City of Galt
Community Development Department

Carillion Boulevard Corridor Plan

Initial Study/Negative Declaration

March 2020

Prepared by

RANEY PLANNING & MANAGEMENT, INC.
1501 Sports Drive, Suite A, Sacramento, CA 95834

TABLE OF CONTENTS

INITIAL STUDY

March 2020

A. BACKGROUND

1. Project Title: Carillion Boulevard Corridor Plan

2. Lead Agency Name and Address: City of Galt
Community Development Department
495 Industrial Drive
Galt, CA 95632

3. Contact Person and Phone Number: Chris Erias
Community Development Director
(209) 366-7230

4. Project Location: Galt, CA

5. Project Applicant's Name and Address: City of Galt
Community Development Department
495 Industrial Drive
Galt, CA 95632

6. Existing and Proposed General Plan Designation: Multiple
(project not changing designations)

7. Existing and Proposed Zoning Designation: Multiple (project not changing designations)

8. Required Approvals from Other Public Agencies: Encroachment Permit (Caltrans)

9. Project Description Summary:

   The Carillion Boulevard Corridor Plan (proposed project) consists of a planning-level document identifying various future roadway improvements along existing segments and planned extensions of Carillion Boulevard. The proposed project would provide for implementation of a road diet along the roadway, as well as installation of roundabouts at most intersections, among other improvements. The improvements included in the proposed project have been designed to implement the Complete Streets policy framework identified in the Circulation Element of the General Plan.

10. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

   The City of Galt's tribal consultation request list, pursuant to Assembly Bill (AB) 52/Public Resources Code Section 21080.3.1, currently includes the Torres Martinez Desert Cahuilla Indians and Wilton Rancheria. The City provided each of the tribes with notification regarding the proposed project, consistent with Section 21080.3.1

requirements. The mandatory 30-day response period for consultation under AB 52 closed, and requests for consultation on the proposed project were not received.

B. SOURCES

All of the technical reports and modeling results used for the project analysis are available upon request at the City of Galt Community Development Department, located at 495 Industrial Drive, Galt. Office hours are Monday through Thursday, 7:30 AM to 5:30 PM. The following documents are referenced information sources used for the purposes of this Initial Study:

1. Cal Fire. *Sacramento County, Draft Fire Hazard Severity Zones in LRA.* October 2, 2007.
2. California Air Resources Board. *The 2017 Climate Change Scoping Plan Update.* November, 2017.
3. California Department of Conservation. *Alquist-Priolo Fault Zone and Seismic Hazard Zone Maps*. Available at: https://www.conservation.ca.gov/cgs/information-warehouse. 2016. Accessed July 25, 2019.
4. California Department of Conservation. *California Important Farmland 2016. Accessed* August 2018.
5. California Department of Forestry and Fire Protection. *Sacramento County Draft Fire Hazard Severity Zones in LRA.* October 2, 2007.
6. California Department of Toxic Substances Control. *EnviroStor.* Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=galt%2C+ca. Accessed September 2019.
7. City of Galt. *2015 Urban Water Management Plan Update*. June 2016.
8. City of Galt. *2030 Galt General Plan.* April 2009.
9. City of Galt. *City of Galt 2030 General Plan EIR*. April 2009.
10. City of Galt. *City of Galt Emergency Operations Plan.* March 6, 2012.
11. City of Galt. *City of Galt General Plan Policy Document*. April 2009.
12. City of Galt. *City of Galt General Plan Policy Document*. April 2009.
13. City of Galt. *Environmental Impact Report for the 2030 Galt General Plan, SCH No. 2007082092.* April 2009.
14. Department of Conservation, California Geological Survey. *Special Report 192: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California*. 2006.
15. Federal Emergency Management Agency. *Flood Insurance Rate Map, Panel 06067C0468J.* Updated April 2019.
16. GHD. *Carillion Boulevard Complete Street Corridor Study.* August 30, 2019.
17. Native American Heritage Commission. *Carillion Boulevard Corridor Plan Project, Sacramento County.* August 29, 2019.
18. North Central Information Center. *Records Search Results for Carillion Boulevard Corridor Plan.* August 21, 2019.
19. Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment in Sacramento County* [pg. 3-2]. Updated April 2019.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "less-than-significant with mitigation incorporated" as indicated by the checklist on the following pages.

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

D. DETERMINATION

On the basis of this initial study:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

× I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

____________________	____________________
Signature	Date
Chris Erias	City of Galt
Printed Name	For

E. BACKGROUND AND INTRODUCTION

The following document is an Initial Study resulting in a Mitigated Negative Declaration (IS/MND) prepared pursuant to the California Environmental Quality Act (CEQA) for the Carillion Boulevard Corridor Plan (proposed project). The IS/MND has been prepared in accordance with CEQA, Public Resources Code Sections 21000 et seq., and the State CEQA Guidelines to evaluate the potential environmental impacts of the proposed project. Pursuant to Appendix G of CEQA Guidelines, the IS/MND includes an environmental checklist used to describe the impacts of the proposed project.

In 2009, the City of Galt adopted the 2030 Galt General Plan (General Plan).[1] The General Plan provides a long-term vision for Galt's growth and outlines policies, standards, and programs to guide day-to-day decisions concerning Galt's development through the year 2030. Concurrent with adoption of the General Plan, the City certified an associated General Plan Environmental Impact Report (EIR).[2] The General Plan EIR is a program EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations, Sections 15000 et seq.). The General Plan EIR analyzed full implementation of the Galt General Plan and identified measures to mitigate the significant adverse impacts associated with the General Plan.

The Circulation Element of the General Plan identified major improvements to the City's roadway system, including the widening of State Route (SR) 99; improvements and realignments of major SR 99 overpasses and on- and offramps; new north-south extensions of Carillion Boulevard, Marengo Road, and Industrial Drive; and new east-west extensions of Walnut Avenue, Simmerhorn Road, Boessow Road. Per the Circulation Element, Carillion Boulevard was initially planned to be extended southwest as a four-lane arterial from Simmerhorn Road to Boessow Road. Environmental impacts associated with buildout of the General Plan, including planned improvements to Carillion Boulevard, were analyzed in the General Plan EIR.

In February 2017, the California Energy Commission presented a grant funding opportunity to local governments by initiating the Small Government Leadership Challenge (SGLC) and the Energy Innovation Challenge (EIC) programs. Both of the programs were enabled by the State Energy Program funds made possible by the American Recovery and Reinvestment Act (ARRA) of 2009. The City of Galt applied for an SGLC grant to help fund the preparation of a Climate Action Plan (CAP) to aid the reduction of greenhouse gases (GHGs) within the City. In addition, the SGLC grant application included funding for preparation of a Carillion Boulevard Corridor Plan, which is the subject of this IS/MND.

The proposed project has been designed to implement the Complete Streets policy framework identified in the Circulation Element of the General Plan. The General Plan identifies the following goals and policies in the implementation of Complete Streets within the City:

- Goal C-8: To promote the creation of complete streets throughout the community which provide safe access to pedestrians, bicyclists, motorists, and bus riders of all ages and abilities.
    - Policy C-8.1: Attractive Streets. The City shall provide attractive streets designed to serve a broad spectrum of travel modes (e.g., bikes, pedestrians, transit, and people with disabilities) as well as automobiles.

---

1 City of Galt. *2030 Galt General Plan.* April 2009.
2 City of Galt. *Environmental Impact Report for the 2030 Galt General Plan, SCH No. 2007082092.* April 2009.

- Policy C-8.2: Bikeways along Major Streets. The City should provide Class II bike lanes along all collector and minor arterial streets. Class I bike paths should be considered along major arterials and along certain minor arterials.
- Policy C-8.3: Street, Pedestrian, and Bicycle Facilities. The City shall create a network of street, pedestrian, and bicycle facilities that provides for multiple safe routes between various origins and destinations.
- Policy C-8.4: Pedestrian and Bike Convenience at Intersections. The City should design and build new intersections and redesign existing intersections (as opportunities arise) to maximize pedestrian and bike convenience and safety relative to automobile needs
- Policy C-8.5: Intersection Speed Reduction. The City should design intersections to reduce car speeds through the use of various traffic calming measures such as bulb-outs, reduced corner radii, and/or on-street parking.
- Policy C-8.6: Bikeway and Pedestrian Trail Funding Mechanisms. The City should develop mechanisms to increase the funding for the creation and maintenance of bikeways and pedestrian trails.
- Policy C-8.7: Bike Safety Outreach Program. The City should seek/develop funding mechanisms to create an outreach program to promote bike safety and the use of bikes as a viable and attractive alternative to cars.
- Policy C-8.8: Transit Access in New Developments. The City shall, where appropriate, require new developments that are located adjacent to arterial streets or existing/planned transit routes to include bus loading zones, shelters, lighting, and other amenities which make transit attractive and safe.

Community Outreach

Four meetings were held to present the purpose and goals of the study, the findings of the existing technical analysis (collision data, existing multimodal facilities, operations, etc.), the potential options for complete street improvements, and receive the community's concerns and answer questions. The four meetings are listed below:

- A meeting was held on Wednesday, November 14, 2018 with the Galt Joint Union Elementary School District staff.
- A public meeting was held on Monday, November 26, 2018, as part of the Galt Public Safety Committee meeting, at the City Police Department.
- A public meeting was held on Monday, December 3, 2018 with the Youth Commission.
- A public meeting was held on Monday, March 25, 2019 as part of the Galt Public Safety Committee meeting.

At the meetings noted above, the community expressed concerns such as speeding vehicles along Carillion Boulevard, the safeness of crossing intersections, especially for schoolchildren, longer crossing distances, and design flexibility for school buses, and emergency service vehicles. Although people use the sidewalks along Carillion Boulevard, the public considers the bike lanes to be too narrow and unsafe. Lastly, Carillion Boulevard, as well as Walnut Avenue, are considered as barriers or boundaries of neighborhoods rather than conduits for connecting neighborhoods. Parents indicated they do not allow their children to cross Carillion Boulevard to either go to school or visit friends.

On March 25, 2019, a second workshop was held to present alternative concepts to improve Carillion Boulevard in response to the community's concerns. Two alternatives were presented. The alternatives analyzed include two concepts: one with a road diet and roundabouts, and one without a road diet and traffic signals as control types. Ultimately, to best address concerns noted at the public meetings, the City elected to focus on the road diet and roundabout concept, which is analyzed herein.

F. PROJECT DESCRIPTION

The following sections describe the location and setting of the project site, the roadway improvements included in the proposed project, and the relationship between the proposed project and other local planning documents and pending development proposals.

Project Location and Setting

The proposed project consists of Corridor Plan identifying future improvements to Carillion Boulevard within the City of Galt (see Figure 1 and Figure 2). Carillion Boulevard is a divided, north-south arterial facility that generally serves northeast Galt. Currently, Carillion Boulevard extends from Twin Cities Road southward to Simmerhorn Boulevard. The extent of Carillion Boulevard is roughly contiguous with the boundaries of the City's Northeast Area Specific Plan.

Between Twin Cities Road and Vauxhall Avenue, Carillion Boulevard is a four-lane arterial (two lanes in each direction), and the areas adjacent to the roadway are primarily built-out. South of Vauxhall Avenue, Carillion Boulevard narrows to one lane in each direction. The posted speed limit on Carillion Boulevard is 45 mph, and 25 mph in school areas. Neighboring land uses along the southern portion of the roadway are limited to agricultural operations and scattered rural single-family residences.

The existing rights-of-way along Carillion Boulevard within the specified study limits are as follows:

- Twin Cities Road to Vauxhall Avenue – right-of-way varies between 65-105 feet (which includes approximately eight feet of landscaping and wide sidewalks); and
- Vauxhall Avenue to Simmerhorn Road – right-of-way is currently 30 feet.

Carillion Boulevard is located within the City limits between Twin Cities Road and Vauxhall Avenue. From Vauxhall Avenue to Simmerhorn Road, Carillion Boulevard is included in the City of Galt's Sphere of Influence (SOI), but is operated and maintained by Sacramento County.

Project Components

The proposed project would include implementation of a road diet along Carillion Boulevard (see Figure 3). Along the existing roadway between Twin Cities Road and Vauxhall Avenue, the road diet would convert the current four-lane facility into a two-lane facility and allow room for a buffered bike lane in each direction. Between Vauxhall Road and Simmerhorn Boulevard, the project would include future widening of the existing two-lane roadway to accommodate buffered bike lanes and sidewalks. The aforementioned improvements would occur primarily within the existing rights-of-way; however, limited right-of-way expansions would be necessary in some locations, resulting in disturbance of areas that are not currently paved.

Per General Plan Policy C-2.6, the City has planned for extension of Carillion Boulevard south to the present location of the Crystal Way/SR 99 on- and off-ramps, near the Dry Creek Ranch Golf Course. The planned extension would be included in the proposed project; however, the proposed project would not require substantially increased right-of-way relative to what was previously considered by the City per Policy C-2.6.

