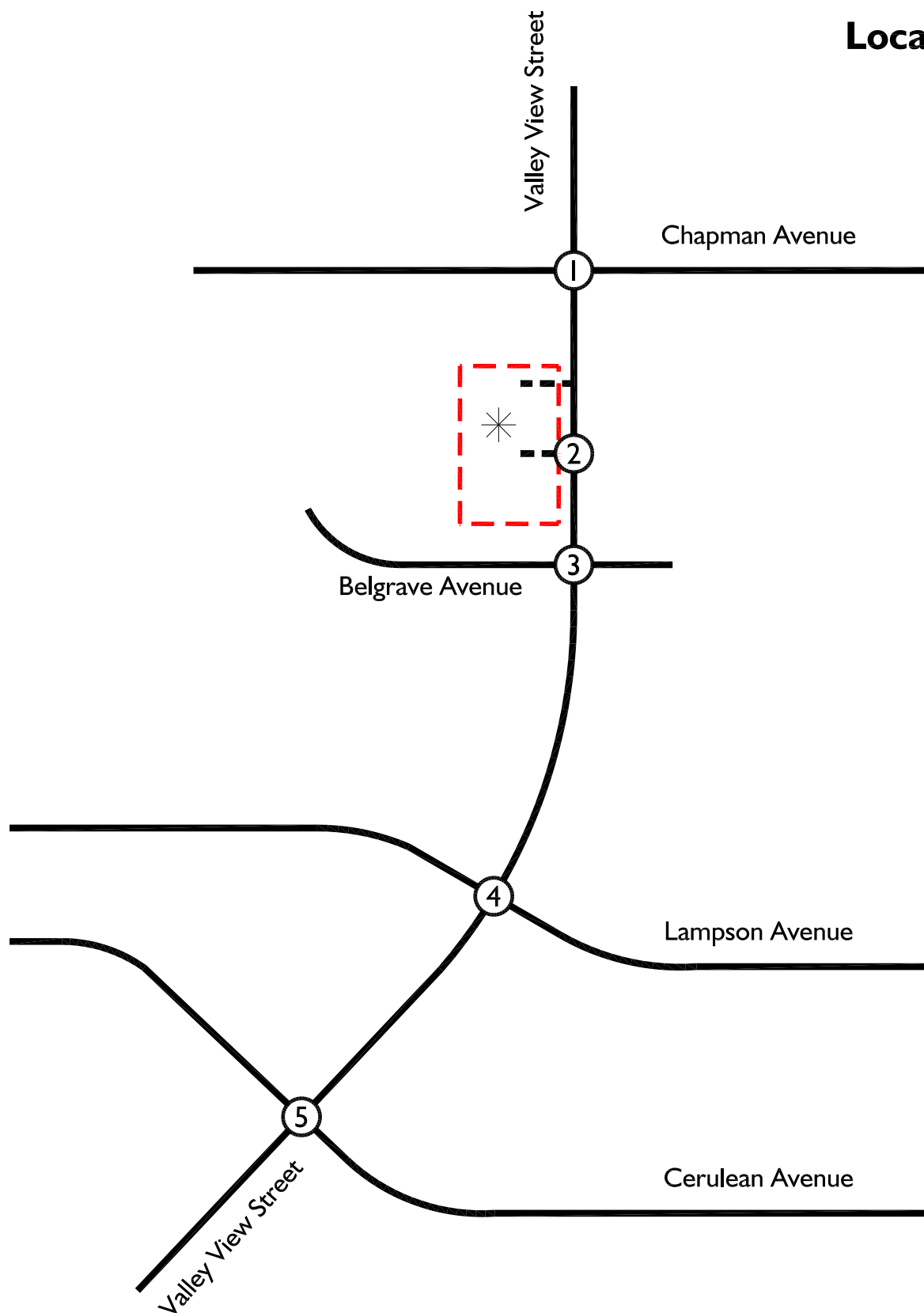
Attachments

Approved by:

City of Garden Grove

Date

Attachments

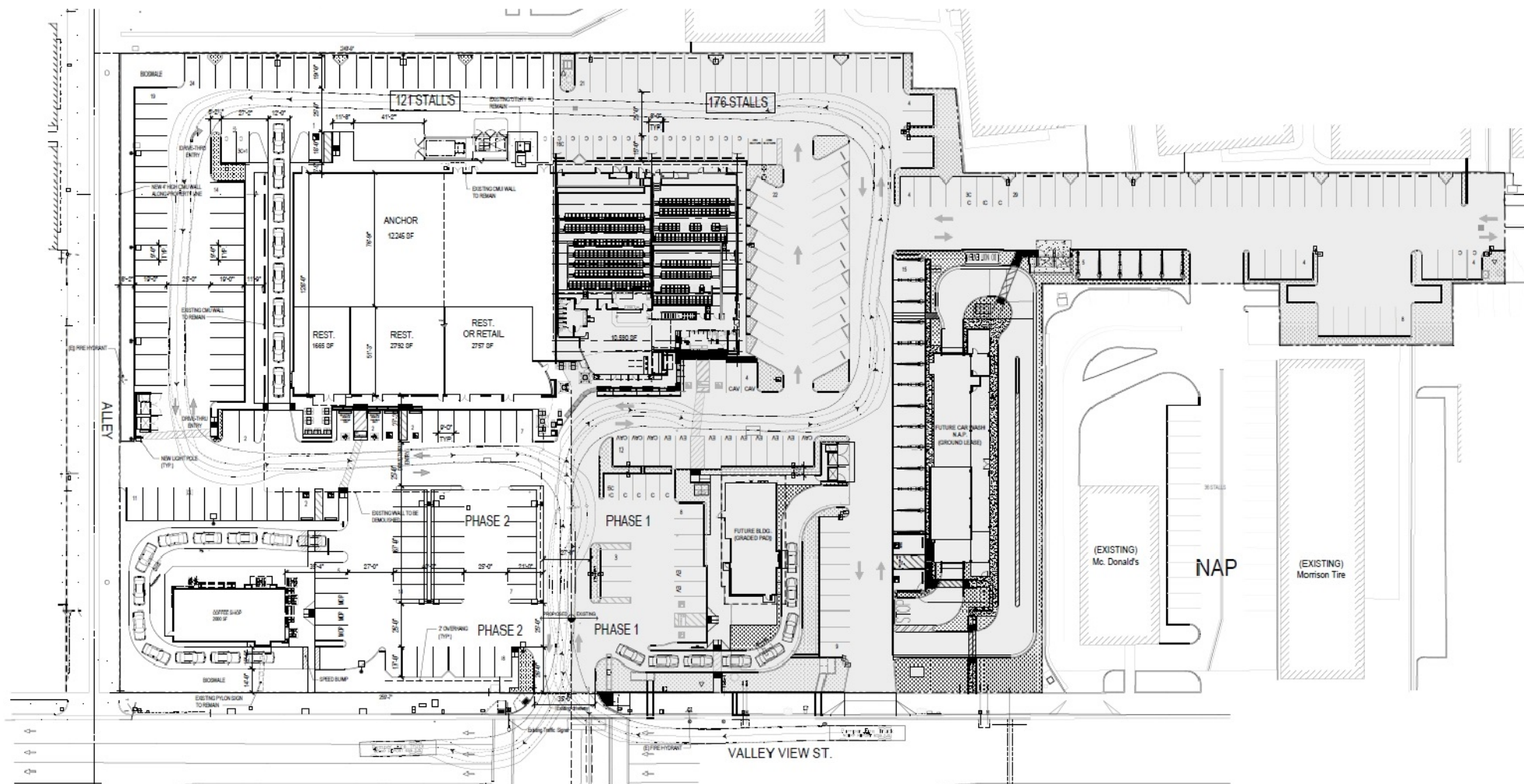


Legend:

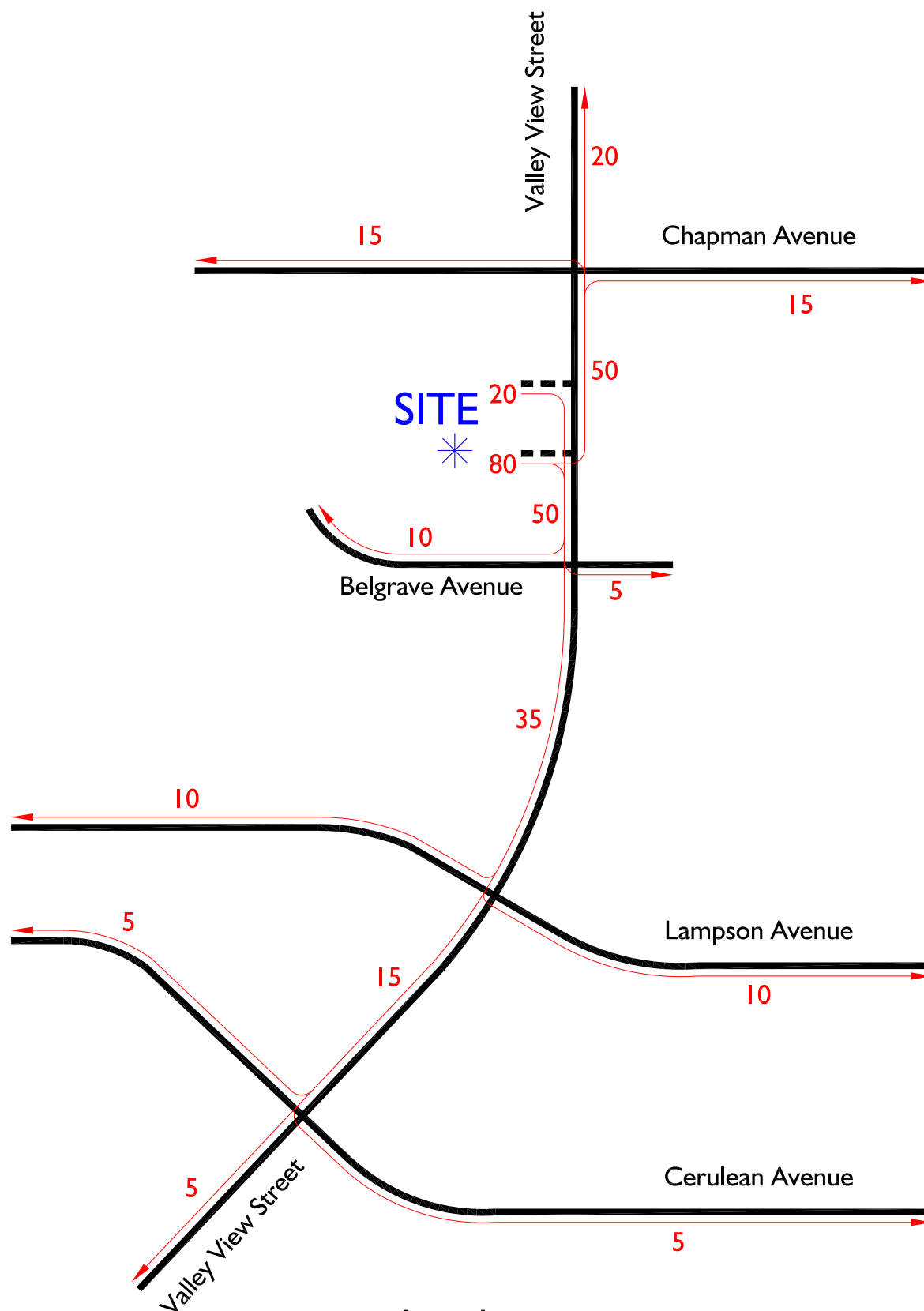
- ① = Study Area Intersection
- * = Project Site
- = Project Access Driveway
- = Project Site Boundary



Exhibit B Site Plan



Outbound Project Trip Distribution

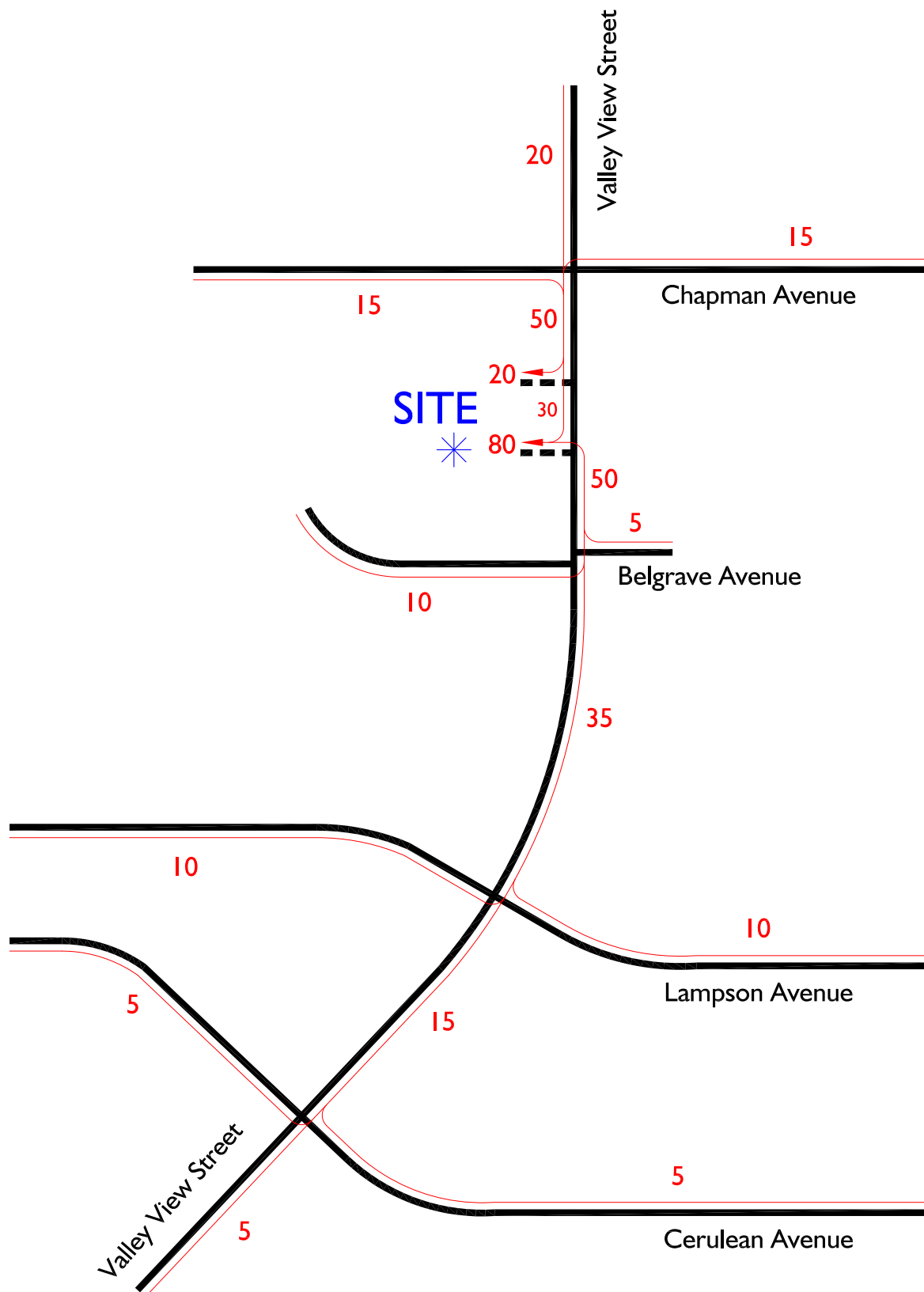


Legend:

10 = Percent from Project



Inbound Project Trip Distribution



Legend:

