RK engineering group, inc.

traffic engineering ▪ transportation planning
acoustical engineering ▪ parking studies
air quality & greenhouse gas analysis

LETTER OF TRANSMITTAL

TO:	WESTERN STATES ENGINEERING & CONSTRUCTION, INC. 4887 East La Palma Avenue #707 Anaheim, CA 92807	DATE:	April 21, 2017
		JOB NO.:	2617-2016-01
		SUBJECT:	Chevron Convenience Store and Service Station Traffic Impact Study City of Bloomington, California
ATTN:	Mr. Florentino Mendoza		

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	File		Released		Corrections

REMARKS:

Attached please find the Chevron Convenience Store and Service Station Traffic Impact Study, City of Bloomington, California (Updated April 21, 2017). Please call us at (949) 474-0809, if you have any questions.

BY: _____

Alex Tabrizi, PE, TE
Associate Principal

COPIES TO:

_____ _____

_____ _____

4000 westerly place, suite 280
newport beach, california 92660
tel 949.474.0809 fax 949.474.0902
www.rkengineer.com

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April 21, 2017

Mr. Florentino Mendoza
WESTERN STATES ENGINEERING & CONSTRUCTION, INC.
4887 East La Palma Ave #707
Anaheim, CA 92807

Subject: Proposed Chevron Convenience Store and Service Station Traffic Impact Study, Bloomington, California (Updated April 21, 2017)

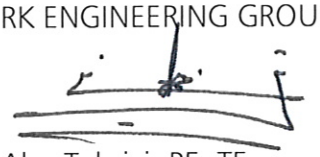
Dear Mr. Mendoza:

RK ENGINEERING GROUP, INC. (RK) is pleased to submit this Traffic Impact Study for the proposed Chevron Convenience Store and Service Station located in the Bloomington area of the County of San Bernardino. The project consists of a 13 vehicle fueling position gas station with a 5,812 square foot convenience market. The proposed project is located at the southwest corner (SWC) of Cedar Avenue/Slover Avenue intersection, in the County of San Bernardino. Access to the site will be provided via two (2) driveways, one (1) driveway on Cedar Avenue and one (1) driveway on Slover Avenue.

This report provides a summary of the findings, analysis procedures, and evaluation of the proposed project with respect to on-site and off-site traffic impacts pursuant to County of San Bernardino requirements. **Based upon our analysis of existing and future traffic volumes, all study area intersections are projected to perform at satisfactory levels of service. Based on agency-established significant impact criteria, the proposed project is forecast to not result in a significant traffic impact at the study intersections. Hence, no mitigation measures are required for the proposed project.**

RK Engineering Group, Inc. appreciates this opportunity to work with WESTERN STATES ENGINEERING & CONSTRUCTION, INC. on this project and looks forward to working with you again in the future. If you have any questions regarding this study, please do not hesitate to call us at (949) 474-0809.

Sincerely,
RK ENGINEERING GROUP, INC.



Alex Tabrizi, PE, TE
Associate Principal Engineer

Attachments

AV:dt/RK11968.DOC
JN:2617-2016-01

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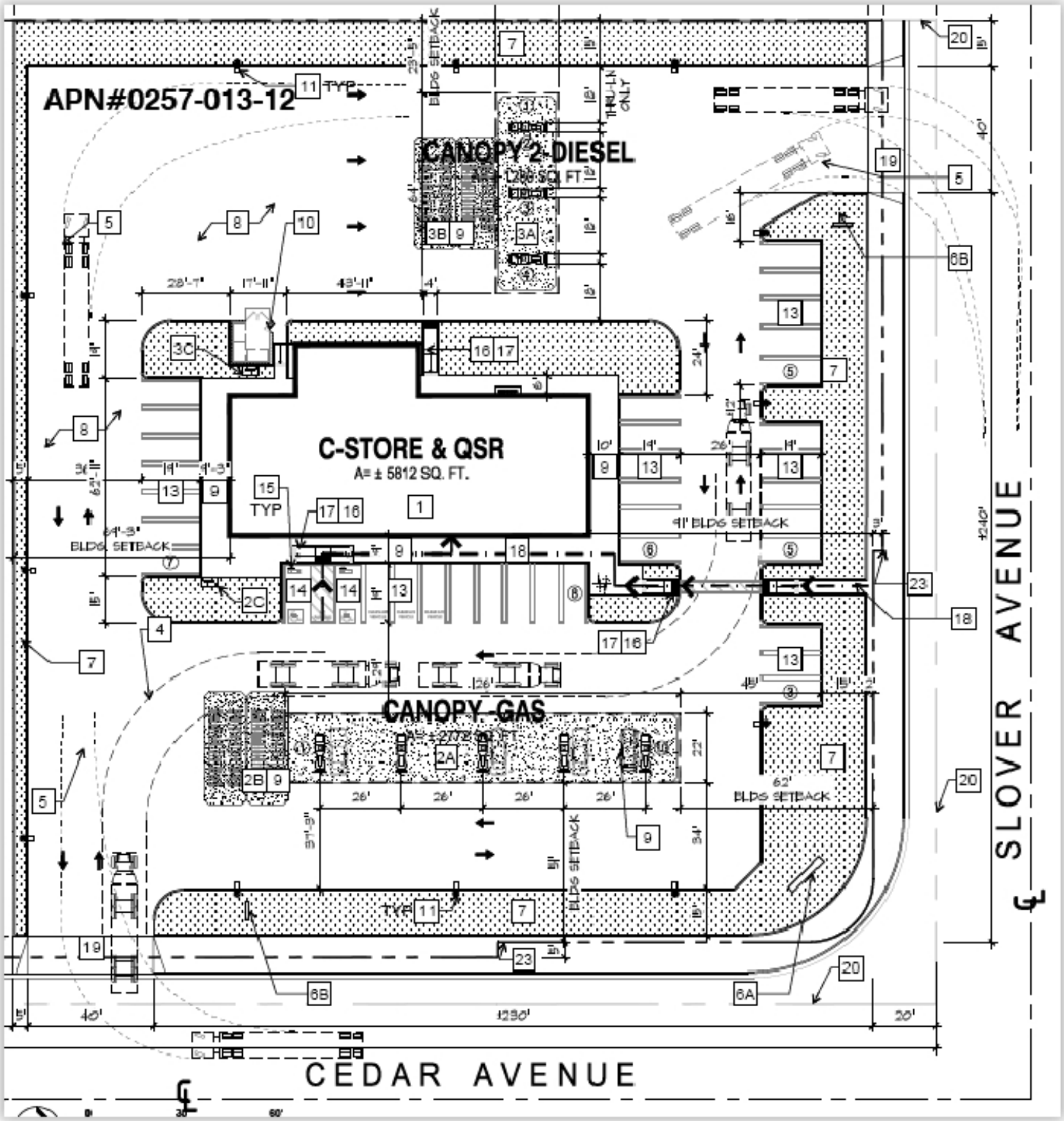
PROPOSED CHEVRON CONVENIENCE STORE AND SERVICE STATION TRAFFIC IMPACT STUDY
Bloomington, California
(Updated 4/21/2017)



PROPOSED CHEVRON CONVENIENCE STORE AND SERVICE STATION TRAFFIC IMPACT STUDY Bloomington, California (Updated 4/21/2017)

Prepared for:

WESTERN STATES ENGINEERING & CONSTRUCTION, INC.
4887 East La Palma Ave #707
Anaheim, CA 92807

Prepared by:

RK ENGINEERING GROUP, INC.
4000 Westerly Place, Suite 280
Newport Beach, CA 92660

Mohammad 'Alex' Tabrizi, PE, TE

April 21, 2017

AV:dt/RK11968.DOC
JN:2617-2016-01

Table of Contents

List of Attachments

Exhibits

Tables

Appendices

1.0 Introduction

1.1 Purpose of Report and Study Objectives

The purpose of this traffic study is to assess the impacts of the proposed Chevron convenience store and service station development project. The proposed project is located at the southwest corner (SWC) of Cedar Avenue/Slover Avenue intersection in the County of San Bernardino. The location of the project site is presented on Exhibit A. This traffic study has been prepared in accordance with the Scope for Traffic Study reviewed and approved by the County of San Bernardino. A copy of the approved scope of work is contained in Appendix A of this report.

A CMP (Congestion Management Program) traffic impact analysis is not required for this project based on the project's trip generation. The proposed development is projected to generate less than the 250 trips per hour threshold necessary for requiring a CMP traffic impact analysis.

The introduction to this report presents an overview of the project and provides a brief description of the study area. The analysis methodologies used to evaluate the impacts of the project are described, and the definitions of roadway system deficiencies and significant project impacts are presented in the context of County of San Bernardino requirements.

Subsequent sections of the report will describe the project in detail and provide a complete description of existing and projected traffic conditions within the study area.

1.2 Site Location and Study Area

The proposed project is located at the southwest corner (SWC) of Cedar Avenue/Slover Avenue intersection, in the County of San Bernardino. The project location is indicated on the Location Map, provided in Exhibit A. The proposed project would consist of a 13 vehicle fueling position gas station with a 5,812 square foot convenience market. The site plan is shown on Exhibit B.

Access to the site will be provided via one (1) Right-In/Right-Out driveway on Cedar Avenue and one (1) Right-In/Right-Out driveway on Slover Avenue.

Pursuant to discussions with County of San Bernardino, the following study area intersections have been analyzed in the traffic impact study:

North-South Street	East-West Street
Cedar Avenue	Orange Street
Cedar Avenue	Slover Avenue

1.3 Analysis Methodologies

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. In accordance with the County of San Bernardino requirements, this traffic impact study evaluates potential project impacts during AM and PM peak hour for the following conditions:

- Existing Conditions;
- Existing Plus Project Condition;
- Project Opening Year (2018) With Ambient Traffic Conditions;
- Project Opening Year (2018) With Ambient Traffic and Proposed Project Conditions;
- Project Opening Year (2018) With Ambient Traffic, Proposed Project, and Cumulative Projects Conditions;
- Long Range (2040) Without Project Conditions; and
- Long Range (2040) With Project Conditions.

Both the overall methodologies used to develop future traffic volume forecasts and the explicit traffic operations analysis methodologies are summarized herein.

1.3.1 Traffic Operations Analysis

The current technical guide to the evaluation of traffic operations is the Highway Capacity Manual (HCM2010) (*Transportation Board Special Report 209*). The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

- LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.

- LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.

- LOS D represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

- LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.

- LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas.

The definitions of the level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

Per the HCM methodology for signalized intersections, average control delay per vehicle is used to determine the level of service.

The levels of service are defined as follows:

LOS	Average Total Control Delay Per Vehicle (Seconds) Signalized
A	0.00 - 10.00
B	10.01 - 20.00
C	20.01 - 35.00
D	35.01 - 55.00
E	55.01 - 80.00
F	>80.01

The LOS analysis for signalized intersections has been performed using optimized signal timing. This analysis has been prepared utilizing the parameters contained in the County of San Bernardino Traffic Impact Study Guidelines and the San Bernardino County Congestion Management Program.

Saturation flow rates of 1,800 vehicles per hour of green (vph) for through and right turn lanes, 1,700 vehicles for single left turn lanes, and 1,600 vehicles per lane for dual left turn lanes have been assumed for the capacity analysis.

1.4 Significant Impact Criteria

The County of San Bernardino Draft Interim Traffic Impact Study Guidelines state that the following criteria shall be used to determine if the addition of project traffic results in a significant traffic impact. Feasible measures must be identified to mitigate the impacts.

1. Signalized Intersections:

   Any study intersection that is operating at LOS A, B, C, or D for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to LOS E or F shall mitigate the impact to bring the intersection back to at least LOS D.

   Any study intersection that is operating at LOS E or F for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

2.0 Existing Conditions

This section of the report summarizes existing roadway and traffic conditions in the study area. The number of through travel lanes for existing roadways and intersection controls are presented, along with existing traffic count data collected for this study. This data was used to analyze existing traffic operations in the study area. Existing plans for roadway improvements are also described in this section.

2.1 Existing Roadway System

The number of through travel lanes for existing roadways and intersection controls within the study area are presented on Exhibit C.

2.2 Existing Peak Hour Traffic Volumes

Existing conditions intersection level of service calculations are based upon AM and PM peak hour turning movement data contained in the *I-10 Cedar Avenue Interchange Supplemental Traffic Operations Report (May 11, 2016)* provided by the County of San Bernardino staff and collected in 2015. Based on direction from County staff, the 2015 traffic counts from the report have been adjusted upwards utilizing an annual growth rate of two (2) percent over a two-year period to derive existing 2017 traffic volumes for use in this analysis.

Existing peak hour intersection turning movement volumes are presented on Exhibit D.

2.3 Existing Traffic Operations

Existing peak hour traffic operations have been evaluated for both the AM and PM peak hours of traffic at the study area intersections and represent year 2017 conditions. The results of this analysis are summarized in Table 1, along with the existing intersection geometrics and traffic control devices at the analysis locations.

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

The operations analysis worksheets for Existing traffic conditions are included in Appendix B.

2.4 General Plan Circulation Element

The County of San Bernardino Circulation Element in the vicinity of the project is shown on Exhibit E. The project study area includes the following designated roadways:

Cedar Avenue: Major Highway – 104 feet right-of-way

Slover Avenue: Major Highway – 104 feet right-of-way

3.0 Project Traffic

3.1 Project Description

The project site plan is presented on Exhibit B. The project will consist of a 13 vehicle fueling position gas station with a 5,812 square foot convenience market. The estimated project completion date Year 2018.

3.2 Project Traffic

The traffic related to the project has been calculated in accordance with the following accepted procedural steps:

- Trip Generation
- Trip Distribution
- Trip Assignment

These steps are described in detail below.

3.3 Trip Generation

3.3.1 Trip Generation Rates

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 the development.

The *Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition (2012)* was utilized to determine the trip generation rates for the proposed land uses. The trip generation rates are shown in Table 2.

3.3.2 Pass-By Trips

Studies have shown that for developments such as the one proposed, a substantial portion of the site-generated vehicle trips are already present in the adjacent passing stream of traffic. These types of trips are known as pass-by trips. Pass-by trips are made by traffic already using the adjacent roadway and enter the site as an intermediate stop on the way to or from another destination. The trip may not necessarily be "generated" by the land use under study, and thus, no new trips are added to the roadway system.

According to data provided by ITE, developments similar to the one proposed may experience pass-by rates of approximately 62% during the AM peak hour and 56% during the PM peak hour.

Pass-by trips are not applied to the project driveways or to the intersection immediately adjacent to the site.

3.3.3 Project Trip Generation

The proposed development is projected to generate approximately 2,116 trip-ends per day, with 132 trips per hour during the AM peak hour and 176 trips per hour during the PM peak hour.

After accounting for applicable adjustments such as pass-by trips, the proposed project is projected to generate approximately 1,936 trip-ends per day, with 50 trips per hour during the AM peak hour and 78 trips per hour during the PM peak hour.

Both daily and peak-hour trip generation for the proposed development are shown in Table 3.

3.4 Trip Distribution and Assignment

The trip distribution and assignment process represents the directional orientation of traffic to and from the project site. The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution, proposed arterial highway, and local street systems that would be in place by the time of initial occupancy of the project. Detailed routing assumptions are included on Exhibit F.

3.5 Project Traffic Volume Forecasts

The project traffic volume forecasts have been developed by applying the trip generation and distribution calculations. The traffic volumes attributable to the proposed project are presented on Exhibit G.

3.6 Existing Plus Project Traffic Volumes

Existing Plus Project traffic conditions include existing traffic volumes on surrounding roadways and project traffic. Existing Plus Project traffic conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibit H.

3.7. Intersection Level of Service for Existing Plus Project Conditions

Intersection levels of service for the existing network with the proposed project are shown in Table 4. As shown in Table 4, HCM calculations are based on the existing intersection geometrics.

As shown in Table 4, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Existing Plus Project Conditions.

The operations analysis worksheets for Existing Plus Project Condition are included in Appendix C.

4.0 Future Traffic Conditions

Future traffic operations have been evaluated for Project Opening Year (2018) conditions and long-range (2040) conditions.

4.1 Cumulative Developments

This project is located within the Bloomington area of the County of San Bernardino. All potential development projects within the nearby jurisdictions have been considered as cumulative projects. Table 5 lists the proposed land uses and associated trip generation for the nearby developments for Project Completion year (2018) With Project and Cumulative Projects traffic conditions known by the County of San Bernardino, City of Rialto, City of Fontana and RK Engineering at the time this study was being prepared. Development that has been approved or is being processed concurrently in the study area includes the projects illustrated on the map in Exhibit I.

Appendix D contains the directional distribution of the Cumulative Projects traffic.

4.2 Project Opening Year (2018) Conditions

The operations analysis for Project Opening Year (2018) conditions examined three (3) scenarios:

- Project Opening Year (2018) With Ambient Traffic;
- Project Opening Year (2018) With Ambient Traffic and Proposed Project; and
- Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Projects.

Each of these conditions is discussed in the remainder of this section.

4.2.1 Project Opening Year (2018) With Ambient Traffic Conditions

To account for area wide growth on roadways, Project Completion (Year 2018) volumes have been calculated based on a two percent (2%) annual growth rate of existing (Year 2018) traffic volumes over a one-year period. It is estimated that there

would be an approximate 2% increase in ambient traffic for Opening Year (2018) conditions.

Project Opening Year (2018) With Ambient Traffic Conditions peak hour intersection turning movement volumes are presented on Exhibit J.

The intersection operations analysis for Project Opening Year (2018) With Ambient Traffic conditions is summarized in Table 6.

As shown in Table 6, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year (2018) With Ambient Conditions.

The operations analysis worksheets for Project Opening Year (2018) With Ambient Traffic are included in Appendix E.

4.2.2 Project Opening Year (2018) With Ambient Traffic and Proposed Project Conditions

Project Opening Year (2018) With Ambient Traffic and Proposed Project conditions include the future ambient growth plus the addition of the proposed project traffic.

Project Opening Year (2018) With Ambient Traffic Conditions peak hour intersection turning movement volumes are presented on Exhibit K.

The intersection operations analysis for Project Opening Year (2018) With Ambient Traffic and Proposed Project conditions is summarized in Table 7.

As shown in Table 7, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year (2018) With Ambient Traffic and Proposed Project Conditions.

The operations analysis worksheets for Project Opening Year (2018) With Ambient Traffic and Proposed Project are included in Appendix F.

4.2.3 Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Project Traffic Conditions

Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Project Traffic conditions include the future ambient growth, the addition of the proposed project, and the cumulative project traffic.

Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Project Traffic Conditions peak hour intersection turning movement volumes are presented on Exhibit L.

The intersection operations analysis for Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Project conditions is summarized in Table 8.

As shown in Table 8, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Opening Year (2018) With Ambient Traffic, Proposed Project and Cumulative Project Traffic Conditions.

The operations analysis worksheets for Project Opening Year (2018) With Ambient Traffic, Proposed Project, and Cumulative Projects are included in Appendix G.

4.3 Long-Range (2040) Conditions

The operations analysis for Long-Range (2040) conditions examined two (2) scenarios:

- Long-Range (2040) Without Project Conditions; and
- Long-Range (2040) With Project Conditions.

4.3.1 Long-Range (2040) Without Project Traffic Conditions

Long-Range (2040) Without Project Conditions peak hour traffic volumes for the study area intersections are based upon the 2040 AM and PM peak hour turning movement forecasts contained in the *I-10 Cedar Avenue Interchange Supplemental Traffic Operations Report (May 11, 2016)* provided by the County of San Bernardino staff.

Long-Range (2040) Without Project Conditions peak hour intersection turning movement volumes are presented on Exhibit M.

The intersection operations analysis for Long-Range (2040) Without Project Conditions is summarized in Table 9.

As shown in Table 9, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Long-Range (2040) Without Project Conditions.

The operations analysis worksheets for Long-Range (2040) Without Project Conditions are included in Appendix H.

4.3.2 Long-Range (2040) With Project Traffic Conditions

Long-Range (2040) With Project Conditions peak hour traffic volumes for the study area intersections are derived by adding project-generated trips to Long-Range (2040) With Project Conditions traffic volumes.

Long-Range (2040) With Project Conditions peak hour intersection turning movement volumes are presented on Exhibit N.

The intersection operations analysis for Long-Range (2040) With Project Conditions is summarized in Table 10.

As shown in Table 10, the study area intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Long-Range (2040) With Project Conditions.

The operations analysis worksheets for Long-Range (2040) With Project Conditions are included in Appendix I.

5.0 Recommendations

5.1 Site Overview

The findings of this analysis are based on the land use plan for the proposed Chevron Convenience Store and Service Station project. The project would consist of a 13 vehicle fueling position gas station with a 5,812 square foot convenience market.

The project will be accessed by one Right-In/Right-Out access driveways on Slover Avenue and one Right-In/Right-Out access on Cedar Avenue.

5.2 Intersection Analysis Summary & Mitigation Measures

Table 11 summarizes the results of the analysis at the study intersections for the analysis scenarios. As shown in Table 11, the study intersections are currently operating at an acceptable Level of Service (LOS D or better) for Existing Conditions and are forecast to continue to operate at an acceptable Level of Service for the future analysis scenarios evaluated as part of this report.

As also shown in Table 11, based on the agency-established thresholds of significance, the proposed project is forecast to not result in a significant traffic impact at the study intersections for any of the evaluated analysis scenarios.

Hence, no mitigation measures are required for the proposed project.

5.3 On-Site Improvements

I. Construct the project per the detailed site plan.

II. Provide one (1) Right-In/Right-Out access driveway on Slover Avenue and one Right-In/Right-Out access driveway on Cedar Avenue.

III. Sight distance at all project access points shall comply with County of San Bernardino other applicable standards.

    a. A limited use area shall be maintained where a clear line of sight can be established.

b. The limited use area shall be used for the purpose of prohibiting or clearing obstructions to maintain adequate sight distance at intersections.

c. The project shall maintain a limited use area, to be kept clear of all obstructions over 30 inches high, including signage and vegetation.

d. Sight distance at all project access points should be reviewed with respect to County of San Bernardino sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

IV. Complete any remaining half-section improvements along Slover Avenue and Cedar Avenue, adjacent to the site.

5.4 Conclusions

The study intersections are currently operating at an acceptable Level of Service (LOS D or better) for Existing Conditions

The proposed development is projected to generate approximately 2,116 trip-ends per day, with 132 trips per hour during the AM peak hour and 176 trips per hour during the PM peak hour.

After accounting for applicable adjustments such as pass-by trips, the proposed project is projected to generate approximately 1,936 trip-ends per day, with 50 trips per hour during the AM peak hour and 78 trips per hour during the PM peak hour.

The study intersections are forecast to continue to operate at an acceptable Level of Service (LOS D or better) for the future analysis scenarios evaluated as part of this report.

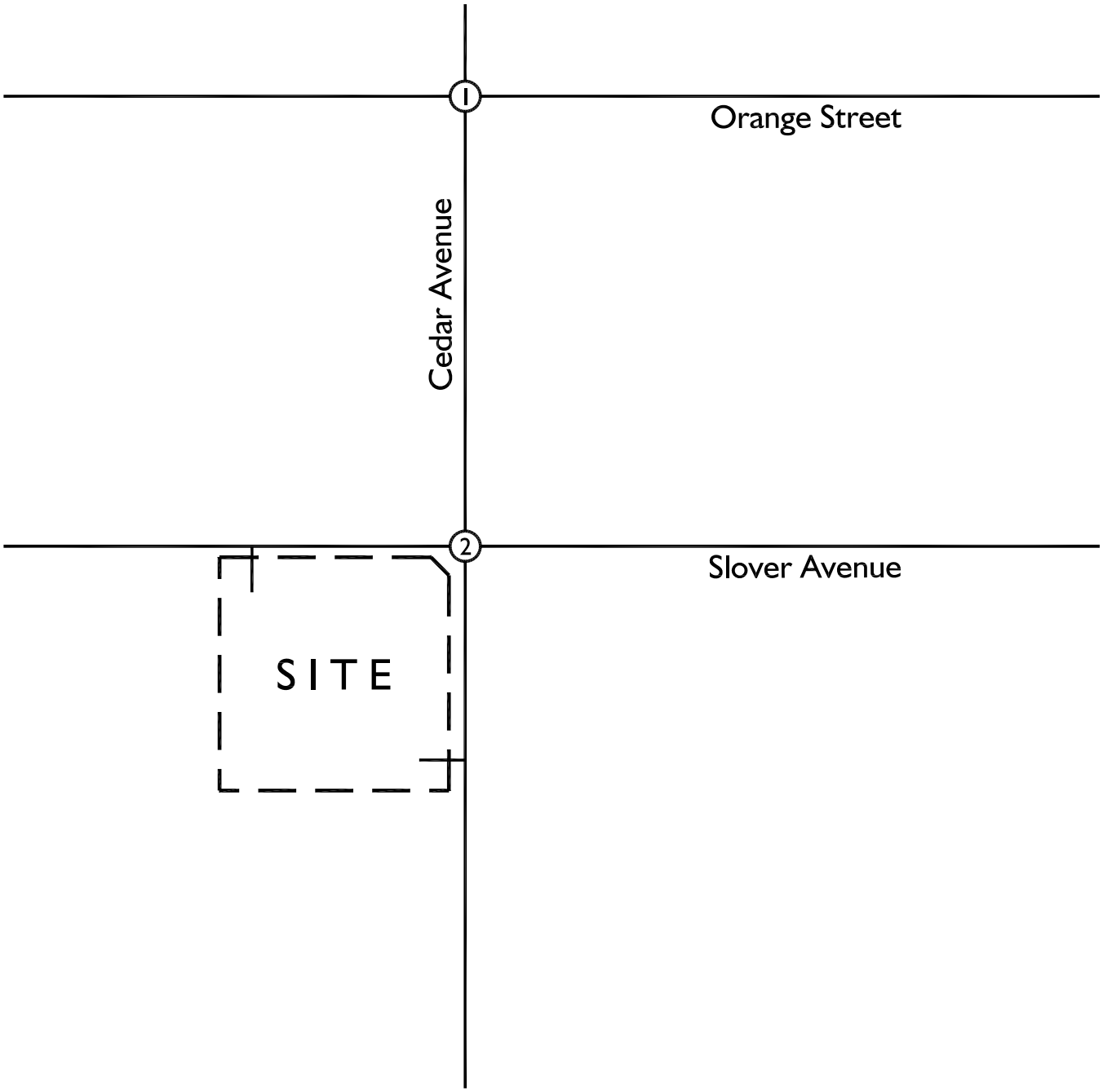
Based on the agency-established thresholds of significance, the proposed project is forecast to not result in a significant traffic impact at the study intersections for any of the evaluated analysis scenarios.

Hence, no mitigation measures are required for the proposed project.