Figure 1
Regional Project Location

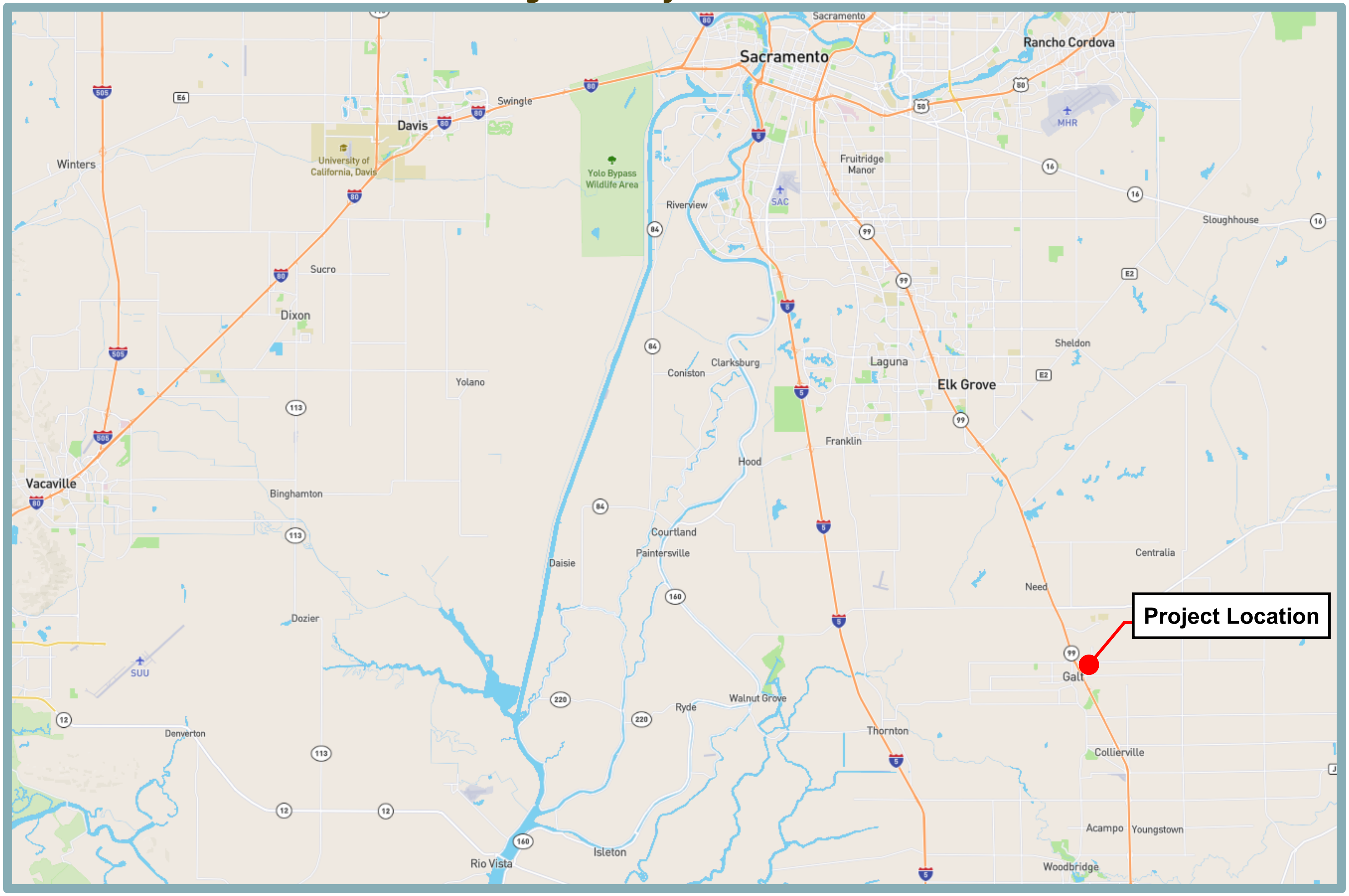
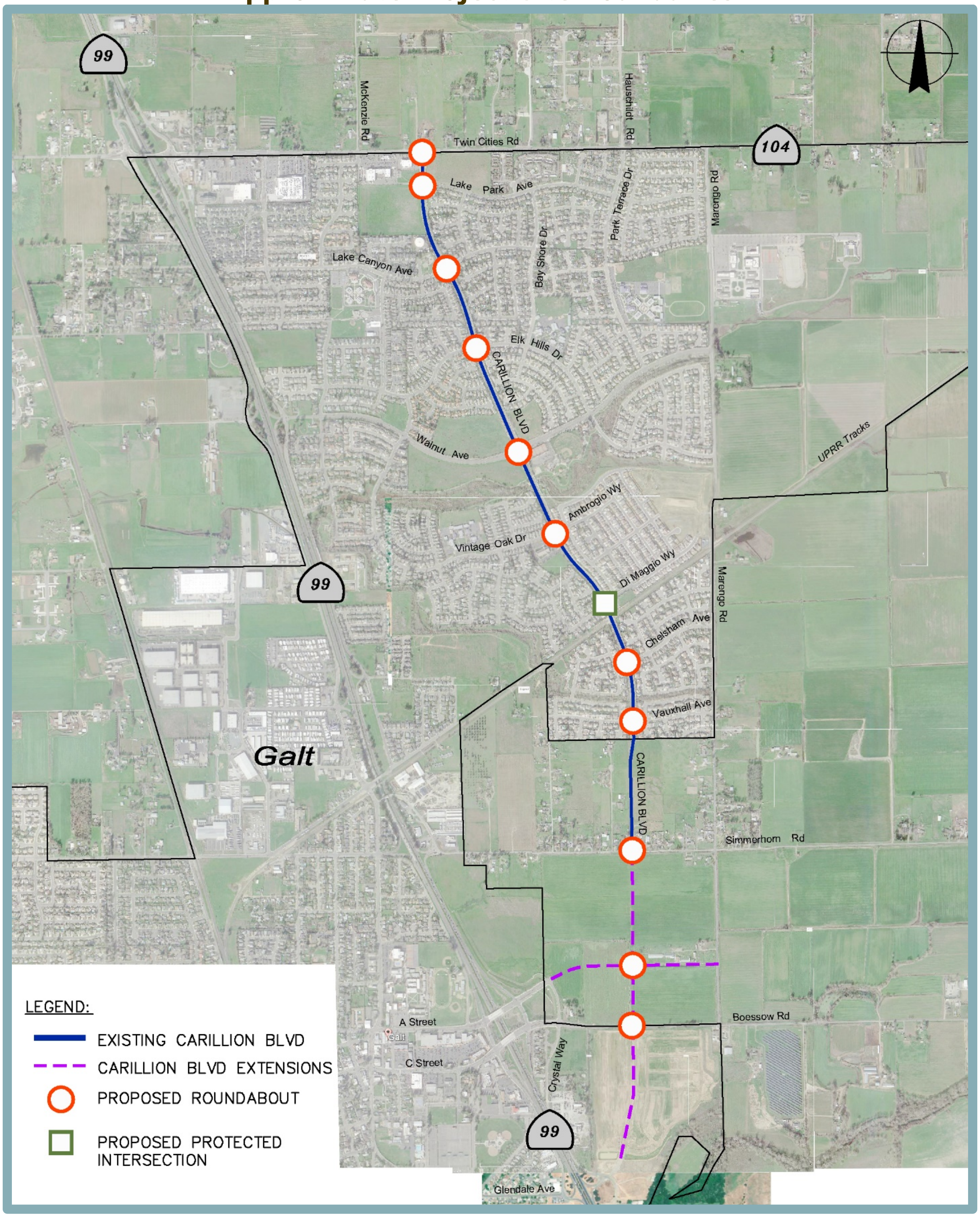
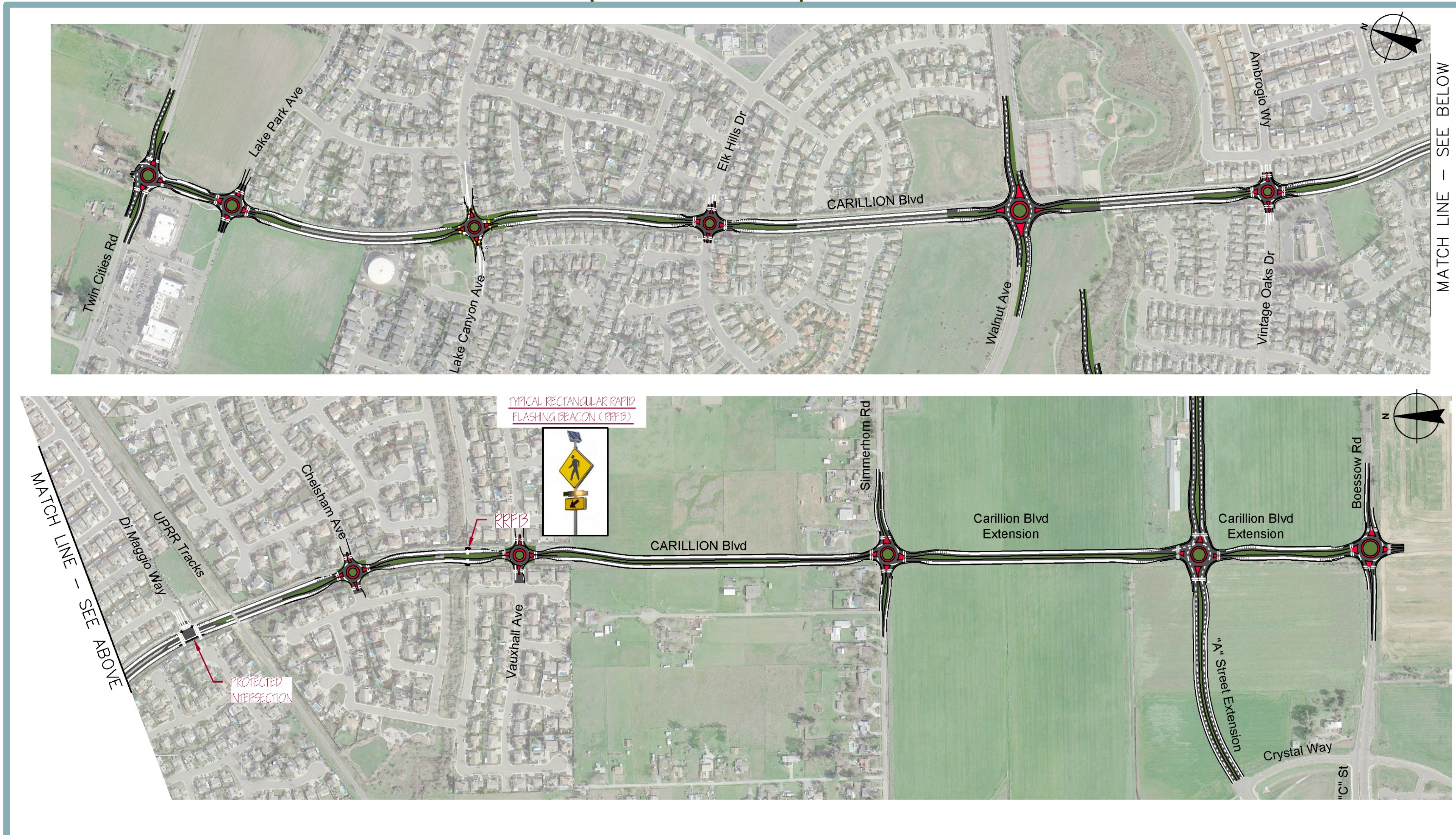


Figure 2
Approximate Project Site Boundaries



Source: GHD, 2019.

Figure 3
Proposed Intersection Improvements



Source: GHD, 2019.

Figure 4 provides an overview of the proposed Carillion Boulevard two-lane cross-section. As shown in the figure, the proposed bike lane buffers would be six feet wide. The bike lanes would be eight feet wide, and would accommodate bicycles, scooters, electric scooters, and other low-speed electric vehicles.

In addition, the proposed project identifies future construction of roundabouts at all of the intersections along Carillion Boulevard except for at Di Maggio Way. The roundabouts would provide improved throughput for the two-lane roadway, while also creating a safer environment for pedestrians and bicyclists to cross. The ‘T’-intersection of Carillion Boulevard at Di Maggio Way is proposed to be a protected intersection, which would provide separated pedestrian and bicycle facilities to enhance the safety of conflict areas between automobiles, bicycles and pedestrians at the intersection. Additionally, a mid-block crossing with a Rectangular Rapid Flashing Beacon (RRFB) is proposed north of Vauxhall Avenue, to provide for safer crossing of the Class I path along Deadman Gulch.

Lastly, the proposed project includes refinements to the planned east-west “A” Street extension from the existing Crystal Way terminus near Boessow Road, eastward to Marengo Road. As shown in Figure 3, the east-west extension would include two lanes in each direction. Generally, the east-west extension improvements would be consistent with the General Plan Circulation Element.

Relationship to Other Planning Documents

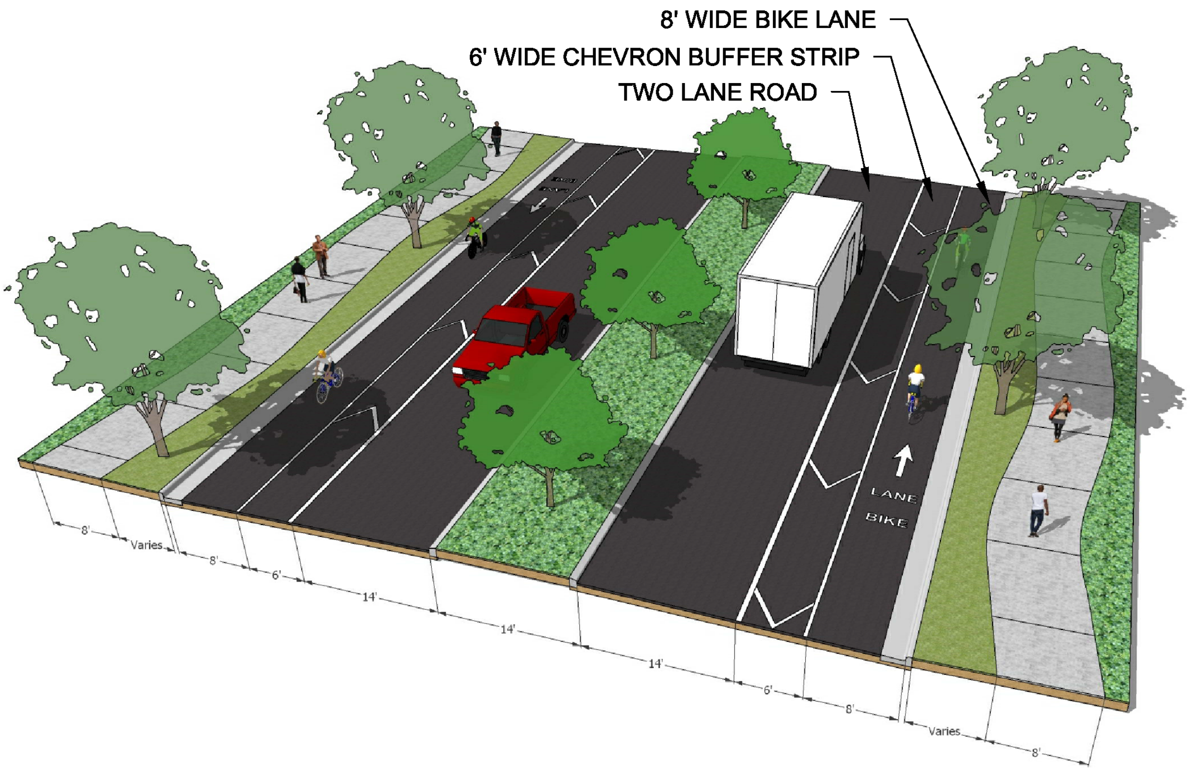
As noted previously, per the Circulation Element of the City’s General Plan, Carillion Boulevard was initially planned to be extended southwest as a four-lane arterial from Simmerhorn Road to Boessow Road. While the proposed project would alter the configuration of the roadway, the project would not result in substantial right-of-way expansions beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR.