10 = Percent in Project



Table 1
ITE Trip Generation Rates¹

Land Use	Units ²	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Supermarket	TSF	850	2.29	1.53	3.82	4.71	4.53	9.24	106.78
Fast Food Restaurant Without Drive Thru	TSF	933	15.06	10.04	25.10	14.17	14.17	28.34	346.23
Fast Food Restaurant With Drive Thru	TSF	934	20.50	19.69	40.19	16.99	15.68	32.67	470.95
Coffee/Donut Shop w/ Drive Thru	TSF	937	45.38	43.61	88.99	21.69	21.69	43.38	820.38
Movie Theater	Seats	444	0.00	0.00	0.00	0.05	0.04	0.09	1.76
Health/Fitness Club	TSF	492	0.67	0.64	1.31	1.97	1.48	3.45	34.50
Church	TSF	560	0.20	0.13	0.33	0.22	0.27	0.49	6.95

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

Table 2-1
Project Trip Generation¹
Alternative 1 - Super Market Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Supermarket (850)	12.245	TSF	28	19	47	58	55	113	1,308
<i>ITE Pass-by Adjustment³ (0% AM, 36% PM)</i>			0	0	0	-21	-20	-41	0
Subtotal			28	19	47	37	35	72	1,308
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			220	179	399	173	170	343	5,654

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 2-2
Project Trip Generation¹
Alternative 2 - Movie Theater Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Movie Theater (444)	275	Seats	0	0	0	14	11	25	484
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			192	160	352	150	146	296	4,830

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 2-3
Project Trip Generation¹
Alternative 3 - Health Club Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Health/Fitness Club (492)	12.245	TSF	8	8	16	24	18	42	420
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			200	168	368	160	153	313	4,766

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Table 2-4
Project Trip Generation¹
Alternative 4 - Church Alternative

Proposed Land Use									
Land Use / (ITE Code)	Quantity	Units ²	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Church (560)	12.245	TSF	2	2	4	3	3	6	85
Fast Food Restaurant With Drive Thru (934)	1.665	TSF	34	33	67	28	26	54	784
<i>ITE Pass-by Adjustment³ (49% AM, 50% PM)</i>			-17	-16	-33	-14	-13	-27	0
Subtotal			17	17	34	14	13	27	784
Fast Food Restaurant Without Drive Thru (935)	5.549	TSF	84	56	140	79	79	158	1,921
Coffee/Donut Shop w/ Drive Thru (937)	2.000	TSF	91	87	178	43	43	86	1,641
Total Trip Generation			194	162	356	139	138	277	4,431

¹ Source: 2017 ITE Trip Generation Manual (10th Edition)

² TSF = Thousand Square Feet

Appendix B

MUTCD Traffic Signal Warrant Analysis Worksheets

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions AM**

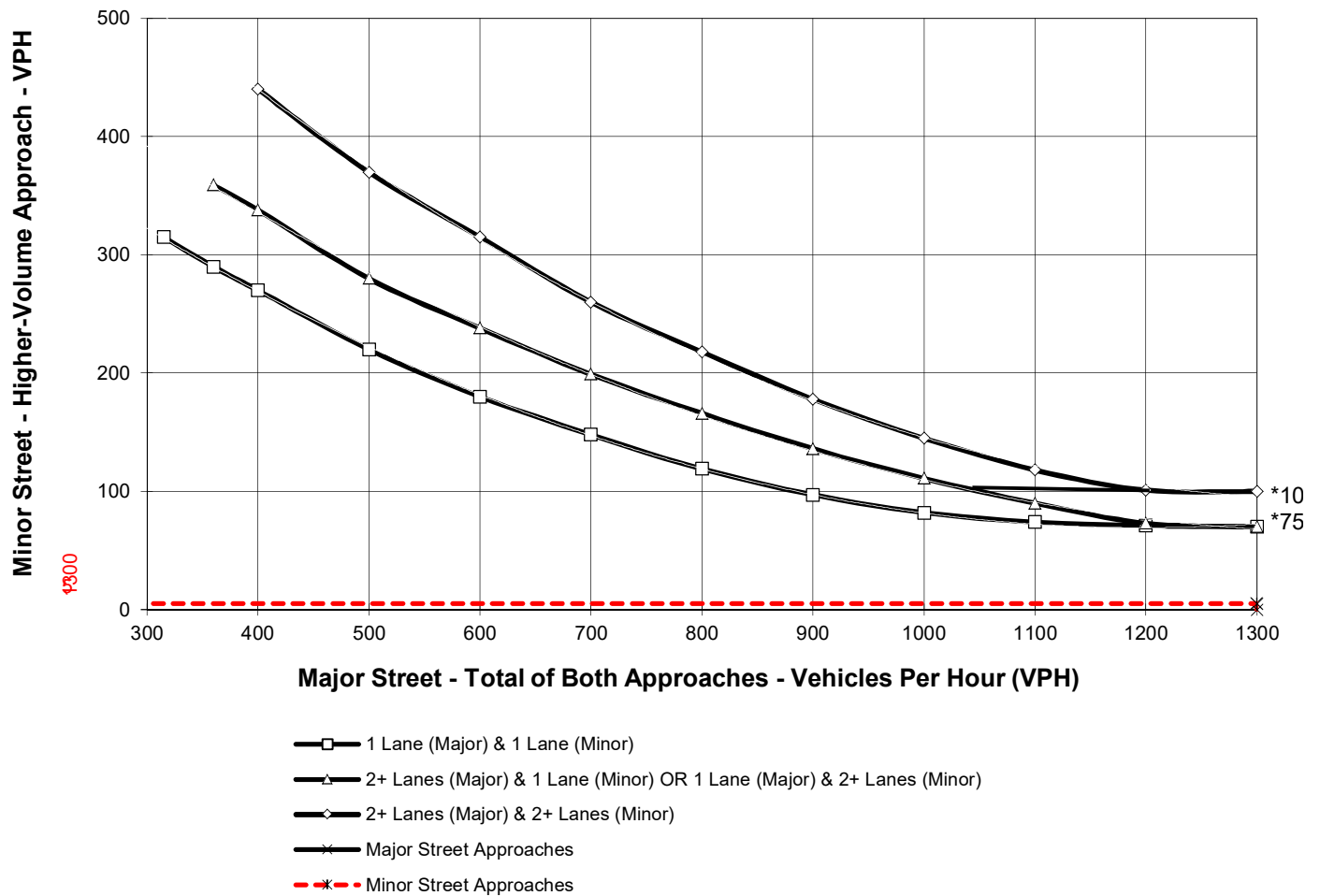
Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **3832**
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **5**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Conditions PM**

Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4196**

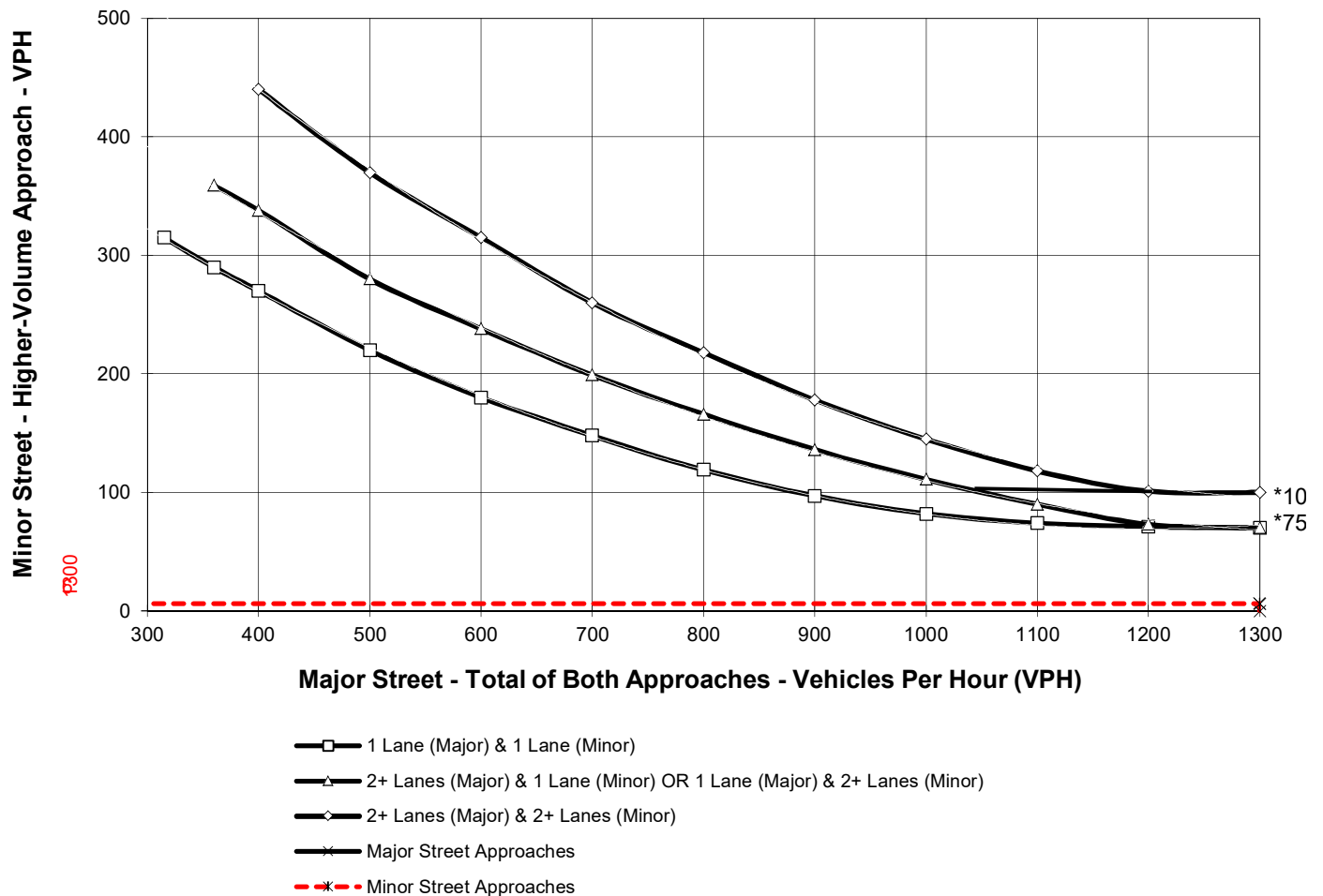
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **6**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions AM**

Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4032**

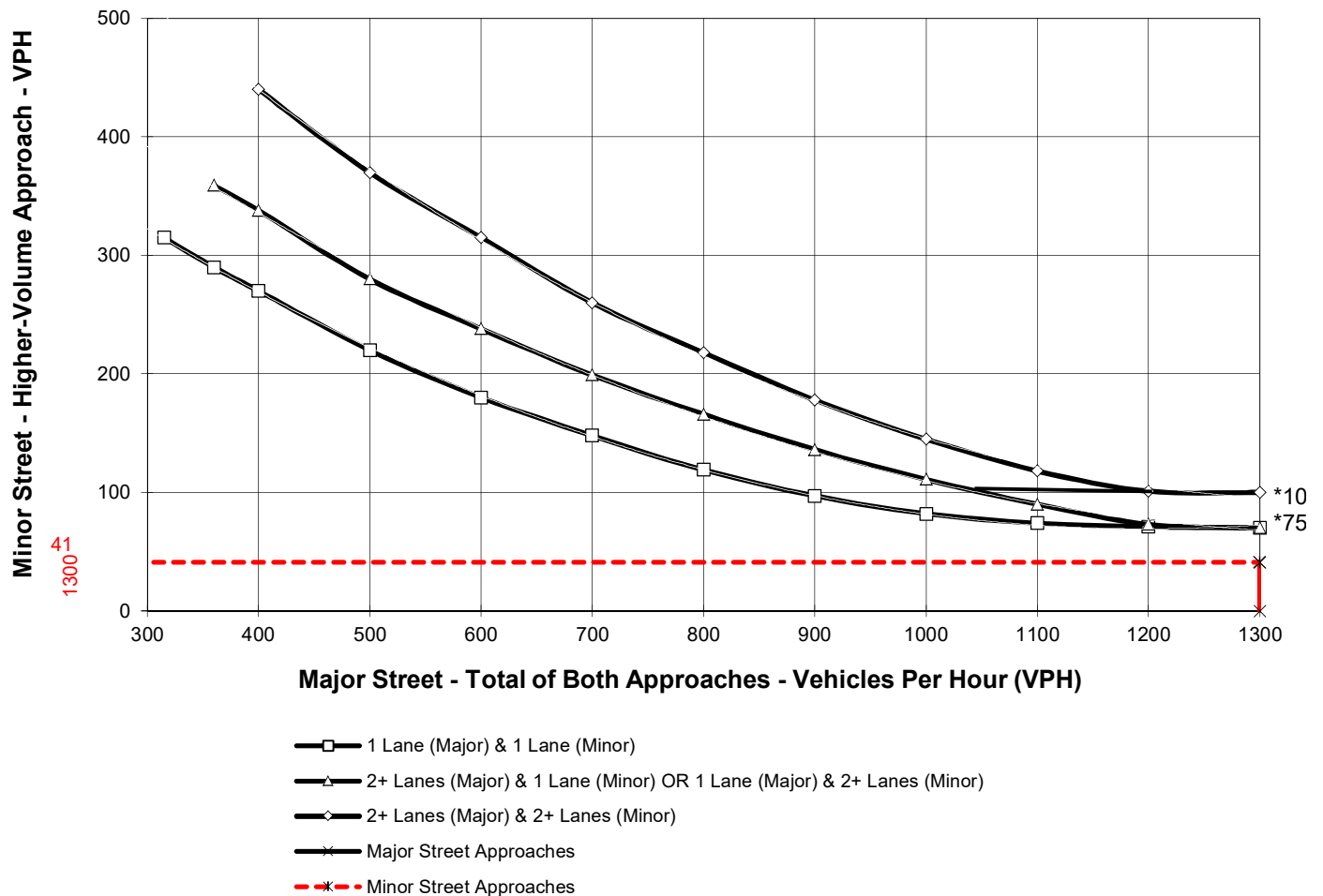
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **41**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing Plus Project Conditions PM**

Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4368**

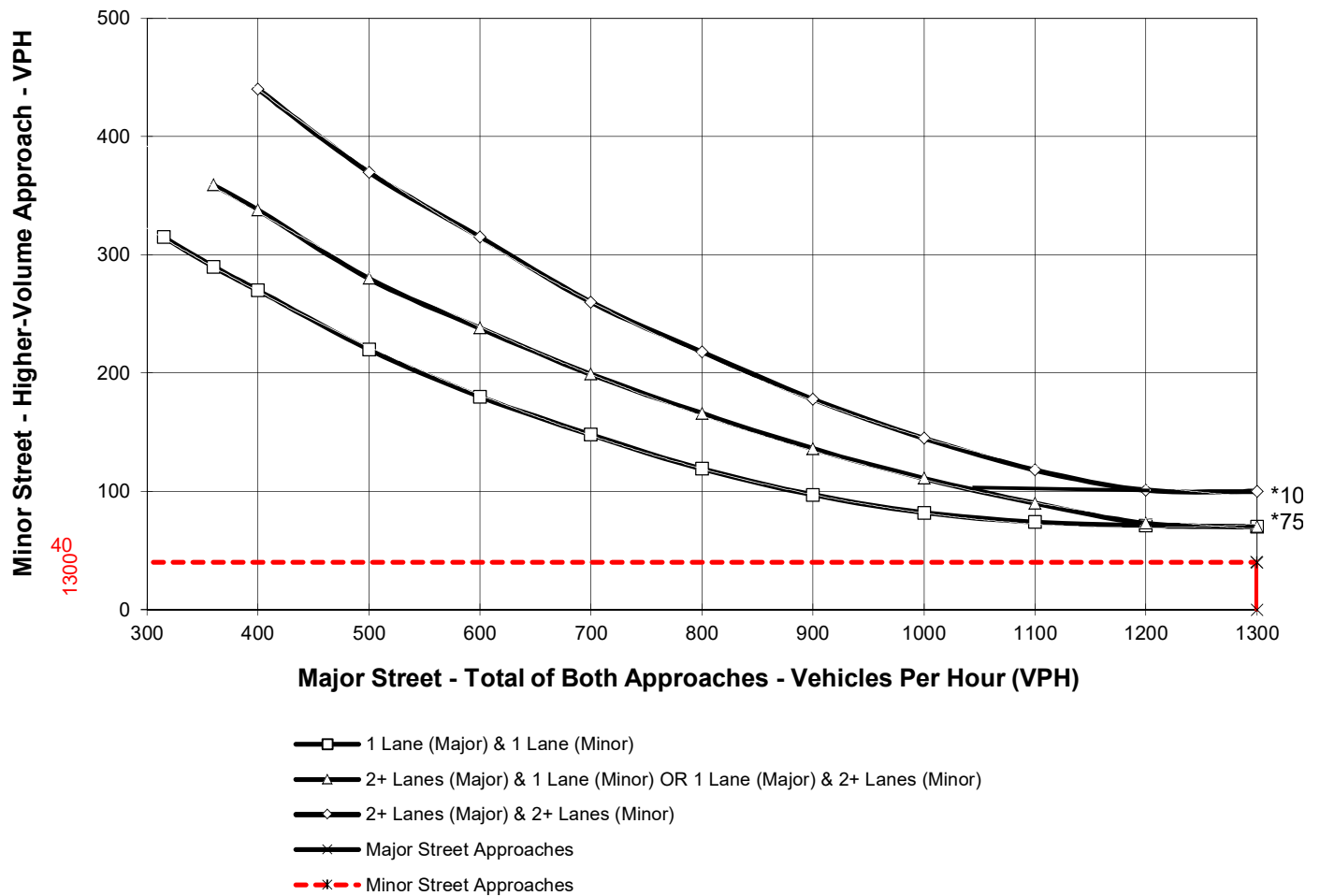
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **40**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Project Opening Year Without Project Conditions AM**