Exhibits

Exhibit A

Location Map



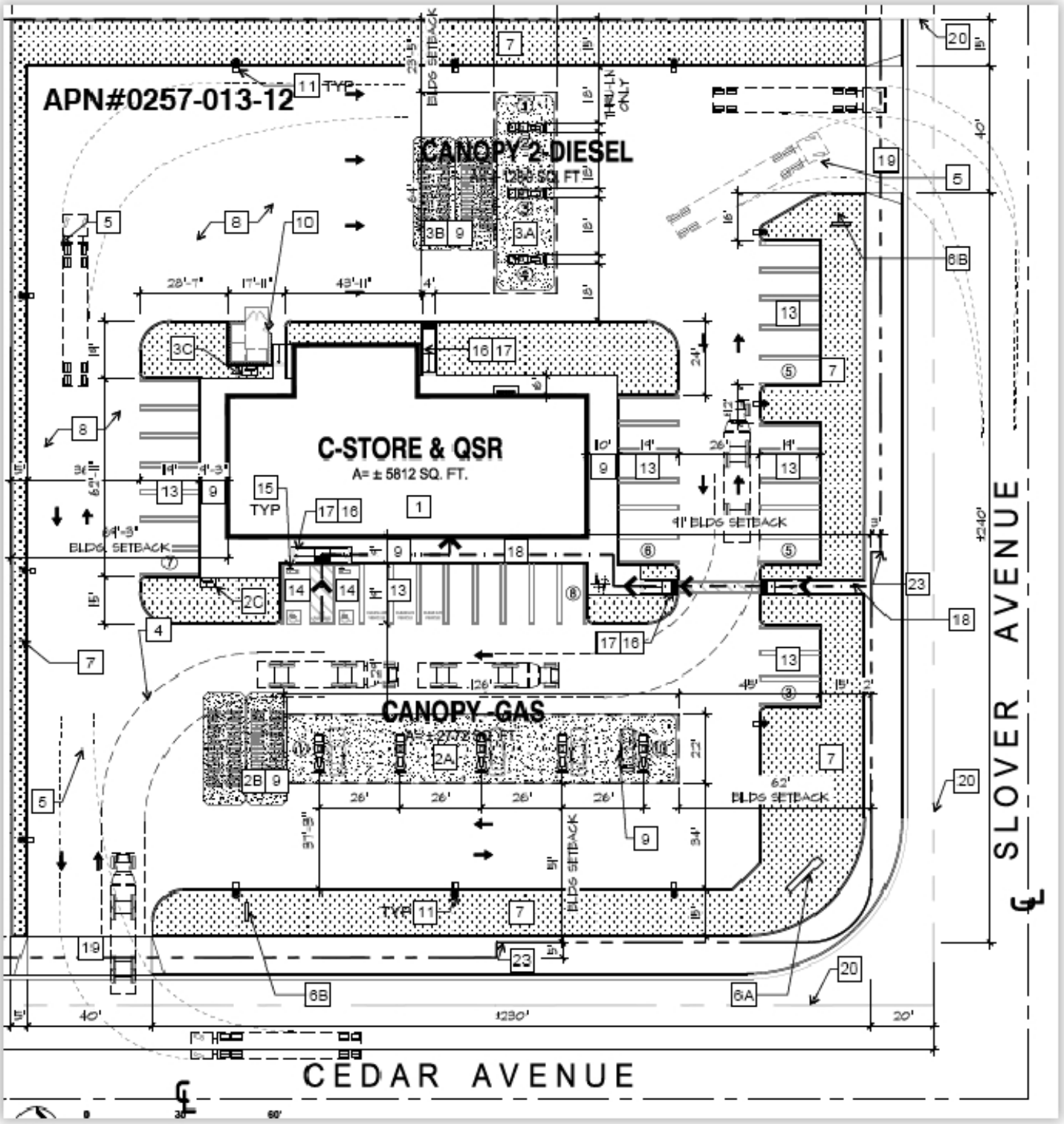
N

Legend:

(1) = Study Area Intersection

Exhibit B

Site Plan



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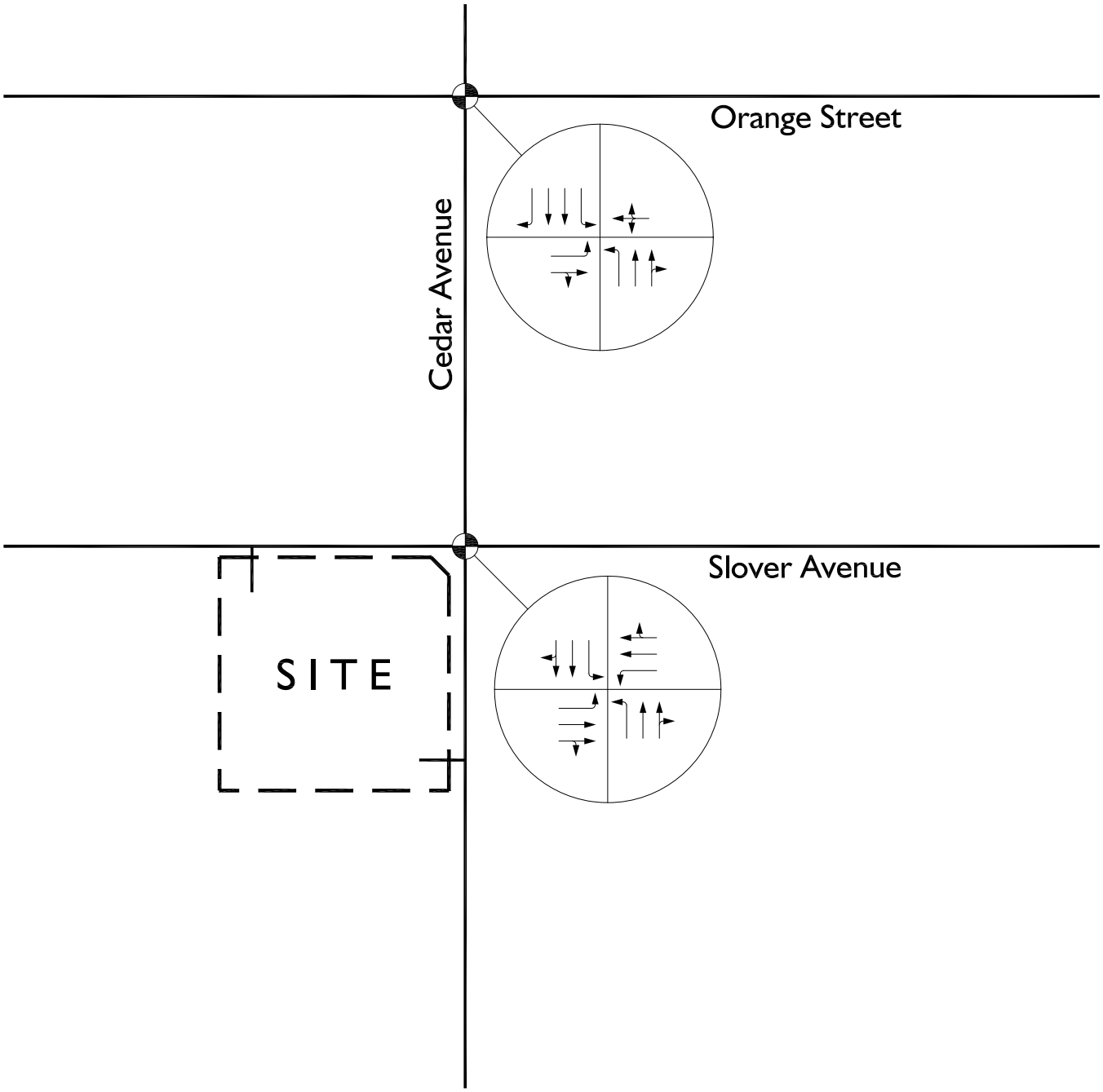
RK engineering group, inc.

Exhibit C

Existing Lane Geometry and Traffic Controls



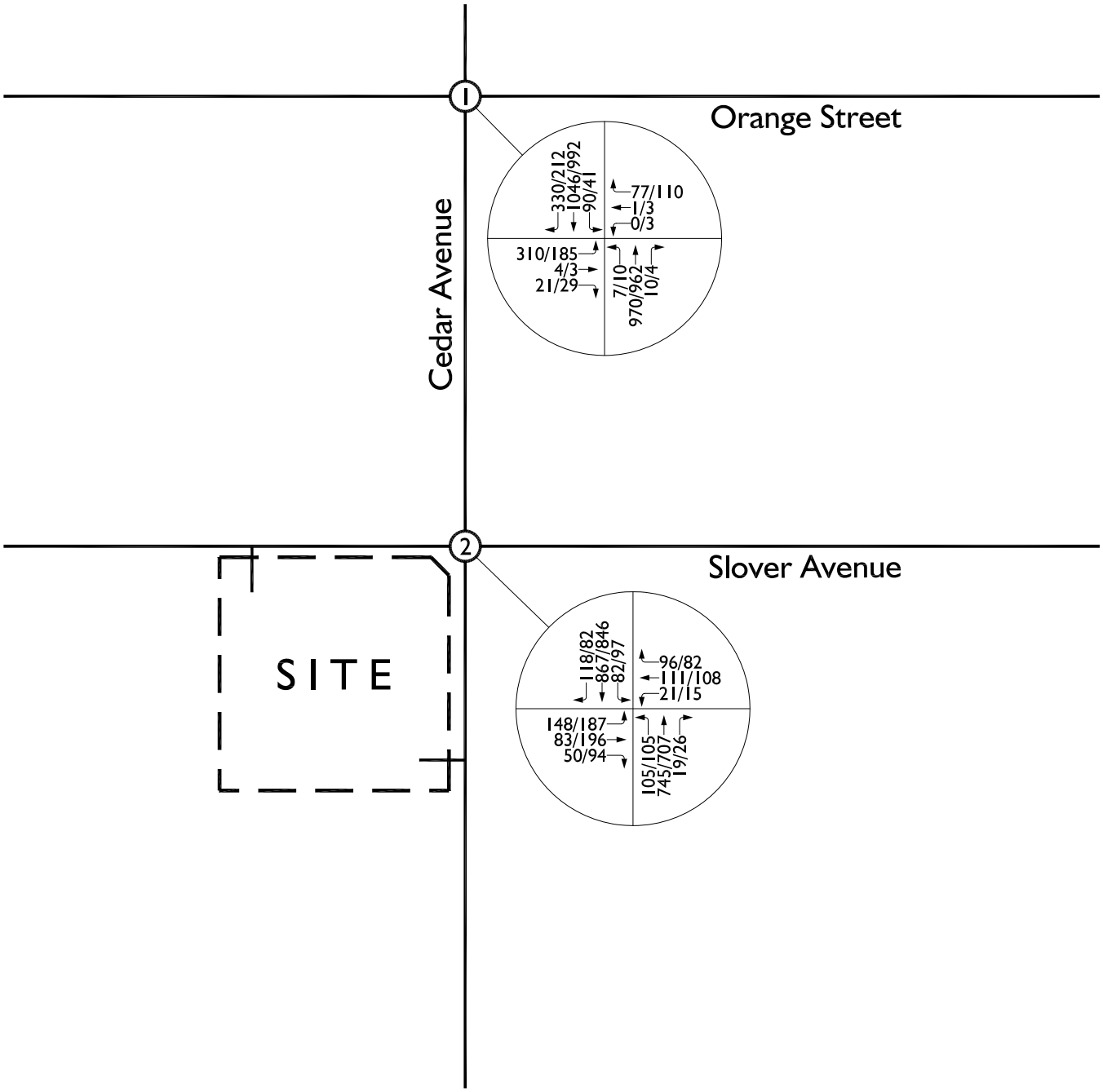
N

Legend:

= Traffic Signal

Exhibit D

Existing Traffic Volumes



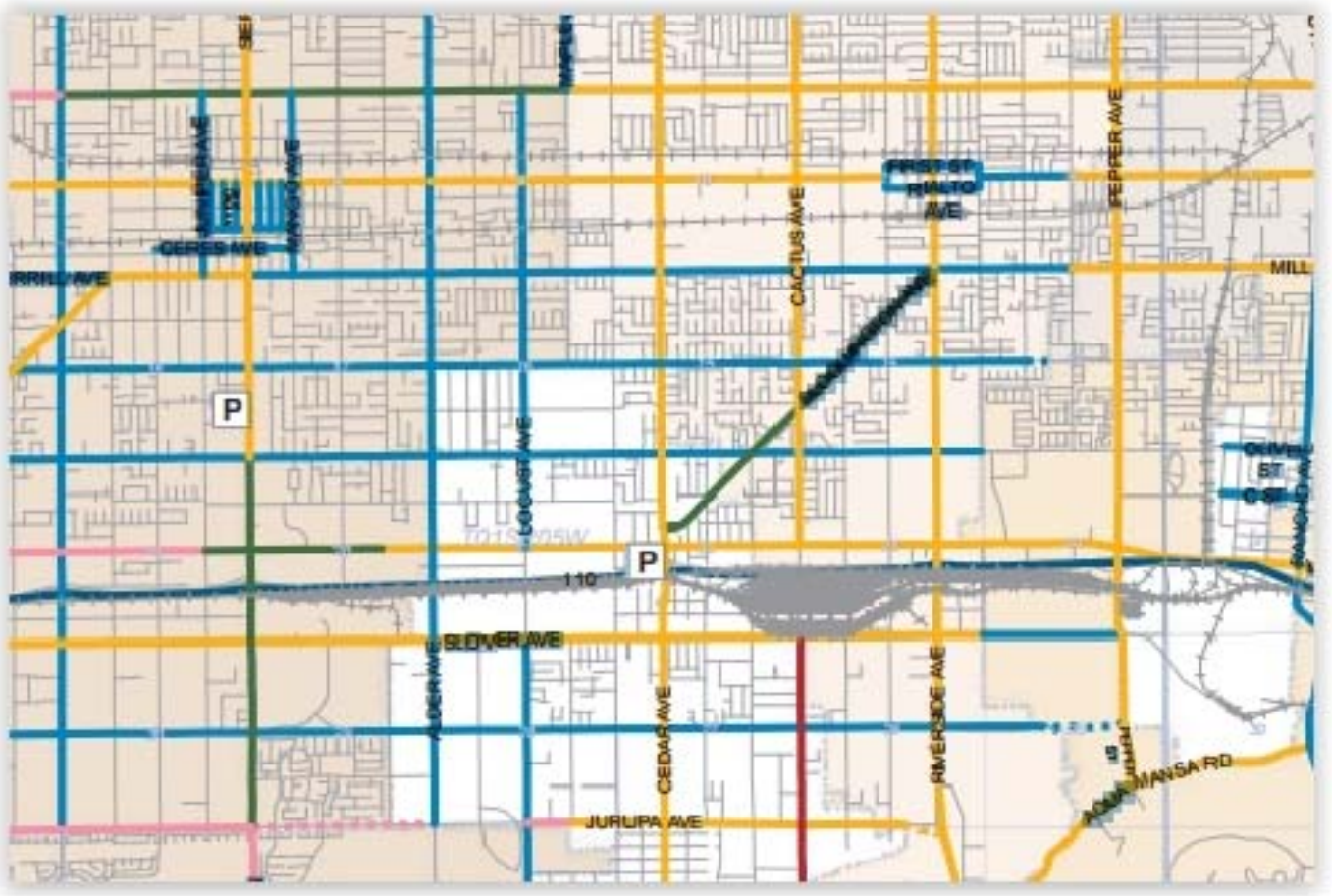
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic (1000's)

N

Exhibit E

San Bernardino County Circulation Plan (Valley-Mountain)



Legend

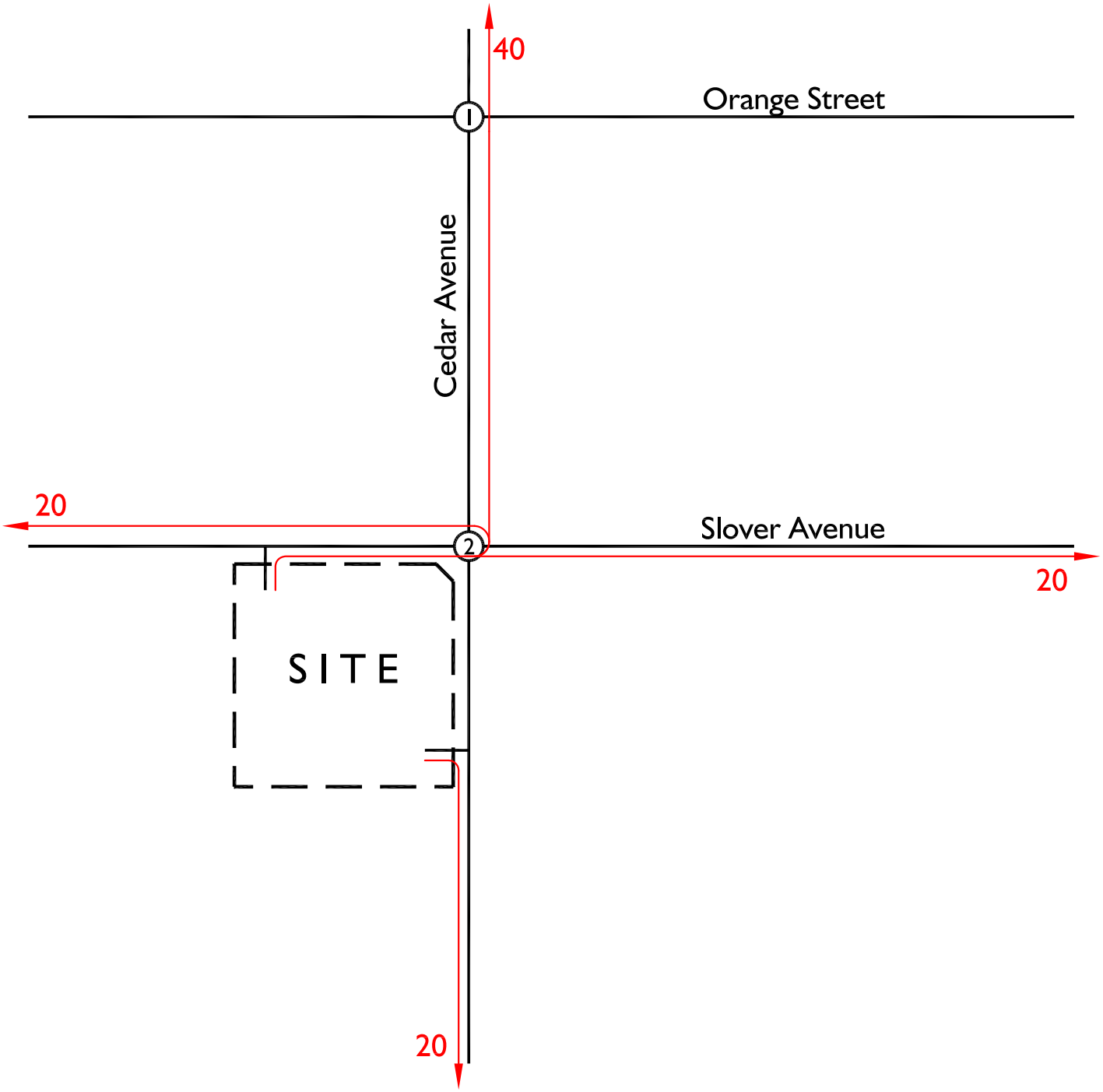
Existing	Proposed	
		Freeway
		Major Divided Highway
		Major Arterial Highway
		Major Highway
		Secondary Highway
		Controlled/Limited Access Collector
		Mountain Major Highway
		Mountain Secondary Highway
		State Highway (Special Standards or Conditions)

P Park & Ride — Railroad — Airport / Airfield

N

Exhibit F

Project Trip Distribution



Legend:

1 = Study Area Intersection

10 = Percent to/from Project

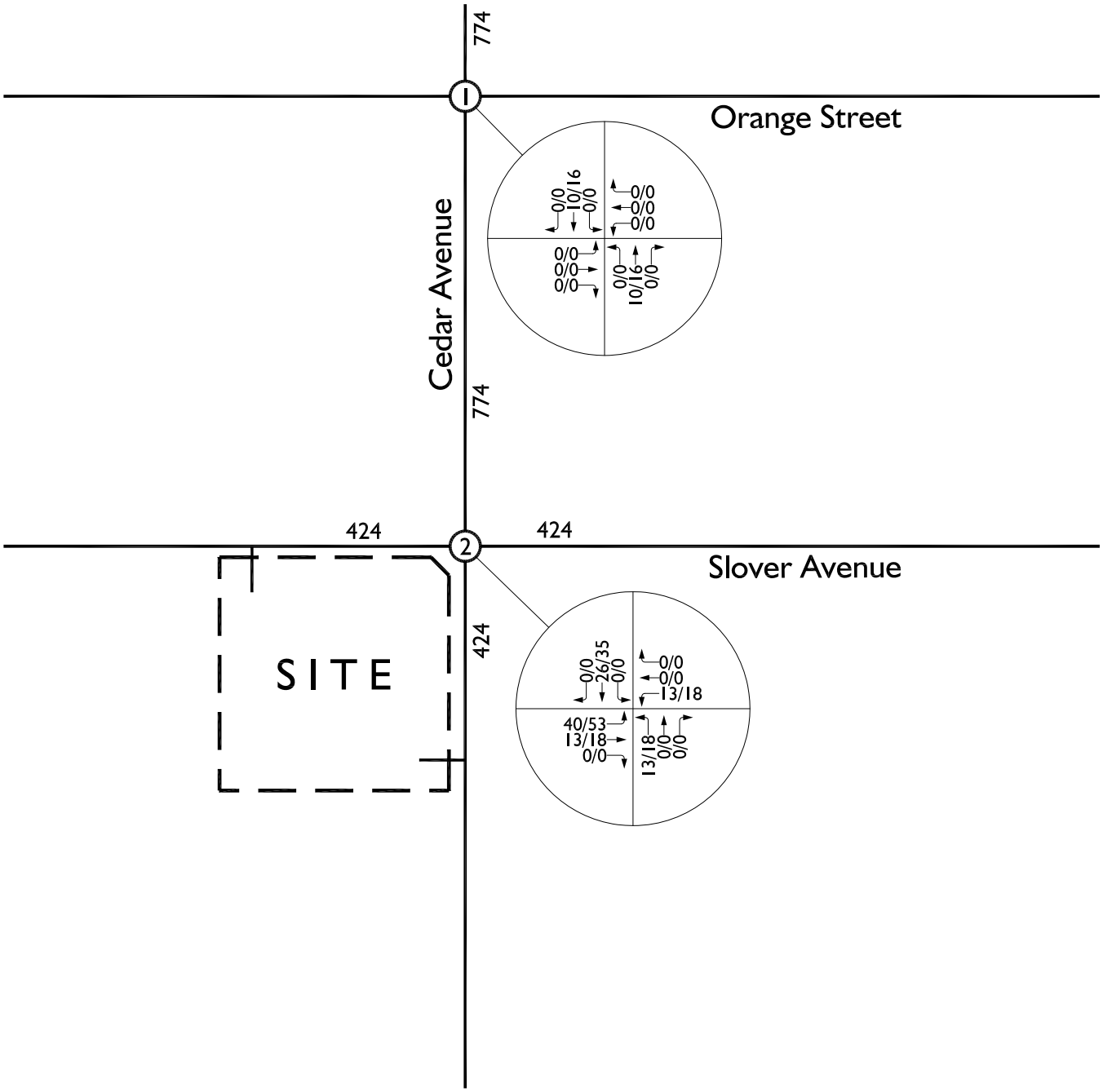
—— = Trip Distribution

N

RK engineering group, inc.

Exhibit G

Project Traffic Volumes



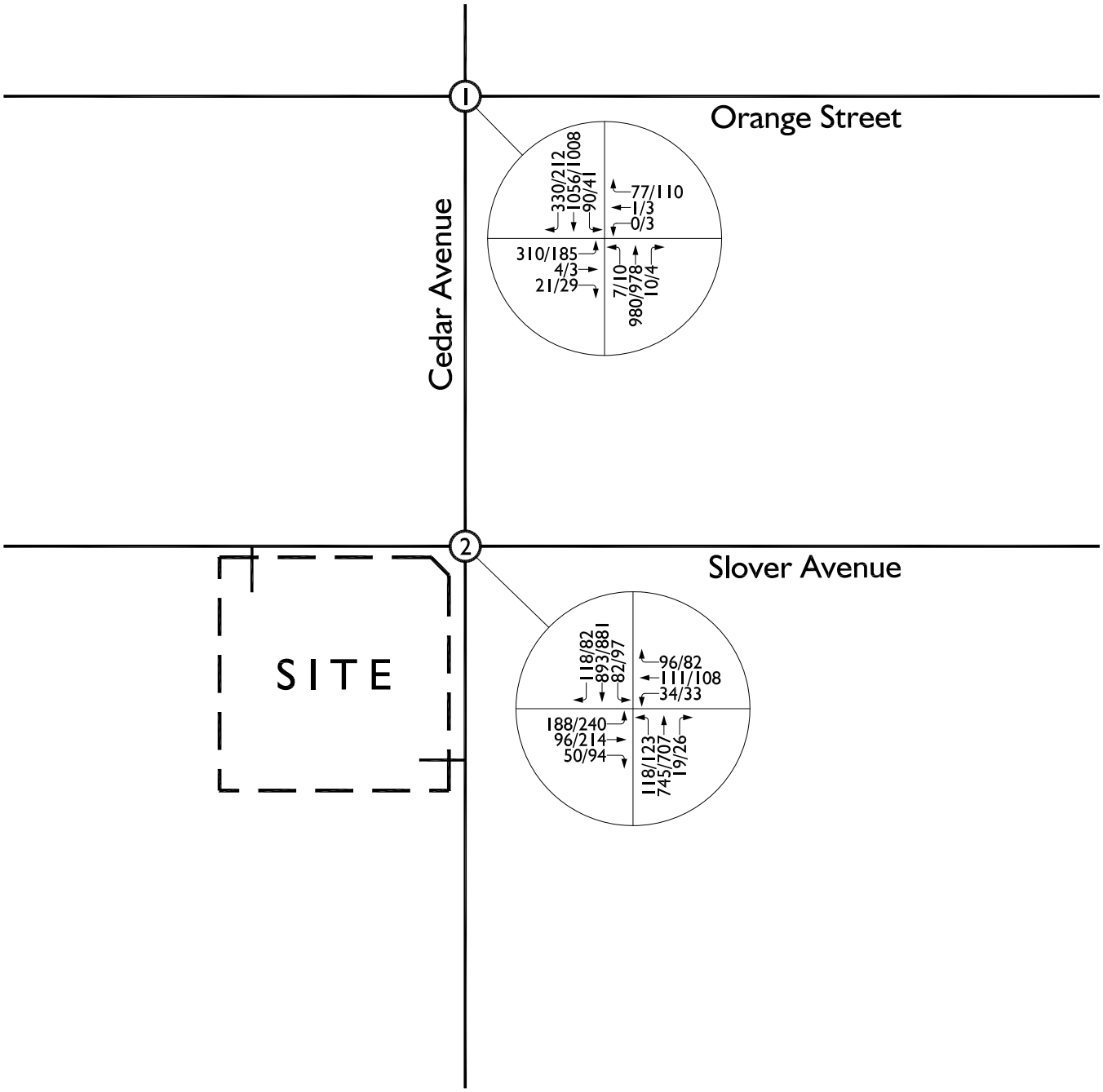
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic

N

Exhibit H

Existing Plus Project Peak Hour Traffic Volumes



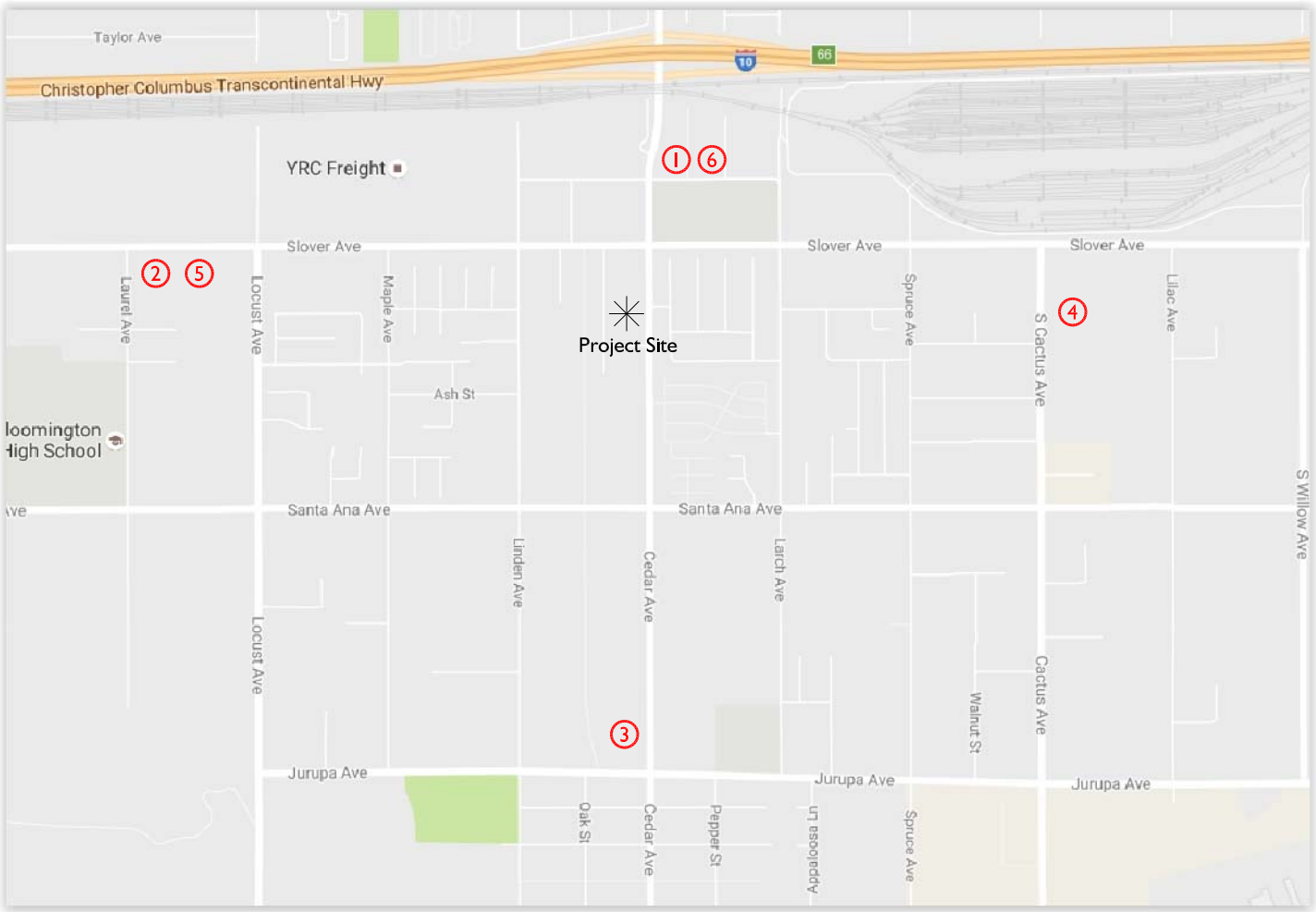
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic (1000's)

N

Exhibit I

Cumulative Projects Location Map



1 = 0253-171-17 Warehouse 385 TSF

2 = 0256-041-01-03 Warehouse 344 TSF

3 = 0257-091-11 Warehouse 676.98 TSF

4 = Go 2 Logistics Warehouse 45.35 TSF

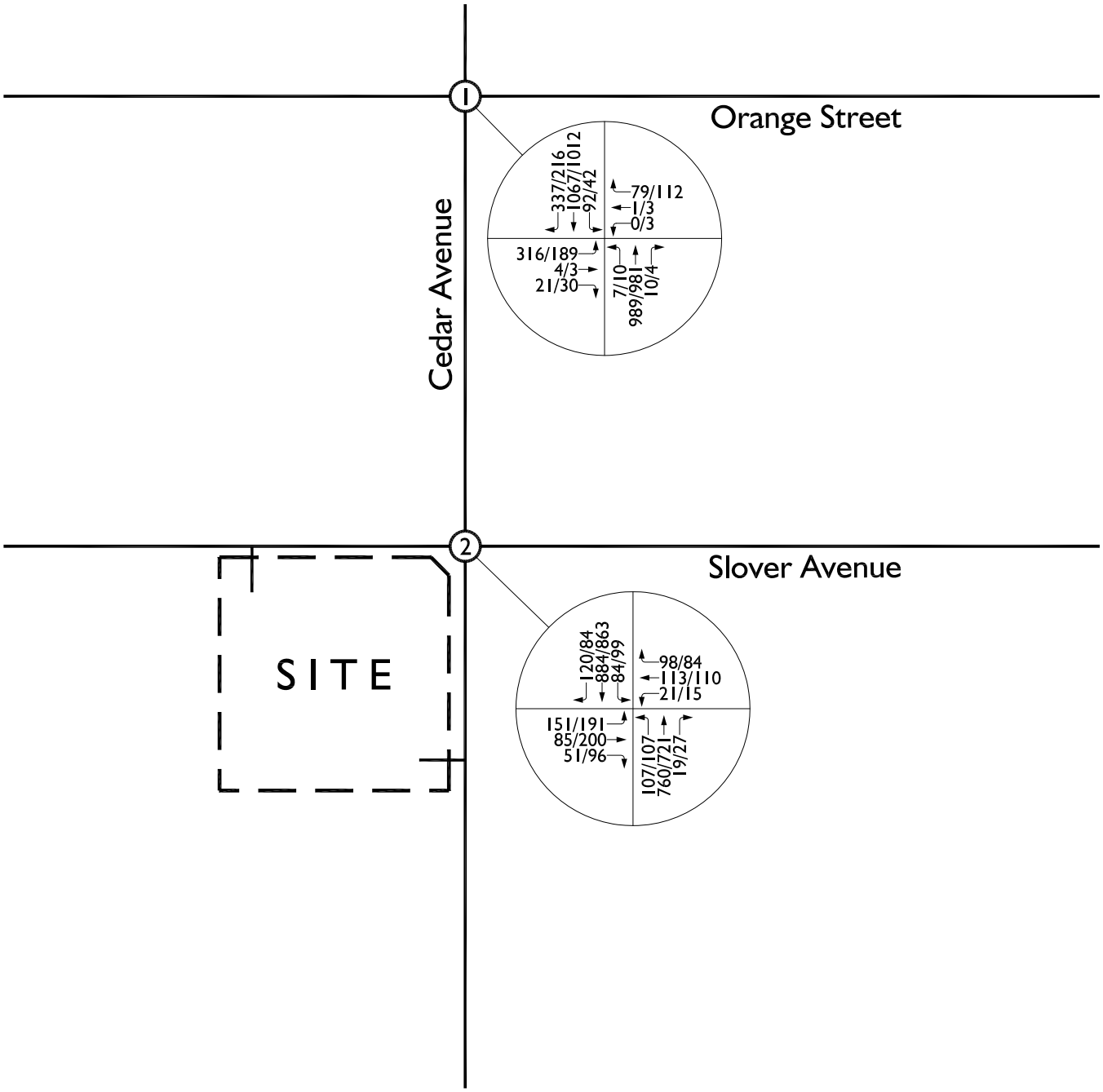
5 = Bloomington Business Center

6 = Cedar Avenue Technology Center

N

Exhibit J

Project Opening Year (2018) With Ambient Growth Traffic Volumes



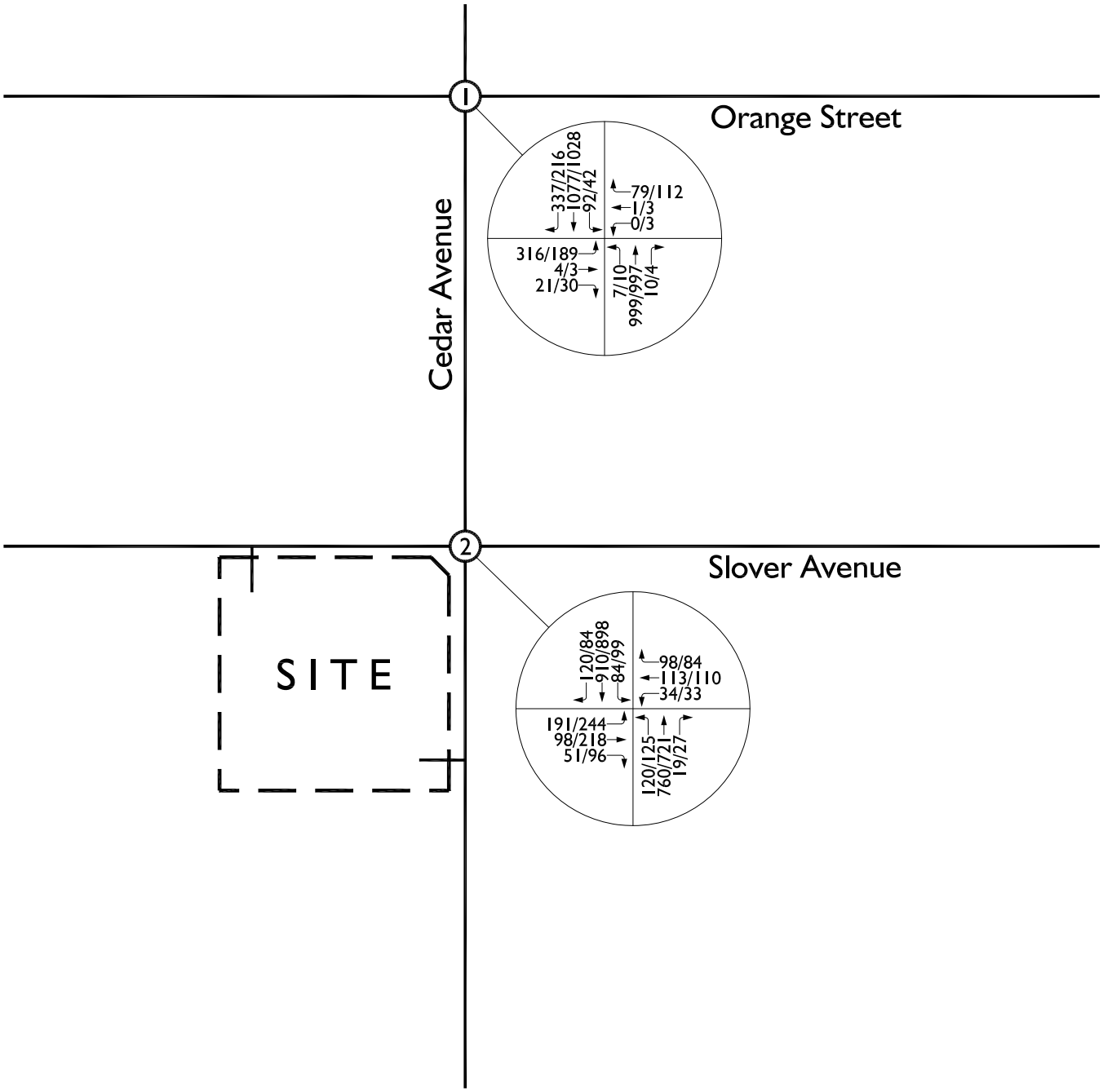
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic (1000's)

N

Exhibit K

Project Opening Year (2018) With Ambient Growth and Proposed Project Traffic Volumes



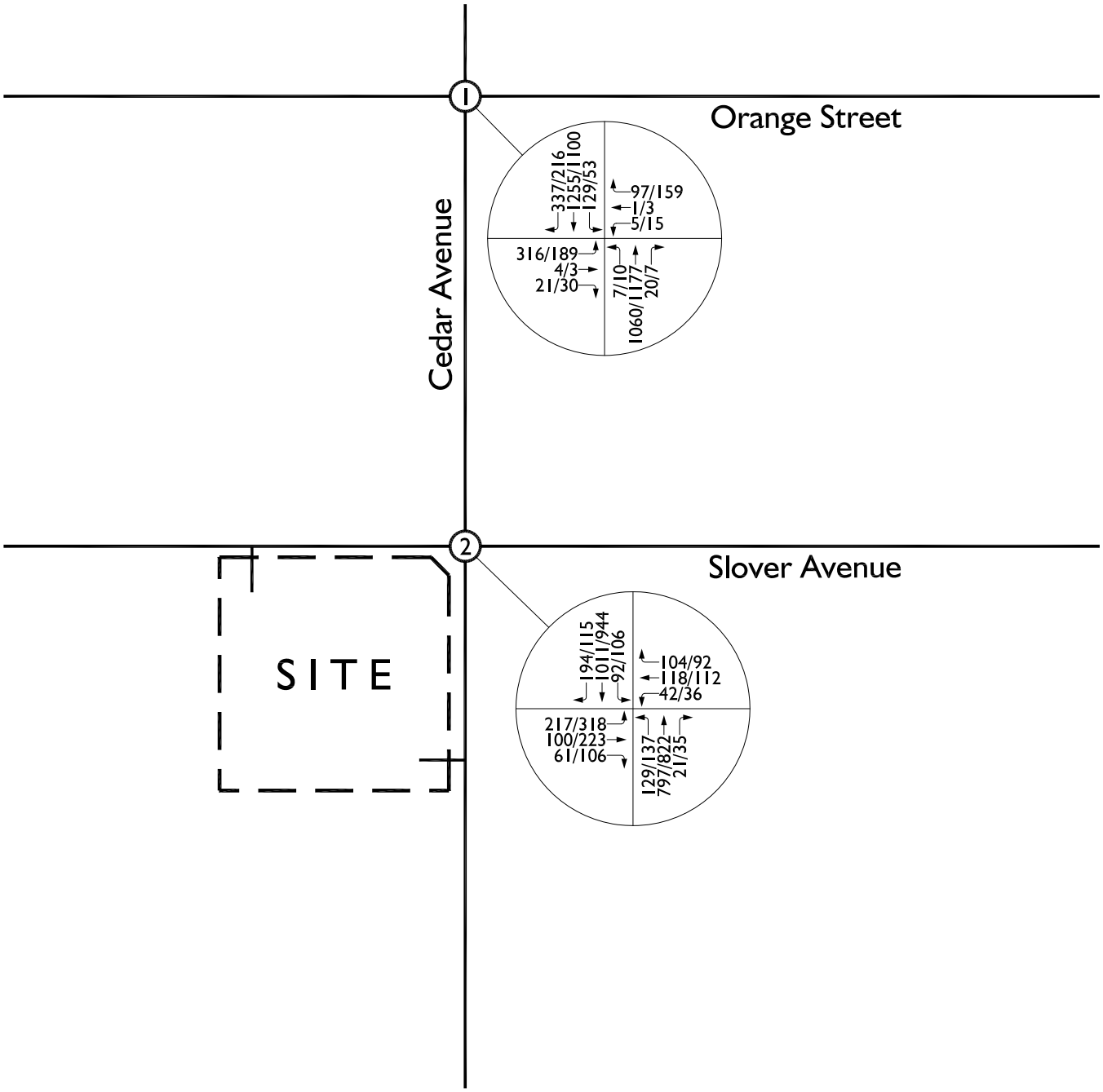
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic (1000's)

N

Exhibit L

Project Opening Year (2018) With Ambient Growth Plus Proposed Project and Cumulative Project Traffic Volumes



Legend:

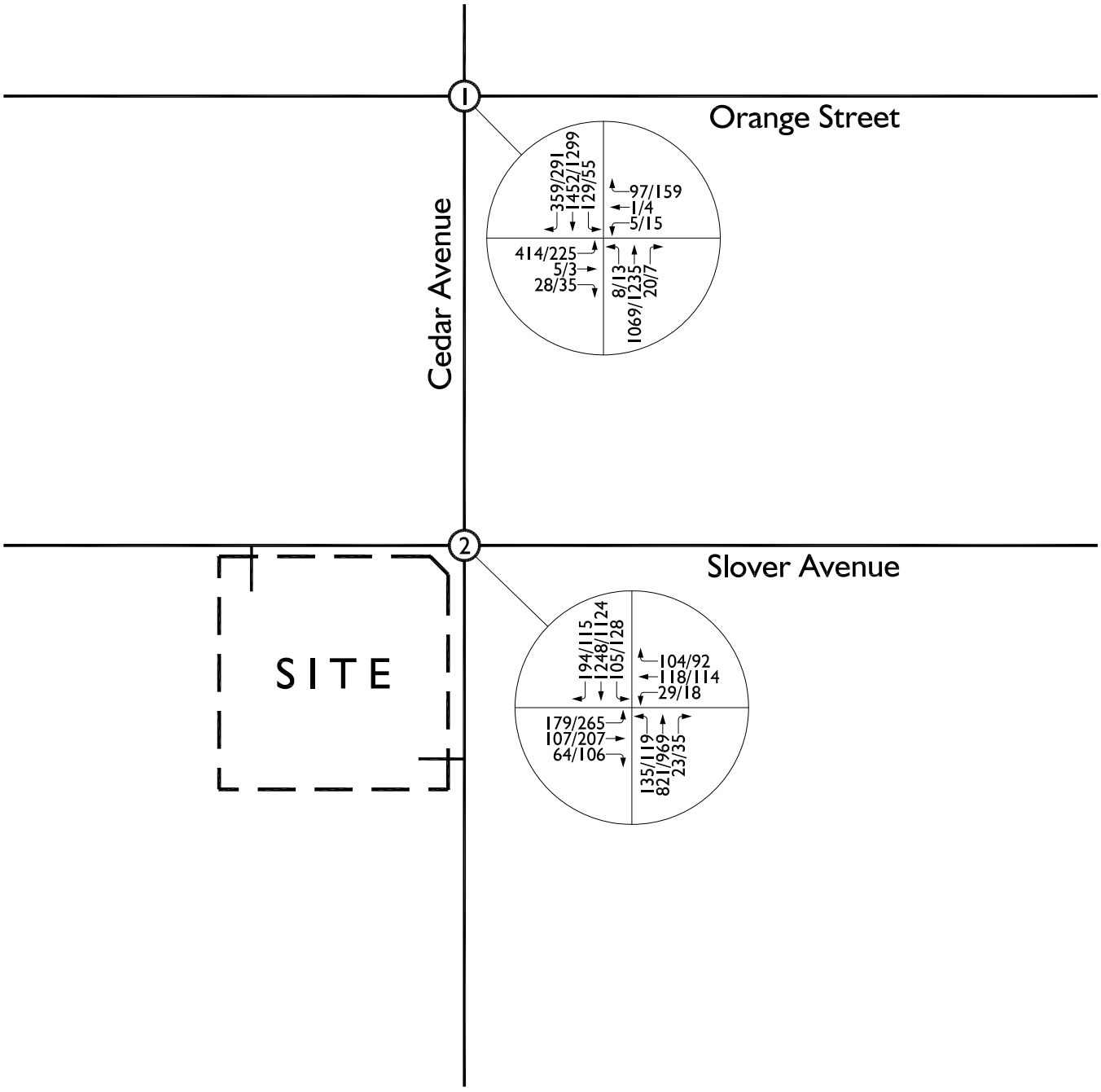
10/20 = AM/PM Peak Hour Volumes

10.0 = Average Daily Traffic (1000's)

N

Exhibit M

Year 2040 Without Project Traffic Volumes



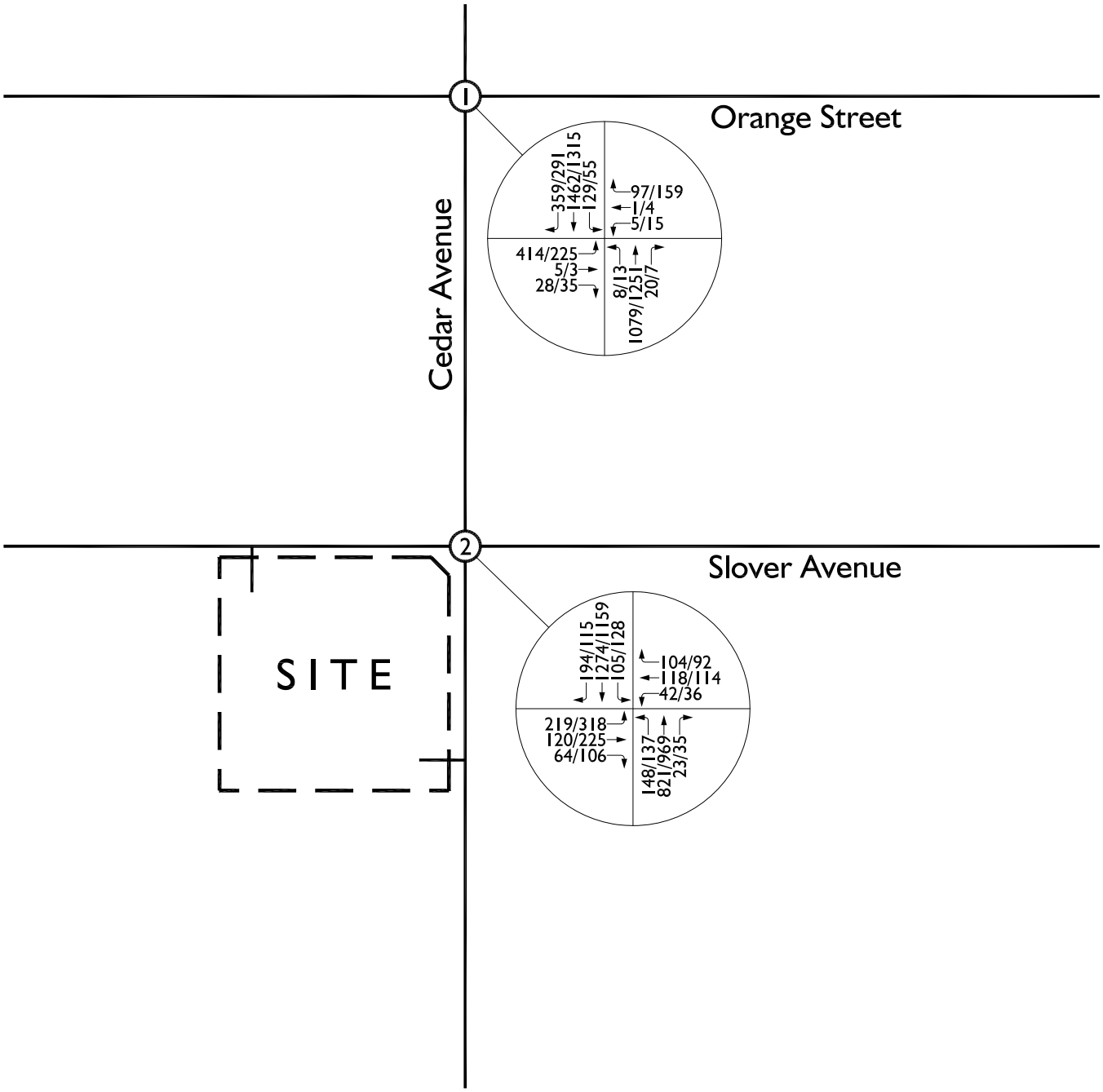
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Average Daily Traffic (1000's)

N

Exhibit N

Year 2040 With Project Traffic Volumes



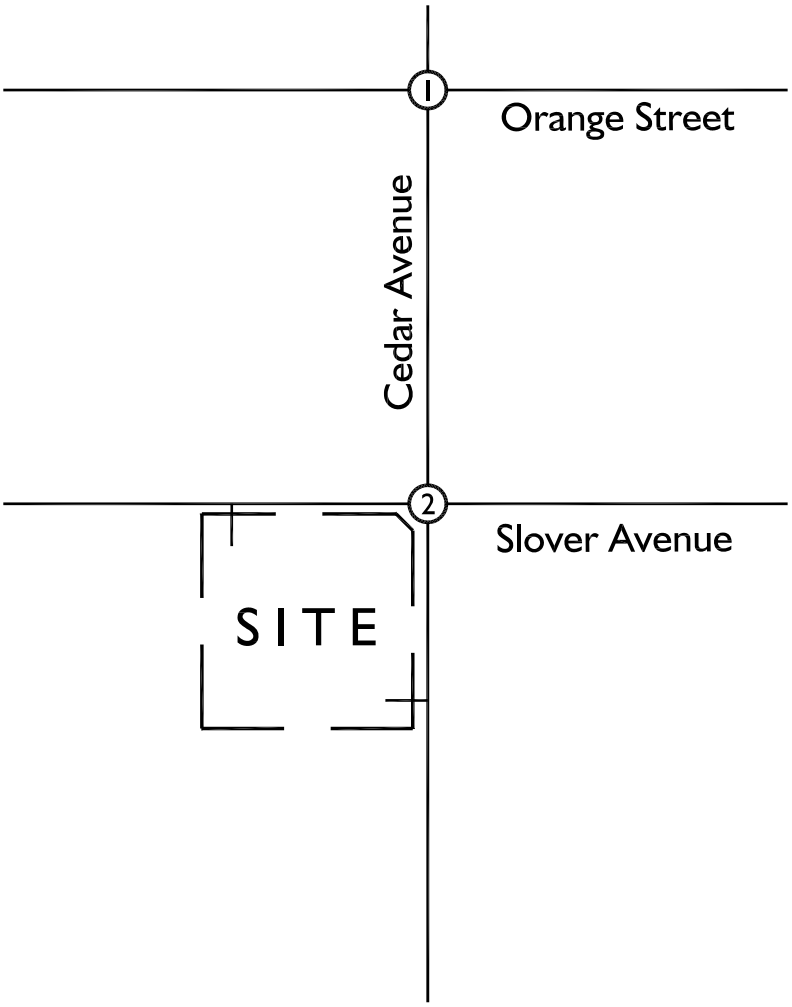
Legend:

10/20 = AM/PM Peak Hour Volumes

10.0 = Average Daily Traffic (1000's)

N

Recommendations



Legend:

(1) = Study Area Intersection

Recommendations

On-Site Improvements

I. Construct the project per the detailed site plan.

II. Provide one (1) Right-In/Right-Out access driveway on Slover Avenue and one (1) Right-In/Right-Out access driveway on Cedar Avenue.

III. Sight distance at all project access points shall comply with County of San Bernardino and Caltrans standards.

a. A limited use area shall be maintained where a clear line of site can be established.

b. The limited use area shall be used for the purpose of prohibiting or clearing obstructions to maintain adequate sight distance at intersections.

c. The project shall maintain a limited use area, to be kept clear of all obstructions over 30 inches high, including signage and vegetation.

d. Sight distance at all project access points should be reviewed with respect to County sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

IV. Complete any remaining half-section improvements along Slover Avenue and Cedar Avenue, adjacent to the site.

N

Tables

TABLE 1

Intersection Analysis For Existing Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	32.5	13.7	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	25.3	28.0	C	C

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 2

Project Trip Generation Rates[1]

Land Use	Units[2]	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Gasoline/Service Station with Convenience Market	FP	945	5.08	5.08	10.16	6.76	6.76	13.51	162.78

[1] Source: 2012 ITE Trip Generation Manual (9th Edition)

[2] FP = Fueling Positions

j:\rktables\RK11968TB.xls
JN:2617-2016-01

Table 3

Forecast Trip Generation of Proposed Project [1]

Land Use	Quantity	Units[2]	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Gasoline/Service Station with Convenience Market	13	FP	66	66	132	88	88	176	2,116
ITE Pass-By Reduction for AM/PM (62% / 56%)			-41	-41	-82	-49	-49	-98	-180
Net Trips:			25	25	50	39	39	78	1,936

[1] Source: 2012 ITE Trip Generation Manual (9th Edition)

[2] FP = Fueling Positions

TABLE 4

Intersection Analysis For Existing Plus Project Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	26.3	15.4	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	29.4	33.0	C	C

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 5

Cumulative Projects Trip Generation[1]

No.	Project	Land Use	Quantity	Units	Peak Hour AM In	AM Out	AM Total	PM In	PM Out	PM Total	Daily
1	0253-171-16	Warehouse	385	TSF	91	24	115	31	92	123	1,371
2	0256-041-01-03	Warehouse	344	TSF	82	22	104	28	83	111	1,225
3	0257-091-11	Warehouse	676.983	TSF	160	43	203	54	162	216	2,410
4	Go 2 Logistics	Warehouse	45.345	TSF	11	3	14	4	11	15	161
5	Bloomington Business Center	Warehouse	344	TSF	107	30	137	35	108	143	1,604
6	Cedar Ave Technology Center	Warehouse	184.77	TSF	49	25	74	15	62	77	863
		Total Cumulative Project Trip Generation			**500**	**147**	**647**	**167**	**518**	**685**	***7,634***

[1] Cumulative Projects were provided by the City of Rialto, City of Fontana, and the County of San Bernardino to the best of RK Engineering's knowledge.