Furthermore, the Carillion Boulevard extension is located within the East Galt Infill Annexation/Simmerhorn Ranch Area; specifically, within a 119.6-acre portion referred to as the Simmerhorn Ranch site. The City has received an application for the East Galt Infill Annexation/Simmerhorn Ranch Development, which, if approved, would include annexation of the East Galt Infill Area to the City and buildout of planned roadway improvements on the Simmerhorn Ranch site. The roadway improvements occurring with the East Galt Infill/Simmerhorn Ranch Annexation Area would be required to maintain consistency with the proposed project. Environmental impacts associated with the planned Carillion Boulevard extension will be subject to future CEQA analysis prior to City approval of development within the Simmerhorn Ranch site.

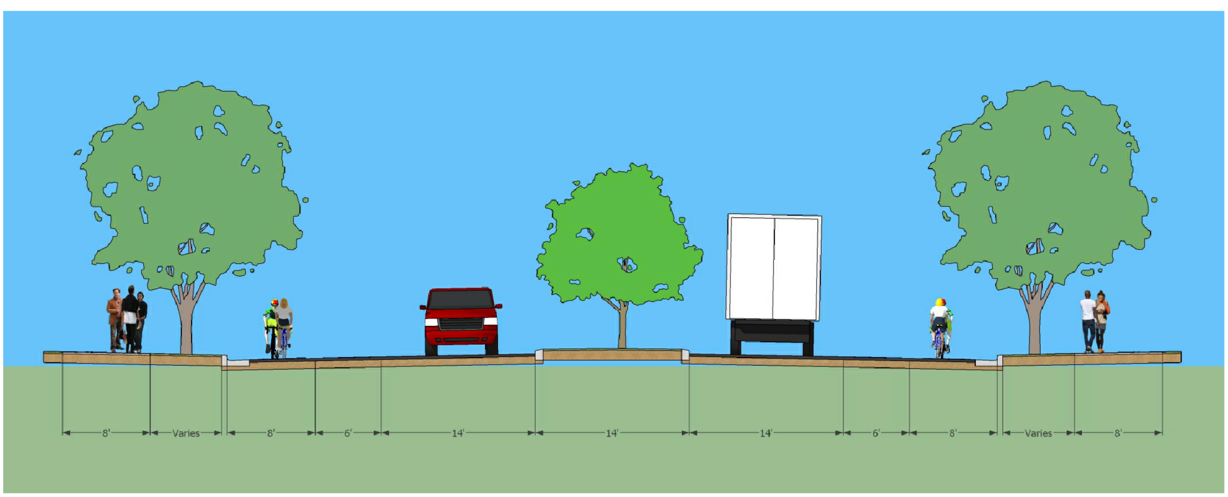
PUBLIC AGENCIES WHOSE APPROVAL IS OR MAY BE REQUIRED: (e.g., permits, financing approval, or participation agreement.)

The City of Galt has sole approval authority over the Carillion Boulevard Corridor Plan. However, future construction of roundabouts and other intersection improvements at Twin Cities Road would require approvals from the California Department of Transportation (Caltrans), including approval of an Encroachment Permit.

Figure 4
Proposed Carillion Boulevard Configuration



ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES PERSPECTIVE



ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES CROSS-SECTION

Source: GHD, 2019.

G. ENVIRONMENTAL CHECKLIST

The following checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	✖
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	✖	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	✖	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	✖	☐

Discussion

a. The City of Galt General Plan does not identify any designated scenic vistas within the vicinity of the project site. In addition, the City of Galt is not located within the vicinity of a designated State Scenic Highway. Therefore, the proposed project would result in ***no impact***.

b. The northern portion of the proposed Carillion Boulevard improvements would occur along the existing roadway, which is identified in the General Plan as a major community corridor that is critical to the identify of the City. The proposed improvements would serve to implement the City's Complete Street goals by adding elements such as roundabouts, curb extensions, high-visibility crosswalks, and other improvements to pedestrian and bicycle facilities. Along the existing four-lane roadway, Carillion Boulevard would be reduced to one lane in each direction with buffered bike lanes. As shown in Figure 5, the proposed lane reduction would not degrade the existing visual character or quality of the roadway. In addition, the proposed roundabouts would include central island landscape treatments such as planting (formal and informal), sculptures, community identification signage, gateway monuments, etc. All landscaping elements would comply with the regulations included in Chapter 18.52, Landscape Standards, of the City's Municipal Code. Figure 6 below provides examples of typical landscape treatments for modern roundabouts.

Between Vauxhall Road and Simmerhorn Road, the project would include future widening of the existing two-lane roadway to accommodate buffered bike lanes and sidewalks. In addition, the planned extension of Carillion Boulevard to the south of Simmerhorn Road would be included in the proposed road diet; however, the proposed project would not require substantially increased right-of-way relative to what was previously considered by the City. The proposed improvements would be consistent with what the City has previously anticipated for the planned extension of Carillion Boulevard, and would not result in new or more severe impacts to aesthetic resources relative to what has been analyzed in the General Plan EIR. Furthermore, the proposed improvements would serve to increase pedestrian and bicycle engagement along Carillion Boulevard, thereby improving the visual quality of the streetscape.

Figure 5
Carillion Boulevard Streetscape: Existing vs Proposed

EXISTING CONDITIONS

ALTERNATIVE 1: ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES

Figure 6
Roundabout Landscaping Options

ABSTRACT - INERT MATERIALS AND SCULPTURES

THEMED SCULPTURES AND MONUMENT SIGNAGE

CONTEMPORARY LANDSCAPE WITH STRUCTURES

NATURALISTIC LANDSCAPE AND SCULPTURE

FORMAL LANDSCAPE PLANTING

MINIMALIST

Note: The ultimate design of roundabout landscaping elements may differ from the examples presented above.

Therefore, the proposed project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings, and would not conflict with applicable zoning and other regulations governing scenic quality. Thus, a ***less-than-significant*** impact would occur.

d. The proposed project would not include the installation of new street lights along Carillion Boulevard, with the exception of potential lighting fixtures at the proposed roundabout locations and the proposed protected intersection at Di Maggio Way. It should be noted that the future extension of Carillion Boulevard south of Simmerhorn Road would include street lighting elements; however, the extension has been anticipated per the General Plan and analyzed in the General Plan EIR. Per direction from the City of Galt, all lighting elements would be subject to applicable regulations designed to reduce light spillage and glare, including Section 5: Street Light Design, of the Sacramento County Engineering Standards.[3] The proposed project would not result in increased light or glare along the planned extensions beyond what has been previously analyzed. Therefore, the proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area, and a ***less-than-significant*** impact would occur.

[3] City of Galt. *Standards and Specifications.* Available at: http://www.ci.galt.ca.us/city-departments/public-works/engineering-division/technical-services/standards-and-specifications. Accessed September 2019.

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	✖
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	✖
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	✖
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	✖
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	✖

Discussion

a,e. According to the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP), the existing alignment of Carillion Boulevard is located within areas characterized as Urban and Built-Up Land, Farmland of Local Importance, and Other Land. The planned extensions to the south of the current city limits would be located within areas designated exclusively as Farmland of Local Importance. Thus, the proposed project would not include any improvements that would result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP, to non-agricultural use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use. Therefore, ***no impact*** would occur.

b. The proposed project would not involve any changes to agricultural zoning districts, and would not include any improvements that would conflict with agricultural zoning or agricultural uses within the vicinity of the planned roadway alignment. In addition, as noted previously, the proposed project would not result in substantial right-of-way expansions beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. Therefore, the proposed project would not conflict with existing zoning for agricultural use, or a Williamson Act contract, and ***no impact*** would occur.

c,d. The proposed roadway improvements would not occur within or adjacent to land that is considered forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or zoned Timberland Production (as defined by Government Code section 51104[g]). Therefore, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	✖	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	✖	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	✖	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	✖	☐

Discussion

a,b. The City of Galt is within Sacramento County, which is within the boundaries of the Sacramento Valley Air Basin (SVAB) and under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). Federal and State ambient air quality standards (AAQS) have been established for six common air pollutants, known as criteria pollutants, due to the potential for pollutants to be detrimental to human health and the environment. The criteria pollutants include particulate matter (PM), ground-level ozone, carbon monoxide (CO), sulfur oxides, nitrogen oxides (NO_X), and lead. At the federal level, Sacramento County is designated as severe nonattainment for the 8-hour ozone AAQS, nonattainment for the 24-hour $PM_{2.5}$ AAQS, and attainment or unclassified for all other criteria pollutant AAQS. At the State level, the area is designated as a serious nonattainment area for the 1-hour ozone AAQS, nonattainment for the 8-hour ozone AAQS, nonattainment for the PM_{10} and $PM_{2.5}$ AAQS, and attainment or unclassified for all other State AAQS.

Due to the nonattainment designations, SMAQMD, along with the other air districts in the SVAB region, is required to develop plans to attain the federal and State AAQS for ozone and particulate matter. The attainment plans currently in effect for the SVAB are the *2013 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (2013 Ozone Attainment Plan), *$PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area* ($PM_{2.5}$ Implementation/Maintenance Plan), and the 1991 Air Quality Attainment Plan (AQAP), including triennial reports. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control measures have worked, and show how air pollution would be reduced. In addition, the plans include the estimated future levels of pollution to ensure that the area would meet air quality goals.

Nearly all development projects in the Sacramento region have the potential to generate air pollutants that may increase the difficultly of attaining federal and State AAQS. Therefore, for most projects, evaluation of air quality impacts is required to comply with CEQA. In order to evaluate ozone and other criteria air pollutant emissions and support attainment goals for those pollutants that the area is designated nonattainment, SMAQMD has developed the *Guide to Air Quality Assessment in Sacramento County* (SMAQMD Guide), which includes recommended thresholds of significance, including mass emission thresholds for construction-related and operational ozone precursors, as the area is under nonattainment for ozone. The SMAQMD's recommended thresholds of significance for the ozone precursors reactive organic compounds (ROG) and NO_X, which are expressed in pounds per day (lbs/day), are presented in Table 1.

Table 1
SMAQMD Thresholds of Significance (lbs/day)

Pollutant	Construction Thresholds	Operational Thresholds
NO_X	85	65
ROG	-	65
PM_{10}	80	80
$PM_{2.5}$	82	82
Source: SMAQMD, May, 2015.		

In addition, SMAQMD has screening criteria for development projects based on default inputs in the California Emissions Estimator Model (CalEEMod) version 2016.3.1. software - a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the ITE Manual, vehicle mix, trip length, average speed, etc. The SMAQMD screening criteria has been developed to aid in determining if emissions from development projects would exceed the SMAQMD thresholds of significance presented in Table 1. The screening criteria provides a conservative indication of whether a development project could result in potentially significant air quality impacts. If all of the screening criteria are met by a project, a detailed air quality assessment of that project's air pollutant emissions would not be required.

Construction Emissions

The SMAQMD's screening criteria for construction-related emissions of NO_X, PM_{10}, and $PM_{2.5}$ include whether the project is 35 acres or less in size and would not involve any of the following:

- Include buildings more than four stories tall;
- Include demolition activities;
- Include significant trenching activities;
- Have a construction schedule that is unusually compact, fast-paced, or involves more than two phases (i.e., grading, paving, building-construction, and architectural coatings) occurring simultaneously;
- Involve cut-and-fill operations (moving earth with haul trucks and/or flattening or terracing hills); and
- Require import or export of soil materials that will require a considerable amount of haul truck activity.

For projects that meet the screening criteria noted above, quantification of daily mass emissions of ROG, NO_X, and PM is not required.[4]

As discussed previously, the portion of the proposed Carillion Boulevard improvements north of Simmerhorn Road would occur along the existing roadway, and would consist of restriping of the sections between Vauxhall Avenue and Twin Cities Road to reduce the roadway from four lanes to two lanes with buffered bike lanes, installation of roundabouts and a protected intersection, and widening of the section between Simmerhorn Road and

[4] Sacramento Metropolitan Air Quality Management District. *Guide to Air Quality Assessment in Sacramento County* [pg. 3-2]. Updated April 2019.

Vauxhall Avenue. Construction of such improvements would not occur simultaneously but, rather, would be phased to occur over multiple years as funding becomes available.

Given that the proposed roadway improvements north of Simmerhorn Boulevard would require only minor ground disturbance associated with road widening and intersection improvements, such improvements would be expected to disturb fewer than 35 acres. In addition, the proposed road widening has been previously identified in the Circulation Element of the City's General Plan, and associated construction emissions were analyzed in the General Plan EIR. The project would not result in more intensive road widening beyond what was previously anticipated. Furthermore, all construction activities would be required to comply with the SMAQMD Basic Construction Emission Control Practices.

South of Simmerhorn Road, the roadway extensions included identified in the proposed project would be implemented as part of buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area. The City has received an application for the East Galt Infill Annexation/Simmerhorn Ranch Development, which, if approved, would include annexation of the East Galt Infill Area to the City and buildout of planned roadway improvements on the Simmerhorn Ranch site. Air quality impacts associated with construction of the planned Carillion Boulevard extension will be subject to future CEQA analysis prior to City approval of development within the Simmerhorn Ranch site.

Based on the above, the proposed project would not result in significant impacts related to construction emissions of ROG, NO_X, and PM.