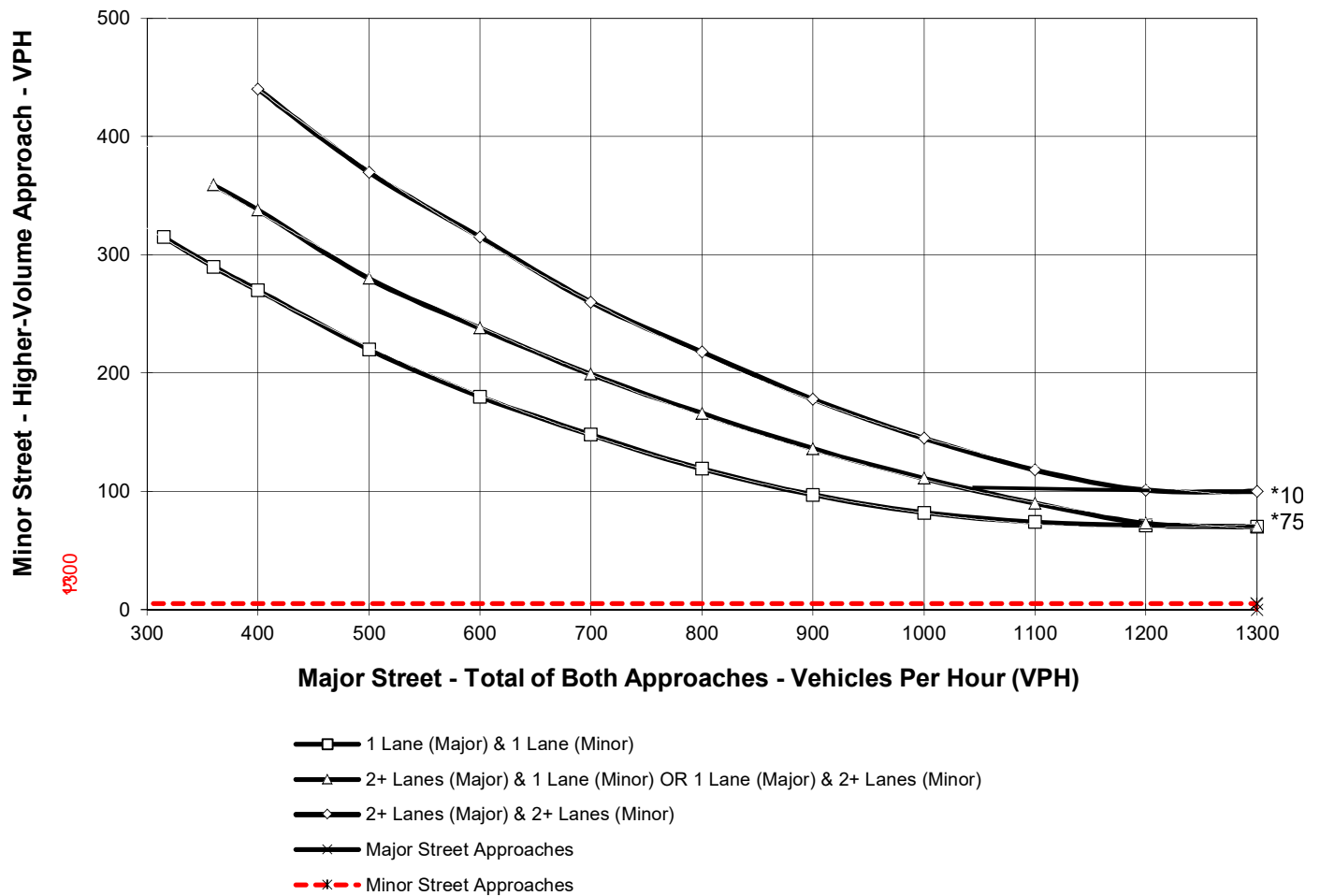
Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **3998**
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **5**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Project Opening Year Without Project Conditions PM**

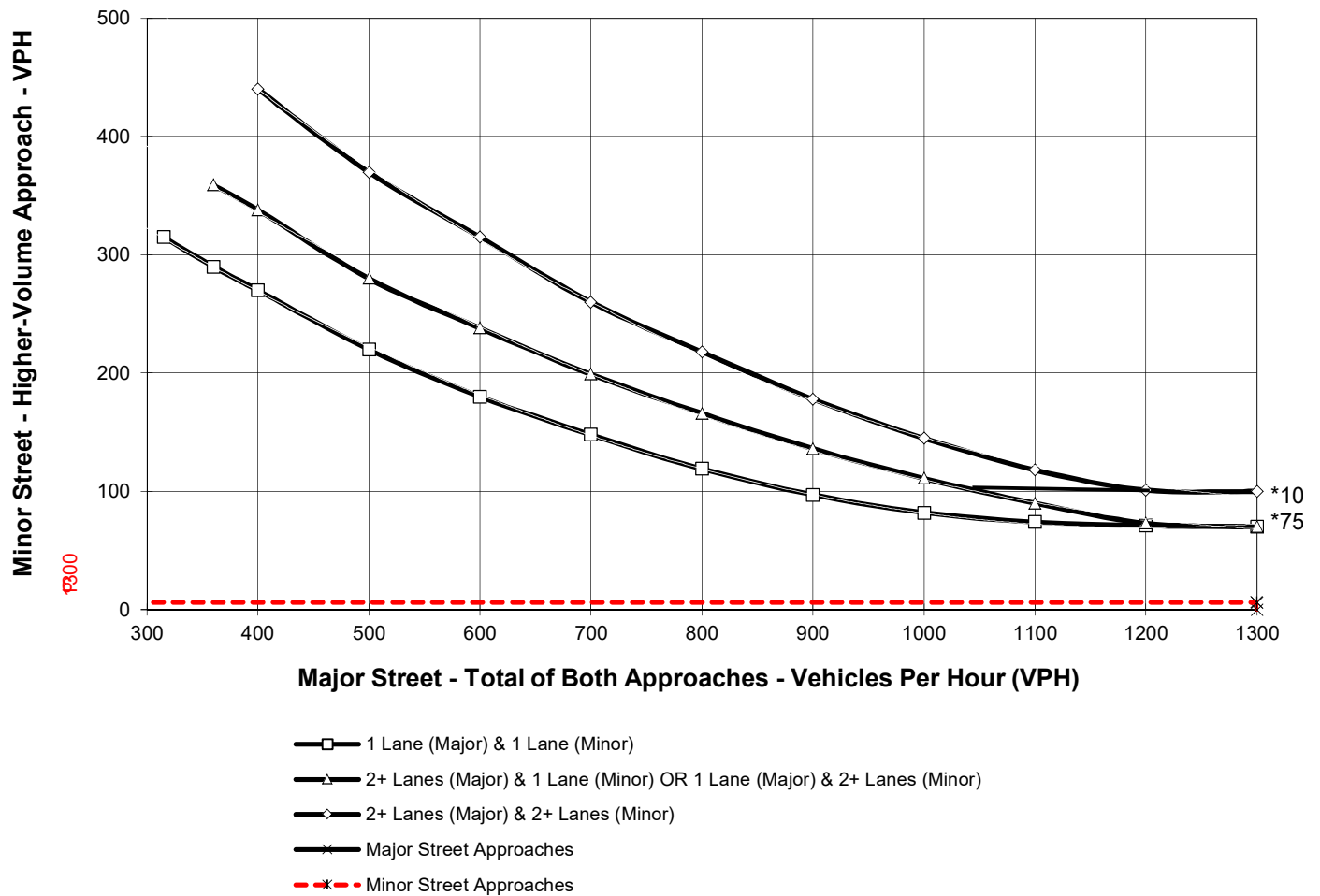
Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4376**
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **6**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Project Opening Year With Project Conditions AM**

Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4197**

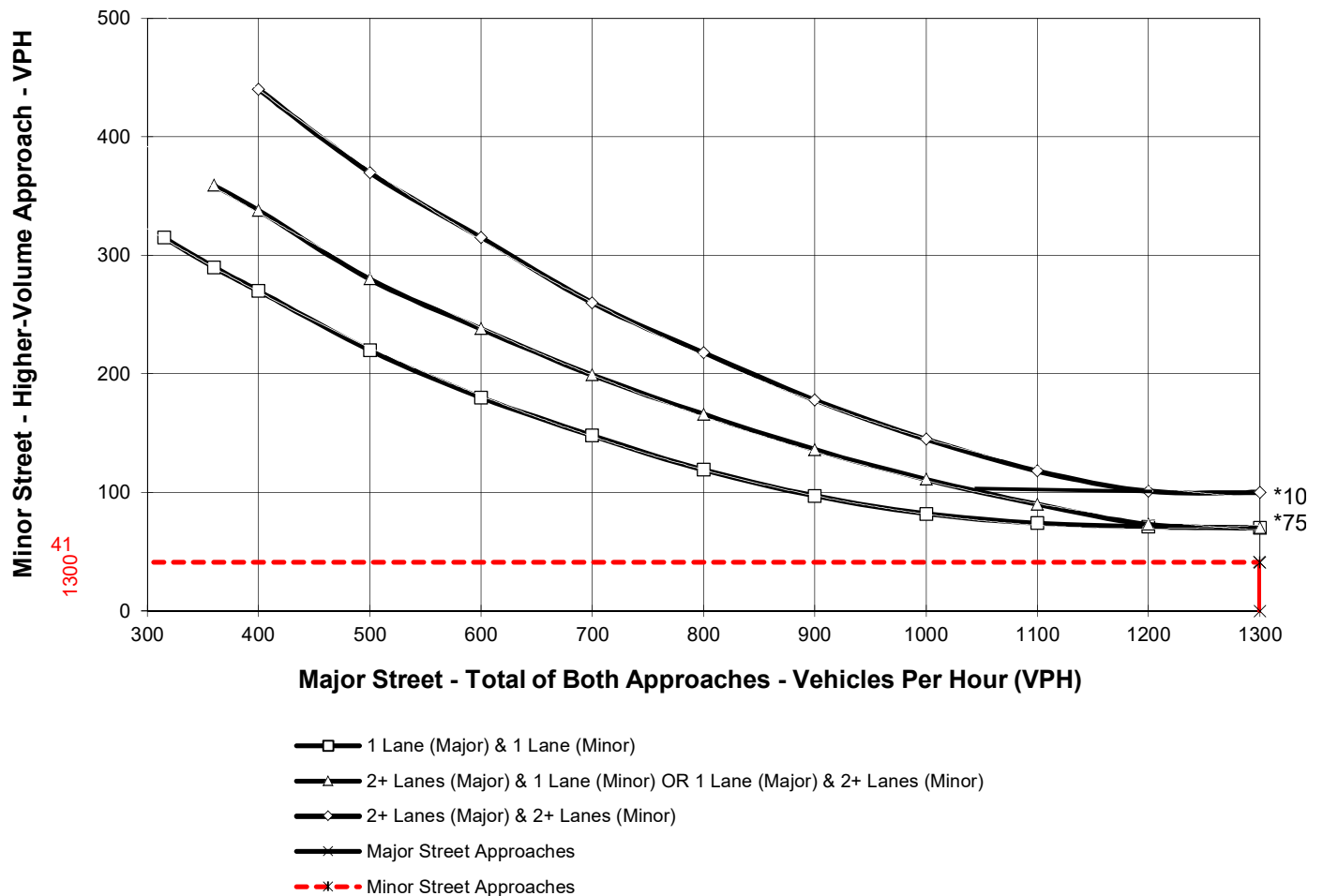
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **41**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

WARRANT 3, PEAK HOUR (70% FACTOR) (Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Project Opening Year With Project Conditions PM**

Major Street Name = **Valley View Street**

Total of Both Approaches (VPH) = **4548**

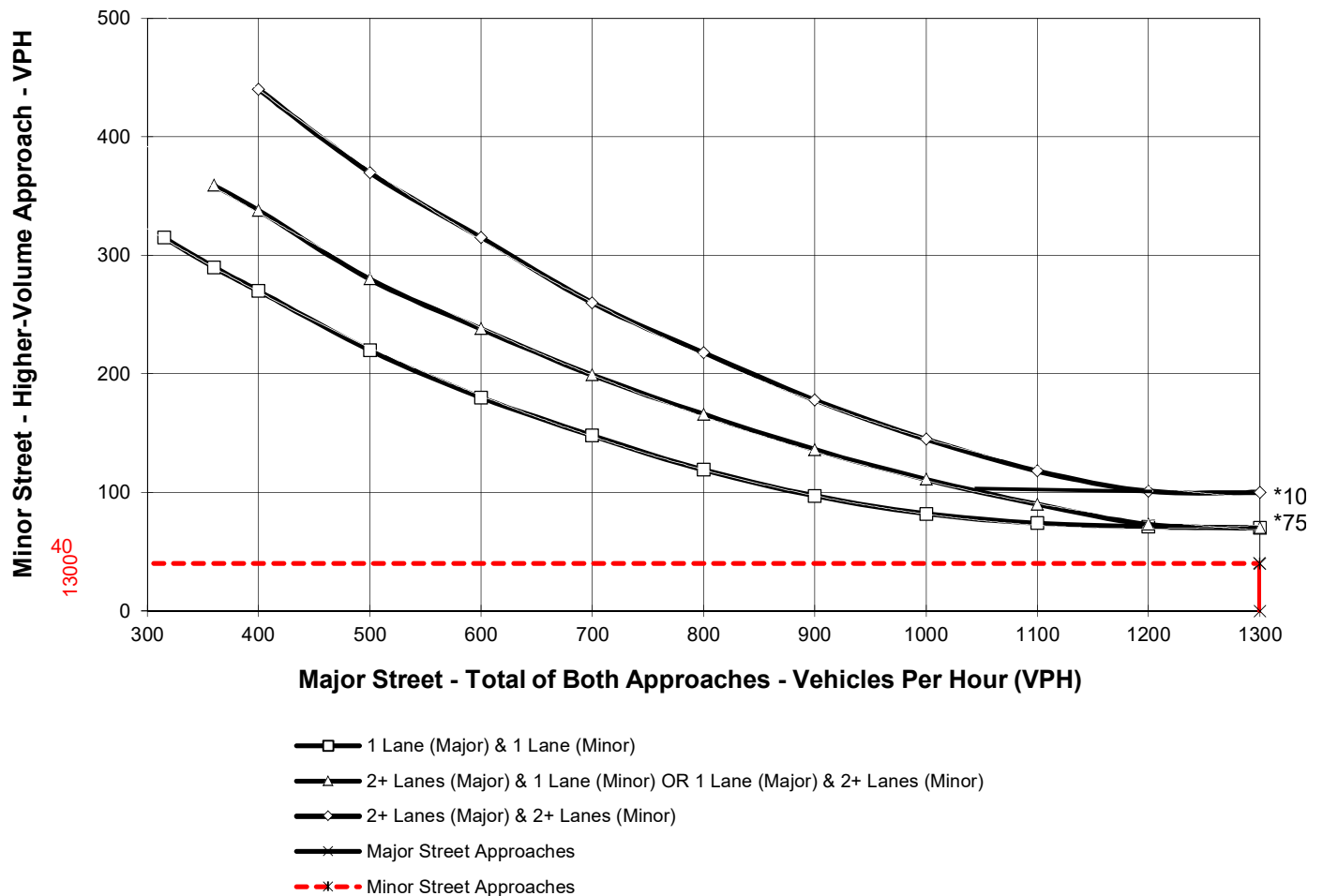
Number of Approach Lanes Major Street = **3**