TABLE 6

Intersection Analysis For Project Opening Year (2018) With Ambient Traffic Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	27.1	15.7	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	26.9	28.6	C	C

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 7

Intersection Analysis For Project Opening Year (2018) With Ambient and Proposed Project Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	27.3	15.7	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	30.7	33.7	C	C

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 8

Intersection Analysis For Project Opening Year (2018) With Ambient, Proposed Project, and Cumulative Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	27.8	19.8	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	37.2	43.2	D	D

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 9

Intersection Analysis For Long-Range (2040) Without Project Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	33.5	20.0	C	B
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	34.2	36.2	C	D

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 10

Intersection Analysis For Long-Range (2040) With Project Conditions

Intersection	Traffic Control[3]	Intersection Approach Lane(s)[1]												Delay[2]		Level of Service	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	TS	1	1.5	0.5	1	2	1	1	0.5	0.5	-	1!	-	33.8	20.2	C	C
2. Cedar Avenue (NS) / Slover Avenue (EW)	TS	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	1	1.5	0.5	39.9	44.0	D	D

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes. Where "1" is indicated for the through movement and "0"s are indicated for R/L movements, the R and/or L turns are shared with the through movement.

L = Left; T = Through; R = Right; 1! = Left/Thru/Right; > = Right Turn Overlap; >> = Free Right Turn; Bold = Deficiency; Bold & Underline = Improvements; * = Defacto Right Turn

[2] Analysis Software: Synchro Version 8.0. Highway Capacity Manual (HCM)

[3] TS = Traffic Signal

TABLE 11

Summary of Intersection Analysis

Intersection	Existing Conditions				Existing Plus Project Conditions				Change in Delay		Significant Impact	
	Delay[1] (Seconds)		Level of Service		Delay[1] (Seconds)		Level of Service					
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	32.5	13.7	C	B	26.3	15.4	C	B	-6.2	1.7	NO	NO
2. Cedar Avenue (NS) / Slover Avenue (EW)	25.3	28.0	C	C	29.4	33.0	C	C	4.1	5.0	NO	NO

Intersection	Project Opening Year (2018) With Ambient Traffic Conditions				Project Opening Year (2018) With Ambient and Proposed Project Conditions								Project Opening Year (2018) With Ambient, Proposed Project, and Cumulative Conditions							
	Delay[1] (Seconds)		Level of Service		Delay[1] (Seconds)		Level of Service		Change in Delay[2]		Significant Impact		Delay[1] (Seconds)		Level of Service		Change in Delay[3]		Significant Impact	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	27.1	15.7	C	B	27.3	15.7	C	B	0.2	0.0	NO	NO	27.8	19.8	C	B	0.7	4.1	NO	NO
2. Cedar Avenue (NS) / Slover Avenue (EW)	26.9	28.6	C	C	30.7	33.7	C	C	3.8	5.1	NO	NO	37.2	43.2	D	D	10.3	14.6	NO	NO

Intersection	Long-Range (2040) Without Project Conditions				Long-Range (2040) With Project Conditions							
	Delay[1] (Seconds)		Level of Service		Delay[1] (Seconds)		Level of Service		Change in Delay[2]		Significant Impact	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Cedar Avenue (NS) / Orange Street (EW)	33.5	20.0	C	B	33.8	20.2	C	C	0.3	0.2	NO	NO
2. Cedar Avenue (NS) / Slover Avenue (EW)	34.2	36.2	C	D	39.9	44.0	D	D	5.7	7.8	NO	NO

[1] Analysis Software: Synchro Version 8.0.

[2] Change in Delay is between Project Opening Year (2018) With Ambient Traffic Conditions and Project Opening Year (2018) With Ambient and Proposed Project Conditions

[3] Change in Delay is between Project Opening Year (2018) With Ambient Traffic Conditions and Project Opening Year (2018) With Ambient, Proposed Project, and Cumulative Conditions

Appendices

Appendix A

Memorandum of Understanding (MOU)

SCOPE FOR TRAFFIC STUDY

Project Name:	Proposed Chevron Convenience Store and Service Station Traffic Impact Study

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	Southwest Corner of Cedar Avenue and Slover Avenue		
Project Description:	Proposal for gasoline station with sixteen (16) vehicle fueling positions and 4,050 square feet of convenience store.		
City:	County of San Bernardino (Bloomington)		
Project Buildout Year:	2018	**Ambient Growth Rate per Year:**	2%
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Cedar Avenue		
Xtn E/W Street Name:	Slover Avenue		
Thomas Guide Pg+Grid:	605+E7	**County Supervisorial District:**	5

	Engineer	**Developer**
Company:	RK Engineering Group, Inc.	Western States Engineering & Construction, Inc.
Name:	Jethro Jay Narciso, E.I.T.	Henry Ling
Address:	4000 Westerly Place, Suite 280	4887 East La Palma Ave., #707
City, State, Zip Code:	Newport Beach, CA, 92660	Anaheim, CA, 92807
Phone #:	949-474-0809	
Fax #:	949-474-0902	
Email:	jn@rkengineer.com	

By:

Print Name: Jethro Narciso, EIT

Consultant/Developer's Representative **Date**

Reviewed By: Jeremy Johnson

Print Name:

Traffic Divsion Representative **Date** 9-23-16

SCOPE FOR TRAFFIC STUDY

Project Name:	Proposed Chevron Convenience Store and Service Station Traffic Impact Study

1. Traffic Distribution: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	Yes/no	
Existing Active Land Use	Yes/no	
Previous Land Use	Yes/no	
Internal Trip Reduction	Yes/no	
Pass-by Trip Reduction	Yes	SEE ATTACHED TABLES

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

N/A

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at:
http://www.sanbag.ca.gov/planning/subr_congestion.html

SCOPE FOR TRAFFIC STUDY

Project Name:	Proposed Chevron Convenience Store and Service Station Traffic Impact Study

5. Trip Generation

Trip Generation Rate(s) Source: ITE Trip Generation	I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:	Edition:	9th

Land Use Code	Land Use	Rate Based on	Qty	*AVTE vs	ADT	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
945	Gasoline/Service Station with Convenience Market	FP	16	-	2,604	81	81	108	108	-	-

* - Average Vehicle Trip Ends.

SCOPE FOR TRAFFIC STUDY

Project Name:	Proposed Chevron Convenience Store and Service Station Traffic Impact Study

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page+Grid	N↕ S/E↔W Street Name	City	Signalized	CMP
1	100%	605+E7	Cedar Avenue / Slover Avenue	SAN BERNARDINO CO.	Yes	No
2	100%	605+E7	Cedar Avenue / Orange Street	SAN BERNARDINO CO.	Yes	No
3					Yes/no	Yes/no
4					Yes/no	Yes/no
5					Yes/no	Yes/no
6					Yes/no	Yes/no
7					Yes/no	Yes/no
8					Yes/no	Yes/no
9					Yes/no	Yes/no
10					Yes/no	Yes/no

Cites to be consulted: Fontana (within 2 miles of project site), Rialto (within 1 mile)

SCOPE FOR TRAFFIC STUDY

Project Name:	

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3400 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

Project Name:	

9. Contact Information:

Please submit a signed copy of this MOU for approval by the Traffic Division. The MOU may be submitted in person, by fax, by email or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: epetre@dpw.sbcounty.gov (Ed Petre)

Table 1
ITE Trip Generation Rates

Land Use	Units	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Gasoline/Service Station with Convenience Market	FP	945	5.08	5.08	10.16	6.76	6.76	13.51	162.78

Source: *2012 ITE Trip Generation Manual (9th Edition)*

FP = fueling positions

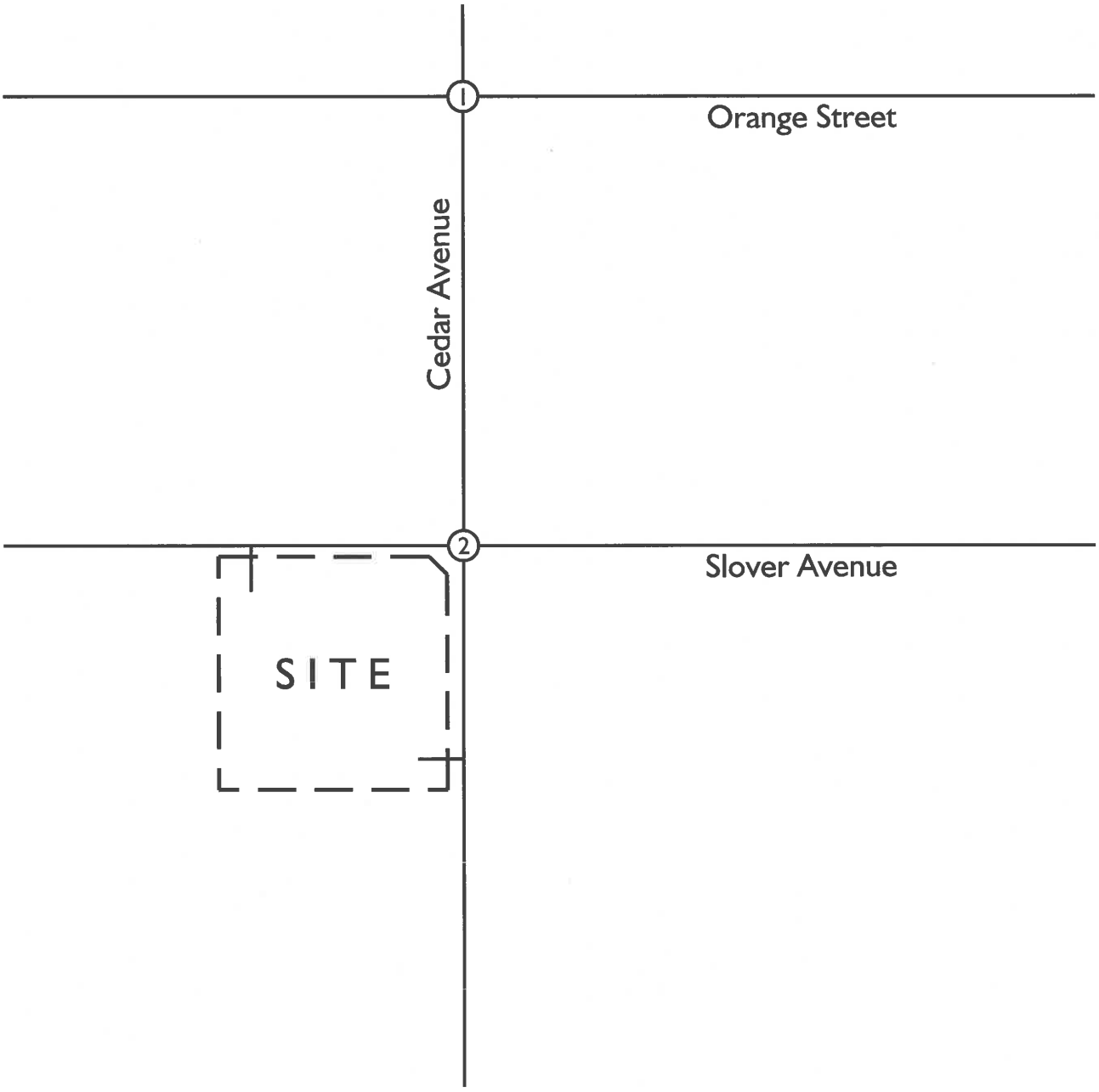
Table 2
Forecast Trip Generation of Proposed Project

Land Use	Quantity	Units	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Gasoline/Service Station with Convenience Market	16	FP	81	81	162	108	108	216	2,604
ITE Pass-By Reduction for AM/PM/Daily (62% / 56%)			-50	-50	-100	-60	-60	-120	-220
Net Trips			31	31	62	48	48	96	2,384

Source: *2012 ITE Trip Generation Manual (9th Edition)*

FP = fueling positions

Exhibit A
Location Map

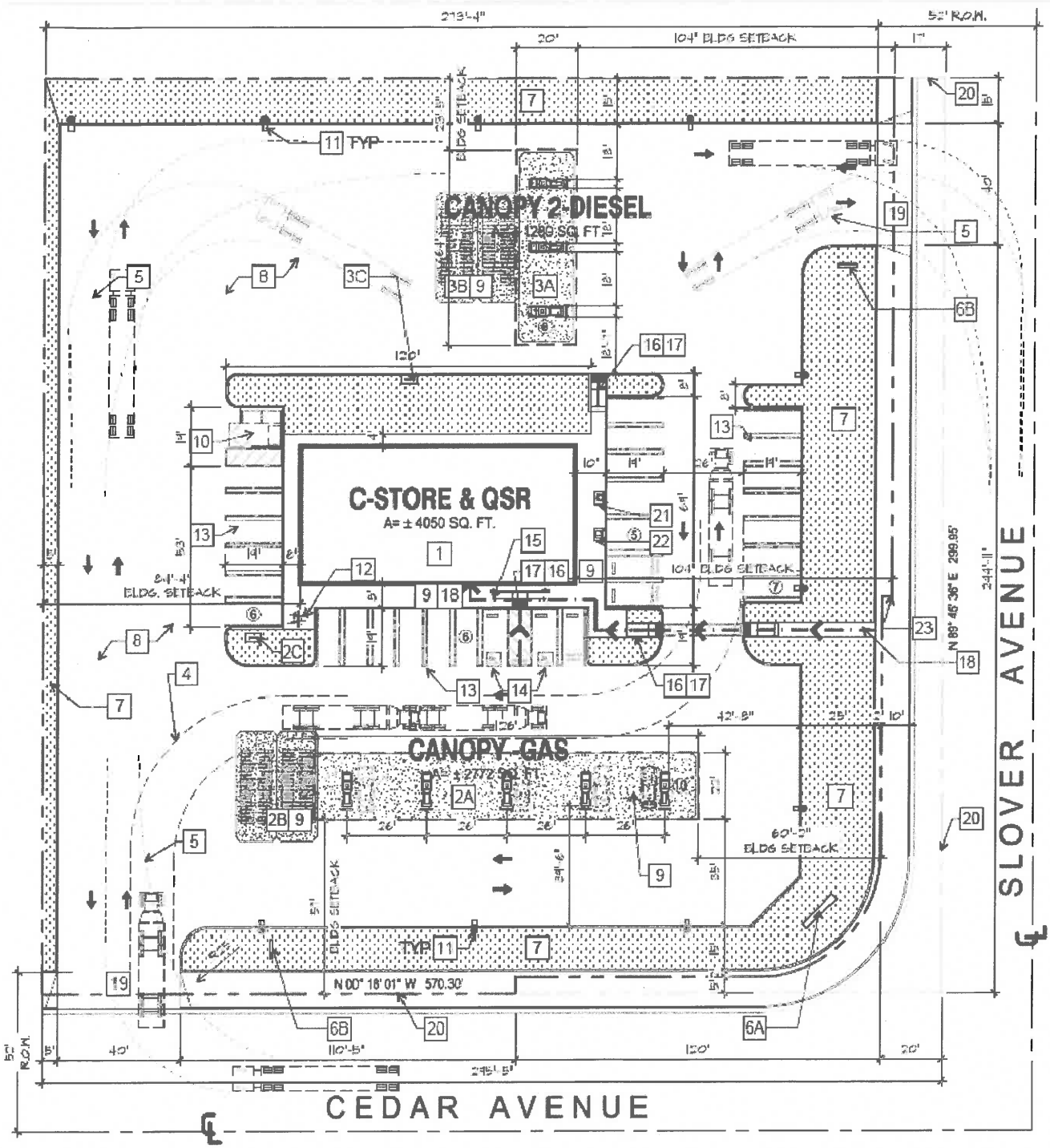


N

Legend:

(1) = Study Area Intersection

Exhibit B
Site Plan

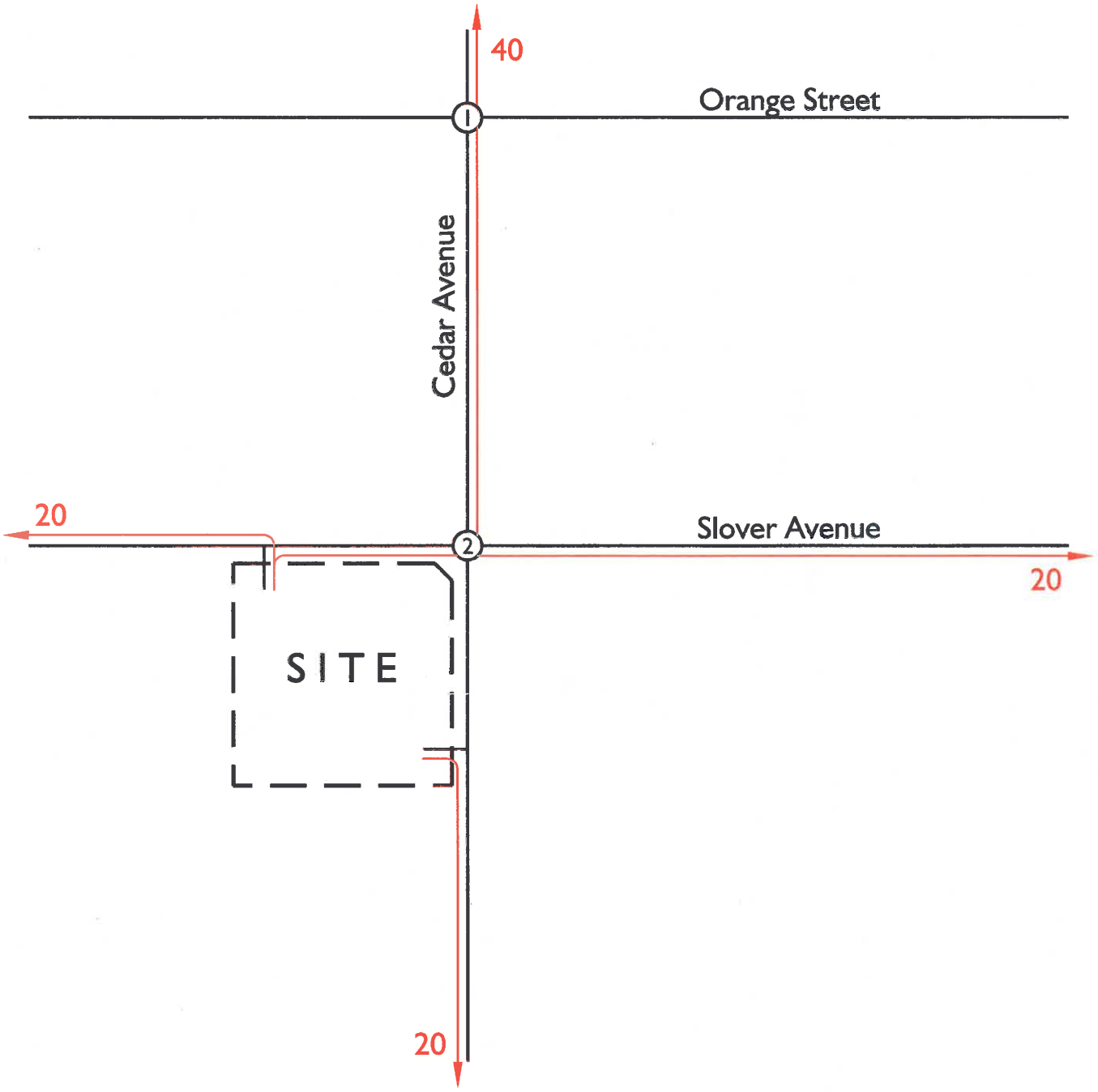


N

RK engineering group, inc.

Exhibit C

Project Trip Distribution



Legend:

(1) = Study Area Intersection
10 = Percent to/from Project
—— = Trip Distribution

N

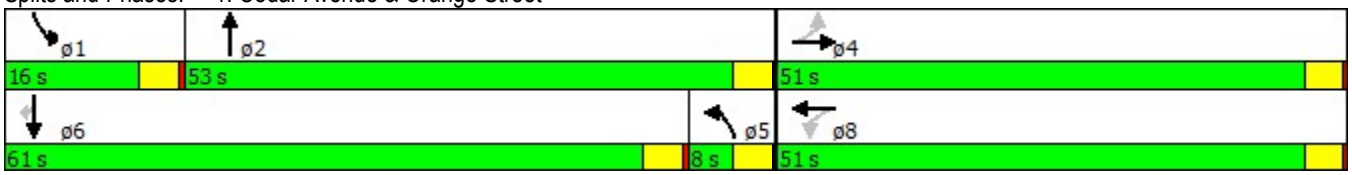
Appendix B

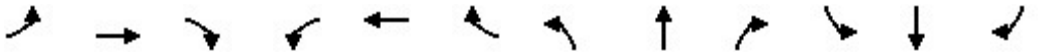
Existing Conditions
Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	310	4	1	7	970	90	1046	330
Turn Type	Perm	NA	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	8	5	2	1	6	
Permitted Phases	4							6
Detector Phase	4	4	8	5	2	1	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	8.0	53.0	16.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	6.7%	44.2%	13.3%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	34.9	34.9	34.9	4.0	49.6	10.6	62.7	62.7
Actuated g/C Ratio	0.33	0.33	0.33	0.04	0.46	0.10	0.59	0.59
v/c Ratio	0.89	0.05	0.15	0.14	0.69	0.63	0.58	0.35
Control Delay	59.3	10.3	5.9	60.1	27.5	67.3	17.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	5.9	60.1	27.5	67.3	17.6	2.7
LOS	E	B	A	E	C	E	B	A
Approach Delay		55.6	5.9		27.8		17.3	
Approach LOS		E	A		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	310	4	21	0	1	77	7	970	10	90	1046	330
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	337	4	23	0	1	84	8	1054	11	98	1137	359
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	433	80	459	0	6	521	1	1565	16	120	1796	803
Arrive On Green	0.35	0.35	0.35	0.00	0.35	0.35	0.00	0.46	0.46	0.08	0.54	0.54
Sat Flow, veh/h	1170	227	1307	0	18	1485	1587	3399	35	1587	3353	1500
Grp Volume(v), veh/h	337	0	27	0	0	85	8	520	545	98	1137	359
Grp Sat Flow(s),veh/h/ln	1170	0	1534	0	0	1503	1587	1676	1758	1587	1676	1500
Q Serve(g_s), s	29.6	0.0	1.2	0.0	0.0	4.1	0.1	25.8	25.8	6.5	25.4	15.6
Cycle Q Clear(g_c), s	33.8	0.0	1.2	0.0	0.0	4.1	0.1	25.8	25.8	6.5	25.4	15.6
Prop In Lane	1.00		0.85	0.00		0.99	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	433	0	539	0	0	527	1	772	810	120	1796	803
V/C Ratio(X)	0.78	0.00	0.05	0.00	0.00	0.16	5.36	0.67	0.67	0.81	0.63	0.45
Avail Cap(c_a), veh/h	539	0	677	0	0	664	60	772	810	179	1796	803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	0.0	22.8	0.0	0.0	23.8	53.2	22.5	22.5	48.4	17.4	15.1
Incr Delay (d2), s/veh	5.7	0.0	0.0	0.0	0.0	0.1	2244.0	4.7	4.4	16.1	1.7	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	440.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	0.5	0.0	0.0	1.7	1.0	12.8	13.4	3.4	12.1	6.8
LnGrp Delay(d),s/veh	41.1	0.0	22.9	0.0	0.0	23.9	2737.5	27.1	26.9	64.5	19.1	16.9
LnGrp LOS	D		C			C	F	C	C	E	B	B
Approach Vol, veh/h		364			85			1073			1594	
Approach Delay, s/veh		39.7			23.9			47.2			21.4	
Approach LOS		D			C			D			C	

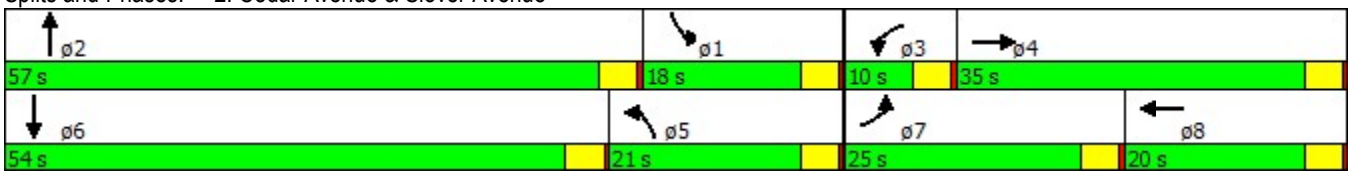
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	53.0		41.4	4.1	61.0		41.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	49.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	8.5	27.8		35.8	2.1	27.4		6.1
Green Ext Time (p_c), s	0.1	7.4		1.6	0.4	11.9		2.2

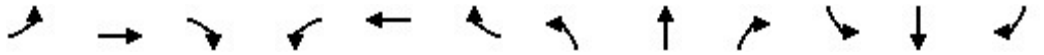
Intersection Summary	
HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	148	83	21	11	105	745	82	867
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	25.0	35.0	10.0	20.0	21.0	57.0	18.0	54.0
Total Split (%)	20.8%	29.2%	8.3%	16.7%	17.5%	47.5%	15.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	15.3	22.1	5.9	6.5	13.2	55.4	10.7	50.4
Actuated g/C Ratio	0.15	0.22	0.06	0.06	0.13	0.55	0.11	0.50
v/c Ratio	0.68	0.20	0.25	0.41	0.55	0.46	0.54	0.65
Control Delay	56.2	22.5	56.0	16.9	53.1	17.0	56.7	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	22.5	56.0	16.9	53.1	17.0	56.7	22.6
LOS	E	C	E	B	D	B	E	C
Approach Delay		40.3		23.4		21.3		25.2
Approach LOS		D		C		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 101.5	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	148	83	50	21	11	96	105	745	19	82	867	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	161	90	54	23	12	104	114	810	21	89	942	128
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	412	230	30	162	145	163	1823	47	114	1528	208
Arrive On Green	0.12	0.20	0.20	0.02	0.10	0.10	0.10	0.55	0.55	0.07	0.52	0.52
Sat Flow, veh/h	1587	2076	1161	1587	1676	1500	1587	3339	87	1587	2967	403
Grp Volume(v), veh/h	161	71	73	23	12	104	114	407	424	89	532	538
Grp Sat Flow(s),veh/h/ln	1587	1676	1560	1587	1676	1500	1587	1676	1749	1587	1676	1694
Q Serve(g_s), s	9.6	3.5	3.8	1.4	0.6	6.5	6.7	14.1	14.1	5.4	21.9	21.9
Cycle Q Clear(g_c), s	9.6	3.5	3.8	1.4	0.6	6.5	6.7	14.1	14.1	5.4	21.9	21.9
Prop In Lane	1.00		0.74	1.00		1.00	1.00		0.05	1.00		0.24
Lane Grp Cap(c), veh/h	192	333	310	30	162	145	163	915	955	114	864	872
V/C Ratio(X)	0.84	0.21	0.23	0.76	0.07	0.72	0.70	0.44	0.44	0.78	0.62	0.62
Avail Cap(c_a), veh/h	343	535	498	98	276	247	278	915	955	229	864	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	32.6	32.7	47.4	39.9	42.6	42.1	13.2	13.2	44.3	16.7	16.7
Incr Delay (d2), s/veh	9.3	0.3	0.4	31.6	0.2	6.5	5.4	1.6	1.5	11.1	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	1.6	1.7	0.9	0.3	3.0	3.2	6.8	7.1	2.7	10.8	10.9
LnGrp Delay(d),s/veh	51.0	32.9	33.1	79.0	40.1	49.1	47.5	14.8	14.7	55.4	20.0	20.0
LnGrp LOS	D	C	C	E	D	D	D	B	B	E	C	B
Approach Vol, veh/h		305			139			945			1159	
Approach Delay, s/veh		42.5			53.3			18.7			22.7	
Approach LOS		D			D			B			C	