Operational Emissions

The proposed project would not result in any operational emissions of ROG, NO_X, or PM. Rather, the proposed improvements would generally serve to reduce mobile-source emissions of criteria pollutants within the City. Specifically, the proposed roundabouts would reduce vehicle idling times, while the lane reductions included in the proposed road diet would reduce mid-block travel speeds. In addition, given that the proposed improvements would prioritize pedestrian and bicycle modes of transport consistent with the City's Complete Streets policies, the project would likely result in an overall decrease in passenger vehicle use within the City. Therefore, the proposed project would not result in significant impacts related to operational emissions of ROG, NO_X, and PM.

Conclusion

As discussed above, the proposed project would be below the applicable screening criteria developed by SMAQMD for construction emissions and would not result in substantially increased emissions relative to what has already been anticipated by the City and analyzed in the General Plan EIR. The project would not include any operational emissions. Furthermore, because the proposed project would shift local travel away from use of motor vehicles, operational mobile-source emissions would be reduced relative to existing conditions. Thus, the proposed project would not violate an AAQS, contribute substantially to an existing or projected air quality violation, or result in PM concentrations greater than the applicable thresholds, and impacts would be considered ***less than significant***.

c. The major pollutant concentrations of concern are localized carbon monoxide (CO) emissions and toxic air contaminants (TAC) emissions, which are addressed in further detail below.

Localized Carbon Monoxide Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Per the SMAQMD Guide, emissions of CO are generally of less concern than other criteria pollutants, as operational activities are not likely to generate substantial quantities of CO, and the SVAB has been in attainment for CO for multiple years. Consequently, the proposed project is not anticipated to result in significant impacts to air quality related to localized CO emissions.

TAC Emissions

The CARB Handbook provides recommendations for siting new sensitive land uses near sources typically associated with significant levels of TAC emissions, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure.

Construction activities have the potential to generate DPM emissions related to the number and types of equipment typically associated with construction. Off-road heavy-duty diesel equipment used for site grading, paving, and other construction activities result in the generation of DPM. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. In addition, the roadway improvements included in the proposed project would occur within various portions of the City at different times; thus, only portions of the proposed improvement areas would be disturbed at a time, with operation of construction equipment regulated by federal, State, and local regulations, including SMAQMD rules and regulations. Thus, the likelihood that any one sensitive receptor would be exposed to high concentrations of DPM for any extended period of time would be low. The project would not include substantial operational emissions of TACs.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) was identified as a TAC in 1986 by CARB. Earth disturbance activity could result in the release of NOA to the air. NOA is located in many parts of California and is commonly associated with ultramafic rocks. According to mapping prepared by the California Geological Survey, the only area within Sacramento County that is likely to contain NOA is eastern Sacramento County. The proposed improvement areas are not located in eastern Sacramento County and is not in an area identified as likely to contain NOA.[5] Thus, sensitive receptors would not be exposed to NOA as a result of the proposed project.

Conclusion

Based on the above, the proposed project would not result in substantial pollutant concentrations, such as localized CO or TAC emissions, including DPM and NOA. Therefore, exposure of sensitive receptors to substantial pollutant concentrations would not occur as a result of the proposed project, and impacts would be ***less than significant***.

---

5 Department of Conservation, California Geological Survey. *Special Report 192: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California*. 2006.

d. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative or formulaic methodologies to determine the presence of a significant odor impact do not exist. Typical odor generating land uses include, but are not limited to, wastewater treatment plants, landfills, and composting facilities. The proposed project would not include construction of any such land uses or result in other odor-producing operations.

The SMAQMD regulates objectionable odors through Rule 402 (Nuisance), which prohibits any person or source from emitting air contaminants that cause detriment, nuisance, or annoyance to a considerable number of persons or the public. Rule 402 is enforced based on complaints. If complaints are received, the SMAQMD is required to investigate the complaint, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications. Thus, although not anticipated, if odor complaints are made after the proposed project is approved, the SMAQMD would ensure that such odors are addressed and any potential odor effects reduced to less than significant.

Because, the proposed project is not expected to create any objectionable odors that would affect a substantial number of people, a ***less-than-significant*** impact would result.

IV. BIOLOGICAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	✖	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	✖	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	✖	☐
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	✖	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	✖	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	✖	☐

Discussion

a-f. Special-status species include those plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal and State Endangered Species Acts. Both acts afford protection to listed and proposed species. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFW special-status invertebrates are all considered special-status species. Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal. In addition, plant species on California Native Plant Society (CNPS) Lists 1 and 2 are considered special-status plant species and are protected under CEQA. It should be noted that the City of Galt and the surrounding areas within unincorporated Sacramento County are located within the Plan Area of the South Sacramento Habitat Conservation Plan (SSHCP).[6]

Raney Planning & Management, Inc. conducted a search of the California Natural Diversity Database (CNDDB) for the two quadrangles in which the proposed improvements would occur, Lodi North and Galt. The intent of the database review was to

6 South Sacramento Conservation Agency. *South Sacramento Habitat Conservation Plan*. 2018.

identify documented occurrences of special-status species in the vicinity of the project area, to determine their locations relative to the project site, and to evaluate whether the site meets the habitat requirements of such species. Based on the results of the CNDDB search, a total of three special-status plant species and 13 wildlife species are known to occur within the project region.

As noted in the General Plan EIR, the City's General Plan includes policies designed to minimize impacts to biological resources associated with new development within the City's planning area. For example, Policy COS-2.1 requires new development to minimize impacts to mature trees, vernal pools, and any threatened endangered or other sensitive species. Policy COS-2.6 requires surveys of development sites that have the potential to contain critical or sensitive habitats or special-status species. Nevertheless, the General Plan EIR concluded that even with implementation of all applicable General Plan policies, impacts to biological resources would remain significant and unavoidable.

The proposed project would not include substantial right-of-way expansions beyond what has been previously anticipated for Carillion Boulevard in the General Plan and analyzed in the General Plan EIR. Along the portion of Carillion Boulevard between Twin Cities Road and Vauxhall Avenue, the proposed roundabouts could require minor expansion beyond the current edge of pavement, resulting in minor ground-disturbing activity along the roadway shoulder. However, such disturbance would occur primarily within areas which are graveled and have been subject to previous disturbance associated with other development along the roadway. Therefore, modifications to the existing roadway system occurring as a result of the proposed project would not have the potential to result in adverse effects to special-status plants or wildlife, riparian habitat, or other biological resources.

In addition to modifications to the existing roadway system, the proposed project would include improvements within the East Galt Infill Annexation/Simmerhorn Ranch Area, including widening of Carillion Boulevard between Vauxhall Avenue and Simmerhorn Road and new extensions of Carillion Boulevard south of Simmerhorn Road. However, potential impacts to biological resources associated such extensions have been previously analyzed in the City's General Plan EIR. While the proposed road diet would alter the configuration of the roadway from what has been planned, the project would not result in substantial right-of-way expansions beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. Furthermore, future project-level CEQA analysis will be required in conjunction with future development in the East Galt Infill Annexation/Simmerhorn Ranch Area; such CEQA analysis would be required to include potential impacts to biological resources associated with circulation system improvements.

Based on the above, the proposed project would result in a ***less-than-significant*** impact related to biological resources.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	✖	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	☐	✖	☐	☐

Discussion

a. Per a search of the California Historic Resources Information System (CHRIS) performed for the proposed project, the proposed improvement areas do not contain any documented historic resources.[7] Furthermore, the proposed roadway improvements would not require the demolition or alteration of any existing buildings. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5, and a ***less-than-significant*** impact would occur.

b,c. The CHRIS search conducted for the proposed project did not identify any known archaeological resources within the proposed improvement areas. While a total of two historic-period cultural resources have been identified within a 0.25-mile radius of the improvement areas, such resources would not be disturbed as a result of the proposed project. However, based on the extent of known cultural resources in the project region and the environmental setting of the improvement area, a low potential exists for previously undiscovered archaeological resources to occur within the project site.

To the south of Vauxhall Avenue, ground-disturbing activity would be required in order to accommodate widening of Carillion Boulevard to Simmerhorn Road and future extension of Carillion Boulevard further south. However, while the proposed road diet would alter the configuration of the roadway, the project would not result in additional ground-disturbing activity beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. In addition, the Carillion Boulevard widening and extension would be subject to future CEQA analysis as part of buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area.

Along the existing section of Carillion Boulevard to the north of Vauxhall Avenue, ground-disturbance associated with implementation of the proposed roadway improvements would be primarily limited to the existing paved right-of-of way. While limited expansion of the pavement edge could be required in order to accommodate the proposed roundabouts, such improvements would not require substantial trenching, excavation, or other ground disturbance with the potential to upset cultural resources. Furthermore, the roundabouts would be installed within areas which have been subject to prior ground disturbance. Nonetheless, the potential exists, while unlikely, for project-related ground disturbance to cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5 or disturb human remains, including those interred outside of dedicated cemeteries. Thus, a ***potentially significant*** impact could occur.

[7] North Central Information Center. *Records Search Results for Carillion Boulevard Corridor Plan.* August 21, 2019.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

V-1. Prior to approval of improvement plans associated with the roadway modifications included in the Carillion Boulevard Corridor Plan, the improvement plans shall include notes (per California Health & Safety Code, Section 7050.5, Government Code 27491, and Public Resource Code Section 5097.98) indicating that if historic and/or cultural resources, including human remains, are encountered during site grading or other site work, all such work shall be halted immediately within the area of discovery and the project contractor shall immediately notify the City's Community Development Department of the discovery. In the case of an archeological, prehistoric, or historic discovery, the developer shall be required to retain the services of a qualified archaeologist, approved by the City, for the purpose of recording, protecting, or curating the discovery as appropriate. The archaeologist shall be required to submit to the City's Community Development Department for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery shall not be allowed until the preceding steps have been taken. The language of this mitigation measure shall be incorporated into future CEQA analysis conducted in conjunction with future Carillion Boulevard improvements within the East Galt Infill Annexation/Simmerhorn Ranch Area.

V-2. Prior to approval of improvement plans associated with the roadway modifications included in the Carillion Boulevard Corridor Plan, the improvement plans shall include notes indicating that pursuant to State Health and Safety Code §7050.5(c) State Public Resources Code §5097.98, if human bone or bone of unknown origin is found during construction, all work shall stop in the vicinity of the find and the Sacramento County Coroner shall be contacted immediately. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission who shall notify the person believed to be the most likely descendant. The most likely descendant shall work with the contractor to develop a program for re-internment of the human remains and any associated artifacts. Additional work is not to take place in the immediate vicinity of the find, which shall be identified by the qualified archaeologist, until the identified appropriate actions have been implemented. The language of this mitigation measure shall be incorporated into future CEQA analysis conducted in conjunction with future Carillion Boulevard improvements within the East Galt Infill Annexation/Simmerhorn Ranch Area.

VI. ENERGY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	✖	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	✖	☐

Discussion

a,b. The main forms of available energy supply are electricity, natural gas, and oil. Construction activities associated with the improvements included in the proposed project would involve energy demand and consumption related to the use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and material delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met via a hookup to the existing electricity grid. Use of natural gas appliances or equipment would not be required.

The CARB has recently prepared the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan), which builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions (municipal code changes, zoning changes, policy directions, and mitigation measures) that would support the State's climate goals. The examples provided include, but are not limited to, enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable fuel-powered construction equipment. All construction equipment used for construction of the proposed roadway improvements would be required to comply with the CARB's In-Use Off Road regulation, which is consistent with the intention of the 2017 Scoping Plan and the recommended actions included in Appendix B of the 2017 Scoping Plan.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. Construction activities would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand. Furthermore, the proposed improvements would be consistent with the improvements identified in the Circulation Element of the City's General Plan, and energy use associated with construction of the improvements has been analyzed in the General Plan EIR.

Upon completion, the proposed improvements would generally serve to reduce energy use within the City. Specifically, the proposed roundabouts would reduce vehicle idling times, thereby improving fuel efficiency. In addition, given that the proposed improvements would prioritize pedestrian and bicycle modes of transport consistent with the City's Complete Streets policies, the project would likely result in an overall decrease in passenger vehicle use within the City, thereby resulting in a decrease in gasoline use.

Based on the above, implementation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

VII. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	✖	☐
ii. Strong seismic ground shaking?	☐	☐	✖	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	✖	☐
iv. Landslides?	☐	☐	✖	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	✖	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	✖	☐
d. Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	✖	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	✖	☐	☐

Discussion

a. The City of Galt's topography is relatively flat and Galt is not located within an Alquist-Priolo Earthquake Fault Zone, is not located in the immediate vicinity of an active fault, nor within a Landslide and Liquefaction Zone.[8] The nearest mapped fault to the site is the Midland Fault and the nearest active fault is the Clayton-Marsh Creek-Greenville Fault, which is located over 40 miles southwest of the City. According to the Galt 2030 General Plan EIR, ground shaking hazards are considered to be low.[9]

Implementation of the proposed project would not include the construction of any permanent structures; rather, physical improvements would be limited to roadway enhancements. Given that the potential for severe seismic activity in the project region is relatively limited, the proposed improvements would not be subject to substantial risk related to fault rupture, seismic ground shaking, or seismic-related ground failure. None of the proposed improvement areas are located on or near substantial slopes and, thus, the improvements would not be subject to substantial landslide risk. Therefore, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake

8 California Department of Conservation. *Alquist-Priolo Fault Zone and Seismic Hazard Zone Maps*. Available at: https://www.conservation.ca.gov/cgs/information-warehouse. 2016. Accessed July 25, 2019.