Minor Street Name = **Project Driveway**

High Volume Approach (VPH) = **40**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



Appendix C

Existing Conditions
LOS Analysis Worksheets

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.589

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 30 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	70	1884	98	112	1494	19	70	189	58	177	114	139
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1884	98	112	1494	19	70	189	58	177	114	139
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1884	98	112	1494	19	70	189	58	177	114	139
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1884	98	112	1494	19	70	189	58	177	114	139
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	70	1884	98	112	1494	19	70	189	58	177	114	139

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.53	0.47	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2602	798	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.04	0.37	0.06	0.07	0.29	0.01	0.04	0.07	0.07	0.05	0.03	0.08
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.465

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 23 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	10	2039	3	67	1684	1	3	0	4	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	2039	3	67	1684	1	3	0	4	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	10	2039	3	67	1684	1	3	0	4	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	2039	3	67	1684	1	3	0	4	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	2039	3	67	1684	1	3	0	4	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.99	0.01	0.43	0.00	0.57	1.00	0.00	0.00
Final Sat.:	1700	5093	7	1700	5097	3	729	0	971	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.01	0.40	0.40	0.04	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.456
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 23 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	33	2032	6	8	1662	5	7	2	44	5	0	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	33	2032	6	8	1662	5	7	2	44	5	0	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	33	2032	6	8	1662	5	7	2	44	5	0	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	33	2032	6	8	1662	5	7	2	44	5	0	4
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	33	2032	6	8	1662	5	7	2	44	5	0	4

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.99	0.01	0.78	0.22	1.00	0.56	0.00	0.44
Final Sat.:	1700	5085	15	1700	5085	15	1322	378	1700	944	0	756

Capacity Analysis Module:

Vol/Sat:	0.02	0.40	0.40	0.00	0.33	0.33	0.00	0.01	0.03	0.00	0.00	0.01
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.583
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 29 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	98	1831	72	85	1472	144	127	132	125	118	145	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	98	1831	72	85	1472	144	127	132	125	118	145	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	98	1831	72	85	1472	144	127	132	125	118	145	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	1831	72	85	1472	144	127	132	125	118	145	70
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	98	1831	72	85	1472	144	127	132	125	118	145	70

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.03	0.97	1.00	1.35	0.65
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1746	1654	1700	2293	1107

Capacity Analysis Module:

















Vol/Sat:	0.06	0.36	0.04	0.05	0.29	0.08	0.07	0.08	0.08	0.07	0.06	0.06
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
AM PEAK HOUR

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                        Level Of Service Computation Report
                        ICU 2(Loss as Green Time %) Method (Base Volume Alternative)
*****
Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)
*****
Cycle (sec):           100                      Critical Vol./Cap.(X):           0.572
Loss Time (sec):        5                        Average Delay (sec/veh):           xxxxxx
Optimal Cycle:          28                      Level Of Service:                A
*****
Approach:              North Bound              South Bound              East Bound              West Bound
Movement:              L - T - R                L - T - R                L - T - R                L - T - R
-----|-----|-----|-----|
Control:               Protected                Protected                Prot+Permit                Prot+Permit
Rights:               Include                  Include                  Include                  Include
Min. Green:            0    0    0                0    0    0                0    0    0                0    0    0
Y+R:                   4.0  4.0  4.0                4.0  4.0  4.0                4.0  4.0  4.0                4.0  4.0  4.0
Lanes:                 1  0  3  0  1                1  0  3  0  1                1  0  1  0  1                1  0  1  0  1
-----|-----|-----|-----|
Volume Module:
Base Vol:              45 1983    50                21 1668    21                40  18  126    115  23  46
Growth Adj:            1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
Initial Bse:           45 1983    50                21 1668    21                40  18  126    115  23  46
User Adj:              1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
PHF Adj:               1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
PHF Volume:            45 1983    50                21 1668    21                40  18  126    115  23  46
Reduct Vol:            0    0    0                0    0    0                0    0    0                0    0    0
Reduced Vol:           45 1983    50                21 1668    21                40  18  126    115  23  46
PCE Adj:               1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
MLF Adj:               1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
FinalVolume:           45 1983    50                21 1668    21                40  18  126    115  23  46
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:              1700 1700  1700                1700 1700  1700                1700 1700  1700                1700 1700  1700
Adjustment:            1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
Lanes:                 1.00 3.00  1.00                1.00 3.00  1.00                1.00 1.00  1.00                1.00 1.00  1.00
Final Sat.:            1700 5100  1700                1700 5100  1700                1700 1700  1700                1700 1700  1700
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:               0.03 0.39  0.03                0.01 0.33  0.01                0.02 0.01  0.07                0.07 0.01  0.03
Crit Moves:            ****                  ****                  ****                  ****
*****

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.865									
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5085	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5085	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		458			512			355			338	
Travel Time (s)		10.4			11.6			8.1			7.7	













Intersection Summary

Area Type: Other

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	5	0	0	0	0	2052	0	0	1775	5
Future Volume (vph)	0	0	5	0	0	0	0	2052	0	0	1775	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	5	0	0	0	0	2230	0	0	1929	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	5	0	0	0	0	2230	0	0	1934	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	0	0	2052	0	0	1775	5
Future Vol, veh/h	0	0	5	0	0	0	0	2052	0	0	1775	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	0	0	2230	0	0	1929	5

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	967	-	-	1115	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	218	0	0	174	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	218	-	-	174	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	0	0	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	218	-	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Control Delay (s)	-	-	21.9	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.659

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 35 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	156	1662	185	184	1856	48	125	206	108	204	230	164
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	156	1662	185	184	1856	48	125	206	108	204	230	164
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	156	1662	185	184	1856	48	125	206	108	204	230	164
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	156	1662	185	184	1856	48	125	206	108	204	230	164
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	156	1662	185	184	1856	48	125	206	108	204	230	164

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.31	0.69	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2231	1169	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.09	0.33	0.11	0.11	0.36	0.03	0.07	0.09	0.09	0.06	0.07	0.10
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.467
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 23 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	21	1954	8	57	2142	6	7	0	8	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	1954	8	57	2142	6	7	0	8	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	21	1954	8	57	2142	6	7	0	8	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	21	1954	8	57	2142	6	7	0	8	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	21	1954	8	57	2142	6	7	0	8	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.99	0.01	0.47	0.00	0.53	1.00	0.00	0.00
Final Sat.:	1700	5079	21	1700	5086	14	793	0	907	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.01	0.38	0.38	0.03	0.42	0.42	0.00	0.00	0.01	0.00	0.00	0.00
Crit Moves:	****			****			****		****	****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.501
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 25 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	75	1925	7	5	2120	21	11	1	28	5	1	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1925	7	5	2120	21	11	1	28	5	1	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1925	7	5	2120	21	11	1	28	5	1	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1925	7	5	2120	21	11	1	28	5	1	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	75	1925	7	5	2120	21	11	1	28	5	1	3

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.97	0.03	0.92	0.08	1.00	0.56	0.11	0.33
Final Sat.:	1700	5082	18	1700	5050	50	1558	142	1700	944	189	567

Capacity Analysis Module:

Vol/Sat:	0.04	0.38	0.38	0.00	0.42	0.42	0.01	0.01	0.02	0.00	0.01	0.01
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.780

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 50 Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	226	1653	117	109	1859	177	228	234	109	188	269	103
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	226	1653	117	109	1859	177	228	234	109	188	269	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	226	1653	117	109	1859	177	228	234	109	188	269	103
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	226	1653	117	109	1859	177	228	234	109	188	269	103
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	226	1653	117	109	1859	177	228	234	109	188	269	103

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.36	0.64	1.00	1.45	0.55
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2320	1080	1700	2459	941

Capacity Analysis Module:

Vol/Sat:	0.13	0.32	0.07	0.06	0.36	0.10	0.13	0.10	0.10	0.11	0.11	0.11
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Base Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.608

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 31 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:

















Base Vol:	117	1915	115	65	2000	31	54	49	107	92	44	62
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	117	1915	115	65	2000	31	54	49	107	92	44	62
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	117	1915	115	65	2000	31	54	49	107	92	44	62
Reduct Vol:	0		0	0		0	0		0	0		0
Reduced Vol:	117	1915	115	65	2000	31	54	49	107	92	44	62
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	117	1915	115	65	2000	31	54	49	107	92	44	62

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1700	1700	1700	1700	1700

Capacity Analysis Module:

Vol/Sat:	0.07	0.38	0.07	0.04	0.39	0.02	0.03	0.03	0.06	0.05	0.03	0.04
Crit Moves:	****			****					****	****		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%				0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt	0.865						0.999					
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5080	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5080	0
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	458				512			355			338	
Travel Time (s)	10.4				11.6			8.1			7.7	













Intersection Summary

Area Type: Other

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	6	0	0	0	0	2003	0	0	2179	14
Future Volume (vph)	0	0	6	0	0	0	0	2003	0	0	2179	14
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	7	0	0	0	0	2177	0	0	2368	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	7	0	0	0	0	2177	0	0	2383	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	0	0	0	0	2003	0	0	2179	14
Future Vol, veh/h	0	0	6	0	0	0	0	2003	0	0	2179	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	0	0	0	0	2177	0	0	2368	15

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1192	-	-	1089	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	154	0	0	181	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	154	-	-	181	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.4	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	154	-	-
HCM Lane V/C Ratio	-	-	0.042	-	-
HCM Control Delay (s)	-	-	29.4	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-

Appendix D

Existing Plus Project Conditions
LOS Analysis Worksheets

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING PLUS PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.617
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 31 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	70	1884	98	112	1494	19	70	189	58	177	114	139
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1884	98	112	1494	19	70	189	58	177	114	139
Added Vol:	27	36	27	0	44	0	0	0	33	33	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	97	1920	125	112	1538	19	70	189	91	210	114	139
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	97	1920	125	112	1538	19	70	189	91	210	114	139
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	1920	125	112	1538	19	70	189	91	210	114	139
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	97	1920	125	112	1538	19	70	189	91	210	114	139

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.35	0.65	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2295	1105	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.06	0.38	0.07	0.07	0.30	0.01	0.04	0.08	0.08	0.06	0.03	0.08
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.558
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 28 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	10	2039	3	67	1684	1	3	0	4	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	2039	3	67	1684	1	3	0	4	2	0	0
Added Vol:	110	0	0	0	36	66	90	0	54	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	120	2039	3	67	1720	67	93	0	58	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	120	2039	3	67	1720	67	93	0	58	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	2039	3	67	1720	67	93	0	58	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	120	2039	3	67	1720	67	93	0	58	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.89	0.11	0.62	0.00	0.38	1.00	0.00	0.00
Final Sat.:	1700	5093	7	1700	4909	191	1047	0	653	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.07	0.40	0.40	0.04	0.35	0.35	0.05	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****		****	****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.477
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 24 Level Of Service: A

Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit					Prot+Permit					Permitted					Permitted				
Rights:	Include					Include					Include					Include				
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:	North Bound					South Bound					East Bound					West Bound				
Base Vol:	33	2032		6		8	1662		5		7	2		44		5	0		4	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	33	2032		6		8	1662		5		7	2		44		5	0		4	
Added Vol:	0	77		0		9	63		18		22	0		0		0	0		11	
PasserByVol:	0	0		0		0	0		0		0	0		0		0	0		0	
Initial Fut:	33	2109		6		17	1725		23		29	2		44		5	0		15	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	33	2109		6		17	1725		23		29	2		44		5	0		15	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
Reduced Vol:	33	2109		6		17	1725		23		29	2		44		5	0		15	
PCE Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
MLF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
FinalVolume:	33	2109		6		17	1725		23		29	2		44		5	0		15	

Saturation Flow Module:	North Bound					South Bound					East Bound					West Bound				
Sat/Lane:	1700	1700		1700		1700	1700		1700		1700	1700		1700		1700	1700		1700	
Adjustment:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Lanes:	1.00	2.99		0.01		1.00	2.96		0.04		0.94	0.06		1.00		0.25	0.00		0.75	
Final Sat.:	1700	5086		14		1700	5033		67		1590	110		1700		425	0		1275	

Capacity Analysis Module:	North Bound					South Bound					East Bound					West Bound				
Vol/Sat:	0.02	0.41		0.41		0.01	0.34		0.34		0.02	0.02		0.03		0.00	0.00		0.01	
Crit Moves:	****					****					****					****				

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.614

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 31 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1		0		3	0		1		1	1		0		1	1		0		1

Volume Module:

Base Vol:	98	1831	72	85	1472	144	127	132	125	118	145	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	98	1831	72	85	1472	144	127	132	125	118	145	70
Added Vol:	0	33	0	18	27	18	22	0	0	0	0	22
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	98	1864	72	103	1499	162	149	132	125	118	145	92
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	98	1864	72	103	1499	162	149	132	125	118	145	92
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	1864	72	103	1499	162	149	132	125	118	145	92
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	98	1864	72	103	1499	162	149	132	125	118	145	92

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.03	0.97	1.00	1.22	0.78
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1746	1654	1700	2080	1320

Capacity Analysis Module:

Vol/Sat:	0.06	0.37	0.04	0.06	0.29	0.10	0.09	0.08	0.08	0.07	0.07	0.07
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.579
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 29 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:

















Base Vol:	45	1983	50	21	1668	21	40	18	126	115	23	46
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	45	1983	50	21	1668	21	40	18	126	115	23	46
Added Vol:	0	11	0	9	9	9	11	0	0	0	0	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	1994	50	30	1677	30	51	18	126	115	23	57
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	45	1994	50	30	1677	30	51	18	126	115	23	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	45	1994	50	30	1677	30	51	18	126	115	23	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	45	1994	50	30	1677	30	51	18	126	115	23	57

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1700	1700	1700	1700	1700

Capacity Analysis Module:

Vol/Sat:	0.03	0.39	0.03	0.02	0.33	0.02	0.03	0.01	0.07	0.07	0.01	0.03
Crit Moves:	****			****					****	****		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.865								0.996	
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5065	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5065	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		458			512			355			338	
Travel Time (s)		10.4			11.6			8.1			7.7	













Intersection Summary

Area Type: Other

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	41	0	0	0	0	2142	0	0	1841	49
Future Volume (vph)	0	0	41	0	0	0	0	2142	0	0	1841	49
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	45	0	0	0	0	2328	0	0	2001	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	45	0	0	0	0	2328	0	0	2054	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	41	0	0	0	0	2142	0	0	1841	49
Future Vol, veh/h	0	0	41	0	0	0	0	2142	0	0	1841	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	45	0	0	0	0	2328	0	0	2001	53

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1027	-	-	1164	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	199	0	0	161	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	199	-	-	161	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.2	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	199	-	-
HCM Lane V/C Ratio	-	-	0.224	-	-
HCM Control Delay (s)	-	-	28.2	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.8	-	-