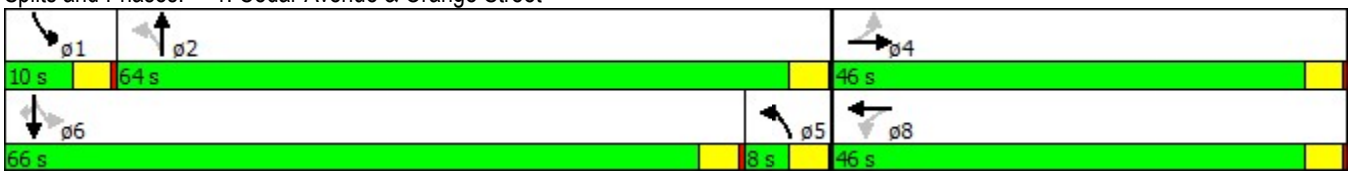
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	57.0	5.8	23.3	14.0	54.0	15.7	13.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	53.0	6.0	31.0	17.0	50.0	21.0	16.0
Max Q Clear Time (g_c+I1), s	7.4	16.1	3.4	5.8	8.7	23.9	11.6	8.5
Green Ext Time (p_c), s	0.3	6.2	0.0	1.6	0.3	8.1	0.3	0.8

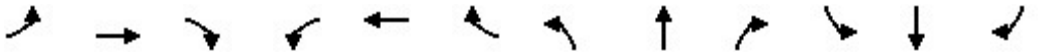
Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	185	3	3	3	10	962	41	992	212
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	46.0	46.0	46.0	46.0	8.0	64.0	10.0	66.0	66.0
Total Split (%)	38.3%	38.3%	38.3%	38.3%	6.7%	53.3%	8.3%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	24.3	24.3		24.3	64.7	62.9	67.2	67.2	67.2
Actuated g/C Ratio	0.24	0.24		0.24	0.64	0.62	0.67	0.67	0.67
v/c Ratio	0.84	0.09		0.27	0.04	0.50	0.15	0.48	0.21
Control Delay	66.0	11.1		7.6	12.7	13.8	9.9	11.0	2.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	11.1		7.6	12.7	13.8	9.9	11.0	2.0
LOS	E	B		A	B	B	A	B	A
Approach Delay		57.8		7.6		13.7		9.4	
Approach LOS		E		A		B		A	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 100.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 15.1	Intersection LOS: B
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	185	3	29	3	3	110	10	962	4	41	992	212
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	201	3	32	3	3	120	11	1046	4	45	1078	230
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	29	313	40	14	323	257	2130	8	315	2154	964
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.01	0.62	0.62	0.03	0.64	0.64
Sat Flow, veh/h	1130	130	1389	9	63	1436	1587	3426	13	1587	3353	1500
Grp Volume(v), veh/h	201	0	35	126	0	0	11	512	538	45	1078	230
Grp Sat Flow(s),veh/h/ln	1130	0	1520	1508	0	0	1587	1676	1762	1587	1676	1500
Q Serve(g_s), s	11.1	0.0	1.8	0.0	0.0	0.0	0.0	16.1	16.1	1.1	16.4	6.3
Cycle Q Clear(g_c), s	17.9	0.0	1.8	6.8	0.0	0.0	0.0	16.1	16.1	1.1	16.4	6.3
Prop In Lane	1.00		0.91	0.02		0.95	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	312	0	342	377	0	0	257	1042	1096	315	2154	964
V/C Ratio(X)	0.64	0.00	0.10	0.33	0.00	0.00	0.04	0.49	0.49	0.14	0.50	0.24
Avail Cap(c_a), veh/h	549	0	661	693	0	0	310	1042	1096	367	2154	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	29.7	31.6	0.0	0.0	14.5	9.9	9.9	9.0	9.1	7.3
Incr Delay (d2), s/veh	2.2	0.0	0.1	0.5	0.0	0.0	0.1	1.7	1.6	0.2	0.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	0.8	2.9	0.0	0.0	0.2	7.9	8.3	0.5	7.7	2.7
LnGrp Delay(d),s/veh	38.6	0.0	29.8	32.1	0.0	0.0	14.5	11.6	11.5	9.2	9.9	7.9
LnGrp LOS	D		C	C			B	B	B	A	A	A
Approach Vol, veh/h		236			126			1061			1353	
Approach Delay, s/veh		37.3			32.1			11.6			9.6	
Approach LOS		D			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	64.0		25.7	4.8	66.0		25.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.0	60.0		42.0	4.0	62.0		42.0
Max Q Clear Time (g_c+I1), s	3.1	18.1		19.9	2.0	18.4		8.8
Green Ext Time (p_c), s	0.0	8.7		1.8	1.1	11.6		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	187	196	15	108	105	707	97	846
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	29.0	39.0	10.0	20.0	20.0	51.0	20.0	51.0
Total Split (%)	24.2%	32.5%	8.3%	16.7%	16.7%	42.5%	16.7%	42.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.1	27.9	5.9	9.4	12.3	48.0	11.8	47.5
Actuated g/C Ratio	0.17	0.27	0.06	0.09	0.12	0.46	0.11	0.46
v/c Ratio	0.74	0.35	0.18	0.56	0.61	0.51	0.58	0.66
Control Delay	57.4	25.5	56.0	32.5	59.4	22.8	58.5	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	25.5	56.0	32.5	59.4	22.8	58.5	26.0
LOS	E	C	E	C	E	C	E	C
Approach Delay		38.0		34.2		27.3		29.1
Approach LOS		D		C		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 103.5	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 30.6	Intersection LOS: C
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	187	196	94	15	108	82	105	707	26	97	846	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	203	213	102	16	117	89	114	768	28	105	920	89
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	535	247	23	198	140	140	1639	60	130	1515	147
Arrive On Green	0.15	0.24	0.24	0.01	0.11	0.11	0.09	0.50	0.50	0.08	0.49	0.49
Sat Flow, veh/h	1587	2230	1030	1587	1881	1326	1587	3300	120	1587	3090	299
Grp Volume(v), veh/h	203	158	157	16	103	103	114	390	406	105	499	510
Grp Sat Flow(s),veh/h/ln	1587	1676	1583	1587	1676	1531	1587	1676	1743	1587	1676	1712
Q Serve(g_s), s	12.0	7.6	8.0	1.0	5.6	6.2	6.8	14.6	14.6	6.2	20.7	20.7
Cycle Q Clear(g_c), s	12.0	7.6	8.0	1.0	5.6	6.2	6.8	14.6	14.6	6.2	20.7	20.7
Prop In Lane	1.00		0.65	1.00		0.87	1.00		0.07	1.00		0.17
Lane Grp Cap(c), veh/h	237	402	380	23	176	161	140	833	866	130	822	839
V/C Ratio(X)	0.86	0.39	0.41	0.70	0.59	0.64	0.81	0.47	0.47	0.81	0.61	0.61
Avail Cap(c_a), veh/h	414	612	578	99	280	255	265	833	866	265	822	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	30.6	30.7	47.0	40.9	41.1	42.9	15.8	15.8	43.3	17.7	17.7
Incr Delay (d2), s/veh	8.7	0.6	0.7	31.5	3.1	4.1	10.7	1.9	1.8	11.1	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	3.6	3.6	0.6	2.8	2.8	3.4	7.2	7.4	3.1	10.3	10.5
LnGrp Delay(d),s/veh	48.5	31.2	31.4	78.6	44.0	45.3	53.6	17.7	17.6	54.4	21.1	21.0
LnGrp LOS	D	C	C	E	D	D	D	B	B	D	C	C
Approach Vol, veh/h		518			222			910			1114	
Approach Delay, s/veh		38.0			47.1			22.2			24.2	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	51.6	5.4	27.0	12.5	51.0	18.3	14.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	47.0	6.0	35.0	16.0	47.0	25.0	16.0
Max Q Clear Time (g_c+I1), s	8.2	16.6	3.0	10.0	8.8	22.7	14.0	8.2
Green Ext Time (p_c), s	0.1	15.2	0.0	3.3	0.1	13.5	0.4	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

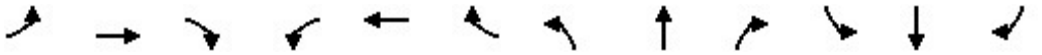
Appendix C

Existing Plus Project Conditions
Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	310	4	1	7	980	90	1056	330
Turn Type	Perm	NA	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	8	5	2	1	6	
Permitted Phases	4							6
Detector Phase	4	4	8	5	2	1	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	8.0	53.0	16.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	6.7%	44.2%	13.3%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	34.9	34.9	34.9	4.0	49.6	10.6	62.7	62.7
Actuated g/C Ratio	0.33	0.33	0.33	0.04	0.46	0.10	0.59	0.59
v/c Ratio	0.89	0.05	0.15	0.14	0.70	0.63	0.58	0.35
Control Delay	59.3	10.3	5.9	60.1	27.8	67.3	17.7	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	5.9	60.1	27.8	67.3	17.7	2.7
LOS	E	B	A	E	C	E	B	A
Approach Delay		55.6	5.9		28.0		17.4	
Approach LOS		E	A		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.1	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 70.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	310	4	21	0	1	77	7	980	10	90	1056	330
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	337	4	23	0	1	84	8	1065	11	98	1148	359
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	432	80	458	0	6	521	13	1571	16	120	1777	795
Arrive On Green	0.35	0.35	0.35	0.00	0.35	0.35	0.01	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	1170	227	1307	0	18	1485	1587	3400	35	1587	3353	1500
Grp Volume(v), veh/h	337	0	27	0	0	85	8	525	551	98	1148	359
Grp Sat Flow(s),veh/h/ln	1170	0	1534	0	0	1503	1587	1676	1759	1587	1676	1500
Q Serve(g_s), s	30.0	0.0	1.3	0.0	0.0	4.2	0.5	26.4	26.4	6.5	26.3	15.9
Cycle Q Clear(g_c), s	34.2	0.0	1.3	0.0	0.0	4.2	0.5	26.4	26.4	6.5	26.3	15.9
Prop In Lane	1.00		0.85	0.00		0.99	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	432	0	538	0	0	527	13	775	813	120	1777	795
V/C Ratio(X)	0.78	0.00	0.05	0.00	0.00	0.16	0.64	0.68	0.68	0.82	0.65	0.45
Avail Cap(c_a), veh/h	532	0	670	0	0	657	59	775	813	177	1777	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	23.1	0.0	0.0	24.0	53.2	22.7	22.7	49.0	18.1	15.6
Incr Delay (d2), s/veh	6.0	0.0	0.0	0.0	0.0	0.1	43.1	4.7	4.5	16.6	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	0.5	0.0	0.0	1.8	0.4	13.1	13.7	3.4	12.6	7.0
LnGrp Delay(d),s/veh	41.7	0.0	23.1	0.0	0.0	24.2	96.3	27.4	27.2	65.5	19.9	17.5
LnGrp LOS	D		C			C	F	C	C	E	B	B
Approach Vol, veh/h		364			85			1084			1605	
Approach Delay, s/veh		40.4			24.2			27.8			22.1	
Approach LOS		D			C			C			C	

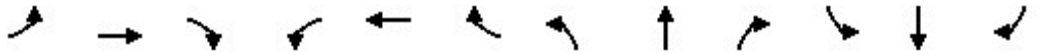
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	53.7		41.7	4.9	61.0		41.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	49.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	8.5	28.4		36.2	2.5	28.3		6.2
Green Ext Time (p_c), s	0.1	16.3		1.6	0.0	21.2		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	188	96	34	111	118	745	82	893
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	28.0	37.0	11.0	20.0	20.0	54.0	18.0	52.0
Total Split (%)	23.3%	30.8%	9.2%	16.7%	16.7%	45.0%	15.0%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.1	25.7	6.7	9.7	12.9	53.1	10.8	48.5
Actuated g/C Ratio	0.17	0.24	0.06	0.09	0.12	0.50	0.10	0.46
v/c Ratio	0.75	0.19	0.37	0.59	0.66	0.49	0.55	0.72
Control Delay	59.8	22.3	61.9	31.9	62.6	21.1	60.0	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	22.3	61.9	31.9	62.6	21.1	60.0	27.9
LOS	E	C	E	C	E	C	E	C
Approach Delay		43.5		36.2		26.7		30.3
Approach LOS		D		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 31.3	Intersection LOS: C
Intersection Capacity Utilization 68.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	96	50	34	111	96	118	745	19	82	893	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	204	104	54	37	121	104	128	810	21	89	971	128
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	493	241	44	186	147	155	1719	45	111	1450	191
Arrive On Green	0.15	0.23	0.23	0.03	0.10	0.10	0.10	0.51	0.51	0.07	0.49	0.49
Sat Flow, veh/h	1587	2184	1069	1587	1781	1411	1587	3339	87	1587	2979	393
Grp Volume(v), veh/h	204	78	80	37	113	112	128	407	424	89	546	553
Grp Sat Flow(s),veh/h/ln	1587	1676	1576	1587	1676	1516	1587	1676	1749	1587	1676	1695
Q Serve(g_s), s	12.4	3.7	4.1	2.3	6.4	7.0	7.8	15.3	15.3	5.5	24.5	24.5
Cycle Q Clear(g_c), s	12.4	3.7	4.1	2.3	6.4	7.0	7.8	15.3	15.3	5.5	24.5	24.5
Prop In Lane	1.00		0.68	1.00		0.93	1.00		0.05	1.00		0.23
Lane Grp Cap(c), veh/h	237	378	356	44	175	158	155	863	900	111	816	825
V/C Ratio(X)	0.86	0.21	0.22	0.84	0.65	0.71	0.82	0.47	0.47	0.80	0.67	0.67
Avail Cap(c_a), veh/h	386	561	527	113	272	246	257	863	900	225	816	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	31.0	31.2	47.7	42.4	42.7	43.7	15.3	15.3	45.2	19.3	19.3
Incr Delay (d2), s/veh	10.6	0.3	0.3	32.0	4.0	5.7	10.4	1.8	1.8	12.6	4.3	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	1.8	1.8	1.4	3.2	3.2	3.9	7.4	7.8	2.8	12.2	12.3
LnGrp Delay(d),s/veh	51.6	31.3	31.5	79.7	46.4	48.4	54.0	17.2	17.1	57.8	23.6	23.6
LnGrp LOS	D	C	C	E	D	D	D	B	B	E	C	C
Approach Vol, veh/h		362			262			959			1188	
Approach Delay, s/veh		42.8			52.0			22.1			26.2	
Approach LOS		D			D			C			C	

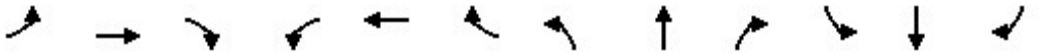
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	54.8	6.7	26.3	13.7	52.0	18.7	14.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	50.0	7.0	33.0	16.0	48.0	24.0	16.0
Max Q Clear Time (g_c+I1), s	7.5	17.3	4.3	6.1	9.8	26.5	14.4	9.0
Green Ext Time (p_c), s	0.1	17.3	0.0	2.4	0.1	13.5	0.4	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.4
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	185	3	3	3	10	978	41	1008	212
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	62.0	13.0	67.0	67.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	6.7%	51.7%	10.8%	55.8%	55.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	24.6	24.6		24.6	4.0	62.3	7.7	68.1	68.1
Actuated g/C Ratio	0.24	0.24		0.24	0.04	0.61	0.08	0.67	0.67
v/c Ratio	0.85	0.09		0.27	0.18	0.52	0.38	0.49	0.21
Control Delay	66.7	11.2		7.6	59.0	15.3	57.2	11.2	2.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	11.2		7.6	59.0	15.3	57.2	11.2	2.0
LOS	E	B		A	E	B	E	B	A
Approach Delay		58.5		7.6		15.8		11.1	
Approach LOS		E		A		B		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 60.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	185	3	29	3	3	110	10	978	4	41	1008	212
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	201	3	32	3	3	120	11	1063	4	45	1096	230
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	310	29	313	40	14	323	17	2118	8	55	2153	963
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.01	0.62	0.62	0.03	0.64	0.64
Sat Flow, veh/h	1130	130	1389	9	63	1436	1587	3426	13	1587	3353	1500
Grp Volume(v), veh/h	201	0	35	126	0	0	11	520	547	45	1096	230
Grp Sat Flow(s),veh/h/ln	1130	0	1520	1508	0	0	1587	1676	1762	1587	1676	1500
Q Serve(g_s), s	11.4	0.0	1.8	0.0	0.0	0.0	0.7	16.9	16.9	2.8	17.1	6.4
Cycle Q Clear(g_c), s	18.3	0.0	1.8	6.9	0.0	0.0	0.7	16.9	16.9	2.8	17.1	6.4
Prop In Lane	1.00		0.91	0.02		0.95	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	310	0	342	377	0	0	17	1036	1089	55	2153	963
V/C Ratio(X)	0.65	0.00	0.10	0.33	0.00	0.00	0.66	0.50	0.50	0.82	0.51	0.24
Avail Cap(c_a), veh/h	528	0	635	666	0	0	65	1036	1089	146	2153	963
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	30.2	32.1	0.0	0.0	48.4	10.4	10.4	47.1	9.3	7.4
Incr Delay (d2), s/veh	2.3	0.0	0.1	0.5	0.0	0.0	35.9	1.7	1.7	25.1	0.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	0.8	2.9	0.0	0.0	0.5	8.2	8.6	1.6	8.0	2.8
LnGrp Delay(d),s/veh	39.4	0.0	30.3	32.7	0.0	0.0	84.3	12.1	12.0	72.2	10.2	8.0
LnGrp LOS	D		C	C			F	B	B	E	B	A
Approach Vol, veh/h		236			126			1078			1371	
Approach Delay, s/veh		38.0			32.7			12.8			11.9	
Approach LOS		D			C			B			B	

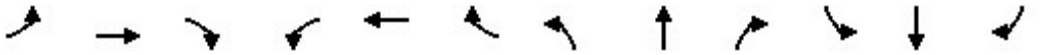
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	64.7		26.1	5.0	67.0		26.1
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	9.0	58.0		41.0	4.0	63.0		41.0
Max Q Clear Time (g_c+I1), s	4.8	18.9		20.3	2.7	19.1		8.9
Green Ext Time (p_c), s	0.0	24.7		1.8	0.0	26.4		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	240	214	33	108	123	707	97	881
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	31.0	40.0	11.0	20.0	19.0	49.0	20.0	50.0
Total Split (%)	25.8%	33.3%	9.2%	16.7%	15.8%	40.8%	16.7%	41.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	21.9	29.3	6.6	9.5	13.1	47.5	12.0	46.4
Actuated g/C Ratio	0.20	0.27	0.06	0.09	0.12	0.44	0.11	0.43
v/c Ratio	0.81	0.37	0.37	0.57	0.69	0.54	0.59	0.73
Control Delay	60.7	27.7	62.5	33.6	66.0	25.2	60.7	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	27.7	62.5	33.6	66.0	25.2	60.7	30.2
LOS	E	C	E	C	E	C	E	C
Approach Delay		42.1		37.9		31.1		33.0
Approach LOS		D		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 34.7	Intersection LOS: C
Intersection Capacity Utilization 70.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	214	94	33	108	82	123	707	26	97	881	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	261	233	102	36	117	89	134	768	28	105	958	89
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	599	254	43	194	137	161	1560	57	129	1405	131
Arrive On Green	0.18	0.26	0.26	0.03	0.10	0.10	0.10	0.47	0.47	0.08	0.45	0.45
Sat Flow, veh/h	1587	2295	974	1587	1881	1326	1587	3300	120	1587	3102	288
Grp Volume(v), veh/h	261	168	167	36	103	103	134	390	406	105	518	529
Grp Sat Flow(s),veh/h/ln	1587	1676	1593	1587	1676	1531	1587	1676	1743	1587	1676	1714
Q Serve(g_s), s	16.3	8.4	8.8	2.3	6.0	6.6	8.4	16.2	16.2	6.6	24.8	24.8
Cycle Q Clear(g_c), s	16.3	8.4	8.8	2.3	6.0	6.6	8.4	16.2	16.2	6.6	24.8	24.8
Prop In Lane	1.00		0.61	1.00		0.87	1.00		0.07	1.00		0.17
Lane Grp Cap(c), veh/h	294	438	416	43	173	158	161	793	824	129	759	776
V/C Ratio(X)	0.89	0.38	0.40	0.84	0.60	0.65	0.83	0.49	0.49	0.81	0.68	0.68
Avail Cap(c_a), veh/h	422	594	565	109	264	241	234	793	824	250	759	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	30.8	31.0	49.2	43.5	43.8	44.8	18.4	18.4	45.9	22.0	22.0
Incr Delay (d2), s/veh	15.2	0.6	0.6	32.6	3.3	4.4	15.2	2.2	2.1	11.4	4.9	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	3.9	3.9	1.4	2.9	3.0	4.4	8.0	8.3	3.3	12.4	12.7
LnGrp Delay(d),s/veh	55.5	31.4	31.6	81.8	46.8	48.2	60.0	20.6	20.5	57.3	26.9	26.8
LnGrp LOS	E	C	C	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		596			242			930			1152	
Approach Delay, s/veh		42.0			52.6			26.2			29.6	
Approach LOS		D			D			C			C	

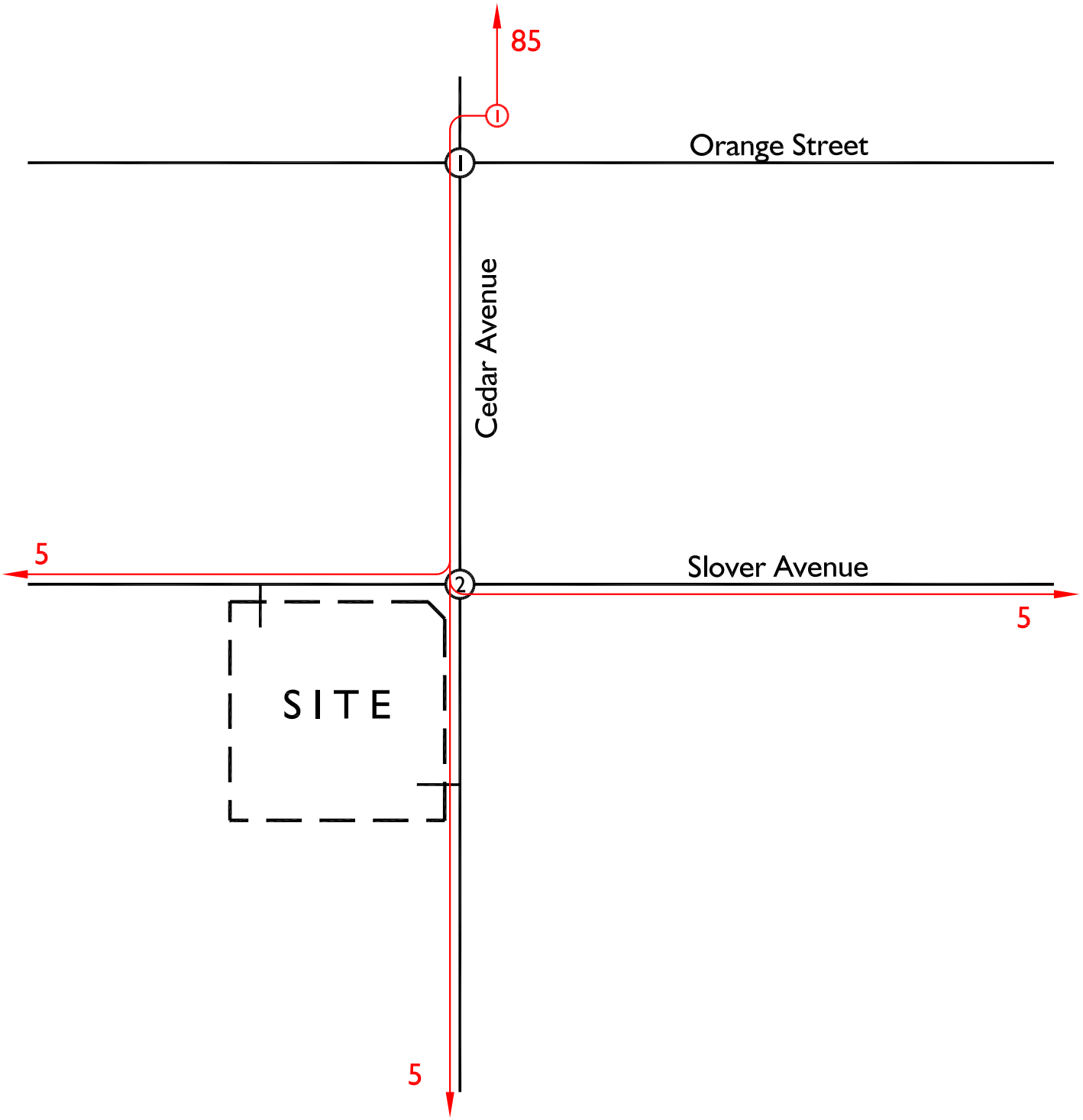
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	52.0	6.7	30.5	14.3	50.0	22.8	14.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	45.0	7.0	36.0	15.0	46.0	27.0	16.0
Max Q Clear Time (g_c+I1), s	8.6	18.2	4.3	10.8	10.4	26.8	18.3	8.6
Green Ext Time (p_c), s	0.1	14.6	0.0	3.4	0.1	11.9	0.5	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Appendix D