9 City of Galt. *City of Galt 2030 General Plan EIR*. [pg. 8-24]. April 2009.

fault, strong seismic ground shaking, seismic-related ground failure, or landslides, and a ***less-than-significant*** impact would occur.

b. Ground-disturbing activities associated with implementation of the roadway improvements included in the proposed project could result in temporary exposure of topsoil, thereby temporarily increasing the risk of soil erosion. However, all construction activities would be subject to implementation of both temporary and permanent erosion control techniques. Policy PFS-4.6 of the Galt 2030 General Plan requires new development projects to prepare an erosion control plan.[10] In addition, Policy COS-1.12 requires new development to implement best management practices (BMPs) that would help minimize soil erosion during construction and grading related activities.[11] Furthermore, per Chapter 16.30 of the City of Galt Municipal Code, construction activities involving disturbance of one acre or more or land would be subject to a Stormwater Pollution Prevention Plan (SWPPP), consistent with the State's General Construction Activity Stormwater Permit. A SWPPP describes BMPs to control or minimize pollutants from entering stormwater and must address non-point source pollution impacts of the subject project. In addition, all future construction activities associated with implementation of the proposed project would comply with provisions of the National Pollutant Discharge Elimination System (NPDES) permit to avoid and minimize any potential violations of water quality standards or waste discharge requirements. Therefore, the proposed project would not result in substantial soil erosion or the loss of topsoil, and a ***less-than-significant*** impact would occur.

c,d. As noted above, none of the proposed improvement areas are located on or near substantial slopes and, thus, the improvements would not be subject to substantial landslide risk. Per the City's General Plan EIR, the probability of soil liquefaction occurring within the City is considered to be a low to moderate hazard. However, the proposed roadway improvements would be designed consistent with Sacramento County Improvement Standards and Standard Construction Specifications (except where modified by the City of Galt Improvement Standards), which contain provisions to ensure the structural stability and longevity of roadway facilities. Thus, the proposed roadway improvements would not be subject to on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, and would not be subject to risks related to expansive soils, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property. Therefore, impacts would be ***less-than-significant.***

e. The proposed project would not include use of septic tanks or alternative wastewater disposal systems. Thus, ***no impact*** would occur related to having soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

f. As discussed in Section V, Cultural Resources, of this IS/MND, to the south of Vauxhall Avenue, ground-disturbing activity would be required in order to accommodate widening of Carillion Boulevard to Simmerhorn Road and future extension of Carillion Boulevard further south. However, while the proposed road diet would alter the configuration of the roadway, the project would not result in additional ground-disturbing activity beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. In addition, the Carillion Boulevard widening and extension would be subject to

10 City of Galt. *City of Galt General Plan Policy Document*. [pg. PFS-6]. April 2009.
11 City of Galt. *City of Galt General Plan Policy Document*. [pg. COS-3]. April 2009.

future CEQA analysis as part of buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area.

Along the existing section of Carillion Boulevard to the north of Vauxhall Avenue, ground-disturbance associated with implementation of the proposed roadway improvements would be primarily limited to the existing paved right-of-of way. While limited expansion of the pavement edge could be required in order to accommodate the proposed roundabouts, such improvements would not require substantial trenching, excavation, or other ground disturbance with the potential to upset paleontological resources.

Nonetheless, the potential exists, while unlikely, for project-related ground disturbance to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, both along the existing roadway alignment and along the future Carillion Boulevard extensions. Thus, a ***potentially significant*** impact could occur.

<u>Mitigation Measure(s)</u>
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

VII-1. Implement Mitigation Measures V-1 and V-2.

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	✖	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?	☐	☐	✖	☐

Discussion

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

Recognizing the global scale of climate change, California has enacted several pieces of legislations in an attempt to address GHG emissions. Specifically, Assembly Bill (AB) 32, and more recently Senate Bill (SB) 32, have established statewide GHG emissions reduction targets. Accordingly, the CARB has prepared the Climate Change Scoping Plan for California (Scoping Plan), which was approved in 2008 and updated in 2014. The Scoping Plan provides the outline for actions to reduce California's GHG emissions and achieve the emissions reductions targets required by AB 32. In concert with statewide efforts to reduce GHG emissions, air districts, counties, and local jurisdictions throughout the State have implemented their own policies and plans to achieve emissions reductions in line with the Scoping Plan and emissions reductions targets, including AB 32 and SB 32. As part of SMAQMD's efforts to reduce GHG emissions within the district in compliance with AB 32 and SB 32, SMAQMD has adopted thresholds of significance for GHG Emissions from proposed projects. SMAQMD's threshold for land development and construction projects is 1,100 metric tons of CO_2 equivalents ($MTCO_2e$/yr), the common unit of measurement for GHG emissions. If a proposed project results in emissions in excess of 1,100 $MTCO_2e$/yr during either construction or operation, the proposed project would be anticipated to result in a significant impact related to GHG emissions.

It should be noted that the 2030 General Plan includes Policy COS-7.1 related to GHG emission reduction. Policy COS-7.1 indicates, in part, that the City of Galt shall reduce GHG emissions from City operations as well as from private development in compliance with the California Global Warming Act of 2006 and any applicable State regulations. To accomplish this, the City of Galt will coordinate with the SMAQMD and the CARB in developing a Climate Action Plan (CAP) that identifies GHG emissions within the City of Galt as well as ways to reduce those emissions. Currently, the City is in the process of adopting a CAP, consistent with Policy COS-7.1.

The portion of the proposed Carillion Boulevard improvements north of Simmerhorn Road would occur along the existing roadway, and would consist of restriping of the sections between Vauxhall Avenue and Twin Cities Road to reduce the roadway from four lanes to two lanes with buffered bike lanes, installation of roundabouts and a protected intersection, and widening of the section between Simmerhorn Road and Vauxhall

Avenue. Construction of such improvements would not occur simultaneously but, rather, would be phased to occur over multiple years as funding becomes available. Future construction of such improvements would result in short-term emissions of GHGs. However, the proposed road widening has been previously identified in the Circulation Element of the City's General Plan. The project would not result in more intensive road widening beyond what was previously anticipated.

South of Simmerhorn Road, the roadway extensions included identified in the proposed project would be implemented as part of buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area. The City has received an application for the East Galt Infill Annexation/Simmerhorn Ranch Development, which, if approved, would include annexation of the East Galt Infill/Simmerhorn Ranch Annexation Area to the City and buildout of planned roadway improvements on the Simmerhorn Ranch site. Impacts related to GHG emissions associated with construction of the planned Carillion Boulevard extension will be subject to future CEQA analysis prior to City approval of development within the Simmerhorn Ranch site.

Based on the above, construction of the roadway improvements located within the Simmerhorn Ranch site would be subject to CEQA analysis in conjunction with the pending East Galt Infill Annexation/Simmerhorn Ranch Development, for which project-level analysis of construction GHG emissions would be required. Alternatively, future CEQA analysis within the East Galt Infill Annexation/Simmerhorn Ranch Area may instead demonstrate consistency with a Climate Action Plan, when such a plan is adopted by the City. In addition, the proposed improvements would not result in any operational emissions of GHGs. Rather, given that the proposed improvements would prioritize pedestrian and bicycle modes of transport consistent with the City's Complete Streets policies, the project would likely result in an overall decrease in passenger vehicle use within the City, thereby resulting in reduced operational mobile-source GHG emissions relative to existing conditions.

Consequently, the proposed project would not generate GHG emissions that would have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. Thus, impacts would be considered ***less than significant***.

IX. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	✖	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☐	✖	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	✖	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	✖
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	✖
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	✖	☐
g. Expose people or structures, either directly or indirectly, to the risk of loss, injury or death involving wildland fires?	☐	☐	✖	☐

Discussion

a-c. The proposed project would not substantially alter the types of vehicle traffic along Carillion Boulevard and other local roadways relative to existing conditions. Thus, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. While limited transport of hazardous materials could potentially be required during construction of the improvements included in the proposed project, the project contractor would be required to comply with all California Health and Safety Codes and local County ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Thus, the project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Existing schools located within 0.25-mile of the proposed improvement areas include Lake Canyon Elementary School, Marengo Ranch Elementary School, and River Oaks Elementary School.

Furthermore, the proposed project would not include substantial right-of-way expansions beyond what has been previously anticipated for Carillion Boulevard in the General Plan and analyzed in the General Plan EIR. Along the portion of Carillion Boulevard between Twin Cities Road and Vauxhall Avenue, the proposed roundabouts could result require minor expansion beyond the current edge of pavement, resulting in minor ground-disturbing activity along the roadway shoulder. However, such disturbance would occur primarily within areas which are graveled and have been subject to previous disturbance associated with other development along the roadway. Therefore, modifications to the existing roadway system occurring as a result of the proposed project would not have the potential to result in substantial hazards related to upset of hazardous materials.

In addition to modifications to the existing roadway system, the proposed project would include improvements within the East Galt Infill Annexation/Simmerhorn Ranch Area, including widening of Carillion Boulevard between Vauxhall Avenue and Simmerhorn Road and new extensions of Carillion Boulevard south of Simmerhorn Road. However, potential impacts related to hazardous materials associated such extensions have been previously analyzed in the City's General Plan EIR. While the proposed road diet would alter the configuration of the roadway from what has been planned, the project would not result in substantial right-of-way expansions beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. Furthermore, future project-level CEQA analysis will be required in conjunction with future development in the East Galt Infill Annexation/Simmerhorn Ranch Area; such CEQA analysis would be required to include potential impacts related to hazards and hazardous materials associated with circulation system improvements, including, but not limited to, hazardous materials transport and upset of existing contaminated soils.

Based on the above, the proposed project would result in a ***less-than-significant*** impact related to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment, and emitting hazardous emissions or handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

d. Per the California Department of Toxic Substances Control (DTSC) EnviroStor database, the improvements included in the proposed project would not occur within any areas that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[12] Thus, ***no impact*** would occur.

e. The proposed improvement areas are not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport, Vetters Sky Ranch Airport is located approximately four miles southeast of the Galt city limits. Thus, the proposed project would not result in a safety hazard or excessive noise for people residing or working in the project area, and ***no impact*** would occur.

f. As noted previously, the improvements included in the proposed project are consistent with what has been previously anticipated for Carillion Boulevard in the General Plan and analyzed in the General Plan EIR. The proposed diet would not interfere with emergency access in the City and would not conflict with the Emergency Operations Plan (EOP) adopted by the City.[13] While the road diet would reduce the number of lanes on Carillion Boulevard from four to two, sufficient shoulders would be maintained to allow for passage of emergency vehicles. In addition, the proposed project would reduce congestion along the roadway. The proposed roundabouts would be designed to safely accommodate emergency vehicles. Therefore, the proposed project would not impair implementation of

[12] California Department of Toxic Substances Control. *EnviroStor.* Available at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=galt%2C+ca. Accessed September 2019.
[13] City of Galt. *City of Galt Emergency Operations Plan.* March 6, 2012.

or physically interfere with an adopted emergency response plan or emergency evacuation plan, and a ***less-than-significant*** impact would occur.

g. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the City of Galt the surrounding area within unincorporated Sacramento County is not classified as a Very High Fire Hazard Severity Zone (VHFHSZ).[14] Additionally, the proposed project would not include development of any housing or other structures that would be subject to substantial fire risk. Based on the above, the proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, and a ***less-than-significant*** impact would occur.

---

[14] Cal Fire. *Sacramento County, Draft Fire Hazard Severity Zones in LRA.* October 2, 2007.

X. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	✖	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	✖	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site;	☐	☐	✖	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	✖	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	✖	☐
iv. Impede or redirect flood flows?	☐	☐	✖	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	✖	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	✖	☐

Discussion

a,ci,cii,
ciii. The City of Galt has a Phase I National Pollutant Discharge Elimination System (NPDES) stormwater permit and is part of the Sacramento Stormwater Quality Partnership (SSQP). The City of Galt is regulated by Order No. R5-2002-0206 NPDES No. CAS082597, “Waste Discharge Requirements for County of Sacramento and Cities of Citrus Heights, Elk Grove, Folsom, Galt and Sacramento Storm Water Discharges From Municipal Separate Storm Sewer Systems Sacramento County” issued by the Central Valley Regional Water Quality Control Board (CVRWQCB). However, the City of Galt Municipal Separate Storm Sewer System (MS4) is noncontiguous with other MS4s and is surrounded by rural and agricultural areas that are not subject to NPDES regulations.

The City of Galt participates in the County-wide Sacramento Stormwater Quality Improvement Program (SQIP), which was established in 1990 to reduce the pollution carried by stormwater into local creeks and rivers. The SQIP is based on the NPDES municipal stormwater discharge permit. The comprehensive SQIP includes pollution reduction activities for construction sites, industrial sites, illegal discharges and illicit connections, new development, and municipal operations.

Construction

Construction of the improvements included in the proposed project would have the potential to affect surface water quality. Construction of certain project components would require grading and vegetation removal activities that may increase soil erosion rates.

Grading operations may affect the surface runoff by increasing the amount of silt and debris carried by runoff. In addition, refueling and parking of construction equipment and other vehicles on-site during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into the City's storm drains. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery close to area waterways could cause water quality degradation.

Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to the General Permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation. South of Vauxhall Avenue, future construction of the improvements included in the proposed project would likely disturb greater than one acre and, thus, would be subject to the relevant requirements within the aforementioned General Permit.

Although construction of the future improvements associated with implementation of the proposed project could result in impacts associated with water quality, future development of roadway network improvements, traffic calming measures, and other improvements within the City of Galt would be subject to construction related BMPs, including, but not limited to features such as the installation of silt fences, implementation of storm drain inlet protection, installation of fiber rolls, and proper maintenance of material stockpiles.

Operations

Completion of the improvements included in the proposed project would result in an increased amount of impervious surfaces within the City. Stormwater runoff from the proposed impervious surfaces would have the potential discharge pollutants to downstream waterways. In addition, the increase in impervious surfaces would have the potential to alter the rate or amount of stormwater runoff entering the City's storm drain system. However, as noted above, the proposed improvements are consistent with the circulation improvements anticipated in the General Plan and analyzed in the General Plan EIR. In addition, review of site-specific impacts to water quality and drainage would be included in future CEQA analysis associated with buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area. In addition, the future improvements would be required to all applicable standards and regulations related to water quality and drainage, including the SQIP and the City of Galt's Stormwater Management Program. Thus, operational impacts would be less than significant.