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.679

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 37 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	156	1662	185	184	1856	48	125	206	108	204	230	164
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	156	1662	185	184	1856	48	125	206	108	204	230	164
Added Vol:	26	34	26	0	35	0	0	0	26	26	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	182	1696	211	184	1891	48	125	206	134	230	230	164
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	182	1696	211	184	1891	48	125	206	134	230	230	164
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	182	1696	211	184	1891	48	125	206	134	230	230	164
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	182	1696	211	184	1891	48	125	206	134	230	230	164

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.21	0.79	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2060	1340	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.11	0.33	0.12	0.11	0.37	0.03	0.07	0.10	0.10	0.07	0.07	0.10
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.623
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 32 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	21	1954	8	57	2142	6	7	0	8	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	1954	8	57	2142	6	7	0	8	2	0	0
Added Vol:	87	0	0	0	34	52	85	0	51	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	1954	8	57	2176	58	92	0	59	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	108	1954	8	57	2176	58	92	0	59	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	108	1954	8	57	2176	58	92	0	59	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	108	1954	8	57	2176	58	92	0	59	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.92	0.08	0.61	0.00	0.39	1.00	0.00	0.00
Final Sat.:	1700	5079	21	1700	4968	132	1036	0	664	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.06	0.38	0.38	0.03	0.44	0.44	0.05	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****		****	****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.533
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 26 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	75	1925	7	5	2120	21	11	1	28	5	1	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1925	7	5	2120	21	11	1	28	5	1	3
Added Vol:	0	61	0	9	60	17	17	0	0	0	0	9
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1986	7	14	2180	38	28	1	28	5	1	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1986	7	14	2180	38	28	1	28	5	1	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1986	7	14	2180	38	28	1	28	5	1	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	75	1986	7	14	2180	38	28	1	28	5	1	12

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.95	0.05	0.97	0.03	1.00	0.28	0.05	0.67
Final Sat.:	1700	5082	18	1700	5013	87	1641	59	1700	472	94	1133

Capacity Analysis Module:

Vol/Sat:	0.04	0.39	0.39	0.01	0.43	0.43	0.02	0.02	0.02	0.00	0.01	0.01
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
EXISTING PLUS PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.801
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 54 Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	226	1653	117	109	1859	177	228	234	109	188	269	103
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	226	1653	117	109	1859	177	228	234	109	188	269	103
Added Vol:	0	26	0	17	26	17	17	0	0	0	0	17
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	226	1679	117	126	1885	194	245	234	109	188	269	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	226	1679	117	126	1885	194	245	234	109	188	269	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	226	1679	117	126	1885	194	245	234	109	188	269	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	226	1679	117	126	1885	194	245	234	109	188	269	120

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.36	0.64	1.00	1.38	0.62
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2320	1080	1700	2351	1049

Capacity Analysis Module:

Vol/Sat:	0.13	0.33	0.07	0.07	0.37	0.11	0.14	0.10	0.10	0.11	0.11	0.11
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 EXISTING PLUS PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.610

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 31 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:

















Base Vol:	117	1915	115	65	2000	31	54	49	107	92	44	62
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	117	1915	115	65	2000	31	54	49	107	92	44	62
Added Vol:	0	9	0	9	9	9	9	0	0	0	0	9
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	117	1924	115	74	2009	40	63	49	107	92	44	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	117	1924	115	74	2009	40	63	49	107	92	44	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	117	1924	115	74	2009	40	63	49	107	92	44	71
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	117	1924	115	74	2009	40	63	49	107	92	44	71

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1700	1700	1700	1700	1700

Capacity Analysis Module:

Vol/Sat:	0.07	0.38	0.07	0.04	0.39	0.02	0.04	0.03	0.06	0.05	0.03	0.04
Crit Moves:	****			****			****		****	****		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%				0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt	0.865						0.997					
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5070	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5070	0
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	458				512			355			338	
Travel Time (s)	10.4				11.6			8.1			7.7	













Intersection Summary

Area Type: Other

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	40	0	0	0	0	2088	0	0	2231	49
Future Volume (vph)	0	0	40	0	0	0	0	2088	0	0	2231	49
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	43	0	0	0	0	2270	0	0	2425	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	43	0	0	0	0	2270	0	0	2478	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	0	0	2088	0	0	2231	49
Future Vol, veh/h	0	0	40	0	0	0	0	2088	0	0	2231	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	43	0	0	0	0	2270	0	0	2425	53

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1239	-	-	1135	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	143	0	0	168	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	143	-	-	168	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.8	0	0	0
HCM LOS	E	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	143	-	-
HCM Lane V/C Ratio	-	-	0.304	-	-
HCM Control Delay (s)	-	-	40.8	0	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	1.2	-	-

Appendix E

Project Opening Year Without Project Conditions
LOS Analysis Worksheets

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.622

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 32 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	70	1884	98	112	1494	19	70	189	58	177	114	139
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	73	1960	102	117	1554	20	73	197	60	184	119	145
Added Vol:	0	3	0	0	8	0	0	25	0	0	24	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	73	1963	102	117	1562	20	73	222	60	184	143	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	73	1963	102	117	1562	20	73	222	60	184	143	145
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	73	1963	102	117	1562	20	73	222	60	184	143	145
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	73	1963	102	117	1562	20	73	222	60	184	143	145

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.57	0.43	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2672	728	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.04	0.38	0.06	0.07	0.31	0.01	0.04	0.08	0.08	0.05	0.04	0.09
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.484
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 24 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	10	2039		3	67	1684		1	3	0		4	2	0		0
Growth Adj:	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04
Initial Bse:	10	2121		3	70	1752		1	3	0		4	2	0		0
Added Vol:	0	3		0	0	8		0	0	0		0	0	0		0
PasserByVol:	0	0		0	0	0		0	0	0		0	0	0		0
Initial Fut:	10	2124		3	70	1760		1	3	0		4	2	0		0
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	10	2124		3	70	1760		1	3	0		4	2	0		0
Reduct Vol:	0	0		0	0	0		0	0	0		0	0	0		0
Reduced Vol:	10	2124		3	70	1760		1	3	0		4	2	0		0
PCE Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
MLF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
FinalVolume:	10	2124		3	70	1760		1	3	0		4	2	0		0

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700		1700	1700	1700		1700	1700	1700		1700	1700	1700		1700
Adjustment:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Lanes:	1.00	2.99		0.01	1.00	2.99		0.01	0.43	0.00		0.57	1.00	0.00		0.00
Final Sat.:	1700	5093		7	1700	5097		3	729	0		971	1700	0		0

Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.01	0.42		0.42	0.04	0.35		0.35	0.00	0.00		0.00	0.00	0.00		0.00
Crit Moves:	****				****				****				****			

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
 AM PEAK HOUR

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                        Level Of Service Computation Report
                        ICU 2(Loss as Green Time %) Method (Future Volume Alternative)
*****
Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)
*****
Cycle (sec):           100                Critical Vol./Cap.(X):           0.475
Loss Time (sec):        5                  Average Delay (sec/veh):          xxxxxx
Optimal Cycle:          24                Level Of Service:              A
*****
Approach:              North Bound        South Bound        East Bound        West Bound
Movement:              L - T - R          L - T - R          L - T - R          L - T - R
-----|-----|-----|-----|
Control:               Prot+Permit        Prot+Permit        Permitted          Permitted
Rights:                Include            Include            Include            Include
Min. Green:            0    0    0          0    0    0          0    0    0          0    0    0
Y+R:                   4.0  4.0  4.0        4.0  4.0  4.0        4.0  4.0  4.0        4.0  4.0  4.0
Lanes:                 1  0  2  1  0        1  0  2  1  0        0  1  0  0  1        0  0  1! 0  0
-----|-----|-----|-----|
Volume Module:
Base Vol:              33 2032          6    8 1662          5    7    2    44          5    0    4
Growth Adj:            1.04 1.04  1.04    1.04 1.04  1.04    1.04 1.04  1.04    1.04 1.04  1.04
Initial Bse:           34 2114          6    8 1729          5    7    2    46          5    0    4
Added Vol:              0    3    0          0    8    0          0    0    0          0    0    0
PasserByVol:           0    0    0          0    0    0          0    0    0          0    0    0
Initial Fut:           34 2117          6    8 1737          5    7    2    46          5    0    4
User Adj:              1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
PHF Adj:               1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
PHF Volume:            34 2117          6    8 1737          5    7    2    46          5    0    4
Reduct Vol:             0    0    0          0    0    0          0    0    0          0    0    0
Reduced Vol:           34 2117          6    8 1737          5    7    2    46          5    0    4
PCE Adj:              1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
MLF Adj:              1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
FinalVolume:           34 2117          6    8 1737          5    7    2    46          5    0    4
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:              1700 1700  1700    1700 1700  1700    1700 1700  1700    1700 1700  1700
Adjustment:            1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00    1.00 1.00  1.00
Lanes:                 1.00 2.99  0.01    1.00 2.99  0.01    0.78 0.22  1.00    0.56 0.00  0.44
Final Sat.:            1700 5085          15 1700 5085          15 1322 378  1700    944    0    756
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:               0.02 0.42  0.42    0.00 0.34  0.34    0.00 0.01  0.03    0.00 0.00  0.01
Crit Moves:            ****          ****          ****          ****
*****

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WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.618

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 32 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	98	1831	72	85	1472	144	127	132	125	118	145	70
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	102	1905	75	88	1531	150	132	137	130	123	151	73
Added Vol:	0	2	0	4	3	0	0	27	1	0	23	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	102	1907	75	92	1534	150	132	164	131	123	174	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	102	1907	75	92	1534	150	132	164	131	123	174	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	1907	75	92	1534	150	132	164	131	123	174	74
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	102	1907	75	92	1534	150	132	164	131	123	174	74

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.11	0.89	1.00	1.40	0.60
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1892	1508	1700	2387	1013

Capacity Analysis Module:

















Vol/Sat:	0.06	0.37	0.04	0.05	0.30	0.09	0.08	0.09	0.09	0.07	0.07	0.07
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
AM PEAK HOUR

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                        Level Of Service Computation Report
                        ICU 2(Loss as Green Time %) Method (Future Volume Alternative)
*****
Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)
*****
Cycle (sec):           100                Critical Vol./Cap.(X):           0.595
Loss Time (sec):       5                  Average Delay (sec/veh):         xxxxxx
Optimal Cycle:         30                Level Of Service:           A
*****
Approach:              North Bound        South Bound        East Bound        West Bound
Movement:              L - T - R          L - T - R          L - T - R          L - T - R
-----|-----|-----|-----|
Control:               Protected          Protected          Prot+Permit        Prot+Permit
Rights:               Include            Include            Include            Include
Min. Green:           0    0    0          0    0    0          0    0    0          0    0    0
Y+R:                  4.0  4.0  4.0        4.0  4.0  4.0        4.0  4.0  4.0        4.0  4.0  4.0
Lanes:                1  0  3  0  1        1  0  3  0  1        1  0  1  0  1        1  0  1  0  1
-----|-----|-----|-----|
Volume Module:
Base Vol:             45 1983    50      21 1668    21      40  18  126    115  23  46
Growth Adj:           1.04 1.04    1.04    1.04 1.04    1.04    1.04 1.04    1.04 1.04 1.04
Initial Bse:          47 2063    52      22 1735    22      42  19  131    120  24  48
Added Vol:            0    3    0          0    4    0          0    0    0          0    0    0
PasserByVol:         0    0    0          0    0    0          0    0    0          0    0    0
Initial Fut:         47 2066    52      22 1739    22      42  19  131    120  24  48
User Adj:             1.00 1.00    1.00    1.00 1.00    1.00    1.00 1.00    1.00 1.00 1.00
PHF Adj:              1.00 1.00    1.00    1.00 1.00    1.00    1.00 1.00    1.00 1.00 1.00
PHF Volume:          47 2066    52      22 1739    22      42  19  131    120  24  48
Reduct Vol:          0    0    0          0    0    0          0    0    0          0    0    0
Reduced Vol:         47 2066    52      22 1739    22      42  19  131    120  24  48
PCE Adj:              1.00 1.00    1.00    1.00 1.00    1.00    1.00 1.00    1.00 1.00 1.00
MLF Adj:              1.00 1.00    1.00    1.00 1.00    1.00    1.00 1.00    1.00 1.00 1.00
FinalVolume:         47 2066    52      22 1739    22      42  19  131    120  24  48
-----|-----|-----|-----|
Saturation Flow Module:
Sat/Lane:             1700 1700    1700    1700 1700    1700    1700 1700    1700 1700 1700
Adjustment:           1.00 1.00    1.00    1.00 1.00    1.00    1.00 1.00    1.00 1.00 1.00
Lanes:                1.00 3.00    1.00    1.00 3.00    1.00    1.00 1.00    1.00 1.00 1.00
Final Sat.:          1700 5100    1700    1700 5100    1700    1700 1700    1700 1700 1700
-----|-----|-----|-----|
Capacity Analysis Module:
Vol/Sat:              0.03 0.41    0.03    0.01 0.34    0.01    0.02 0.01    0.08 0.07 0.01    0.03
Crit Moves:           ****          ****          ****          ****
*****













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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.865									
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5085	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5085	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		458			512			355			338	
Travel Time (s)		10.4			11.6			8.1			7.7	
Intersection Summary												
Area Type:	Other											

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	5	0	0	0	0	2138	0	0	1855	5
Future Volume (vph)	0	0	5	0	0	0	0	2138	0	0	1855	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	5	0	0	0	0	2324	0	0	2016	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	5	0	0	0	0	2324	0	0	2021	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	0	0	2138	0	0	1855	5
Future Vol, veh/h	0	0	5	0	0	0	0	2138	0	0	1855	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	5	0	0	0	0	2324	0	0	2016	5

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1011	-	-	1162	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	204	0	0	162	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	204	-	-	162	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.1	0	0	0
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	204	-	-
HCM Lane V/C Ratio	-	-	0.027	-	-
HCM Control Delay (s)	-	-	23.1	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.686
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 37 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	156	1662	185	184	1856	48	125	206	108	204	230	164
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	162	1729	192	191	1931	50	130	214	112	212	239	171
Added Vol:	0	7	0	0	3	0	0	20	0	0	20	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	162	1736	192	191	1934	50	130	234	112	212	259	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	162	1736	192	191	1934	50	130	234	112	212	259	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	162	1736	192	191	1934	50	130	234	112	212	259	171
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	162	1736	192	191	1934	50	130	234	112	212	259	171

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.35	0.65	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2298	1102	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.10	0.34	0.11	0.11	0.38	0.03	0.08	0.10	0.10	0.06	0.08	0.10
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.486
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 24 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	21	1954	8	57	2142	6	7	0	8	2	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	22	2033	8	59	2229	6	7	0	8	2	0	0
Added Vol:	0	7	0	0	3	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	22	2040	8	59	2232	6	7	0	8	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	22	2040	8	59	2232	6	7	0	8	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	2040	8	59	2232	6	7	0	8	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	22	2040	8	59	2232	6	7	0	8	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.99	0.01	0.47	0.00	0.53	1.00	0.00	0.00
Final Sat.:	1700	5079	21	1700	5086	14	793	0	907	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.01	0.40	0.40	0.03	0.44	0.44	0.00	0.00	0.01	0.00	0.00	0.00
Crit Moves:	****			****			****		****	****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.522
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 26 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	75	1925		7	5	2120		21	11	1	28	5	1	3		
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04		
Initial Bse:	78	2003		7	5	2206		22	11	1	29	5	1	3		
Added Vol:	0	7		0	0	3		0	0	0	0	0	0	0		
PasserByVol:	0	0		0	0	0		0	0	0	0	0	0	0		
Initial Fut:	78	2010		7	5	2209		22	11	1	29	5	1	3		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Volume:	78	2010		7	5	2209		22	11	1	29	5	1	3		
Reduct Vol:	0	0		0	0	0		0	0	0	0	0	0	0		
Reduced Vol:	78	2010		7	5	2209		22	11	1	29	5	1	3		
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
FinalVolume:	78	2010		7	5	2209		22	11	1	29	5	1	3		