Cumulative Projects Information

Cumulative Trip Distribution

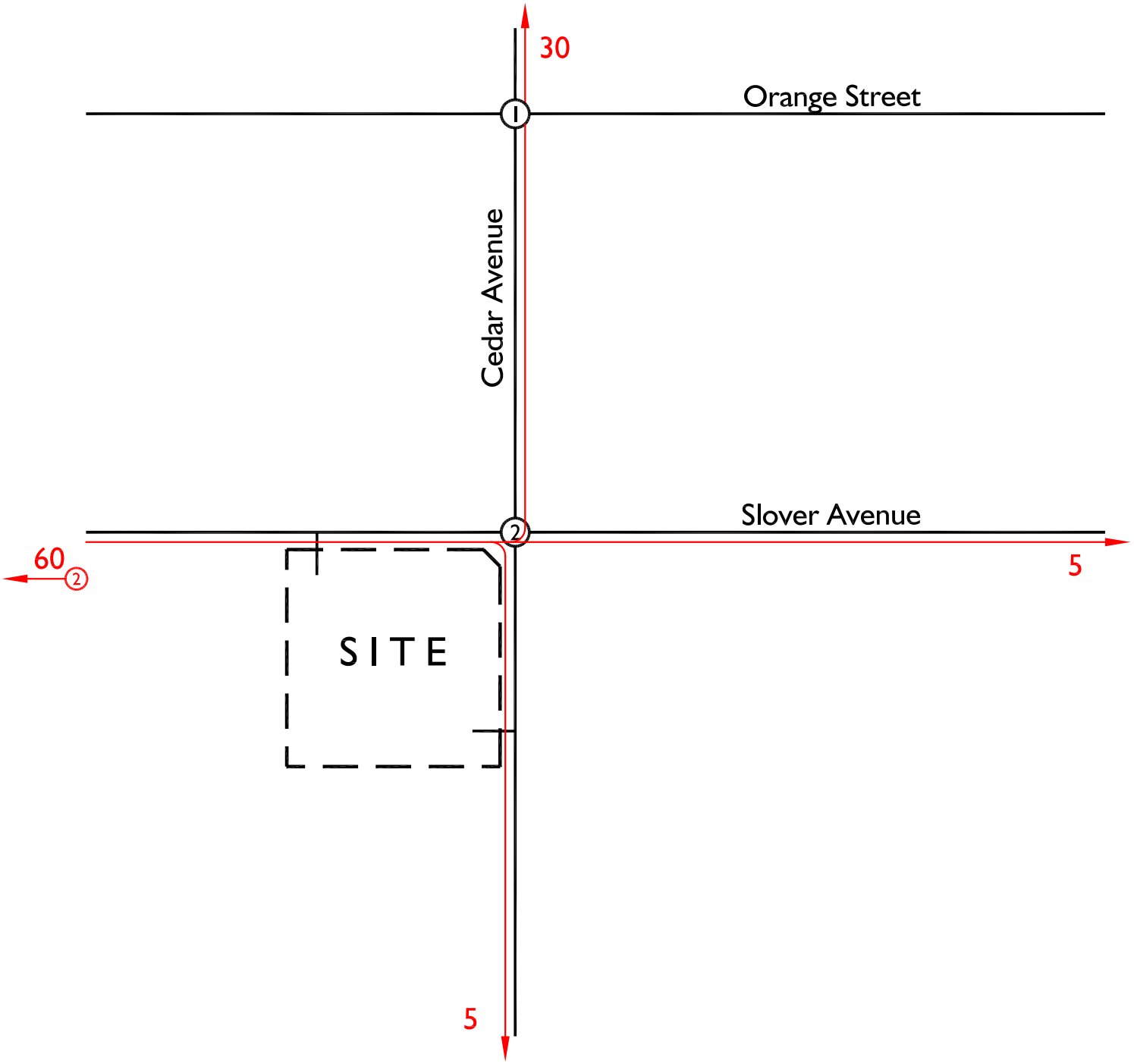


Legend:

(1) = 0253-171-16 - Warehouse 385 TSF
10 = Percent to/from Project
—— = Trip Distribution

N

Cumulative Trip Distribution

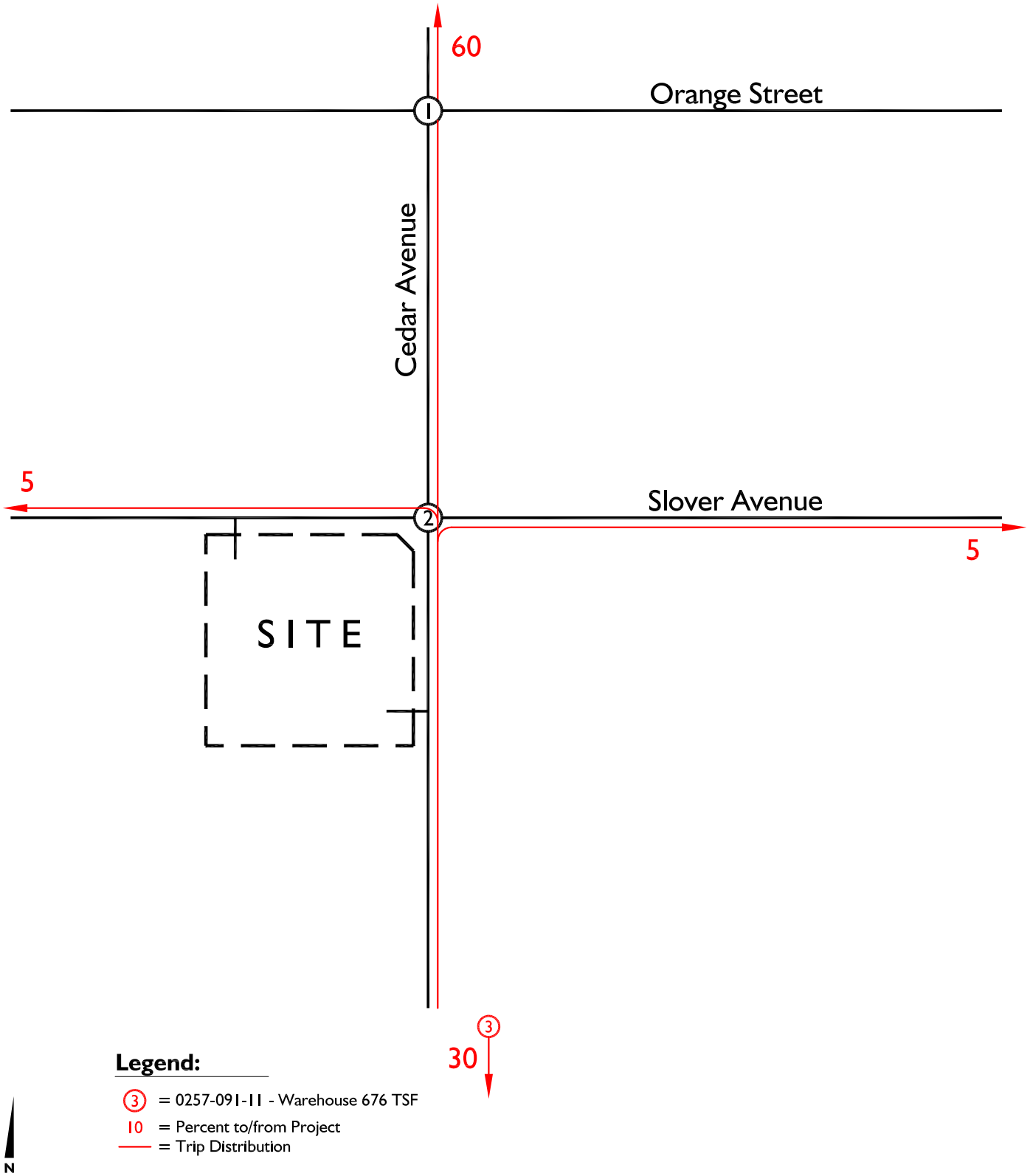


Legend:

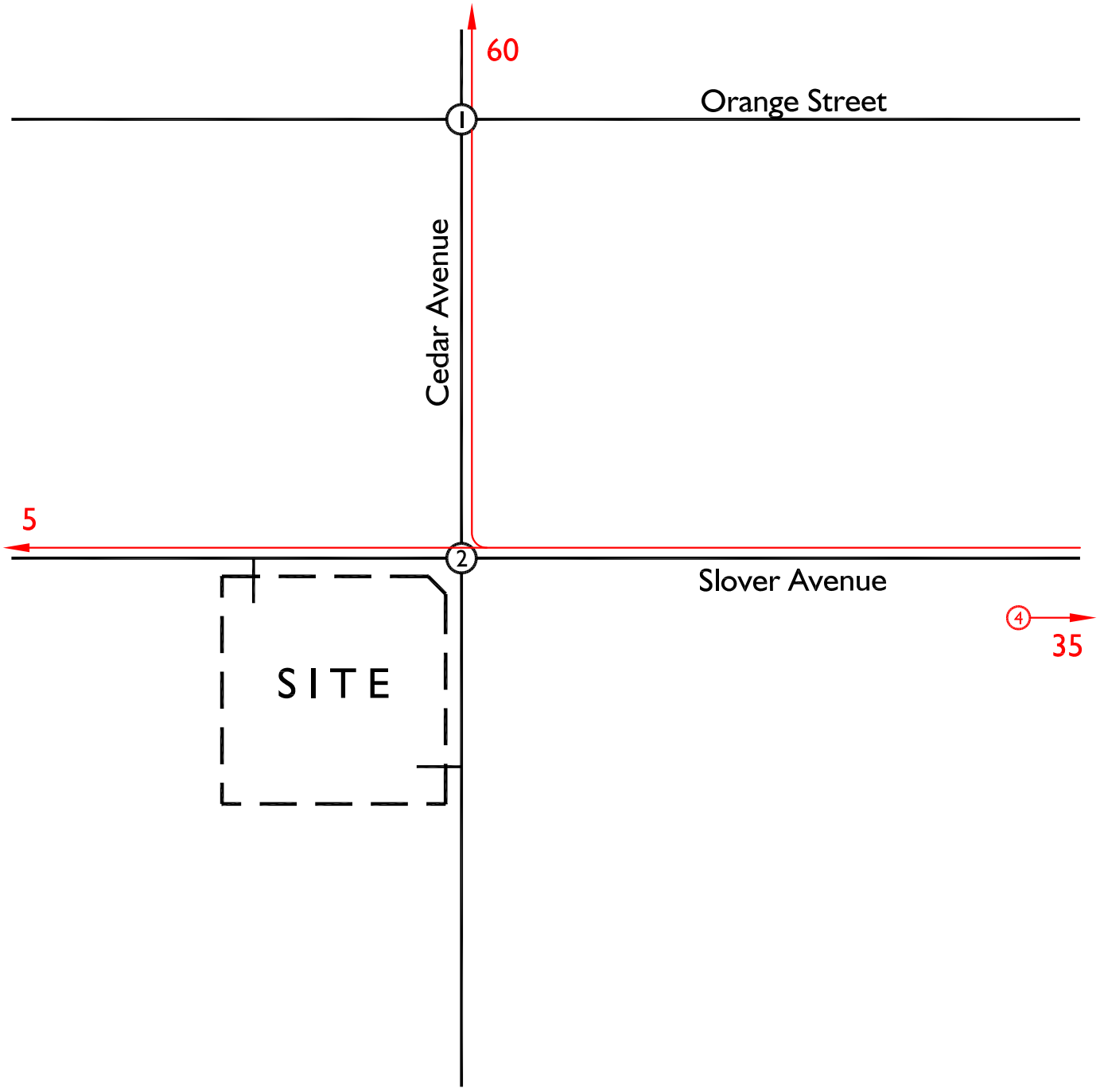
(2) = 0256-041-01-03 - Warehouse 344 TSF
10 = Percent to/from Project
—— = Trip Distribution

N

Cumulative Trip Distribution



Cumulative Trip Distribution



Legend:

(4) = Go 2 Logistics - Warehouse 45 TSF
10 = Percent to/from Project
—— = Trip Distribution

N

Appendix E

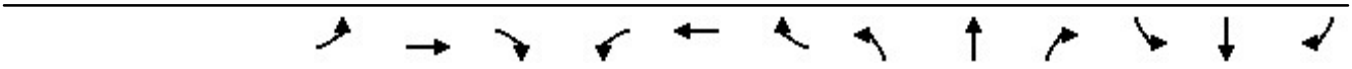
Project Opening Year (2018)
With Ambient Traffic
Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	316	4	1	7	989	92	1067	337
Turn Type	Perm	NA	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	8	5	2	1	6	
Permitted Phases	4							6
Detector Phase	4	4	8	5	2	1	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	8.0	53.0	16.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	6.7%	44.2%	13.3%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	35.7	35.7	35.7	4.0	49.5	10.6	62.7	62.7
Actuated g/C Ratio	0.33	0.33	0.33	0.04	0.46	0.10	0.58	0.58
v/c Ratio	0.89	0.05	0.15	0.14	0.71	0.65	0.60	0.36
Control Delay	59.3	10.3	5.8	60.4	28.5	68.7	18.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	5.8	60.4	28.5	68.7	18.3	2.8
LOS	E	B	A	E	C	E	B	A
Approach Delay		55.7	5.8		28.8		17.9	
Approach LOS		E	A		C		B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 108
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 25.7 — Intersection LOS: C
Intersection Capacity Utilization 71.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	316	4	21	0	1	79	7	989	10	92	1067	337
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	343	4	23	0	1	86	8	1075	11	100	1160	366
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	81	466	0	6	529	13	1551	16	122	1761	788
Arrive On Green	0.36	0.36	0.36	0.00	0.36	0.36	0.01	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	1168	227	1307	0	17	1485	1587	3400	35	1587	3353	1500
Grp Volume(v), veh/h	343	0	27	0	0	87	8	530	556	100	1160	366
Grp Sat Flow(s),veh/h/ln	1168	0	1534	0	0	1503	1587	1676	1759	1587	1676	1500
Q Serve(g_s), s	30.8	0.0	1.3	0.0	0.0	4.3	0.5	27.3	27.3	6.7	27.2	16.6
Cycle Q Clear(g_c), s	35.1	0.0	1.3	0.0	0.0	4.3	0.5	27.3	27.3	6.7	27.2	16.6
Prop In Lane	1.00		0.85	0.00		0.99	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	436	0	547	0	0	535	13	765	802	122	1761	788
V/C Ratio(X)	0.79	0.00	0.05	0.00	0.00	0.16	0.64	0.69	0.69	0.82	0.66	0.46
Avail Cap(c_a), veh/h	526	0	664	0	0	651	59	765	802	176	1761	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	22.9	0.0	0.0	23.9	53.7	23.5	23.5	49.3	18.7	16.2
Incr Delay (d2), s/veh	6.5	0.0	0.0	0.0	0.0	0.1	43.2	5.1	4.9	17.7	1.9	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	0.5	0.0	0.0	1.8	0.4	13.6	14.2	3.5	13.0	7.2
LnGrp Delay(d),s/veh	42.4	0.0	22.9	0.0	0.0	24.0	96.9	28.6	28.4	67.0	20.6	18.1
LnGrp LOS	D		C			C	F	C	C	E	C	B
Approach Vol, veh/h		370			87			1094			1626	
Approach Delay, s/veh		40.9			24.0			29.0			22.9	
Approach LOS		D			C			C			C	

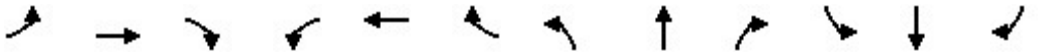
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	53.5		42.7	4.9	61.0		42.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	49.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	8.7	29.3		37.1	2.5	29.2		6.3
Green Ext Time (p_c), s	0.1	15.9		1.5	0.0	20.9		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	151	85	21	113	107	760	84	884
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	25.0	35.0	10.0	20.0	21.0	57.0	18.0	54.0
Total Split (%)	20.8%	29.2%	8.3%	16.7%	17.5%	47.5%	15.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	15.7	25.8	5.9	9.7	12.6	55.6	10.9	51.3
Actuated g/C Ratio	0.15	0.24	0.06	0.09	0.12	0.53	0.10	0.49
v/c Ratio	0.70	0.18	0.26	0.60	0.61	0.48	0.56	0.68
Control Delay	59.9	21.4	59.3	31.9	59.9	19.4	60.3	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	21.4	59.3	31.9	59.9	19.4	60.3	25.0
LOS	E	C	E	C	E	B	E	C
Approach Delay		41.7		34.4		24.3		27.7
Approach LOS		D		C		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.6	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 28.7	Intersection LOS: C
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	85	51	21	113	98	107	760	19	84	884	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	164	92	55	23	123	107	116	826	21	91	961	130
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	435	243	30	187	150	142	1798	46	113	1543	209
Arrive On Green	0.12	0.21	0.21	0.02	0.11	0.11	0.09	0.54	0.54	0.07	0.52	0.52
Sat Flow, veh/h	1587	2078	1159	1587	1771	1420	1587	3341	85	1587	2969	401
Grp Volume(v), veh/h	164	73	74	23	116	114	116	414	433	91	543	548
Grp Sat Flow(s),veh/h/ln	1587	1676	1560	1587	1676	1514	1587	1676	1750	1587	1676	1694
Q Serve(g_s), s	10.0	3.5	3.9	1.4	6.5	7.2	7.1	14.9	14.9	5.6	22.6	22.7
Cycle Q Clear(g_c), s	10.0	3.5	3.9	1.4	6.5	7.2	7.1	14.9	14.9	5.6	22.6	22.7
Prop In Lane	1.00		0.74	1.00		0.94	1.00		0.05	1.00		0.24
Lane Grp Cap(c), veh/h	195	351	327	30	177	160	142	902	941	113	871	880
V/C Ratio(X)	0.84	0.21	0.23	0.76	0.66	0.71	0.81	0.46	0.46	0.80	0.62	0.62
Avail Cap(c_a), veh/h	338	528	491	97	272	246	274	902	941	226	871	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	32.2	32.3	48.1	42.3	42.6	44.0	14.0	14.0	45.1	16.8	16.8
Incr Delay (d2), s/veh	9.4	0.3	0.3	32.1	4.1	5.8	10.6	1.7	1.6	12.4	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	1.7	1.7	0.9	3.2	3.3	3.5	7.3	7.6	2.8	11.2	11.3
LnGrp Delay(d),s/veh	51.6	32.5	32.7	80.2	46.4	48.4	54.7	15.6	15.6	57.5	20.2	20.1
LnGrp LOS	D	C	C	F	D	D	D	B	B	E	C	C
Approach Vol, veh/h		311			253			963			1182	
Approach Delay, s/veh		42.6			50.4			20.3			23.0	
Approach LOS		D			D			C			C	

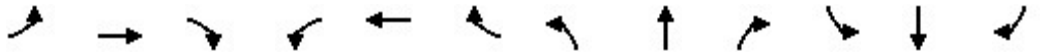
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	57.0	5.9	24.6	12.8	55.2	16.1	14.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	53.0	6.0	31.0	17.0	50.0	21.0	16.0
Max Q Clear Time (g_c+I1), s	7.6	16.9	3.4	5.9	9.1	24.7	12.0	9.2
Green Ext Time (p_c), s	0.1	18.3	0.0	2.3	0.2	15.1	0.3	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	189	3	3	3	10	981	42	1012	216
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	62.0	13.0	67.0	67.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	6.7%	51.7%	10.8%	55.8%	55.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	25.1	25.1		25.1	4.0	62.2	7.7	68.0	68.0
Actuated g/C Ratio	0.24	0.24		0.24	0.04	0.61	0.08	0.66	0.66
v/c Ratio	0.85	0.09		0.27	0.18	0.53	0.39	0.50	0.22
Control Delay	66.9	11.0		7.5	59.5	15.7	57.9	11.5	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	11.0		7.5	59.5	15.7	57.9	11.5	2.1
LOS	E	B		A	E	B	E	B	A
Approach Delay		58.5		7.5		16.2		11.4	
Approach LOS		E		A		B		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 61.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	189	3	30	3	3	112	10	981	4	42	1012	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	205	3	33	3	3	122	11	1066	4	46	1100	235
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	29	320	39	14	330	17	2101	8	56	2139	957
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.01	0.61	0.61	0.04	0.64	0.64
Sat Flow, veh/h	1128	127	1392	9	62	1437	1587	3426	13	1587	3353	1500
Grp Volume(v), veh/h	205	0	36	128	0	0	11	522	548	46	1100	235
Grp Sat Flow(s),veh/h/ln	1128	0	1519	1508	0	0	1587	1676	1762	1587	1676	1500
Q Serve(g_s), s	11.9	0.0	1.8	0.0	0.0	0.0	0.7	17.2	17.2	2.8	17.4	6.6
Cycle Q Clear(g_c), s	18.9	0.0	1.8	7.0	0.0	0.0	0.7	17.2	17.2	2.8	17.4	6.6
Prop In Lane	1.00		0.92	0.02		0.95	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	349	384	0	0	17	1028	1081	56	2139	957
V/C Ratio(X)	0.65	0.00	0.10	0.33	0.00	0.00	0.66	0.51	0.51	0.82	0.51	0.25
Avail Cap(c_a), veh/h	522	0	631	662	0	0	64	1028	1081	145	2139	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	30.0	32.0	0.0	0.0	48.7	10.7	10.7	47.3	9.6	7.7
Incr Delay (d2), s/veh	2.3	0.0	0.1	0.5	0.0	0.0	36.0	1.8	1.7	24.4	0.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.8	3.0	0.0	0.0	0.5	8.5	8.9	1.6	8.2	2.9
LnGrp Delay(d),s/veh	39.4	0.0	30.1	32.5	0.0	0.0	84.7	12.5	12.4	71.7	10.5	8.3
LnGrp LOS	D		C	C			F	B	B	E	B	A
Approach Vol, veh/h		241			128			1081			1381	
Approach Delay, s/veh		38.0			32.5			13.2			12.2	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	64.6		26.7	5.0	67.0		26.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	9.0	58.0		41.0	4.0	63.0		41.0
Max Q Clear Time (g_c+I1), s	4.8	19.2		20.9	2.7	19.4		9.0
Green Ext Time (p_c), s	0.0	24.6		1.8	0.0	26.5		2.0

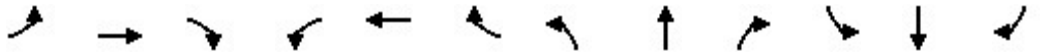
Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	191	200	15	110	107	721	99	863
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	29.0	39.0	10.0	20.0	20.0	51.0	20.0	51.0
Total Split (%)	24.2%	32.5%	8.3%	16.7%	16.7%	42.5%	16.7%	42.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.4	28.3	5.9	9.5	12.4	47.9	12.0	47.5
Actuated g/C Ratio	0.18	0.27	0.06	0.09	0.12	0.46	0.12	0.46
v/c Ratio	0.75	0.35	0.18	0.57	0.62	0.53	0.59	0.68
Control Delay	58.3	25.6	56.2	32.7	59.8	23.3	59.0	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	25.6	56.2	32.7	59.8	23.3	59.0	26.7
LOS	E	C	E	C	E	C	E	C
Approach Delay		38.5		34.4		27.9		29.8
Approach LOS		D		C		C		C

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 104
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 31.2 — Intersection LOS: C
Intersection Capacity Utilization 65.8% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	191	200	96	15	110	84	107	721	27	99	863	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	208	217	104	16	120	91	116	784	29	108	938	91
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	544	252	23	201	141	142	1622	60	133	1501	146
Arrive On Green	0.15	0.24	0.24	0.01	0.11	0.11	0.09	0.49	0.49	0.08	0.49	0.49
Sat Flow, veh/h	1587	2228	1031	1587	1883	1325	1587	3298	122	1587	3089	300
Grp Volume(v), veh/h	208	161	160	16	106	105	116	399	414	108	509	520
Grp Sat Flow(s),veh/h/ln	1587	1676	1583	1587	1676	1531	1587	1676	1743	1587	1676	1712
Q Serve(g_s), s	12.4	7.8	8.2	1.0	5.8	6.4	6.9	15.3	15.3	6.5	21.7	21.7
Cycle Q Clear(g_c), s	12.4	7.8	8.2	1.0	5.8	6.4	6.9	15.3	15.3	6.5	21.7	21.7
Prop In Lane	1.00		0.65	1.00		0.87	1.00		0.07	1.00		0.18
Lane Grp Cap(c), veh/h	242	410	387	23	179	163	142	824	857	133	815	832
V/C Ratio(X)	0.86	0.39	0.41	0.70	0.59	0.64	0.81	0.48	0.48	0.81	0.62	0.62
Avail Cap(c_a), veh/h	410	607	573	98	277	253	263	824	857	263	815	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	30.5	30.7	47.4	41.2	41.4	43.2	16.4	16.4	43.5	18.3	18.3
Incr Delay (d2), s/veh	9.1	0.6	0.7	31.7	3.1	4.2	10.6	2.0	1.9	11.0	3.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	3.7	3.7	0.6	2.9	2.9	3.4	7.5	7.8	3.2	10.9	11.1
LnGrp Delay(d),s/veh	49.1	31.2	31.4	79.2	44.3	45.7	53.9	18.4	18.3	54.5	21.9	21.9
LnGrp LOS	D	C	C	E	D	D	D	B	B	D	C	C
Approach Vol, veh/h		529			227			929			1137	
Approach Delay, s/veh		38.3			47.4			22.8			25.0	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	51.6	5.4	27.6	12.7	51.0	18.7	14.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	47.0	6.0	35.0	16.0	47.0	25.0	16.0
Max Q Clear Time (g_c+I1), s	8.5	17.3	3.0	10.2	8.9	23.7	14.4	8.4
Green Ext Time (p_c), s	0.1	15.4	0.0	3.3	0.1	13.5	0.4	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Appendix F

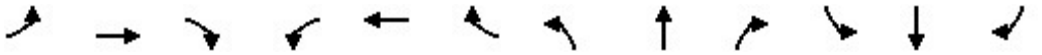
Project Opening Year (2018)
With Ambient Traffic and Proposed Project
Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	316	4	1	7	999	92	1077	337
Turn Type	Perm	NA	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4	8	5	2	1	6	
Permitted Phases	4							6
Detector Phase	4	4	8	5	2	1	6	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	8.0	53.0	16.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	6.7%	44.2%	13.3%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag				Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	35.7	35.7	35.7	4.0	49.5	10.6	62.7	62.7
Actuated g/C Ratio	0.33	0.33	0.33	0.04	0.46	0.10	0.58	0.58
v/c Ratio	0.89	0.05	0.15	0.14	0.71	0.65	0.60	0.36
Control Delay	59.3	10.3	5.8	60.4	28.8	68.7	18.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	10.3	5.8	60.4	28.8	68.7	18.4	2.8
LOS	E	B	A	E	C	E	B	A
Approach Delay		55.7	5.8		29.0		17.9	
Approach LOS		E	A		C		B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 108
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 25.8 — Intersection LOS: C
Intersection Capacity Utilization 71.4% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	316	4	21	0	1	79	7	999	10	92	1077	337
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	343	4	23	0	1	86	8	1086	11	100	1171	366
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	81	466	0	6	529	13	1551	16	122	1761	788
Arrive On Green	0.36	0.36	0.36	0.00	0.36	0.36	0.01	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	1168	227	1307	0	17	1485	1587	3401	34	1587	3353	1500
Grp Volume(v), veh/h	343	0	27	0	0	87	8	535	562	100	1171	366
Grp Sat Flow(s),veh/h/ln	1168	0	1534	0	0	1503	1587	1676	1759	1587	1676	1500
Q Serve(g_s), s	30.8	0.0	1.3	0.0	0.0	4.3	0.5	27.7	27.7	6.7	27.6	16.6
Cycle Q Clear(g_c), s	35.1	0.0	1.3	0.0	0.0	4.3	0.5	27.7	27.7	6.7	27.6	16.6
Prop In Lane	1.00		0.85	0.00		0.99	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	436	0	547	0	0	535	13	765	802	122	1761	788
V/C Ratio(X)	0.79	0.00	0.05	0.00	0.00	0.16	0.64	0.70	0.70	0.82	0.66	0.46
Avail Cap(c_a), veh/h	526	0	664	0	0	651	59	765	802	176	1761	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	22.9	0.0	0.0	23.9	53.7	23.6	23.6	49.3	18.8	16.2
Incr Delay (d2), s/veh	6.5	0.0	0.0	0.0	0.0	0.1	43.2	5.3	5.1	17.7	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	0.5	0.0	0.0	1.8	0.4	13.9	14.5	3.5	13.2	7.2
LnGrp Delay(d),s/veh	42.4	0.0	22.9	0.0	0.0	24.0	96.9	28.9	28.6	67.0	20.8	18.1
LnGrp LOS	D		C			C	F	C	C	E	C	B
Approach Vol, veh/h		370			87			1105			1637	
Approach Delay, s/veh		40.9			24.0			29.2			23.0	
Approach LOS		D			C			C			C	