Conclusion

Given required compliance with the requirements of the SWRCB, the SQIP, and the City of Galt's Stormwater Management Program, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. In addition, the project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. Thus, a ***less-than-significant*** impact would occur.

b,e. The City's South Basin Groundwater Management Plan (GWMP) was adopted in October 2011.[15] North of Vauxhall Avenue, the improvements included in the proposed project would not require a substantial increase in impervious surfaces along Carillion Boulevard beyond what currently exists. Thus, such improvements would not interfere substantially with groundwater recharge. South of Vauxhall Avenue, the proposed road widening and extensions would be consistent with, and possibly less than, the circulation improvements anticipated in the General Plan and analyzed in the General Plan EIR. In addition, review of site-specific impacts to groundwater recharge would be included in future CEQA analysis associated with buildout of the East Galt Infill Annexation/Simmerhorn Ranch Area. Thus, the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin or conflict with or obstruct implementation of a water quality control plan or the South Basin GWMP, and a ***less-than-significant*** impact would occur.

civ,d. Per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, the roadway improvements included in the proposed project are located outside of designated Special Flood Hazard Areas, with the exception of two existing segments of Carillion Boulevard that include creek crossings, located between Walnut Avenue and Vintage Oak Avenue and between Chelsham Avenue and Vauxhall Avenue, respectively.[16] The two existing creek crossings are both located within the 100-year floodplain. However, the proposed improvements in the vicinity of the creek crossings would be limited to restriping of the existing roadway, and would not include any expansion of the existing right-of-way. Therefore, the proposed project would not impede or redirect flood flows. In addition, the City of Galt is not located in an area that is subject to substantial risks related to tsunamis or seiches. Therefore, a ***less-than-significant*** impact would occur.

---

15 City of Galt. *2015 Urban Water Management Plan Update*. June 2016.
16 Federal Emergency Management Agency. *Flood Insurance Rate Map, Panel 06067C0468J.* Updated April 2019.

XI. LAND USE AND PLANNING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	✖
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	✖	☐

Discussion

a. Development of future improvements associated with the proposed project would generally improve connections within the City and surrounding neighborhoods for automobile drivers, bicyclists, and pedestrians. Future improvements associated with the project would not divide an established community. In addition, future development of the proposed improvements within the City of Galt would be required to adhere to local policies and regulations designed to enhance community connectivity. Therefore, **no impact** would occur.

b. The proposed project would be consistent with the circulation improvements included in the City's General Plan, including General Plan Policy C-2.6 related to extension of Carillion Boulevard south to the present location of the Crystal Way/SR 99 on- and off-ramps, near the Dry Creek Ranch Golf Course. Furthermore, this IS/MND includes mitigation measures to ensure that the proposed project would not result in any significant environmental impacts due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Future construction of the improvements included in the project would be subject to all applicable federal, State, and local regulations. Therefore, a ***less-than-significant*** impact would occur.

XII. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	✖
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	✖

Discussion

a,b. Impacts to mineral resources were determined to be less-than-significant during the General Plan EIR scoping stage of the analysis, and further assessment was not performed by the City of Galt. The City of Galt is within Sacramento County's General Plan area, which analyzes mineral resources within the County. According to the Sacramento County General Plan, the mineral resource zone closest to the City of Galt is located near New Hope Road, which is east of the City limits. Therefore, future construction of the improvements included in the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Thus, ***no impact*** would occur.

XIII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	✖	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	✖	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	✖

Discussion

a,b. During construction of the improvements included in the proposed project, noise from construction activities would add to the noise environment in the immediate project vicinity. Construction noise would be similar to noise associated with other public works projects, such as a roadway widening or paving projects. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. While the construction activities could generate groundborne vibration associated with operation of heavy-duty equipment, vibration levels would be typical of other roadway construction projects and would be temporary.

Per Sections 8.40.060(E) and (F) of the City of Galt Municipal Code, noise generating construction activities are exempt from the City's noise standards, provided the activities are limited to the hours of 6:00 AM and 8:00 PM on weekdays, and between 7:00 AM and 8:00 PM on Saturdays and Sundays. Compliance with such restrictions would ensure that construction noise associated with the construction of the future Corridor Plan improvements would be less than significant. In addition, per Section 8.40.060(K), any noise sources associated with City public works projects, including, but not limited to streets, bridges, sewer, and water facilities are exempt from the City's noise standards.

Upon completion of the proposed improvements, the project would not include any increases in operational noise sources relative to existing conditions. The project would not result in increased vehicle travel within the City; rather, as discussed previously, the proposed roundabouts would reduce vehicle idling times, while the lane reductions included in the proposed road diet would reduce mid-block travel speeds. In addition, given that the proposed improvements would prioritize pedestrian and bicycle modes of transport consistent with the City's Complete Streets policies, the project would likely result in an overall decrease in passenger vehicle use within the City. Thus, traffic noise would likely be reduced as a result of the project.

Based on the above, the prosed project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, or generation of excessive groundborne vibration or groundborne noise levels. Thus, a ***less-than-significant*** impact would occur.

c. The proposed improvement areas are not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport, Vetters Sky Ranch Airport is located approximately four miles southeast of the Galt city limits. As a result, ***no impact*** would occur related to exposure of people residing or working in the project area to excessive noise levels.

XIV. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	✖	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖

Discussion

a. The proposed project is a plan-level document that includes plans for future development of roadway network improvements, traffic calming measures, and other improvements. The project would not include construction of housing or new businesses. In addition, the improvements included in the proposed project are consistent with what has been previously anticipated for Carillion Boulevard in the General Plan. Therefore, while the project would include extension of major infrastructure, population growth associated with such infrastructure has been analyzed in the General Plan EIR. Therefore, the proposed project would not induce substantial unplanned population growth, and a ***less-than-significant*** impact would occur.

b. The improvements included in the proposed project would not require the displacement of existing people or housing and, thus, would not necessitate the construction of replacement housing. Therefore, ***no impact*** would occur.

XV. PUBLIC SERVICES. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	☐	✖
b. Police protection?	☐	☐	☐	✖
c. Schools?	☐	☐	☐	✖
d. Parks?	☐	☐	☐	✖
e. Other Public Facilities?	☐	☐	☐	✖

Discussion

a-e. The proposed project would not include any improvements that would increase demand for fire protection, police protections, schools, parks, or other public facilities. Thus, the proposed project would result in ***no impact*** associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for public services.

XVI. RECREATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	✖
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	✖

Discussion

a,b. The proposed project does not include any improvements that would increase demand for existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated. In addition, the project would not include new construction or expansion of recreational facilities. Furthermore, by providing for protected bike lanes along Carillion Boulevard, the proposed project would potentially improve bicycle access to existing neighborhood recreation facilities. Therefore, ***no impact*** would occur related to recreation.

XVII. TRANSPORTATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	✖	☐
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	✖	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	✖	☐
d. Result in inadequate emergency access?	☐	☐	✖	☐

Discussion

The following discussion is based primarily on the Carillion Boulevard Complete Street Study prepared by GHD, included as an appendix to this IS/MND.[17] The Carillion Boulevard Complete Street Study analyzed transportation impacts associated with implementation of the proposed project.

a. Situated at the southern border of Sacramento County, the City of Galt is a suburban community with primary regional access provided by SR 99 and SR 104. SR 99 carries significant freight, commuter, and recreational traffic. Highway retail and commercial land uses along SR 99 benefit from easy access to the freeway and interregional recreational and commute travelers. Within northeast Galt, circulation is provided by multiple arterial and collector facilities that traverse the area in both the north-south and east-west directions. Therefore, in addition to SR 99, the following roadways provide much of the circulation within the northeast portion of the City:

- Twin Cities Road (State Route 104)
- Walnut Avenue
- Simmerhorn Road
- Carillion Boulevard
- Marengo Road

The following sections provide a discussion of the proposed project's potential impacts related to study intersections within the City, as well as pedestrian, bicycle, and transit facilities.

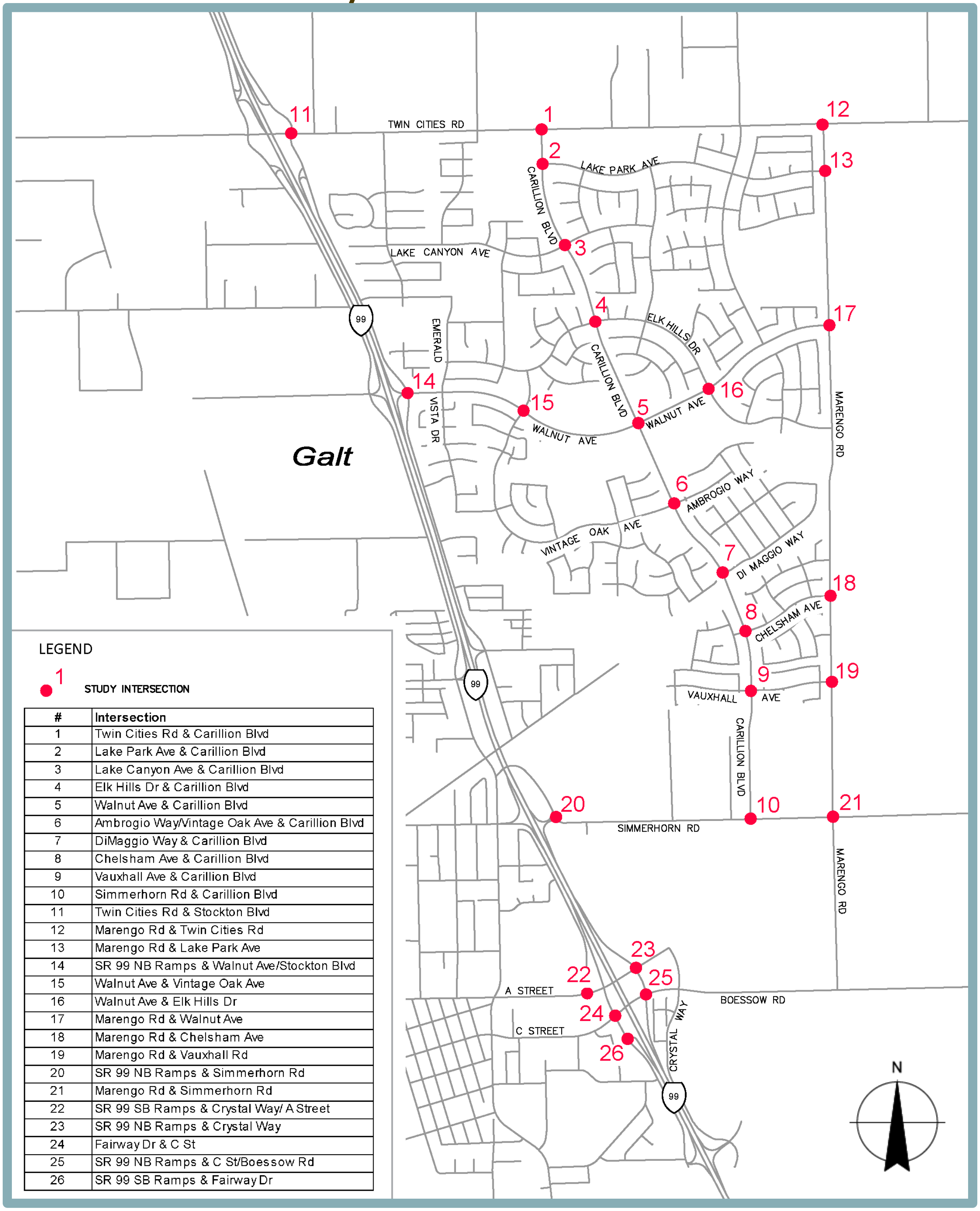
Study Intersections

The following study intersections were evaluated by GHD as part of the Carillion Boulevard Complete Street Study, based on consultation with City staff (see Figure 7):

1. Twin Cities Road/Carillion Blvd;
2. Lake Park Avenue/Carillion Blvd;
3. Lake Canyon Avenue/Carillion Blvd;
4. Elk Hills Drive/Carillion Blvd;
5. Walnut Ave/Carillion Blvd;
6. Ambrogio Way/Vintage Oak Ave/Carillion Blvd;
7. DiMaggio Way/Carillion Blvd;

17 GHD. *Carillion Boulevard Complete Street Corridor Study.* August 30, 2019.

Figure 7
Study Intersection Locations



#	Intersection
1	Twin Cities Rd & Carillion Blvd
2	Lake Park Ave & Carillion Blvd
3	Lake Canyon Ave & Carillion Blvd
4	Elk Hills Dr & Carillion Blvd
5	Walnut Ave & Carillion Blvd
6	Ambrogio Way/Vintage Oak Ave & Carillion Blvd
7	DiMaggio Way & Carillion Blvd
8	Chelsham Ave & Carillion Blvd
9	Vauxhall Ave & Carillion Blvd
10	Simmerhorn Rd & Carillion Blvd
11	Twin Cities Rd & Stockton Blvd
12	Marengo Rd & Twin Cities Rd
13	Marengo Rd & Lake Park Ave
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd
15	Walnut Ave & Vintage Oak Ave
16	Walnut Ave & Elk Hills Dr
17	Marengo Rd & Walnut Ave
18	Marengo Rd & Chelsham Ave
19	Marengo Rd & Vauxhall Rd
20	SR 99 NB Ramps & Simmerhorn Rd
21	Marengo Rd & Simmerhorn Rd
22	SR 99 SB Ramps & Crystal Way/ A Street
23	SR 99 NB Ramps & Crystal Way
24	Fairway Dr & C St
25	SR 99 NB Ramps & C St/Boessow Rd
26	SR 99 SB Ramps & Fairway Dr

Source: GHD, 2019.

8. Chelsham Avenue/Carillion Blvd;
9. Vauxhall Avenue/Carillion Blvd;
10. Simmerhorn Road/Carillion Blvd;
11. Twin Cities Road/Stockton Boulevard;
12. Marengo Road/Twin Cities Road;
13. Marengo Road/Lake Park Avenue;
14. SR 99 NB Ramps/Walnut Avenue/Stockton Blvd;
15. Walnut Avenue/Vintage Oak Avenue;
16. Walnut Avenue/Elk Hills Drive;
17. Marengo Road/Walnut Avenue;
18. Marengo Road/Chelsham Avenue;
19. Marengo Road/Vauxhall Road;
20. SR 99 NB Ramps/Simmerhorn Road;
21. Marengo Road/Simmerhorn Road;
22. SR 99 SB Off-Ramp/A Street;
23. SR 99 NB On-Ramp/A Street;
24. Fairway Drive/C Street;
25. SR 99 NB Off-Ramp/C Street/Boessow Road; and
26. SR 99 SB On-Ramp/Fairway Drive.