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700		
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	1.00	2.99	0.01	1.00	1.00	2.97	0.03	0.92	0.92	0.08	1.00	0.56	0.11	0.33		
Final Sat.:	1700	5082		18	1700	5050		50	1558	142	1700	944	189	567		

Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.05	0.40	0.40	0.00	0.44	0.44	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.01		
Crit Moves:	****				****	****	****					****				

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.820

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 59 Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	226	1653	117	109	1859	177	228	234	109	188	269	103
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	235	1720	122	113	1934	184	237	243	113	196	280	107
Added Vol:	1	4	0	1	3	0	0	19	0	0	21	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	236	1724	122	114	1937	184	237	262	113	196	301	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	236	1724	122	114	1937	184	237	262	113	196	301	111
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	236	1724	122	114	1937	184	237	262	113	196	301	111
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	236	1724	122	114	1937	184	237	262	113	196	301	111

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.40	0.60	1.00	1.46	0.54
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2374	1026	1700	2483	917

Capacity Analysis Module:

Vol/Sat:	0.14	0.34	0.07	0.07	0.38	0.11	0.14	0.11	0.11	0.12	0.12	0.12
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITHOUT PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.634
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	117	1915	115		65	2000	31		54	49	107		92	44	62	
Growth Adj:	1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04	
Initial Bse:	122	1992	120		68	2081	32		56	51	111		96	46	65	
Added Vol:	0	4	0		0	3	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	122	1996	120		68	2084	32		56	51	111		96	46	65	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	122	1996	120		68	2084	32		56	51	111		96	46	65	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	122	1996	120		68	2084	32		56	51	111		96	46	65	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	122	1996	120		68	2084	32		56	51	111		96	46	65	

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700	1700		1700	1700	1700		1700	1700	1700		1700	1700	1700	
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	3.00	1.00		1.00	3.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Sat.:	1700	5100	1700		1700	5100	1700		1700	1700	1700		1700	1700	1700	

















Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.07	0.39	0.07		0.04	0.41	0.02		0.03	0.03	0.07		0.06	0.03	0.04	
Crit Moves:	****				****				****				****			

Lanes and Geometrics

WESTGROVE CENTER (JN: 2909-2020-01)

2: VALLEY VIEW ST & PROJECT DWY/DWY













11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.865								0.999	
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5080	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5080	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		458			512			355			338	
Travel Time (s)		10.4			11.6			8.1			7.7	
Intersection Summary												
Area Type:	Other											

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	6	0	0	0	0	2091	0	0	2270	15
Future Volume (vph)	0	0	6	0	0	0	0	2091	0	0	2270	15
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	7	0	0	0	0	2273	0	0	2467	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	7	0	0	0	0	2273	0	0	2483	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	0	0	0	0	2091	0	0	2270	15
Future Vol, veh/h	0	0	6	0	0	0	0	2091	0	0	2270	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	7	0	0	0	0	2273	0	0	2467	16

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1242	-	-	1137	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	143	0	0	168	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	143	-	-	168	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.4	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	143	-	-
HCM Lane V/C Ratio	-	-	0.046	-	-
HCM Control Delay (s)	-	-	31.4	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-	-

Appendix F

Project Opening Year With Project Conditions
LOS Analysis Worksheets

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.650
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 34 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	70	1884	98	112	1494	19	70	189	58	177	114	139				
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04				
Initial Bse:	73	1960	102	117	1554	20	73	197	60	184	119	145				
Added Vol:	27	39	27	0	52	0	0	25	33	33	24	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	100	1999	129	117	1606	20	73	222	93	217	143	145				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	100	1999	129	117	1606	20	73	222	93	217	143	145				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	100	1999	129	117	1606	20	73	222	93	217	143	145				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
FinalVolume:	100	1999	129	117	1606	20	73	222	93	217	143	145				

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700		
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.41	0.59	2.00	2.00	1.00	1.00	1.00		
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2392	1008	3400	3400	1700	1700	1700		

Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.06	0.39	0.08	0.07	0.31	0.01	0.04	0.09	0.09	0.06	0.04	0.09				
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****				

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.577
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 29 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	10	2039	3	67	1684	1	3	0	4	2	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	10	2121	3	70	1752	1	3	0	4	2	0	0
Added Vol:	110	3	0	0	43	66	90	0	54	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	120	2124	3	70	1795	67	93	0	58	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	120	2124	3	70	1795	67	93	0	58	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	2124	3	70	1795	67	93	0	58	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	120	2124	3	70	1795	67	93	0	58	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.89	0.11	0.62	0.00	0.38	1.00	0.00	0.00
Final Sat.:	1700	5093	7	1700	4916	184	1046	0	654	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.07	0.42	0.42	0.04	0.37	0.37	0.05	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITH PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.496
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 25 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

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Volume Module:

Base Vol:	33	2032	6	8	1662	5	7	2	44	5	0	4
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	34	2114	6	8	1729	5	7	2	46	5	0	4
Added Vol:	0	80	0	9	70	18	22	0	0	0	0	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	34	2194	6	17	1799	23	29	2	46	5	0	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	34	2194	6	17	1799	23	29	2	46	5	0	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	34	2194	6	17	1799	23	29	2	46	5	0	15
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	34	2194	6	17	1799	23	29	2	46	5	0	15

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Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.96	0.04	0.93	0.07	1.00	0.26	0.00	0.74
Final Sat.:	1700	5086	14	1700	5035	65	1587	113	1700	434	0	1266

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Capacity Analysis Module:

Vol/Sat:	0.02	0.43	0.43	0.01	0.36	0.36	0.02	0.02	0.03	0.00	0.00	0.01
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITH PROJECT CONDITIONS
 AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.648

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 34 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	
Control:	Protected				Protected				Prot+Permit				Prot+Permit			
Rights:	Include				Include				Include				Include			
Min. Green:	0		0		0		0		0		0		0		0	
Y+R:	4.0		4.0		4.0		4.0		4.0		4.0		4.0		4.0	
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	

Volume Module:

Base Vol:	98	1831	72	85	1472	144	127	132	125	118	145	70
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	102	1905	75	88	1531	150	132	137	130	123	151	73
Added Vol:	0	35	0	22	30	18	22	27	1	0	23	23
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	102	1940	75	110	1561	168	154	164	131	123	174	96
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	102	1940	75	110	1561	168	154	164	131	123	174	96
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	1940	75	110	1561	168	154	164	131	123	174	96
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	102	1940	75	110	1561	168	154	164	131	123	174	96

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.11	0.89	1.00	1.29	0.71
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	1892	1508	1700	2192	1208

Capacity Analysis Module:

Vol/Sat:	0.06	0.38	0.04	0.06	0.31	0.10	0.09	0.09	0.09	0.07	0.08	0.08
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
AM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

















Cycle (sec): 100 Critical Vol./Cap.(X): 0.603
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 30 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	45	1983		50	21	1668		21	40	18		126	115	23		46
Growth Adj:	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04
Initial Bse:	47	2063		52	22	1735		22	42	19		131	120	24		48
Added Vol:	0	14		0	9	13		9	11	0		0	0	0		11
PasserByVol:	0	0		0	0	0		0	0	0		0	0	0		0
Initial Fut:	47	2077		52	31	1748		31	53	19		131	120	24		59
User Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	47	2077		52	31	1748		31	53	19		131	120	24		59
Reduct Vol:	0	0		0	0	0		0	0	0		0	0	0		0
Reduced Vol:	47	2077		52	31	1748		31	53	19		131	120	24		59
PCE Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
MLF Adj:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
FinalVolume:	47	2077		52	31	1748		31	53	19		131	120	24		59

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700		1700	1700	1700		1700	1700	1700		1700	1700	1700		1700
Adjustment:	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Lanes:	1.00	3.00		1.00	1.00	3.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Final Sat.:	1700	5100		1700	1700	5100		1700	1700	1700		1700	1700	1700		1700

Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.03	0.41		0.03	0.02	0.34		0.02	0.03	0.01		0.08	0.07	0.01		0.03
Crit Moves:	****				****				****				****			

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt			0.865								0.996	
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5065	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5065	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		458			512			355			338	
Travel Time (s)		10.4			11.6			8.1			7.7	













Intersection Summary

Area Type: Other

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	41	0	0	0	0	2227	0	0	1921	49
Future Volume (vph)	0	0	41	0	0	0	0	2227	0	0	1921	49
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	45	0	0	0	0	2421	0	0	2088	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	45	0	0	0	0	2421	0	0	2141	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	41	0	0	0	0	2227	0	0	1921	49
Future Vol, veh/h	0	0	41	0	0	0	0	2227	0	0	1921	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	45	0	0	0	0	2421	0	0	2088	53

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1071	-	-	1211	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	186	0	0	150	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	186	-	-	150	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.3	0	0	0
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	186	-	-
HCM Lane V/C Ratio	-	-	0.24	-	-
HCM Control Delay (s)	-	-	30.3	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.9	-	-

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #1 VALLEY VIEW ST (NS) / CHAPMAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.709
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 40 Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Protected				Protected							
Rights:	Ovl				Ovl				Include				Include							
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	2	0	2	0	1

Volume Module:

Base Vol:	156	1662	185	184	1856	48	125	206	108	204	230	164
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	162	1729	192	191	1931	50	130	214	112	212	239	171
Added Vol:	26	41	26	0	38	0	0	20	26	26	20	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	188	1770	218	191	1969	50	130	234	138	238	259	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	1770	218	191	1969	50	130	234	138	238	259	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	1770	218	191	1969	50	130	234	138	238	259	171
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	1770	218	191	1969	50	130	234	138	238	259	171

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.26	0.74	2.00	2.00	1.00
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2138	1262	3400	3400	1700

Capacity Analysis Module:

Vol/Sat:	0.11	0.35	0.13	0.11	0.39	0.03	0.08	0.11	0.11	0.07	0.08	0.10
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITH PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #3 VALLEY VIEW ST (NS) / CINEMA DWY (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.642
 Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 33 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	0	1	0	0	1	0	0	0	0

Volume Module:

Base Vol:	21	1954	8	57	2142	6	7	0	8	2	0	0
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	22	2033	8	59	2229	6	7	0	8	2	0	0
Added Vol:	87	7	0	0	37	52	85	0	51	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	109	2040	8	59	2266	58	92	0	59	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	109	2040	8	59	2266	58	92	0	59	2	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	2040	8	59	2266	58	92	0	59	2	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	2040	8	59	2266	58	92	0	59	2	0	0

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.92	0.08	0.61	0.00	0.39	1.00	0.00	0.00
Final Sat.:	1700	5079	21	1700	4972	128	1035	0	665	1700	0	0

Capacity Analysis Module:

Vol/Sat:	0.06	0.40	0.40	0.03	0.46	0.46	0.05	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****		****	****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
 PROJECT OPENING YEAR WITH PROJECT CONDITIONS
 PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #4 VALLEY VIEW ST (NS) / BELGRAVE AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.554

Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx

Optimal Cycle: 27 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Prot+Permit				Prot+Permit				Permitted				Permitted							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	2	1	0	1	0	2	1	0	0	1	0	0	1	0	0	1	0	0

Volume Module:

Base Vol:	75	1925	7	5	2120	21	11	1	28	5	1	3
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	78	2003	7	5	2206	22	11	1	29	5	1	3
Added Vol:	0	68	0	9	63	17	17	0	0	0	0	9
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	78	2071	7	14	2269	39	28	1	29	5	1	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	78	2071	7	14	2269	39	28	1	29	5	1	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	78	2071	7	14	2269	39	28	1	29	5	1	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	78	2071	7	14	2269	39	28	1	29	5	1	12

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.99	0.01	1.00	2.95	0.05	0.96	0.04	1.00	0.28	0.06	0.66
Final Sat.:	1700	5082	18	1700	5014	86	1640	60	1700	482	96	1122

Capacity Analysis Module:

Vol/Sat:	0.05	0.41	0.41	0.01	0.45	0.45	0.02	0.02	0.02	0.00	0.01	0.01
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #5 VALLEY VIEW ST (NS) / LAMPSON AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.841
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 65 Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	1	0	1	0	1	1	0

Volume Module:

Base Vol:	226	1653	117	109	1859	177	228	234	109	188	269	103
Growth Adj:	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Initial Bse:	235	1720	122	113	1934	184	237	243	113	196	280	107
Added Vol:	1	30	0	18	28	17	17	19	0	0	21	21
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	236	1750	122	131	1962	201	254	262	113	196	301	128
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	236	1750	122	131	1962	201	254	262	113	196	301	128
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	236	1750	122	131	1962	201	254	262	113	196	301	128
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	236	1750	122	131	1962	201	254	262	113	196	301	128

Saturation Flow Module:

Sat/Lane:	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.40	0.60	1.00	1.40	0.60
Final Sat.:	1700	5100	1700	1700	5100	1700	1700	2374	1026	1700	2384	1016

Capacity Analysis Module:

Vol/Sat:	0.14	0.34	0.07	0.08	0.38	0.12	0.15	0.11	0.11	0.12	0.13	0.13
Crit Moves:	****			****			****			****		

WESTGROVE CENTER TRAFFIC STUDY (JN: 2909-2020-01)
PROJECT OPENING YEAR WITH PROJECT CONDITIONS
PM PEAK HOUR

Level Of Service Computation Report

ICU 2(Loss as Green Time %) Method (Future Volume Alternative)

Intersection #6 VALLEY VIEW ST (NS) / CERULEAN AVE (EW)

Cycle (sec): 100 Critical Vol./Cap.(X): 0.636
Loss Time (sec): 5 Average Delay (sec/veh): xxxxxx
Optimal Cycle: 33 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound							
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Protected				Protected				Prot+Permit				Prot+Permit							
Rights:	Include				Include				Include				Include							
Min. Green:	0		0		0	0		0		0	0		0		0	0		0		0
Y+R:	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0	4.0		4.0		4.0
Lanes:	1	0	3	0	1	1	0	3	0	1	1	0	1	0	1	1	0	1	0	1

Volume Module:	North Bound				South Bound				East Bound				West Bound			
Base Vol:	117	1915	115		65	2000	31		54	49	107		92	44	62	
Growth Adj:	1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04		1.04	1.04	1.04	
Initial Bse:	122	1992	120		68	2081	32		56	51	111		96	46	65	
Added Vol:	0	13	0		9	12	9		9	0	0		0	0	9	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	122	2005	120		77	2093	41		65	51	111		96	46	74	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	122	2005	120		77	2093	41		65	51	111		96	46	74	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	122	2005	120		77	2093	41		65	51	111		96	46	74	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	122	2005	120		77	2093	41		65	51	111		96	46	74	

Saturation Flow Module:	North Bound				South Bound				East Bound				West Bound			
Sat/Lane:	1700	1700	1700		1700	1700	1700		1700	1700	1700		1700	1700	1700	
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	3.00	1.00		1.00	3.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Final Sat.:	1700	5100	1700		1700	5100	1700		1700	1700	1700		1700	1700	1700	

















Capacity Analysis Module:	North Bound				South Bound				East Bound				West Bound			
Vol/Sat:	0.07	0.39	0.07		0.05	0.41	0.02		0.04	0.03	0.07		0.06	0.03	0.04	
Crit Moves:	****				****				****				****			

Lanes and Geometrics

WESTGROVE CENTER (JN: 2909-2020-01)

2: VALLEY VIEW ST & PROJECT DWY/DWY













11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)	0%				0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt	0.865						0.997					
Flt Protected												
Satd. Flow (prot)	0	0	1611	0	0	1863	0	5085	0	0	5070	0
Flt Permitted												
Satd. Flow (perm)	0	0	1611	0	0	1863	0	5085	0	0	5070	0
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	458				512			355			338	
Travel Time (s)	10.4				11.6			8.1			7.7	
Intersection Summary												
Area Type:	Other											