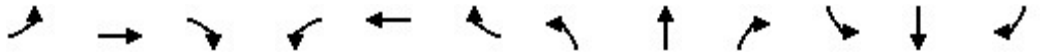
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	53.5		42.7	4.9	61.0		42.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	49.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	8.7	29.7		37.1	2.5	29.6		6.3
Green Ext Time (p_c), s	0.1	15.7		1.5	0.0	20.8		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	191	98	34	113	120	760	84	910
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	27.0	36.0	11.0	20.0	19.0	55.0	18.0	54.0
Total Split (%)	22.5%	30.0%	9.2%	16.7%	15.8%	45.8%	15.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.4	26.1	6.6	9.8	12.9	54.8	11.0	50.4
Actuated g/C Ratio	0.17	0.24	0.06	0.09	0.12	0.51	0.10	0.47
v/c Ratio	0.77	0.20	0.38	0.60	0.69	0.50	0.57	0.72
Control Delay	62.5	22.9	63.4	32.5	66.1	21.1	61.6	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	22.9	63.4	32.5	66.1	21.1	61.6	27.6
LOS	E	C	E	C	E	C	E	C
Approach Delay		45.1		36.8		27.1		30.2
Approach LOS		D		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 31.7	Intersection LOS: C
Intersection Capacity Utilization 69.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	191	98	51	34	113	98	120	760	19	84	910	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	208	107	55	37	123	107	130	826	21	91	989	130
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	498	242	44	185	149	157	1727	44	113	1459	192
Arrive On Green	0.15	0.23	0.23	0.03	0.10	0.10	0.10	0.52	0.52	0.07	0.49	0.49
Sat Flow, veh/h	1587	2191	1063	1587	1771	1420	1587	3341	85	1587	2980	392
Grp Volume(v), veh/h	208	80	82	37	116	114	130	414	433	91	556	563
Grp Sat Flow(s),veh/h/ln	1587	1676	1577	1587	1676	1514	1587	1676	1750	1587	1676	1696
Q Serve(g_s), s	13.1	4.0	4.3	2.4	6.8	7.5	8.2	16.2	16.2	5.8	25.9	25.9
Cycle Q Clear(g_c), s	13.1	4.0	4.3	2.4	6.8	7.5	8.2	16.2	16.2	5.8	25.9	25.9
Prop In Lane	1.00		0.67	1.00		0.94	1.00		0.05	1.00		0.23
Lane Grp Cap(c), veh/h	239	381	359	44	175	158	157	867	905	113	821	830
V/C Ratio(X)	0.87	0.21	0.23	0.84	0.66	0.72	0.83	0.48	0.48	0.81	0.68	0.68
Avail Cap(c_a), veh/h	357	525	494	109	263	237	233	867	905	218	821	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.4	32.0	32.2	49.4	44.0	44.3	45.2	15.8	15.8	46.8	19.9	19.9
Incr Delay (d2), s/veh	14.0	0.3	0.3	31.5	4.2	6.0	14.5	1.9	1.8	12.5	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.9	1.9	1.4	3.4	3.4	4.2	7.9	8.3	2.9	12.9	13.1
LnGrp Delay(d),s/veh	56.4	32.3	32.5	80.9	48.2	50.3	59.7	17.7	17.6	59.3	24.4	24.4
LnGrp LOS	E	C	C	F	D	D	E	B	B	E	C	C
Approach Vol, veh/h		370			267			977			1210	
Approach Delay, s/veh		45.9			53.6			23.3			27.0	
Approach LOS		D			D			C			C	

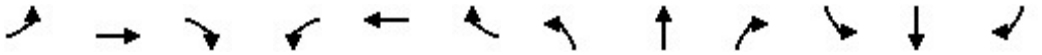
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	56.8	6.8	27.2	14.1	54.0	19.4	14.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	51.0	7.0	32.0	15.0	50.0	23.0	16.0
Max Q Clear Time (g_c+I1), s	7.8	18.2	4.4	6.3	10.2	27.9	15.1	9.5
Green Ext Time (p_c), s	0.1	17.8	0.0	2.4	0.1	14.0	0.3	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	189	3	3	3	10	997	42	1028	216
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	62.0	13.0	67.0	67.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	6.7%	51.7%	10.8%	55.8%	55.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	25.1	25.1		25.1	4.0	62.2	7.7	68.0	68.0
Actuated g/C Ratio	0.24	0.24		0.24	0.04	0.61	0.08	0.66	0.66
v/c Ratio	0.85	0.09		0.27	0.18	0.54	0.39	0.50	0.22
Control Delay	66.9	11.0		7.5	59.5	15.9	57.9	11.6	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	66.9	11.0		7.5	59.5	16.0	57.9	11.6	2.1
LOS	E	B		A	E	B	E	B	A
Approach Delay		58.5		7.5		16.4		11.5	
Approach LOS		E		A		B		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 17.2	Intersection LOS: B
Intersection Capacity Utilization 61.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	189	3	30	3	3	112	10	997	4	42	1028	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	205	3	33	3	3	122	11	1084	4	46	1117	235
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	29	320	39	14	330	17	2101	8	56	2139	957
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.01	0.61	0.61	0.04	0.64	0.64
Sat Flow, veh/h	1128	127	1392	9	62	1437	1587	3426	13	1587	3353	1500
Grp Volume(v), veh/h	205	0	36	128	0	0	11	530	558	46	1117	235
Grp Sat Flow(s),veh/h/ln	1128	0	1519	1508	0	0	1587	1676	1762	1587	1676	1500
Q Serve(g_s), s	11.9	0.0	1.8	0.0	0.0	0.0	0.7	17.7	17.7	2.8	17.9	6.6
Cycle Q Clear(g_c), s	18.9	0.0	1.8	7.0	0.0	0.0	0.7	17.7	17.7	2.8	17.9	6.6
Prop In Lane	1.00		0.92	0.02		0.95	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	349	384	0	0	17	1028	1081	56	2139	957
V/C Ratio(X)	0.65	0.00	0.10	0.33	0.00	0.00	0.66	0.52	0.52	0.82	0.52	0.25
Avail Cap(c_a), veh/h	522	0	631	662	0	0	64	1028	1081	145	2139	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	30.0	32.0	0.0	0.0	48.7	10.8	10.8	47.3	9.7	7.7
Incr Delay (d2), s/veh	2.3	0.0	0.1	0.5	0.0	0.0	36.0	1.8	1.8	24.4	0.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.8	3.0	0.0	0.0	0.5	8.6	9.0	1.6	8.5	2.9
LnGrp Delay(d),s/veh	39.4	0.0	30.1	32.5	0.0	0.0	84.7	12.6	12.6	71.7	10.6	8.3
LnGrp LOS	D		C	C			F	B	B	E	B	A
Approach Vol, veh/h		241			128			1099			1398	
Approach Delay, s/veh		38.0			32.5			13.3			12.2	
Approach LOS		D			C			B			B	

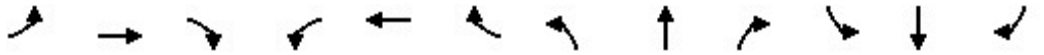
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	64.6		26.7	5.0	67.0		26.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	9.0	58.0		41.0	4.0	63.0		41.0
Max Q Clear Time (g_c+I1), s	4.8	19.7		20.9	2.7	19.9		9.0
Green Ext Time (p_c), s	0.0	24.9		1.8	0.0	26.8		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	244	218	33	110	125	721	99	898
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	31.0	40.0	11.0	20.0	19.0	49.0	20.0	50.0
Total Split (%)	25.8%	33.3%	9.2%	16.7%	15.8%	40.8%	16.7%	41.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	22.1	29.6	6.6	9.6	13.1	47.3	12.2	46.4
Actuated g/C Ratio	0.21	0.28	0.06	0.09	0.12	0.44	0.11	0.43
v/c Ratio	0.81	0.37	0.37	0.58	0.70	0.55	0.60	0.74
Control Delay	61.3	27.8	62.7	33.9	67.0	25.8	61.2	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	27.8	62.7	33.9	67.0	25.8	61.2	30.9
LOS	E	C	E	C	E	C	E	C
Approach Delay		42.4		38.1		31.7		33.7
Approach LOS		D		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 107.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 35.2	Intersection LOS: D
Intersection Capacity Utilization 71.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	244	218	96	33	110	84	125	721	27	99	898	84
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	265	237	104	36	120	91	136	784	29	108	976	91
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	297	607	258	43	197	138	163	1545	57	133	1394	130
Arrive On Green	0.19	0.26	0.26	0.03	0.10	0.10	0.10	0.47	0.47	0.08	0.45	0.45
Sat Flow, veh/h	1587	2293	976	1587	1883	1325	1587	3298	122	1587	3101	289
Grp Volume(v), veh/h	265	171	170	36	106	105	136	399	414	108	528	539
Grp Sat Flow(s),veh/h/ln	1587	1676	1592	1587	1676	1531	1587	1676	1743	1587	1676	1714
Q Serve(g_s), s	16.7	8.6	9.0	2.3	6.2	6.8	8.6	17.0	17.0	6.8	25.9	25.9
Cycle Q Clear(g_c), s	16.7	8.6	9.0	2.3	6.2	6.8	8.6	17.0	17.0	6.8	25.9	25.9
Prop In Lane	1.00		0.61	1.00		0.87	1.00		0.07	1.00		0.17
Lane Grp Cap(c), veh/h	297	444	421	43	175	160	163	785	816	133	753	770
V/C Ratio(X)	0.89	0.39	0.40	0.84	0.60	0.66	0.83	0.51	0.51	0.81	0.70	0.70
Avail Cap(c_a), veh/h	419	590	560	109	262	239	233	785	816	248	753	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	30.8	31.0	49.6	43.8	44.1	45.1	19.0	19.0	46.1	22.6	22.6
Incr Delay (d2), s/veh	16.0	0.6	0.6	32.5	3.3	4.5	16.0	2.3	2.3	11.3	5.4	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	4.0	4.0	1.4	3.0	3.1	4.5	8.4	8.7	3.4	13.0	13.3
LnGrp Delay(d),s/veh	56.6	31.4	31.6	82.1	47.1	48.6	61.1	21.3	21.2	57.4	28.0	27.9
LnGrp LOS	E	C	C	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		606			247			949			1175	
Approach Delay, s/veh		42.5			52.9			27.0			30.7	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	51.9	6.8	31.1	14.5	50.0	23.2	14.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	45.0	7.0	36.0	15.0	46.0	27.0	16.0
Max Q Clear Time (g_c+I1), s	8.8	19.0	4.3	11.0	10.6	27.9	18.7	8.8
Green Ext Time (p_c), s	0.1	14.7	0.0	3.5	0.1	11.7	0.5	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C

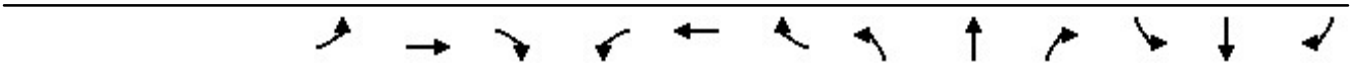
Appendix G

Project Opening Year (2018)
With Ambient Traffic, Proposed Project and Cumulative Projects
Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	316	4	5	1	7	1060	129	1255	337
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	49.0	49.0	49.0	49.0	8.0	53.0	18.0	63.0	63.0
Total Split (%)	40.8%	40.8%	40.8%	40.8%	6.7%	44.2%	15.0%	52.5%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	37.9	37.9		37.9	4.0	49.4	12.9	64.8	64.8
Actuated g/C Ratio	0.34	0.34		0.34	0.04	0.44	0.11	0.58	0.58
v/c Ratio	0.93	0.05		0.19	0.14	0.80	0.77	0.71	0.36
Control Delay	67.9	10.7		6.2	61.7	33.8	77.3	21.3	3.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	10.7		6.2	61.7	33.8	77.3	21.3	3.6
LOS	E	B		A	E	C	E	C	A
Approach Delay		63.7		6.2		33.9		22.0	
Approach LOS		E		A		C		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 29.9	Intersection LOS: C
Intersection Capacity Utilization 76.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	316	4	21	5	1	97	7	1060	20	129	1255	337
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	343	4	23	5	1	105	8	1152	22	140	1364	366
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	74	428	42	19	467	13	1535	29	166	1853	829
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.01	0.46	0.46	0.10	0.55	0.55
Sat Flow, veh/h	1148	227	1307	22	59	1424	1587	3366	64	1587	3353	1500
Grp Volume(v), veh/h	343	0	27	111	0	0	8	574	600	140	1364	366
Grp Sat Flow(s),veh/h/ln	1148	0	1534	1506	0	0	1587	1676	1753	1587	1676	1500
Q Serve(g_s), s	25.7	0.0	1.3	0.0	0.0	0.0	0.5	30.4	30.4	9.3	32.9	15.5
Cycle Q Clear(g_c), s	31.4	0.0	1.3	5.7	0.0	0.0	0.5	30.4	30.4	9.3	32.9	15.5
Prop In Lane	1.00		0.85	0.05		0.95	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	503	528	0	0	13	765	800	166	1853	829
V/C Ratio(X)	0.78	0.00	0.05	0.21	0.00	0.00	0.64	0.75	0.75	0.84	0.74	0.44
Avail Cap(c_a), veh/h	543	0	643	665	0	0	59	765	800	207	1853	829
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	24.7	26.2	0.0	0.0	53.1	24.1	24.1	47.2	18.1	14.2
Incr Delay (d2), s/veh	5.9	0.0	0.0	0.2	0.0	0.0	43.1	6.7	6.4	22.1	2.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	0.6	2.4	0.0	0.0	0.4	15.4	16.1	5.1	15.8	6.8
LnGrp Delay(d),s/veh	40.9	0.0	24.8	26.4	0.0	0.0	96.2	30.8	30.5	69.4	20.8	15.9
LnGrp LOS	D		C	C			F	C	C	E	C	B
Approach Vol, veh/h		370			111			1182			1870	
Approach Delay, s/veh		39.7			26.4			31.1			23.5	
Approach LOS		D			C			C			C	

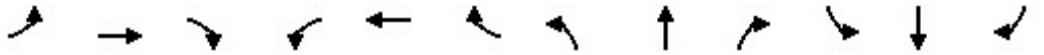
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.2	53.0		39.2	4.8	63.4		39.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	14.0	49.0		45.0	4.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	11.3	32.4		33.4	2.5	34.9		7.7
Green Ext Time (p_c), s	0.1	14.6		1.8	0.0	20.3		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	217	100	42	118	129	797	92	1011
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	26.0	33.0	13.0	20.0	18.0	56.0	18.0	56.0
Total Split (%)	21.7%	27.5%	10.8%	16.7%	15.0%	46.7%	15.0%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	19.9	24.3	7.8	10.1	13.0	53.7	11.5	52.3
Actuated g/C Ratio	0.18	0.22	0.07	0.09	0.12	0.48	0.10	0.47
v/c Ratio	0.84	0.24	0.41	0.62	0.76	0.55	0.61	0.85
Control Delay	69.9	23.7	62.9	33.3	74.7	23.1	65.1	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	69.9	23.7	62.9	33.3	74.7	23.1	65.1	33.3
LOS	E	C	E	C	E	C	E	C
Approach Delay		50.3		38.1		30.2		35.5
Approach LOS		D		D		C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 35.9	Intersection LOS: D
Intersection Capacity Utilization 77.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	217	100	61	42	118	104	129	797	21	92	1011	194
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	236	109	66	46	128	113	140	866	23	100	1099	211
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	264	488	277	56	186	152	165	1682	45	123	1340	256
Arrive On Green	0.17	0.24	0.24	0.04	0.11	0.11	0.10	0.50	0.50	0.08	0.48	0.48
Sat Flow, veh/h	1587	2065	1170	1587	1757	1431	1587	3337	89	1587	2809	537
Grp Volume(v), veh/h	236	87	88	46	122	119	140	435	454	100	654	656
Grp Sat Flow(s),veh/h/ln	1587	1676	1558	1587	1676	1512	1587	1676	1749	1587	1676	1670
Q Serve(g_s), s	15.9	4.6	5.0	3.1	7.6	8.4	9.4	19.0	19.0	6.8	36.5	36.9
Cycle Q Clear(g_c), s	15.9	4.6	5.0	3.1	7.6	8.4	9.4	19.0	19.0	6.8	36.5	36.9
Prop In Lane	1.00		0.75	1.00		0.95	1.00		0.05	1.00		0.32
Lane Grp Cap(c), veh/h	264	396	369	56	177	160	165	845	881	123	800	796
V/C Ratio(X)	0.89	0.22	0.24	0.81	0.69	0.75	0.85	0.51	0.52	0.82	0.82	0.82
Avail Cap(c_a), veh/h	320	446	414	131	246	222	204	845	881	204	800	796
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	33.5	33.7	52.2	47.0	47.3	48.0	18.1	18.1	49.5	24.5	24.6
Incr Delay (d2), s/veh	22.9	0.3	0.3	23.6	4.6	8.5	22.9	2.2	2.1	12.2	9.1	9.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	2.1	2.2	1.8	3.8	3.9	5.2	9.2	9.6	3.4	18.7	19.0
LnGrp Delay(d),s/veh	67.4	33.8	34.0	75.9	51.6	55.8	70.9	20.4	20.3	61.7	33.6	34.0
LnGrp LOS	E	C	C	E	D	E	E	C	C	E	C	C
Approach Vol, veh/h		411			287			1029			1410	
Approach Delay, s/veh		53.2			57.2			27.2			35.8	
Approach LOS		D			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	58.9	7.9	29.8	15.4	56.0	22.1	15.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	52.0	9.0	29.0	14.0	52.0	22.0	16.0
Max Q Clear Time (g_c+I1), s	8.8	21.0	5.1	7.0	11.4	38.9	17.9	10.4
Green Ext Time (p_c), s	0.1	20.0	0.0	2.5	0.1	10.4	0.3	1.2

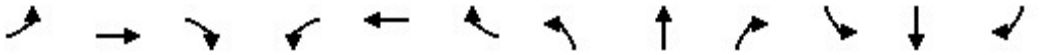
Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	189	3	15	3	10	1177	53	1100	216
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	8.0	63.0	12.0	67.0	67.0
Total Split (%)	37.5%	37.5%	37.5%	37.5%	6.7%	52.5%	10.0%	55.8%	55.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	27.9	27.9		27.9	4.0	61.1	7.5	68.9	68.9
Actuated g/C Ratio	0.26	0.26		0.26	0.04	0.57	0.07	0.65	0.65
v/c Ratio	0.94	0.09		0.41	0.18	0.67	0.52	0.55	0.22
Control Delay	87.3	10.5		17.5	61.5	20.5	68.2	13.6	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	87.3	10.5		17.5	61.5	20.8	68.2	13.6	2.2
LOS	F	B		B	E	C	E	B	A
Approach Delay		75.8		17.5		21.2		13.9	
Approach LOS		E		B		C		B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 106.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 21.7 — Intersection LOS: C
Intersection Capacity Utilization 74.4% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	189	3	30	15	3	159	10	1177	7	53	1100	216
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	205	3	33	16	3	173	11	1279	8	58	1196	235
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	34	375	54	24	365	17	1949	12	72	2029	908
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.01	0.57	0.57	0.05	0.61	0.61
Sat Flow, veh/h	1077	127	1392	60	89	1355	1587	3416	21	1587	3353	1500
Grp Volume(v), veh/h	205	0	36	192	0	0	11	628	659	58	1196	235
Grp Sat Flow(s),veh/h/ln	1077	0	1519	1504	0	0	1587	1676	1761	1587	1676	1500
Q Serve(g_s), s	13.0	0.0	1.8	0.0	0.0	0.0	0.7	26.8	26.8	3.8	22.8	7.6
Cycle Q Clear(g_c), s	23.9	0.0	1.8	11.0	0.0	0.0	0.7	26.8	26.8	3.8	22.8	7.6
Prop In Lane	1.00		0.92	0.08		0.90	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	308	0	409	442	0	0	17	956	1005	72	2029	908
V/C Ratio(X)	0.67	0.00	0.09	0.43	0.00	0.00	0.66	0.66	0.66	0.81	0.59	0.26
Avail Cap(c_a), veh/h	443	0	598	627	0	0	61	956	1005	122	2029	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	28.5	31.8	0.0	0.0	51.3	15.3	15.3	49.2	12.6	9.6
Incr Delay (d2), s/veh	2.5	0.0	0.1	0.7	0.0	0.0	36.9	3.5	3.3	18.8	1.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.8	4.7	0.0	0.0	0.5	13.3	13.9	2.0	10.8	3.3
LnGrp Delay(d),s/veh	40.6	0.0	28.6	32.5	0.0	0.0	88.2	18.9	18.7	68.0	13.9	10.3
LnGrp LOS	D		C	C			F	B	B	E	B	B
Approach Vol, veh/h		241			192			1298			1489	
Approach Delay, s/veh		38.8			32.5			19.4			15.4	
Approach LOS		D			C			B			B	

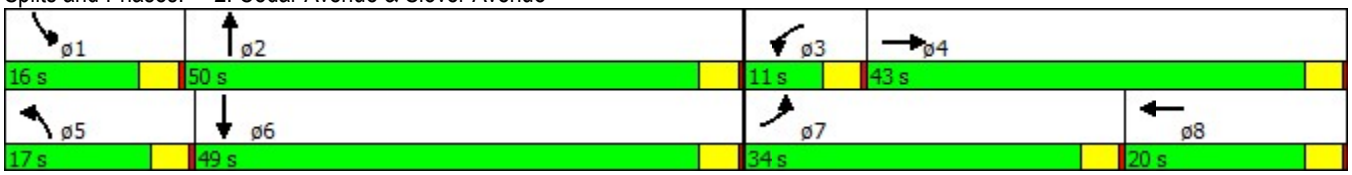
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	63.4		32.0	5.1	67.0		32.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	8.0	59.0		41.0	4.0	63.0		41.0
Max Q Clear Time (g_c+I1), s	5.8	28.8		25.9	2.7	24.8		13.0
Green Ext Time (p_c), s	0.0	23.6		2.1	0.0	28.3		2.5

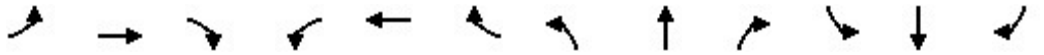
Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	318	223	36	112	137	822	106	944
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	34.0	43.0	11.0	20.0	17.0	50.0	16.0	49.0
Total Split (%)	28.3%	35.8%	9.2%	16.7%	14.2%	41.7%	13.3%	40.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	27.5	35.1	6.7	9.9	12.7	46.6	11.2	45.2
Actuated g/C Ratio	0.25	0.32	0.06	0.09	0.11	0.42	0.10	0.41
v/c Ratio	0.88	0.34	0.41	0.60	0.83	0.67	0.72	0.86
Control Delay	65.6	24.9	66.0	34.0	83.9	29.9	75.2	38.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	24.9	66.0	34.0	83.9	29.9	75.2	38.4
LOS	E	C	E	C	F	C	E	D
Approach Delay		44.9		38.8		37.4		41.7
Approach LOS		D		D		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 40.7	Intersection LOS: D
Intersection Capacity Utilization 79.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	318	223	106	36	112	92	137	822	35	106	944	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	346	242	115	39	122	100	149	893	38	115	1026	125
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	374	693	319	47	190	144	174	1404	60	138	1222	149
Arrive On Green	0.24	0.31	0.31	0.03	0.10	0.10	0.11	0.43	0.43	0.09	0.41	0.41
Sat Flow, veh/h	1587	2232	1028	1587	1819	1378	1587	3277	139	1587	3010	366
Grp Volume(v), veh/h	346	180	177	39	112	110	149	457	474	115	571	580
Grp Sat Flow(s),veh/h/ln	1587	1676	1583	1587	1676	1521	1587	1676	1740	1587	1676	1700
Q Serve(g_s), s	23.6	9.2	9.6	2.7	7.1	7.8	10.2	23.7	23.7	7.9	34.0	34.1
Cycle Q Clear(g_c), s	23.6	9.2	9.6	2.7	7.1	7.8	10.2	23.7	23.7	7.9	34.0	34.1
Prop In Lane	1.00		0.65	1.00		0.91	1.00		0.08	1.00		0.22
Lane Grp Cap(c), veh/h	374	520	491	47	176	159	174	718	745	138	681	690
V/C Ratio(X)	0.93	0.35	0.36	0.83	0.64	0.69	0.86	0.64	0.64	0.83	0.84	0.84
Avail Cap(c_a), veh/h	430	590	557	100	242	220	186	718	745	172	681	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	29.5	29.7	53.5	47.6	47.9	48.5	24.9	24.9	49.8	29.6	29.7
Incr Delay (d2), s/veh	24.3	0.4	0.4	28.6	3.8	5.4	29.4	4.3	4.1	23.5	11.8	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	4.3	4.3	1.6	3.5	3.5	5.9	11.8	12.2	4.4	17.9	18.2
LnGrp Delay(d),s/veh	65.7	29.9	30.1	82.1	51.4	53.3	77.9	29.2	29.0	73.3	41.5	41.4
LnGrp LOS	E	C	C	F	D	D	E	C	C	E	D	D
Approach Vol, veh/h		703			261			1080			1266	
Approach Delay, s/veh		47.6			56.8			35.8			44.3	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	51.5	7.3	38.4	16.1	49.0	30.1	15.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	46.0	7.0	39.0	13.0	45.0	30.0	16.0
Max Q Clear Time (g_c+I1), s	9.9	25.7	4.7	11.6	12.2	36.1	25.6	9.8
Green Ext Time (p_c), s	0.0	14.0	0.0	3.7	0.0	7.2	0.5	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	43.2
HCM 2010 LOS	D