Traffic counts were collected at each intersection on October 25, 2017, February 14, 2018, February 15, 2018, and April 5, 2018. Additionally, in coordination with City staff, daily traffic counts were collected on February 14, 2018 at 12 roadway locations within the study area.

Level of Service Standards

The Galt 2030 General Plan Circulation Element specifies minimum Level of Service (LOS) standards for all streets and intersections within the City of Galt's jurisdiction in Policy C-1.3, Level of Services. Policy C-1.3 requires that roadway systems shall be developed and managed to maintain LOS E on all streets and intersections within a quarter-mile of State Routes, along A Street and C Street between SR 99 to the railroad tracks, and along Lincoln Way between Pringle Avenue to Meladee Lane. An LOS D or better shall be developed on all other streets and intersections.

Regional Growth Estimates

GHD was contracted by the City to perform a comprehensive update to the Citywide Traffic Capital Improvement Program (TCIP) in 2015. Since the time of the 2009 General Plan adoption, the national and regional economy went into a recession, slowing projected land development considerably. In response to the slower development environment, the City contracted Goodwin Consulting Group in 2014 (through GHD) to prepare a market-based evaluation of probable land use absorption over the next 20 years. As expected, the evaluation determined that full buildout of the General Plan land uses was unlikely to occur based on market trends. The City used this absorption forecast, in conjunction with the City's own list of approved/pending projects, to identify a subset of the City's adopted General Plan Land Use Element's land use growth expected to develop over the next 20 years, henceforth referred as the "20-Year Development Forecast".

In order to develop a 20-year horizon forecast for Carillion Boulevard and parallel facilities, the 20- Year Development Forecast based on the 2015 TCIP needed to be updated to reflect current development proposals. The 20-Year Development Forecast was checked for consistency with the City's current list of Approved/Pending projects, and any new development proposals or annexations. Based on the City's current development list, the projects that are added to the 2015 TCIP 20-Year Development Forecast include the following:

- Veranda at River Oaks (General Plan Amendment), 60 units
- Greenwood Cottages, 226 units
- Marengo Road/Twin Cities Road Annexation (Summerfield), 200 units
- Eastview Specific Plan total at 1,744 units.

The updated 20-Year Development Forecast presents a 10 percent increase in housing units by 2040 from the prior 20-Year Development Forecast. Additional information related to the growth assumptions made as part of the Carillion Boulevard Complete Street Study are included in the appendix to this IS/MND.

Intersection Operations

As part of the Carillion Boulevard Complete Street Study, study intersection operations were quantified utilizing HCM 6 methodologies based on 20-year peak hour traffic volumes forecasted for Year 2040. Forecasted AM and PM peak hour intersection operations were quantified based on the planned intersection and roadway improvements within the area to establish forecasted Year 2040 Baseline conditions. To develop the Year 2040 Plus Project conditions, implementation of the roadway improvements included in the proposed project was assumed, with the same Year 2040 Baseline condition traffic volumes. Table 2 below presents a summary of intersection operations under both Year 2040 Baseline and Year 2040 Plus Project conditions.

As shown in the table, seven of the study intersections are projected to operate unacceptably, based on the City's established LOS thresholds, under Year 2040 Baseline Conditions. With implementation of the proposed project, all study intersections would operate acceptably. Therefore, the proposed project would not result in new conflicts with the City's established intersection operations standards, and a less-than-significant impact would occur.

Pedestrian, Bicycle, and Transit Facilities

The projects potential impacts related to pedestrian, bicycle, and transit facilities are described below.

Pedestrian Facilities

Currently, continuous sidewalks exist along the majority of the easterly and westerly sides of Carillion Boulevard, within the limits of Twin Cities Road and Vauxhall Avenue (see Figure 8 and Figure 9). The majority of the sidewalks provided along Carillion Boulevard are typically meandering paths composed of asphalt concrete or Portland cement concrete, and separated by a landscape buffer. Absence of sidewalks was noted at the following locations along Carillion Boulevard:

- Approximately 700-feet on the westerly side of Carillion Boulevard, immediately south of the intersection of Lake Park Avenue and Carillion Boulevard; and
- Approximately 0.30-mile length of Carillion Boulevard, on both the easterly and westerly sides, between Vauxhall Avenue & Simmerhorn Road.

Table 2
Year 2040 Plus Project Conditions: Intersection LOS

#	Intersection	Target LOS	Peak Hour	Year 2040 Baseline Conditions			Year 2040 Plus Project Conditions		
				Control Type	Delay	LOS	Control Type	Delay	LOS
1	Twin Cities Rd/Carillion Blvd	D	AM	Signal	11.3	B	RNDBT	12.1	B
			PM		10.7	B		8.5	A
2	Carillion Blvd/Lake Park Ave	**D**	AM	TWSC*	**205.5**	**F**	RNDBT	6.8	A
			PM		**OVR**	**F**		8.7	A
3	Carillion Blvd/Lake Canyon Ave	**D**	AM	TWSC*	**105.1**	**F**	RNDBT	6.3	A
			PM		**112.8**	**F**		7.1	A
4	Carillion Blvd/Elk Hills Dr	**D**	AM	TWSC*	**55.3**	**F**	RNDBT	6.4	A
			PM		**46.9**	**E**		7.1	A
5	Carillion Blvd/Walnut Ave	**D**	AM	AWSC*	**126.8**	**F**	RNDBT	9.7	A
			PM		**214.9**	**F**		7.5	A
6	Carillion Blvd/Ambrogio Way/Vintage Oak Ave	**D**	AM	AWSC*	**181.9**	**F**	RNDBT	13.3	B
			PM		**113.8**	**F**		8.9	A
7	Carillion Blvd/DiMaggio Way	D	AM	TWSC	21.8	C	TWSC	18.0	C
			PM		19.7	C		13.8	B
8	Carillion Blvd/Chelsham Ave	**D**	AM	TWSC	**60.0**	**F**	RNDBT	5.5	A
			PM		**35.3**	**E**		4.9	A
9	Carillion Blvd/Vauxhall Ave	**D**	AM	TWSC	**46.3**	**E**	RNDBT	5.2	A
			PM		28.7	D		4.9	A
10	Carillion Blvd/Simmerhorn Rd	D	AM	Signal	33.5	C	RNDBT	9.4	A
			PM		30.3	C		8.9	A
11	Twin Cities Rd/Stockton Blvd	D	AM	RNDBT	15.3	B	RNDBT	16.3	B
			PM		5.5	A		5.5	A
12	Marengo Rd/Twin Cities Rd	D	AM	Signal	37.5	D	Signal	43.5	D
			PM		23.6	C		27.9	C
13	Marengo Rd/Lake Park Ave	D	AM	TWSC	22.1	C	TWSC	24.9	C
			PM		12.2	B		12.7	B
14	SR 99 NB Ramps/ Walnut Ave/Stockton Blvd	E	AM	Signal	9.8	A	Signal	14.2	B
			PM		9.6	A		16.7	B
15	Walnut Ave/Vintage Oak Ave	D	AM	Signal	26.1	C	Signal	53.3	D
			PM		21.6	C		29.1	C
16	Walnut Ave/Elk Hills Dr	D	AM	Signal	18.7	B	Signal	24.0	C
			PM		15.5	B		34.1	C
17	Marengo Rd/Walnut Ave	D	AM	Signal	21.0	C	Signal	29.9	C
			PM		20.2	C		24.4	C
18	Marengo Rd/Chelsham Ave	D	AM	TWSC	20.4	C	TWSC	22.1	C
			PM		15.2	C		16.2	C
19	Marengo Rd/Vauxhall Rd	D	AM	TWSC	23.5	C	TWSC	29.8	D
			PM		18.7	C		23.2	C
20	SR 99 NB Ramps/Simmerhorn Rd	E	AM	RNDBT	6.7	A	RNDBT	8.8	A
			PM		6.5	A		8.5	A
21	Marengo Rd/Simmerhorn Rd	D	AM	Signal	24.2	C	Signal	48.6	D
			PM		33.4	C		34.8	C
22	SR 99 SB Ramps/Crystal Way/ A Street	E	AM	Signal	10.9	B	Signal	10.9	B
			PM		10.8	B		10.9	B
23	SR 99 NB Ramps/Crystal Way	E	AM	Signal	16.8	B	Signal	15.6	B
			PM		16.4	B		15.4	B

(Continued on next page)

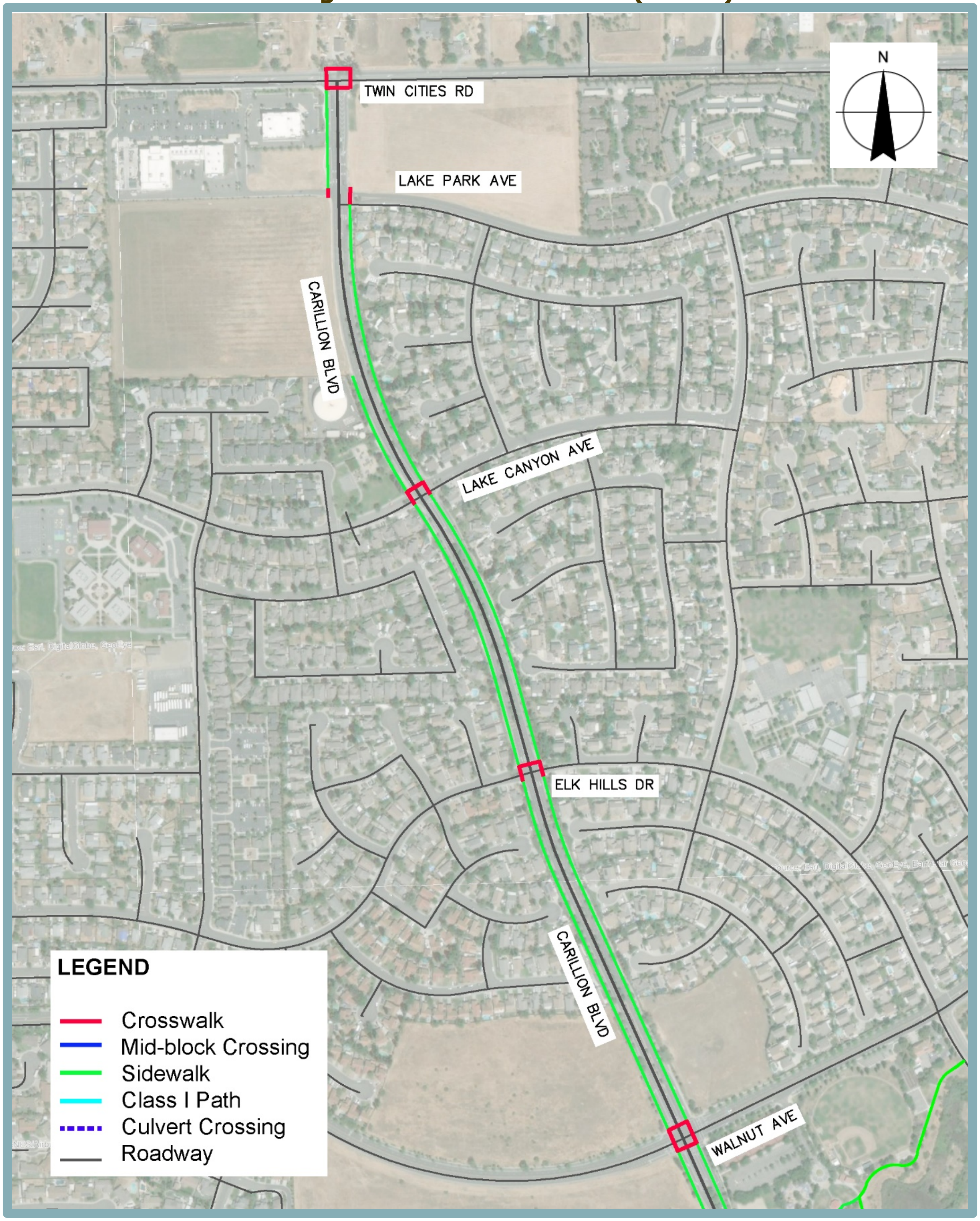
24	Fairway Dr/C St	E	AM	Signal	31.2	C	Signal	49.5	D
			PM		50.9	D		42.6	D
25	SR 99 NB Ramps/C St/Boessow Rd	E	AM	Signal	44.1	D	Signal	29.1	C
			PM		34.3	C		23.5	C
26	SR 99 SB Ramps/Fairway Dr	E	AM	Signal	6.5	A	Signal	6.3	A
			PM		6.5	A		6.4	A

Notes:

- AWSC = All Way Stop Control; TWSC = Two Way Stop Control; RNDBT = Roundabout.
- **Bold** text signifies intersection operating beyond acceptable LOS threshold.
- (*) Indicates signal warrant met, based on California MUTCD Warrant 3 threshold.
- "OVR" indicates delays greater than 300 seconds.