Volume
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)





11/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	40	0	0	0	0	2176	0	0	2322	50
Future Volume (vph)	0	0	40	0	0	0	0	2176	0	0	2322	50
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	43	0	0	0	0	2365	0	0	2524	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	43	0	0	0	0	2365	0	0	2578	0
Intersection Summary												

HCM 2010 TWSC
2: VALLEY VIEW ST & PROJECT DWY/DWY

WESTGROVE CENTER (JN: 2909-2020-01)

11/25/2020

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	0	0	2176	0	0	2322	50
Future Vol, veh/h	0	0	40	0	0	0	0	2176	0	0	2322	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	43	0	0	0	0	2365	0	0	2524	54

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	1289	-	-	1183	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-
Pot Cap-1 Maneuver	0	0	133	0	0	156	0	-
Stage 1	0	0	-	0	0	-	0	-
Stage 2	0	0	-	0	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	133	-	-	156	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.7	0	0	0
HCM LOS	E	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	-	-	133	-	-
HCM Lane V/C Ratio	-	-	0.327	-	-
HCM Control Delay (s)	-	-	44.7	0	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	1.3	-	-

Appendix G

City of Garden Grove Municipal Parking Code

Garden Grove Municipal Code							
Up	Previous	Next	Main	Collapse	Search	Print	No Frames
Title 9 LAND USE Chapter 9.18 MIXED USE REGULATIONS AND DEVELOPMENT STANDARDS							

Section 9.18.140 Parking

9.18.140.010 Purpose

- A. Purpose. These regulations are established to define the regulations applicable to on-site parking and circulation, and to ensure that parking facilities are properly designated and located to meet the parking needs created by specific uses within the respective zones.
- B. Intent. The intent of these regulations is to:
 - 1. Ensure adequately designed parking areas with sufficient capacity and adequate circulation to minimize traffic congestion;
 - 2. Ensure the usefulness of the facilities by providing on-site circulation patterns that facilitate client/business relationships;
 - 3. Contribute to public safety and health;
 - 4. Promote efficient use of land and, where appropriate, buffer and transition land uses from foreseeable impacts; and
 - 5. Utilize landscaping as an effective buffer between different uses and to promote an aesthetic quality within the parking area and site. (2814, 2012)

9.18.140.020 General Provisions

- A. Applicability. In all districts, off-street parking shall be provided subject to the provisions of this chapter for:
 - 1. Any new building or structure constructed;
 - 2. Any new use established;
 - 3. Any structural addition or enlargement of an existing building or use; however, additional parking spaces may be required for the entire building or use as a condition of approval of a conditional use permit, site plan or other discretionary permit granted by the City; or
 - 4. Any change in the occupancy or use of any building that would result in a requirement for additional parking spaces pursuant to this section.
- B. Restriction within Reserved Right-of-Way. Property within the ultimate right-of-way of a street or highway shall not be used to provide required parking or loading or unloading facilities.
- C. Restriction on Streets, Driveways, and Drives. On-street parking within public or private streets, driveways, or drives shall not be used to satisfy the off-street parking requirements.
- D. Garages to Be Used for Parking Only. For developments required to provide garages, each such garage shall only be utilized for the parking of vehicles. No garage shall be used for storage, rental, or lease or for any use other than the parking of vehicles related to the unit or development for which the garage is required by this section and storage areas required by Section 9.18.110.030.H.2 (Storage Facilities).
- E. Parking Must Remain Accessible. All off-street parking spaces and areas required by this section shall be designed and maintained to be fully usable for the duration of the use requiring such areas and spaces. All required off-street parking spaces shall be designated, located, constructed and maintained so as to be fully available for use by patrons and employees of commercial, industrial, public or semi-public premises during operating hours.
- F. Compliance with Design Standards. Parking facilities constructed or substantially reconstructed subsequent to the effective date of the ordinance codified in this title, whether or not required, shall conform to the City's design standards set forth in Parking Design Standards, Section 9.18.140.070.
- G. Requirements for Uses not Listed. The parking requirement for uses not specifically listed in the parking schedule shall be determined by the Planning Commission for the proposed use on the basis of the requirements for similar uses and on any traffic engineering and planning data that is appropriate to the establishment of a minimum requirement.
- H. Surfacing Required. All parking spaces, driveways, and maneuvering areas shall be fully paved and maintained with asphalt, concrete, or other City approved material.
- I. Tandem Parking Restricted. Tandem parking is expressly prohibited, except in the following circumstances:
 - 1. Valet Parking. Parking associated with valet services may be provided in tandem format through the discretionary permit review process. If an approved valet parking arrangement ceases, the use for which the valet parking was approved shall be considered in violation of the provisions of this title. Also, no new use shall be allowed to use the buildings with which the valet parking was provided unless that use meets the requirements of this title and this section in particular.
 - 2. Work-Live Units. Parking provided for each unit may be provided in tandem format subject to conditional use permit approval.
 - 3. Residential/Commercial Mixed Use Development. Parking for the residential component of a residential/commercial mixed use development may be provided in tandem format subject to conditional use permit approval.

- J. **Restriction on Commercial Vehicles in Residential Developments.** Commercial vehicles shall not be parked or stored on properties used exclusively for residential purposes, except while the operator of the vehicle is making normal deliveries or providing services to the residential premises.
- K. **Restriction on Commercial Vehicle Parking in Residential/Commercial Mixed Use Developments.** No commercial vehicle shall be parked on any property zoned Mixed Use except while the operator of the vehicle or trailer is patronizing or serving a business or residential use, or unless that vehicle is associated with the day-to-day operations of an on-site business.
- L. **Restrictions on Recreational Vehicle Parking.** The parking or storing of trailers, vessels, campers, camper shells, motor homes, and similar recreational vehicles shall be prohibited in all Mixed Use zones, except for such vehicles associated with single-family dwellings established prior to the effective date of the ordinance codifying these provisions, in which case the applicable standards contained in Chapter 9.08 (Single-Family Residential Development Standards) shall apply.
- M. **Parking of Vehicles for Sale or Hire Prohibited.** No person shall park a vehicle, camper, camper shell, or vessel upon a public or private street, parking lot, or any public or private property for the purpose of displaying such vehicle thereon for sale, hire or rental, unless the property is duly zoned and permitted by the City to transact that type of business at that location. However, this section shall not prohibit persons from parking vehicles displayed for sale on private residential property belonging to or resided on by the registered owner of the vehicle. For purposes of this section, a vehicle, camper, camper shell, or vessel shall be presumed to be for sale if there is a price, or phone number, or a contact person, or address displayed thereon. Any person violating the provisions of this section shall be guilty of an infraction.
- N. **Restriction of Vehicle Repair.** No person shall repair, grease, or service, or cause to be repaired, greased, or serviced, any vehicle or any part thereof in a parking lot, or anywhere outside of a wholly enclosed building.
- O. **Camping in Parked Vehicles Prohibited.** No person shall occupy or use any camp car, camper, mobile home, recreational vehicle, camper shell, trailer, vessel, or other vehicle or trailer as a dwelling or for living or sleeping quarters upon any public street, right-of-way, alley, private street or alley, or any private property except in an approved trailer, mobile home, or recreational vehicle park.
- P. **Parking in Required Yards.** No above-grade or surface parking shall be allowed in required yards and setbacks. However, partially subterranean and fully subterranean parking shall be permitted beneath required yards.
- Q. **Parking Prohibited in Rear Yards Abutting a Residentially Zoned Lot.** No above-grade, surface, partially subterranean, or fully subterranean parking shall be located in rear yards abutting any “R” zoned lot.
- R. **Parking Height.** Where any part of a building is over parking, the parking shall be considered a full story. Partially subterranean and fully subterranean parking shall not be considered a story.
- S. **Maintenance Required.** Any development requiring parking lot improvements will be required to file with the City conditions, covenants, and restrictions requiring maintenance of the parking area. The conditions, covenants, and restrictions shall run with the land. (2814, 2012)

9.18.140.030 Parking Spaces Required

- A. **General.** The number of off-street parking spaces required shall be no less than as set forth in Table 9.18-11 (Required Parking Spaces). Parking shall be calculated by the maximum building occupancy and/or the gross floor area, as applicable. Where the application of these schedules results in a fractional space, then the resulting fraction shall be rounded up to the higher whole number.
- B. **Residential/Commercial Mixed Use Developments.** The calculation of required parking spaces for residential/commercial mixed use developments shall be based upon the parking required for each individual use within the development. Through the site plan review process or review of any required discretionary permit, the hearing body may reduce the total number of spaces required by up to 10% of the total requirement in recognition of the shared nature of the parking facilities and in particular, by allowing parking spaces provided for a commercial component to satisfy the guest parking needs of the residential component. If an applicant seeks relief greater than 10%, the provisions regarding shared parking and the requirements for provision of a parking management plan pursuant to Section 9.18.140.060 (Joint Use and Parking Management) shall apply.

Table 9.18-11
Required Parking Spaces

Use	Required Minimum Parking Spaces
Residential Uses—Single Family	
1—4 sleeping rooms	2 spaces in an enclosed garage plus 2 open spaces
5—7 sleeping rooms	3 spaces in an enclosed garage plus 3 open spaces
More than 7 sleeping rooms	4 spaces in an enclosed garage plus 4 open spaces
Residential Multiple Family—Stand Alone	
Developments with fewer than 50 units, and adjacent to any principal, major, primary or secondary arterial street	

Use	Required Minimum Parking Spaces
Fewer than 3 sleeping rooms	2.75 spaces per dwelling unit within a parking structure or enclosed garage
3 or more sleeping rooms	3.5 spaces per dwelling unit within a parking structure or enclosed garage
Developments with fewer than 50 units and <u>not</u> adjacent to any principal, major, primary or secondary arterial street	
Fewer than 3 sleeping rooms	2.5 spaces per dwelling unit within a parking structure or enclosed garage
3 or more sleeping rooms	3.25 spaces per dwelling unit within a parking structure or enclosed garage
Developments with 50 or more units, and adjacent to any principal, major, primary or secondary arterial street	
Fewer than 3 sleeping rooms	2.75 spaces per dwelling unit within a parking structure or enclosed garage
3 or more sleeping rooms	3 spaces per dwelling unit within a parking structure or enclosed garage
Developments with more than 50 units and <u>not</u> adjacent to any principal, major, primary or secondary arterial street	
Fewer than 3 sleeping rooms	2.5 spaces per dwelling unit within a parking structure or enclosed garage
3 or more sleeping rooms	2.75 spaces per dwelling unit within a parking structure or enclosed garage
Residential Multiple Family—Part of Mixed Use Development	
Developments with fewer than 50 units	Within a parking structure or enclosed garage:
Fewer than 1 sleeping room	2 spaces per dwelling unit
1 sleeping room	2.25 spaces per dwelling unit
2 sleeping rooms	2.75 spaces per dwelling unit
3 or more sleeping rooms	3.5 spaces per dwelling unit
Developments with 50 units or more	Within a parking structure or enclosed garage:
Fewer than 1 sleeping room	2 spaces per dwelling unit
1 sleeping room	2.25 spaces per dwelling unit
2 sleeping rooms	2.75 spaces per dwelling unit
3 or more sleeping rooms	3 spaces per dwelling unit
Other Residential Uses and Uses Incidental to Residential	
Community residential care facility	0.5 spaces per bed
Senior Citizen Housing	
Apartment	1 space per unit
Congregate general care	0.5 spaces per bed or unit
Congregate general care with on-site transportation provided	0.3 spaces per bed or unit
Work-live	2 spaces per unit plus one additional space per unit
Day Care	1 space per care provider and staff member, plus 1 space for each 6 children

Commercial Uses	
Retail	
Under 40,000 square feet	1 space per 200 square feet gross floor area
40,000—100,000 square feet	1 space per 225 square feet gross floor area
100,000+ square feet	1 space per 250 square feet gross floor area
Restaurants Eating, Drinking Establishments, Cafes, Coffeehouses, Bars	
Attached 0—16 seats with less than 300 square feet of customer/dining area	1 space per 200 square feet of gross floor area
Attached 16+ seats	1 space per 100 square feet of gross floor area, with a minimum of 10 spaces
Freestanding	1 space per 100 square feet of gross floor area, with a minimum of 10 spaces
With entertainment	1 space per 100 square feet of gross floor area (seating and service), plus 1 space per 35 square feet of entertainment area, plus 1 space per 7 square feet of dance floor

Use	Required Minimum Parking Spaces
Outdoor Dining	No additional parking required for the first 500 square feet of outdoor dining area. For any area in excess of 500 square feet, parking shall be provided as required above for the applicable use. Where outdoor dining is covered by a roof structure, all parking shall be provided as required for the above applicable use.
Service Station	
With convenience store	1 space per pump, plus 1 space per 200 square feet of gross floor area of sales area, plus 3 spaces per service bay
Without convenience store	1 space per employee, plus 3 spaces per service bay
Financial institutions	1 space per 200 square feet of gross floor area if a drive-up window exists. If no window, 1 space per 150 square feet of gross floor area
Funeral home/mortuary with no crematorium	
Fixed seats in viewing room(s):	1 space per each 3 fixed seats in area(s) designated for assembly purposes
No fixed seats in viewing room(s):	1 space for each 21 sq. ft. of area designated for assembly purposes
	All usable ancillary area(s) shall provide 1 space for each 250 sq. ft. of gross floor area
Massage establishment	1 space per 200 sq. ft. of gross floor area
Nursery, home improvement center, building materials, furniture, general appliance stores (large display area)	1 space per 200 square feet gross floor area
Hotel, motel, bed and breakfast	1 space per room/unit plus 2 spaces for hotel manager unit, plus any parking required for restaurant, assembly, or other permitted ancillary use
Personal service	1 space per 200 square feet of gross floor area
Professional studios and galleries	
Art gallery/retail business with tattoo art studio	The art gallery portion of the business and service areas shall be parked at 1 space for every 500 square feet of gross floor area and the tattoo art studio shall be parked at 1 space for every 200 square feet of gross floor area
Art, music, dance, martial arts	1 space per employee, plus 1 space per 2 student capacity
Photography, portrait, radio, TV, recording	1 space per 200 square feet of gross floor area
Karaoke studios	1 space per 200 square feet of gross floor area
Art studios and galleries	1 space per 500 square feet of gross floor area
Automatic car wash	5 times the internal washing capacity for stacking and drying, plus 1 space per employee based on the maximum shift, not less than 3 (internal capacity is defined as conveyor length divided by 20 feet)

Auto rental	
Office only	1 space per 250 square feet of gross floor area
Vehicle storage	1 space per 350 square feet of gross floor area of office, plus 1 space per vehicle
Auto and boat sales, leasing	1 space per 400 square feet of gross floor area of inside display, plus 1 space per 2,000 square feet of outside display, plus 1 space per 500 square feet of gross floor area of repair, plus 1 space per 300 square feet of gross floor area of parts storage and sales area
Auto repair and maintenance	1 space per 200 square feet of gross floor area including auto paint and body of office space, plus 3 spaces per service bay
Office Uses	
General business offices	1 space per 250 square feet of gross floor area
Medical, dental and related service support facilities	1 space per 170 square feet of gross floor area
Industrial Uses	
Buildings with less than 20,000 sq. ft. of gross floor area	2.25 spaces per 1,000 square feet of gross floor area
Buildings 20,001 to 100,000 sq. ft. of gross floor area	2 spaces per 1,000 square feet of gross floor area
Buildings with more than 100,000 sq. ft. of gross floor area	1 space per 1,000 square feet of gross floor area
Incidental Office:	

Use	Required Minimum Parking Spaces
Under 30% of gross floor area	No additional requirements
30 to 50% of gross floor area of a building	1 space per 250 square feet of gross floor area
Public and Semi-Public Uses	
Hospital	4 spaces per bed
Private school—elementary through high school	1 space per each employee, plus 1 space for each 6 student capacity
College or university	1 space per employee, plus 1 space per 3 student capacity
Trade school; adult education	1 space per employee, plus 1 space per 3 students capacity (based on maximum occupancy allowable by building code), or 1 space per 35 square feet of instructional area, plus 1 space per 250 square feet of office space
Churches/religious facilities	
Fixed seats:	1 space per each 3 fixed seats
No fixed seats:	1 space for each 21 square feet of area designated for assembly purposes
	All ancillary area(s) shall provide 1 space for each 250 square feet of gross floor area
Commercial Recreation Uses	
Golf driving range	1.5 spaces per tee
Bowling alley	3 spaces per alley plus spaces for other uses on-site
Movie theaters	
Single screen	0.5 space per seat
Multi screen	0.3 space per seat
Arcades, pool hall	1 space per 200 square feet of gross floor area
Night clubs	1 space per 7 square feet of dance floor, plus 1 space per 35 square feet of additional gross floor area
Assembly halls and dance floors	1 space per 7 square feet of dance floor or assembly area, plus 1 space per 35 square feet of additional gross floor area
Spa/health clubs/gyms	1 space per 200 square feet of gross floor area
Private clubs	1 space per each 15 square feet of assembly area
Skating rinks	1 space per 100 square feet of gross floor area, plus spaces required for other uses on-site

(2883 § 10, 2017; 2861 § 16, 2015; 2850 § 7, 2014; 2814, 2012)

9.18.140.040 Parking Requirements

The following parking requirements are applicable to all land uses, unless stated otherwise in this chapter.