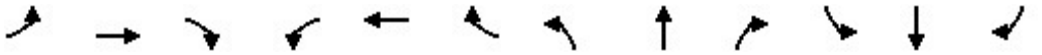
Appendix H

Long-Range (2040) Without Project Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	414	5	5	1	8	1069	129	1452	359
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	51.0	8.0	52.0	17.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	6.7%	43.3%	14.2%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	44.6	44.6		44.6	4.0	48.1	12.2	62.8	62.8
Actuated g/C Ratio	0.38	0.38		0.38	0.03	0.41	0.10	0.54	0.54
v/c Ratio	0.96	0.05		0.16	0.15	0.79	0.78	0.81	0.38
Control Delay	71.2	9.7		5.9	62.6	35.9	82.4	27.6	4.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	9.7		5.9	62.6	35.9	82.4	27.6	4.8
LOS	E	A		A	E	D	F	C	A
Approach Delay		66.7		5.9		36.1		27.1	
Approach LOS		E		A		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 34.1	Intersection LOS: C
Intersection Capacity Utilization 88.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	414	5	28	5	1	97	8	1069	20	129	1452	359
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	414	5	28	5	1	97	8	1069	20	129	1452	359
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	499	88	490	44	22	533	12	1421	27	153	1711	766
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.01	0.42	0.42	0.10	0.51	0.51
Sat Flow, veh/h	1156	233	1302	29	59	1417	1587	3367	63	1587	3353	1500
Grp Volume(v), veh/h	414	0	33	103	0	0	8	532	557	129	1452	359
Grp Sat Flow(s),veh/h/ln	1156	0	1535	1504	0	0	1587	1676	1754	1587	1676	1500
Q Serve(g_s), s	34.3	0.0	1.6	0.0	0.0	0.0	0.6	30.6	30.6	9.1	42.5	17.5
Cycle Q Clear(g_c), s	39.5	0.0	1.6	5.2	0.0	0.0	0.6	30.6	30.6	9.1	42.5	17.5
Prop In Lane	1.00		0.85	0.05		0.94	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	499	0	578	599	0	0	12	707	740	153	1711	766
V/C Ratio(X)	0.83	0.00	0.06	0.17	0.00	0.00	0.64	0.75	0.75	0.84	0.85	0.47
Avail Cap(c_a), veh/h	541	0	634	654	0	0	56	707	740	181	1711	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	22.6	23.7	0.0	0.0	56.3	27.9	27.9	50.6	24.1	17.9
Incr Delay (d2), s/veh	9.8	0.0	0.0	0.1	0.0	0.0	43.9	7.3	7.0	25.5	5.5	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	0.7	2.2	0.0	0.0	0.4	15.5	16.1	5.1	20.9	7.7
LnGrp Delay(d),s/veh	44.3	0.0	22.7	23.9	0.0	0.0	100.2	35.1	34.8	76.1	29.5	20.0
LnGrp LOS	D		C	C			F	D	C	E	C	B
Approach Vol, veh/h		447			103			1097			1940	
Approach Delay, s/veh		42.7			23.9			35.4			30.8	
Approach LOS		D			C			D			C	

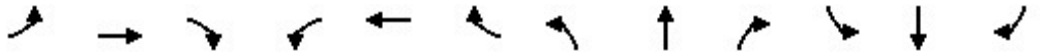
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	52.0		46.8	4.9	62.1		46.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	13.0	48.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	11.1	32.6		41.5	2.6	44.5		7.2
Green Ext Time (p_c), s	0.1	13.7		1.3	0.0	11.3		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	179	107	29	118	135	821	105	1248
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	21.0	31.0	10.0	20.0	18.0	59.0	20.0	61.0
Total Split (%)	17.5%	25.8%	8.3%	16.7%	15.0%	49.2%	16.7%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	15.7	23.7	5.9	9.8	12.8	57.7	12.2	57.2
Actuated g/C Ratio	0.14	0.21	0.05	0.09	0.11	0.52	0.11	0.51
v/c Ratio	0.80	0.24	0.35	0.60	0.75	0.49	0.61	0.85
Control Delay	73.6	24.5	64.8	33.2	73.4	19.6	62.9	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	73.6	24.5	64.8	33.2	73.4	19.6	62.9	31.5
LOS	E	C	E	C	E	B	E	C
Approach Delay		49.6		36.8		27.1		33.7
Approach LOS		D		D		C		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 82.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	107	64	29	118	104	135	821	23	105	1248	194
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	179	107	64	29	118	104	135	821	23	105	1248	194
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	432	242	34	176	143	160	1808	51	129	1522	235
Arrive On Green	0.13	0.21	0.21	0.02	0.10	0.10	0.10	0.54	0.54	0.08	0.52	0.52
Sat Flow, veh/h	1587	2074	1162	1587	1762	1427	1587	3331	93	1587	2912	450
Grp Volume(v), veh/h	179	85	86	29	112	110	135	413	431	105	715	727
Grp Sat Flow(s),veh/h/ln	1587	1676	1560	1587	1676	1513	1587	1676	1748	1587	1676	1685
Q Serve(g_s), s	12.1	4.6	5.0	2.0	7.0	7.7	9.1	16.3	16.3	7.1	38.7	39.5
Cycle Q Clear(g_c), s	12.1	4.6	5.0	2.0	7.0	7.7	9.1	16.3	16.3	7.1	38.7	39.5
Prop In Lane	1.00		0.74	1.00		0.94	1.00		0.05	1.00		0.27
Lane Grp Cap(c), veh/h	206	349	325	34	168	151	160	910	949	129	876	881
V/C Ratio(X)	0.87	0.24	0.26	0.85	0.67	0.73	0.84	0.45	0.45	0.82	0.82	0.82
Avail Cap(c_a), veh/h	247	415	386	87	246	222	204	910	949	233	876	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	36.0	36.2	53.2	47.3	47.6	48.2	15.1	15.1	49.3	21.7	21.8
Incr Delay (d2), s/veh	23.7	0.4	0.4	40.8	4.5	6.5	21.7	1.6	1.6	11.8	8.3	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	2.2	2.2	1.3	3.5	3.5	5.0	7.9	8.2	3.5	19.9	20.3
LnGrp Delay(d),s/veh	70.2	36.4	36.6	94.0	51.8	54.2	69.8	16.8	16.7	61.1	30.0	30.5
LnGrp LOS	E	D	D	F	D	D	E	B	B	E	C	C
Approach Vol, veh/h		350			251			979			1547	
Approach Delay, s/veh		53.7			57.7			24.1			32.3	
Approach LOS		D			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	63.2	6.3	26.7	15.0	61.0	18.1	14.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	55.0	6.0	27.0	14.0	57.0	17.0	16.0
Max Q Clear Time (g_c+I1), s	9.1	18.3	4.0	7.0	11.1	41.5	14.1	9.7
Green Ext Time (p_c), s	0.1	23.5	0.0	2.3	0.1	12.4	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	225	3	15	4	13	1235	55	1299	291
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	47.0	47.0	47.0	47.0	8.0	61.0	12.0	65.0	65.0
Total Split (%)	39.2%	39.2%	39.2%	39.2%	6.7%	50.8%	10.0%	54.2%	54.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	29.0	29.0		29.0	4.0	59.1	7.4	65.4	65.4
Actuated g/C Ratio	0.28	0.28		0.28	0.04	0.56	0.07	0.62	0.62
v/c Ratio	0.92	0.09		0.36	0.22	0.66	0.50	0.62	0.28
Control Delay	78.1	9.7		15.0	62.6	21.1	66.4	16.8	2.6
Queue Delay	0.0	0.0		0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	78.1	9.7		15.0	62.6	21.3	66.4	16.8	2.6
LOS	E	A		B	E	C	E	B	A
Approach Delay		68.2		15.0		21.8		16.0	
Approach LOS		E		B		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 105.4	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 80.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	225	3	35	15	4	159	13	1235	7	55	1299	291
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	225	3	35	15	4	159	13	1235	7	55	1299	291
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	33	386	54	28	372	19	1928	11	68	1994	892
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.01	0.56	0.56	0.04	0.59	0.59
Sat Flow, veh/h	1090	120	1398	58	102	1345	1587	3418	19	1587	3353	1500
Grp Volume(v), veh/h	225	0	38	178	0	0	13	606	636	55	1299	291
Grp Sat Flow(s),veh/h/ln	1090	0	1518	1506	0	0	1587	1676	1761	1587	1676	1500
Q Serve(g_s), s	14.4	0.0	1.9	0.0	0.0	0.0	0.8	25.3	25.3	3.5	26.3	10.0
Cycle Q Clear(g_c), s	24.2	0.0	1.9	9.8	0.0	0.0	0.8	25.3	25.3	3.5	26.3	10.0
Prop In Lane	1.00		0.92	0.08		0.89	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	330	0	420	454	0	0	19	945	993	68	1994	892
V/C Ratio(X)	0.68	0.00	0.09	0.39	0.00	0.00	0.68	0.64	0.64	0.81	0.65	0.33
Avail Cap(c_a), veh/h	486	0	636	666	0	0	62	945	993	124	1994	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	27.5	30.4	0.0	0.0	50.5	15.3	15.3	48.7	13.8	10.5
Incr Delay (d2), s/veh	2.5	0.0	0.1	0.6	0.0	0.0	34.6	3.3	3.2	19.9	1.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	0.8	4.2	0.0	0.0	0.5	12.5	13.1	1.9	12.6	4.4
LnGrp Delay(d),s/veh	39.4	0.0	27.6	31.0	0.0	0.0	85.1	18.6	18.4	68.6	15.4	11.4
LnGrp LOS	D		C	C			F	B	B	E	B	B
Approach Vol, veh/h		263			178			1255			1645	
Approach Delay, s/veh		37.7			31.0			19.2			16.5	
Approach LOS		D			C			B			B	

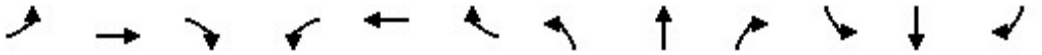
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	61.9		32.4	5.2	65.0		32.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	8.0	57.0		43.0	4.0	61.0		43.0
Max Q Clear Time (g_c+I1), s	5.5	27.3		26.2	2.8	28.3		11.8
Green Ext Time (p_c), s	0.0	23.9		2.1	0.0	25.9		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	B

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	265	207	18	114	119	969	128	1124
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	29.0	39.0	10.0	20.0	16.0	54.0	17.0	55.0
Total Split (%)	24.2%	32.5%	8.3%	16.7%	13.3%	45.0%	14.2%	45.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	22.1	31.8	5.9	9.5	11.3	50.5	12.1	51.2
Actuated g/C Ratio	0.20	0.29	0.05	0.09	0.10	0.46	0.11	0.46
v/c Ratio	0.84	0.32	0.21	0.58	0.73	0.66	0.74	0.80
Control Delay	65.8	24.5	58.9	33.8	75.7	26.8	74.2	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	65.8	24.5	58.9	33.8	75.7	26.8	74.2	31.3
LOS	E	C	E	C	E	C	E	C
Approach Delay		43.4		35.8		32.0		35.3
Approach LOS		D		D		C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 110.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 35.6	Intersection LOS: D
Intersection Capacity Utilization 80.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	265	207	106	18	114	92	119	969	35	128	1124	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	265	207	106	18	114	92	119	969	35	128	1124	115
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	588	290	25	184	137	143	1548	56	153	1460	149
Arrive On Green	0.19	0.27	0.27	0.02	0.10	0.10	0.09	0.47	0.47	0.10	0.48	0.48
Sat Flow, veh/h	1587	2179	1073	1587	1835	1366	1587	3301	119	1587	3072	314
Grp Volume(v), veh/h	265	157	156	18	103	103	119	492	512	128	613	626
Grp Sat Flow(s),veh/h/ln	1587	1676	1575	1587	1676	1524	1587	1676	1744	1587	1676	1709
Q Serve(g_s), s	17.5	8.1	8.6	1.2	6.3	7.0	7.9	23.7	23.7	8.5	32.4	32.6
Cycle Q Clear(g_c), s	17.5	8.1	8.6	1.2	6.3	7.0	7.9	23.7	23.7	8.5	32.4	32.6
Prop In Lane	1.00		0.68	1.00		0.90	1.00		0.07	1.00		0.18
Lane Grp Cap(c), veh/h	294	453	425	25	168	153	143	786	818	153	797	812
V/C Ratio(X)	0.90	0.35	0.37	0.73	0.62	0.67	0.83	0.63	0.63	0.84	0.77	0.77
Avail Cap(c_a), veh/h	370	547	514	89	250	227	177	786	818	192	797	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	31.6	31.7	52.6	46.3	46.6	48.0	21.4	21.4	47.7	23.3	23.3
Incr Delay (d2), s/veh	21.0	0.5	0.5	33.9	3.6	5.1	23.0	3.7	3.6	22.1	7.0	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	3.8	3.8	0.8	3.1	3.2	4.4	11.8	12.2	4.7	16.5	16.9
LnGrp Delay(d),s/veh	63.7	32.0	32.3	86.5	49.9	51.6	71.0	25.2	25.0	69.8	30.3	30.3
LnGrp LOS	E	C	C	F	D	D	E	C	C	E	C	C
Approach Vol, veh/h		578			224			1123			1367	
Approach Delay, s/veh		46.6			53.6			30.0			34.0	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	54.3	5.7	33.0	13.7	55.0	23.9	14.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	50.0	6.0	35.0	12.0	51.0	25.0	16.0
Max Q Clear Time (g_c+I1), s	10.5	25.7	3.2	10.6	9.9	34.6	19.5	9.0
Green Ext Time (p_c), s	0.1	17.1	0.0	3.2	0.1	12.7	0.4	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	36.2
HCM 2010 LOS	D

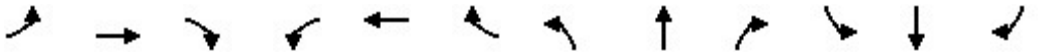
Appendix I

Long-Range (2040) With Project Intersection Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	414	5	5	1	8	1079	129	1462	359
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	51.0	51.0	51.0	51.0	8.0	52.0	17.0	61.0	61.0
Total Split (%)	42.5%	42.5%	42.5%	42.5%	6.7%	43.3%	14.2%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	44.6	44.6		44.6	4.0	48.1	12.2	62.8	62.8
Actuated g/C Ratio	0.38	0.38		0.38	0.03	0.41	0.10	0.54	0.54
v/c Ratio	0.96	0.05		0.16	0.15	0.80	0.78	0.81	0.38
Control Delay	71.2	9.7		5.9	62.6	36.2	82.4	27.9	4.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.2	9.7		5.9	62.6	36.2	82.4	27.9	4.9
LOS	E	A		A	E	D	F	C	A
Approach Delay		66.7		5.9		36.4		27.3	
Approach LOS		E		A		D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 117	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	414	5	28	5	1	97	8	1079	20	129	1462	359
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	414	5	28	5	1	97	8	1079	20	129	1462	359
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	499	88	490	44	22	533	12	1421	26	153	1711	766
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.01	0.42	0.42	0.10	0.51	0.51
Sat Flow, veh/h	1156	233	1302	29	59	1417	1587	3368	62	1587	3353	1500
Grp Volume(v), veh/h	414	0	33	103	0	0	8	537	562	129	1462	359
Grp Sat Flow(s),veh/h/ln	1156	0	1535	1504	0	0	1587	1676	1754	1587	1676	1500
Q Serve(g_s), s	34.3	0.0	1.6	0.0	0.0	0.0	0.6	31.0	31.0	9.1	43.1	17.5
Cycle Q Clear(g_c), s	39.5	0.0	1.6	5.2	0.0	0.0	0.6	31.0	31.0	9.1	43.1	17.5
Prop In Lane	1.00		0.85	0.05		0.94	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	499	0	578	599	0	0	12	707	740	153	1711	766
V/C Ratio(X)	0.83	0.00	0.06	0.17	0.00	0.00	0.64	0.76	0.76	0.84	0.85	0.47
Avail Cap(c_a), veh/h	541	0	634	654	0	0	56	707	740	181	1711	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	22.6	23.7	0.0	0.0	56.3	28.0	28.0	50.6	24.2	17.9
Incr Delay (d2), s/veh	9.8	0.0	0.0	0.1	0.0	0.0	43.9	7.5	7.2	25.5	5.7	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	0.0	0.7	2.2	0.0	0.0	0.4	15.8	16.5	5.1	21.2	7.7
LnGrp Delay(d),s/veh	44.3	0.0	22.7	23.9	0.0	0.0	100.2	35.5	35.2	76.1	29.9	20.0
LnGrp LOS	D		C	C			F	D	D	E	C	B
Approach Vol, veh/h		447			103			1107			1950	
Approach Delay, s/veh		42.7			23.9			35.8			31.1	
Approach LOS		D			C			D			C	

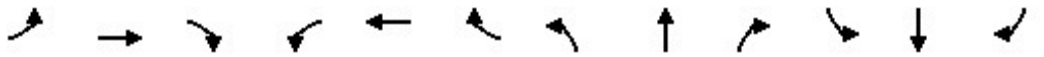
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	52.0		46.8	4.9	62.1		46.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	13.0	48.0		47.0	4.0	57.0		47.0
Max Q Clear Time (g_c+I1), s	11.1	33.0		41.5	2.6	45.1		7.2
Green Ext Time (p_c), s	0.1	13.4		1.3	0.0	10.9		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	219	120	42	118	148	821	105	1274
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	23.0	32.0	11.0	20.0	17.0	57.0	20.0	60.0
Total Split (%)	19.2%	26.7%	9.2%	16.7%	14.2%	47.5%	16.7%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.2	25.5	6.7	9.8	12.7	56.5	12.3	56.1
Actuated g/C Ratio	0.16	0.23	0.06	0.09	0.11	0.50	0.11	0.50
v/c Ratio	0.86	0.24	0.45	0.61	0.83	0.50	0.61	0.89
Control Delay	76.9	24.9	68.2	33.5	85.1	21.2	63.5	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Total Delay	76.9	24.9	68.2	33.5	85.1	21.2	63.5	36.5
LOS	E	C	E	C	F	C	E	D
Approach Delay		53.2		39.0		30.7		38.3
Approach LOS		D		D		C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 112.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 37.9	Intersection LOS: D
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	219	120	64	42	118	104	148	821	23	105	1274	194
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	219	120	64	42	118	104	148	821	23	105	1274	194
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	477	240	51	175	142	172	1746	49	128	1450	219
Arrive On Green	0.15	0.22	0.22	0.03	0.10	0.10	0.11	0.52	0.52	0.08	0.50	0.50
Sat Flow, veh/h	1587	2161	1088	1587	1762	1427	1587	3331	93	1587	2921	442
Grp Volume(v), veh/h	219	92	92	42	112	110	148	413	431	105	728	740
Grp Sat Flow(s),veh/h/ln	1587	1676	1573	1587	1676	1513	1587	1676	1748	1587	1676	1687
Q Serve(g_s), s	15.3	5.1	5.5	3.0	7.3	8.0	10.3	17.5	17.6	7.3	43.5	44.4
Cycle Q Clear(g_c), s	15.3	5.1	5.5	3.0	7.3	8.0	10.3	17.5	17.6	7.3	43.5	44.4
Prop In Lane	1.00		0.69	1.00		0.94	1.00		0.05	1.00		0.26
Lane Grp Cap(c), veh/h	244	370	347	51	166	150	172	879	917	128	832	837
V/C Ratio(X)	0.90	0.25	0.27	0.82	0.67	0.73	0.86	0.47	0.47	0.82	0.87	0.88
Avail Cap(c_a), veh/h	267	416	390	99	238	215	183	879	917	225	832	837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	36.2	36.4	54.3	49.0	49.4	49.4	16.9	16.9	51.0	25.3	25.5
Incr Delay (d2), s/veh	28.4	0.3	0.4	26.1	4.6	7.4	30.2	1.8	1.7	12.0	12.3	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	2.4	2.4	1.7	3.6	3.6	6.0	8.5	8.8	3.6	22.9	23.6
LnGrp Delay(d),s/veh	75.2	36.6	36.8	80.4	53.7	56.8	79.6	18.7	18.7	63.0	37.6	38.6
LnGrp LOS	E	D	D	F	D	E	E	B	B	E	D	D
Approach Vol, veh/h		403			264			992			1573	
Approach Delay, s/veh		57.6			59.2			27.8			39.8	
Approach LOS		E			E			C			D	

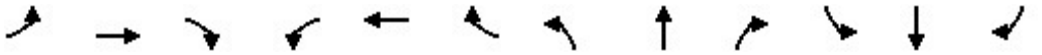
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	63.1	7.6	28.9	16.2	60.0	21.4	15.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	53.0	7.0	28.0	13.0	56.0	19.0	16.0
Max Q Clear Time (g_c+I1), s	9.3	19.6	5.0	7.5	12.3	46.4	17.3	10.0
Green Ext Time (p_c), s	0.1	22.5	0.0	2.4	0.0	8.2	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	225	3	15	4	13	1251	55	1315	291
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases		4		8	5	2	1	6	
Permitted Phases	4		8						6
Detector Phase	4	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	46.0	46.0	46.0	46.0	8.0	62.0	12.0	66.0	66.0
Total Split (%)	38.3%	38.3%	38.3%	38.3%	6.7%	51.7%	10.0%	55.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	29.3	29.3		29.3	4.0	60.1	7.5	66.3	66.3
Actuated g/C Ratio	0.27	0.27		0.27	0.04	0.56	0.07	0.62	0.62
v/c Ratio	0.93	0.09		0.36	0.22	0.67	0.50	0.63	0.28
Control Delay	80.7	9.9		15.4	63.2	21.2	67.2	16.8	2.5
Queue Delay	0.0	0.0		0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	80.7	9.9		15.4	63.2	21.4	67.2	16.8	2.5
LOS	F	A		B	E	C	E	B	A
Approach Delay		70.5		15.4		21.8		16.0	
Approach LOS		E		B		C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 106.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 22.4	Intersection LOS: C
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Cedar Avenue & Orange Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	225	3	35	15	4	159	13	1251	7	55	1315	291
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	225	3	35	15	4	159	13	1251	7	55	1315	291
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	33	386	54	28	371	19	1934	11	68	2000	895
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.01	0.57	0.57	0.04	0.60	0.60
Sat Flow, veh/h	1090	120	1398	59	102	1345	1587	3419	19	1587	3353	1500
Grp Volume(v), veh/h	225	0	38	178	0	0	13	613	645	55	1315	291
Grp Sat Flow(s),veh/h/ln	1090	0	1518	1506	0	0	1587	1676	1761	1587	1676	1500
Q Serve(g_s), s	14.7	0.0	1.9	0.0	0.0	0.0	0.8	26.1	26.1	3.6	27.1	10.1
Cycle Q Clear(g_c), s	24.6	0.0	1.9	9.9	0.0	0.0	0.8	26.1	26.1	3.6	27.1	10.1
Prop In Lane	1.00		0.92	0.08		0.89	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	328	0	419	453	0	0	19	948	996	68	2000	895
V/C Ratio(X)	0.69	0.00	0.09	0.39	0.00	0.00	0.68	0.65	0.65	0.81	0.66	0.33
Avail Cap(c_a), veh/h	467	0	613	643	0	0	61	948	996	122	2000	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	0.0	27.9	30.8	0.0	0.0	51.2	15.5	15.5	49.3	13.9	10.5
Incr Delay (d2), s/veh	2.5	0.0	0.1	0.6	0.0	0.0	34.8	3.4	3.2	19.8	1.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	0.8	4.3	0.0	0.0	0.6	12.8	13.4	1.9	12.9	4.4
LnGrp Delay(d),s/veh	40.1	0.0	28.0	31.4	0.0	0.0	86.0	18.9	18.7	69.2	15.6	11.5
LnGrp LOS	D		C	C			F	B	B	E	B	B
Approach Vol, veh/h		263			178			1271			1661	
Approach Delay, s/veh		38.3			31.4			19.5			16.7	
Approach LOS		D			C			B			B	

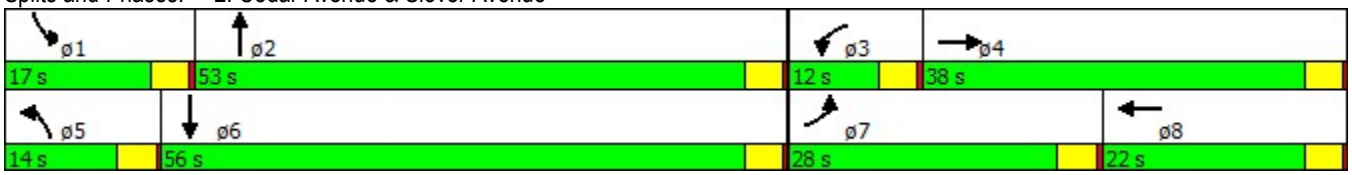
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	62.8		32.7	5.3	66.0		32.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	8.0	58.0		42.0	4.0	62.0		42.0
Max Q Clear Time (g_c+I1), s	5.6	28.1		26.6	2.8	29.1		11.9
Green Ext Time (p_c), s	0.0	24.3		2.1	0.0	26.3		2.5

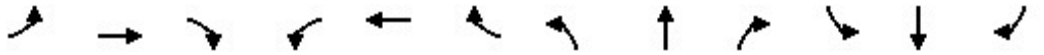
Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	318	225	36	114	137	969	128	1159
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	28.0	38.0	12.0	22.0	14.0	53.0	17.0	56.0
Total Split (%)	23.3%	31.7%	10.0%	18.3%	11.7%	44.2%	14.2%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	24.0	30.5	7.2	9.5	10.0	49.9	12.2	52.0
Actuated g/C Ratio	0.22	0.27	0.06	0.09	0.09	0.45	0.11	0.47
v/c Ratio	0.94	0.36	0.35	0.59	0.97	0.67	0.74	0.82
Control Delay	79.1	28.3	60.4	33.8	120.4	27.7	74.4	31.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	79.1	28.3	60.4	33.8	120.4	27.7	74.4	31.8
LOS	E	C	E	C	F	C	E	C
Approach Delay		53.2		37.8		38.8		35.7
Approach LOS		D		D		D		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.6	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 40.2	Intersection LOS: D
Intersection Capacity Utilization 85.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 2: Cedar Avenue & Slover Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	318	225	106	36	114	92	137	969	35	128	1159	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1800	1667	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	318	225	106	36	114	92	137	969	35	128	1159	115
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	639	291	43	186	138	140	1488	54	152	1412	140
Arrive On Green	0.21	0.29	0.29	0.03	0.10	0.10	0.09	0.45	0.45	0.10	0.46	0.46
Sat Flow, veh/h	1587	2241	1020	1587	1835	1366	1587	3301	119	1587	3082	305
Grp Volume(v), veh/h	318	166	165	36	103	103	137	492	512	128	630	644
Grp Sat Flow(s),veh/h/ln	1587	1676	1585	1587	1676	1524	1587	1676	1744	1587	1676	1711
Q Serve(g_s), s	22.4	8.9	9.4	2.6	6.7	7.4	9.8	25.9	25.9	9.0	37.0	37.2
Cycle Q Clear(g_c), s	22.4	8.9	9.4	2.6	6.7	7.4	9.8	25.9	25.9	9.0	37.0	37.2
Prop In Lane	1.00		0.64	1.00		0.90	1.00		0.07	1.00		0.18
Lane Grp Cap(c), veh/h	336	478	452	43	170	154	140	755	786	152	768	784
V/C Ratio(X)	0.95	0.35	0.36	0.83	0.61	0.67	0.98	0.65	0.65	0.84	0.82	0.82
Avail Cap(c_a), veh/h	336	502	475	112	266	242	140	755	786	182	768	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	32.2	32.3	54.9	48.9	49.2	51.6	24.2	24.2	50.5	26.7	26.7
Incr Delay (d2), s/veh	35.4	0.4	0.5	31.0	3.5	4.9	69.6	4.3	4.2	25.1	9.5	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	4.2	4.2	1.5	3.3	3.3	7.0	12.8	13.3	5.0	19.0	19.6
LnGrp Delay(d),s/veh	79.6	32.6	32.8	86.0	52.4	54.0	121.3	28.6	28.4	75.6	36.2	36.2
LnGrp LOS	E	C	C	F	D	D	F	C	C	E	D	D
Approach Vol, veh/h		649			242			1141			1402	
Approach Delay, s/veh		55.7			58.1			39.6			39.8	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	55.1	7.1	36.4	14.0	56.0	28.0	15.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	49.0	8.0	34.0	10.0	52.0	24.0	18.0
Max Q Clear Time (g_c+I1), s	11.0	27.9	4.6	11.4	11.8	39.2	24.4	9.4
Green Ext Time (p_c), s	0.1	15.6	0.0	3.3	0.0	10.4	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	44.0
HCM 2010 LOS	D