A. **Parking Space Size.** All parking spaces shall conform to the minimum dimensions:

Standard Space:	9 feet wide by 19 feet long
Compact Space:	8 feet wide by 15 feet long
Parallel Space:	8 feet wide by 22 feet long

Wherever a space is adjacent to a wall, fence, or hedge, an additional one foot of width shall be provided to that space.

B. **Compact Car Parking Spaces.**

- Up to 20% of the required parking stalls may be compact parking spaces. The determination of the percentage to be allowed will be made through the site plan review or applicable discretionary permit review process.
- Compact stall size is subject to Public Works Department standards for compact car spaces.
- Compact spaces, where provided, shall be consolidated into a specific area of a parking lot or structure. The area shall include signage designating the spaces by signs, colored lines, or other appropriate indicators for compact vehicles only.

C. **Automated Parking Systems and Mechanical Parking Lifts.** Parking spaces in automated parking systems and vertical parking lifts may be utilized to meet the required number of parking spaces pursuant to Section 9.18.140.030 (Parking Spaces Required), as well as additional/supplemental parking, provided that all of the following conditions can be met.

1. The use of automated parking systems and mechanical parking lifts does not increase the building bulk and mass, in that the area occupied by the automated parking system or mechanical parking lift is no greater in volume than a parking structure that would be configured exclusively with conventional structured parking.
 2. The parking system shall be located entirely within the confines of a building and shall not be visible from the public right-of-way.
 3. Systems may be self-service or fully automated.
 4. Sufficient vehicle queuing distance for the area accessing the parking system shall be provided, as determined through the site plan review or discretionary permit review process.
- D. **Motorcycle Parking Spaces.** Commercial and industrial facilities with 25 or more parking spaces shall provide at least one paved designated parking area for use by motorcycles.
- E. **Bicycle Parking.** For all new developments where parking is not provided in the form of individual garages, secure and convenient bicycle parking shall be provided at a rate of one bicycle space for every 10 required parking spaces. (2814, 2012)

9.18.140.050 Location of Parking Spaces

- A. **Located On-Site.** All required open parking spaces and garages shall be located on the same building site or within the same development, except where allowed by Section 9.18.140.050.B (Off-site Parking), below.
- B. **Off-Site Parking.** Off-site parking for new uses or new construction may be permitted on either a privately owned property or public property through the site plan review process or other applicable discretionary review permit process for an individual use or development project.
1. **Joint Use Off-Site Parking.** Where more than one use is involved, joint use or shared parking shall require preparation of a parking management plan in accordance with Section 9.18.140.060 (Joint Use and Parking Management).
 2. **Location of Off-Site Parking.** In no event shall any off-site parking facility be located more than 1,500 feet from the use it is intended to serve.
 3. **Deed Restriction Required.** Where off-site parking for an individual use or development project is approved, a deed restriction, subject to the review and approval of the City Attorney, shall be recorded against all affected properties. Such deed restriction shall indicate the restrictions on the properties relative to future use and development due to the off-site parking arrangement.
 4. **Irrevocable Access and/or Parking Easement.** If parking is provided on a site other than the subject site, an irrevocable access and/or parking easement shall be obtained on the other site for use and benefit of the site in issue. Such access and/or parking agreement, when fully exercised, shall not diminish the available parking capacity of the site subject to the easement to less than required by this section.
- C. **Accessibility.** All off-street open and enclosed parking spaces shall be located and maintained so as to be accessible and usable for the parking of motor vehicles.
1. All motor vehicles must be parked or stored on a fully paved surface with approved entrances and exits to the street.
 2. For projects approved and developed after April 25, 1991, where security gates are proposed to be provided, 70% of the guest parking spaces shall be located outside the secured area. (2814, 2012)

9.18.140.060 Joint Use and Parking Management

A. **Applicability and Where Allowed.** These regulations apply in situations where two or more separate uses or developments look to share parking and/or loading facilities due to staggered hours of operation or other varying operational characteristics that would allow parking and loading facilities to provide for joint use. If an applicant seeks to provide for shared or joint use parking, preparation of a parking management plan shall be required to allow any deviation from parking requirement standards established by this section, as set forth below. When prepared, a parking management plan shall provide applicable parking standards that address current development trends and the benefits of parking alternatives.

Where off-site parking is requested, the provisions in Section 9.18.140.050.B (Off-Site Parking), above, shall also apply.

B. **Parking Management Plan Required.** A parking management plan shall be required as follows:

1. Where parking is to be shared or jointly used among the same or different developments or uses.
2. Where the number of parking spaces required is proposed to be reduced, except as provided in Section 9.18.140.030.B (Residential/Commercial Mixed Use Developments) regarding required parking for residential/commercial mixed use developments, where a 10% reduction shall be permitted as part of the site plan review or conditional use permit process for that development. However, any reduction beyond 10% shall require a parking management plan.

C. **Limitation on Parking Space Reduction and Distance.** No proposed reduction in parking spaces due to joint or shared use may exceed 25% of the parking required pursuant to this section. Also, no joint use or shared facility shall be located more than 1,500 feet from the use it is intended to serve.

D. Plan Contents. The parking management plan shall be prepared by a qualified transportation engineer, in accordance with Planning Commission policy, and shall include, at minimum, the following elements:

1. Breakdown and description of the proposed uses, including their functional and spatial components.
2. Statement of the functional area square footage based on the proposed plan.
3. Statement of parking demands by uses for morning, midday, and evening periods, and a statement of employee parking demands.
4. A peak-demand calculation by adding the various components together to determine the midday and evening demands with the higher figure represents the minimum number of spaces to be provided.
 - a. A 10% increase in the minimum number of spaces shall be added to the peak demand calculation to allow for future changes in the types of uses proposed in the original development plan, and
 - b. Use changes throughout the life of the project requiring more than the 10% figure shall require the submittal and approval of an amended parking management plan.
5. A cross-check analysis for functional and operational aspects.

6. Parking management plans shall include a copy of proposed easements or conditions, covenants, and restrictions tying the parking agreement to the project in perpetuity, prohibiting revision without City approval. Pre-existing, shared parking proposals shall be accompanied by a recorded off-site parking covenant running with the land. The City Attorney shall have the authority to review and dictate the contents of the CC&Rs and any deed restrictions or easement language proposed.

E. Shared Loading Spaces. Loading spaces may be shared in compliance with this section. However, the loading spaces shall only be shared if located on an adjoining lot.

F. Review Process. For development projects involving new construction, a parking management plan for joint or reduced parking shall be considered by the appropriate review authority at the same time the project is considered. Where a new use is proposed to occupy an existing building and where a parking management plan is required, the parking management plan shall be subject to Community Development Director's review.

G. Required Findings. Where a shared parking facility serving more than one use will be provided, the total number of required parking spaces may be reduced only if the Planning Commission finds that all of the following are true:

1. The peak hours of use will not overlap or coincide to the degree that peak demand for parking spaces from all uses will be greater than the total supply of spaces;
2. The adequacy of the quantity and efficiency of parking provided will equal or exceed the level that can be expected if parking for each use were provided separately;
3. A parking demand study prepared by an independent traffic engineering professional approved by the City supports the proposed reduction; and
4. The applicant submitted a signed contract between the applicant and the other property owner(s) providing the off-street parking spaces subject to the shared parking arrangement. The contract shall be subject to the approval of the Planning Commission and shall also be subject to review by the City Attorney as to form and content. (2814, 2012)

9.18.140.070 Parking Design Standards

A. Parking Improvements.

1. Paving. Parking and loading facilities and pedestrian pathways shall be surfaced and maintained with asphalt concrete, concrete, or other permanent surfacing material acceptable to the Community Development Director or designee and sufficient to prevent loose surfacing materials and other nuisances.
2. Striping. Parking lot striping shall be maintained at all times consistent with City standards.
3. Drainage. All parking and loading facilities shall be graded and provided with permanent storm drainage facilities.
 - a. Surfacing, curbing and drainage improvements shall be sufficient to preclude free flow of water onto adjacent properties or public streets or alleys.
 - b. Measures listed above shall be taken to preclude standing pools of water within the parking facility.
4. Safety Features. Parking and loading facilities shall meet the following standards:
 - a. Safety barriers, protective bumpers, or curbing and directional markers shall be provided to assure pedestrian and vehicular safety, efficient utilization, protection to landscaping, and prevent encroachment onto adjoining public or private property.
 - b. Unobstructed visibility shall be maintained at all times while vehicles are circulating within the parking area.
 - c. Internal circulation patterns and the location and traffic direction of all access drives shall be designated and maintained in accordance with accepted principles of traffic engineering and traffic safety.
 - d. Striping of parking lots must at all times be clearly visible and maintained throughout the life of the facility.

5. Lighting. Lights provided to illuminate any parking facility or paved area shall be designed with automatic timers (photovoltaic cells) and maintained in accordance with the provisions of this title. Parking lot security lights shall be maintained and shall be operated during all hours of darkness.

- a. All nonresidential parking area lighting shall be provided during the hours of darkness the establishment is open at a minimum of two footcandles of light on the parking surface.
- b. A minimum of one footcandle of light shall be provided during all other hours of darkness.
- c. Lighting in the parking area shall be directed, positioned, or shielded in such a manner so as not to unreasonably illuminate the window area of nearby residences.

6. Noise. Areas used for primary circulation, or for frequent idling of vehicular engines or for loading facilities, shall be designed and located to minimize impacts on adjoining properties, including sound attenuation to adjacent property and visibility screening from adjacent property.

7. Screening. Open off-street parking areas shall be screened from view of public streets and adjacent land uses that are more restrictive.

8. Walls. High walls shall not block or otherwise impair visual access from adjacent residential properties.

B. Surface Parking Lot Landscaping. In addition to the Site Design Standards of Section 9.18.100.030, the following landscaping standards shall apply to all surface parking lot areas:

1. Surface Parking Lots Visible from Streets. Surface parking lots that are visible from public and private streets, and in particular surface parking lots located between the public right-of-way and buildings and structures shall meet the following landscaping, paving, and tree requirements:

- a. Landscaping. At least 10% of the total area of any surface parking lot shall be landscaped.
- b. Paving Area. At least five percent of the total area of any surface parking lot shall be paved in high-quality materials such as pavers, stone or cobblestone, patterned or scored concrete, or similar durable materials. Paving is encouraged at highly visible locations such as main drive aisles, parking areas adjacent to required front and corner side yard setbacks, enhanced stall demarcations throughout the parking lot, or pedestrian walkways.
- c. Trees. One tree shall be provided for every four parking spaces. Trees shall be shade-producing trees and shall be evenly distributed throughout the parking lot so as to shade the parking area. Trees shall be located in landscape planters. Trees shall conform to the matrix of plant materials established by the Planning Division. Minimum tree size at planting shall be 24-inch box.

2. Surface Parking Lots Not Visible from Streets. Surface parking lots that are not visible from public and private streets and are located towards the rear and interior of the site shall meet the following landscaping and tree requirements:

- a. Landscaping. At least five percent of the total area of any surface parking lot shall be landscaped.
- b. Trees. One tree shall be provided for every 10 parking spaces. Trees shall be shade-producing trees and shall be evenly distributed throughout the parking lot so as to shade the parking area. Trees shall be located in landscape planters. Trees shall conform to the matrix of plant materials established by the Planning Division. Minimum tree size at planting shall be 24-inch box.

3. Landscape Buffer. Where a surface parking lot abuts a parking structure or is adjacent to a surface parking lot on another lot, a landscape buffer not less than 10 feet in depth shall be provided between the lots or structures. Where adjacent surface parking lots allow common parking to serve multiple businesses and pedestrian walkways provide access to all businesses served, no landscape buffer shall be required.

4. Wheel Stops at Landscaping. Concrete wheel stops shall be installed in parking areas to protect landscaping. Any broken or damaged wheel stops shall be replaced. Alternatively, parking may be designed to overhang landscaped areas. Parking shall overhang landscaping no more than two feet with a minimum planter dimension of five feet.

5. Landscape Planters. All landscape planters shall have a minimum width of four feet.

6. Screening Required. Storage areas, trash enclosures, public utilities, and other similar land uses or elements that do not contribute to the enhancement of the surrounding area shall be screened with landscaping. Landscape screening shall consist of evergreen shrubs, vines, or closely spaced trees.

C. Architectural Treatment of Parking Structures. All façades of a parking structure shall include architectural and landscaping treatment pursuant to the standards established in Sections [9.18.090](#) (Development Standards Specific to Individual Mixed Use Zones), [9.18.100](#) (Development and Design Standards Applicable to All Mixed Use Zones), and [9.18.120](#) (Landscaping) of this chapter. The intent is to ensure that parking structures have the same quality treatment as the buildings and uses they serve, that such structures are well integrated into a development project, and that their design contributes to the overall character and function of the area in which they are located. In particular, any façade that can be viewed from a public right-of-way shall include treatments that make the structure resemble a habitable building.



Photo 9.18-9: Example of Parking Structure Architectural Treatment

(2814, 2012)

9.18.140.080 Loading Areas

All nonresidential developments must provide loading berths in accordance with this section.

- A. Retail Stores, Warehouses, Wholesaling, Manufacturing and Other Goods Handling Uses. Loading spaces shall be provided as set forth in Table 9.18-12 (Required Loading: General Commercial and Industrial).

**Table 9.18-12
Required Loading: General Commercial and Industrial**

Gross Floor Area of Building or Use	Number of Loading Berths Required
Less than 100,000 sf	0
100,001—200,000 sf	1
200,001—500,000 sf	2
More than 500,000 sf	3 plus 1 for each additional 400,000 sf

- B. Offices and Hotels/Motels. Where loading facilities are provided, the standards in Table 9.18-13 (Required Loading: Offices and Lodging) shall apply.

**Table 9.18-13
Required Loading: Offices and Lodging**

Number of Berths	Width	Length	Height
1	10 feet	25 feet	12 feet
2 or more	10 feet	35 feet	14 feet

- C. Minimum Size of Berths. All berths must be provided with an on-site maneuvering area to the loading berth that provides a turning radius of not less than 48 feet.

- D. Screening. All loading areas shall be screened from view of adjacent streets.

- E. Access.

- Access to the loading docks shall be provided without the necessity of vehicle maneuvers in the public right-of-way.
- The dock approach may not be encumbered by parking stalls or physical obstructions.

3. All loading must be conducted in loading berths when berths are provided. Loading and unloading operations shall not be conducted so as to be a nuisance to adjacent residential areas.
4. Loading areas shall not interfere with parking or with vehicle and pedestrian access. (2814, 2012)

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