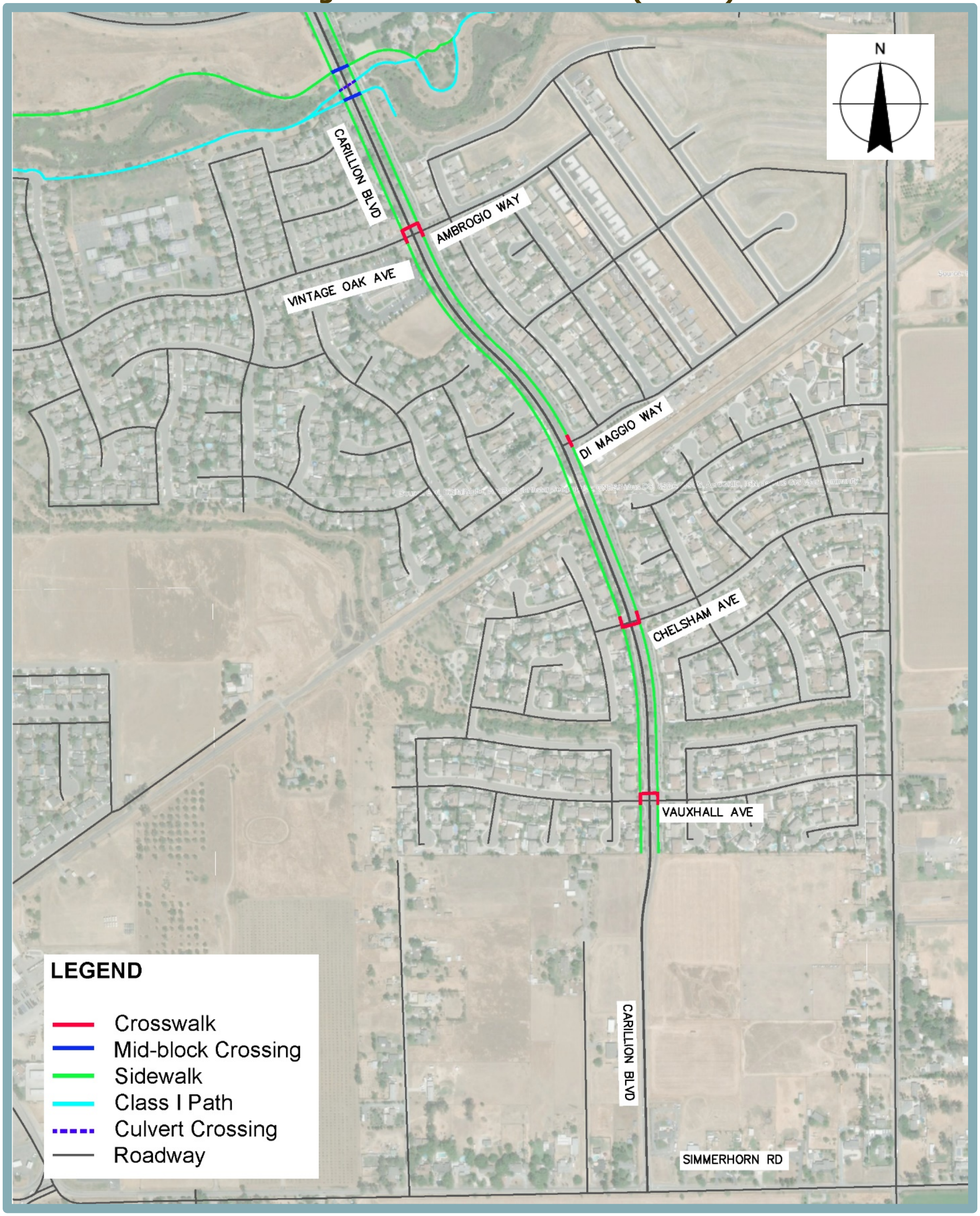
Source: GHD, 2019.

Figure 8
Existing Pedestrian Facilities (North)



Source: GHD, 2019.

Figure 9
Existing Pedestrian Facilities (South)



Source: GHD, 2019.

Currently, marked crosswalks to aid crossing in multiple directions are provided at all of the existing intersections on Carillion Boulevard, except for the intersections of Lake Park Avenue/Carillion Boulevard and Simmerhorn Road/Carillion Boulevard.

In addition, a staggered, mid-block crosswalk is provided on Carillion Boulevard, approximately 375 feet south of the intersection of Walnut Avenue & Carillion Boulevard, providing connectivity between Galt Community Park (on the easterly side of the roadway) and the paved shared use path adjacent to the creek (on the westerly side of the roadway). The existing crossing contains the following features that provide improved visibility and safety for pedestrians:

- Pedestrian Push Button with rectangular flashing beacons;
- High visibility pavement marking patterns;
- ADA compliant yellow warning tactile surfaces at curb ramps;
- Hand rails to guide pedestrians to crosswalk and pedestrian refuge; and
- Double-faced reflective pavement markers on either side of crosswalk for improved nighttime visibility.

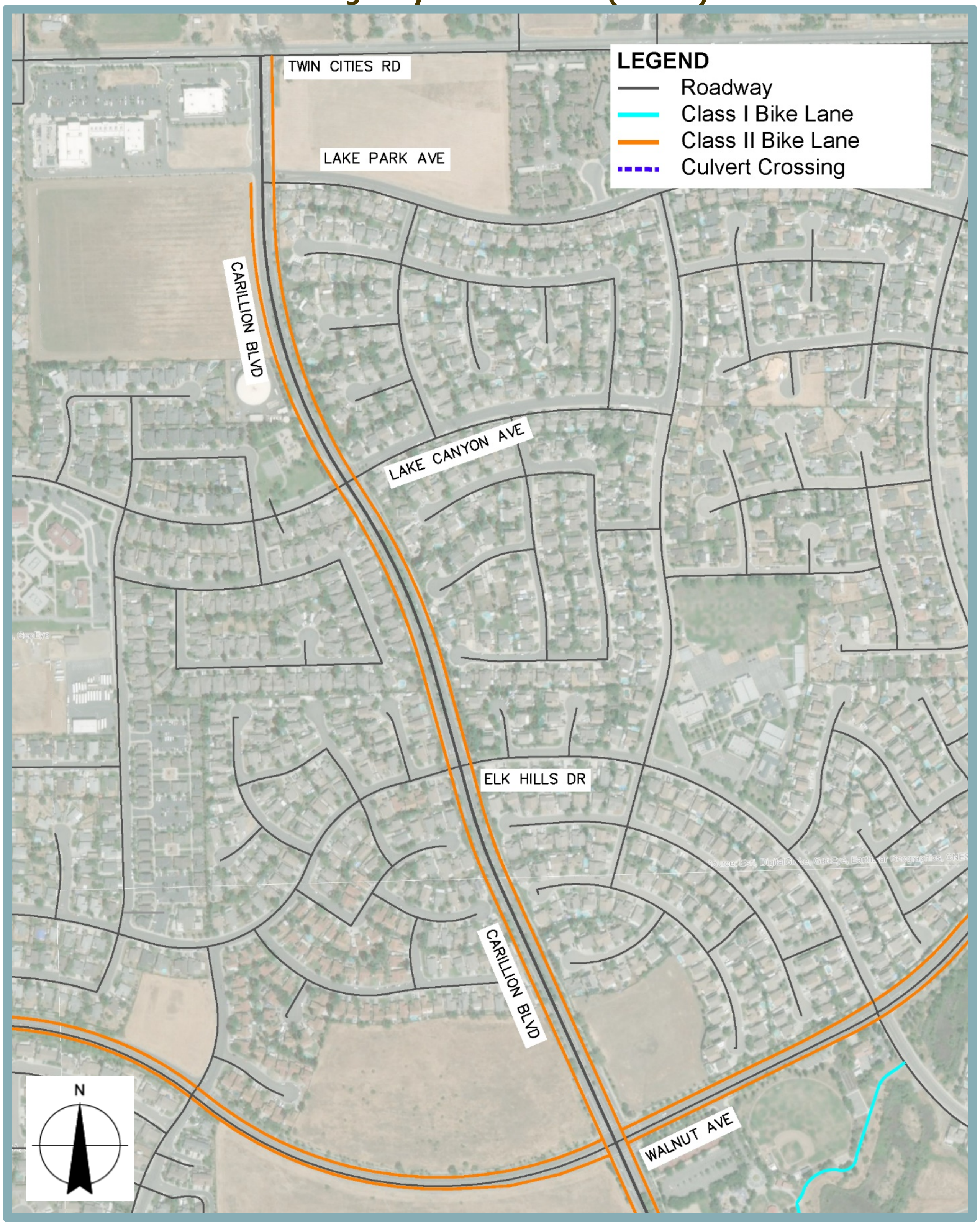
The construction of this mid-block crosswalk was intended to coincide with the dis-use of the Deadman Gulch undercrossing at Carillion Boulevard. According to existing conditions and the 2011 Galt Bicycle Transportation Plan, the undercrossing is not currently viable, as the pathway in the culvert is often flooded. Since its creation, the mid-block crosswalk has provided the optimum pathway to crossing Carillion Boulevard, especially for pedestrians and bicyclists within the vicinity of the Galt Community Park.

The proposed project includes future construction of roundabouts with median refuges at all of the intersections along Carillion Boulevard, except for at Di Maggio Way, thereby resulting in shorter crossing distances and further separation from vehicle traffic. Thus, the roundabouts would result in an overall safer environment for pedestrian crossings. The ‘T’-intersection of Carillion Boulevard at Di Maggio Way is proposed to be a protected intersection, which would provide separated pedestrian and bicycle facilities to enhance the safety of conflict areas between automobiles, bicycles and pedestrians at the intersection. In addition, a mid-block crossing with a RRFB is proposed north of Vauxhall Avenue to provide for safer crossing along the Class I path along Deadman Gulch.

Bicycle Facilities

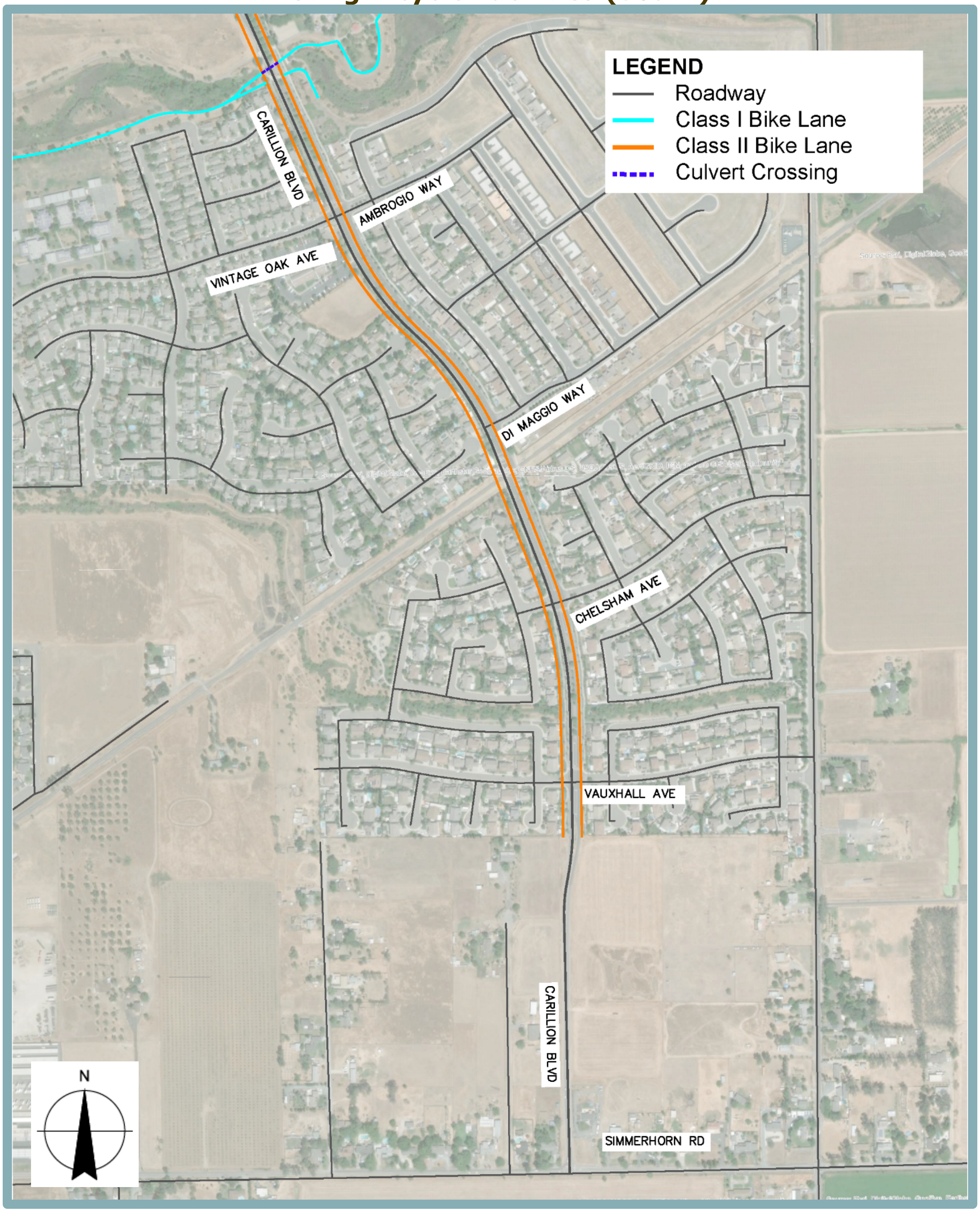
Presently, Class II bike lanes exist in both northbound and southbound directions along Carillion Boulevard (see Figure 10 and Figure 11). The Class II bike lanes, which originate at Twin Cities Road, extend for a length of 1.4 miles along Carillion Boulevard, before terminating at Vauxhall Avenue. The at-grade mid-block crossings are protected with RRFBs. The width (from the edge of pavement stripe to curb face) of the bike facilities is approximately four feet. Currently, as the gutter pan splits the existing width of the bike lane, the existing bike facilities are substandard per the California Manual for Uniform Traffic Control Devices (MUTCD), which requires a five-foot minimum bike lane width with the gutter. The existing Class II bike facilities along Carillion Boulevard are indicated by standard pavement markings and signage per CA MUTCD.

Figure 10
Existing Bicycle Facilities (North)



Source: GHD, 2019.

Figure 11
Existing Bicycle Facilities (South)



Source: GHD, 2019.

Between Vauxhall Avenue and Simmerhorn Road, bicyclists are presently forced to either share the road with motorists, or ride on the existing soft shoulder. However, signage is not provided on either side of the 0.3-mile segment of Carillion Boulevard to indicate the need for bicyclists to share the roadway with motor vehicles. Carillion Boulevard (within the vicinity of Walnut Avenue) also connects with a local recreational Class I bike path. The bike facility, which originates at Elk Hills Drive (at the Galt Community Park) and extends past Carillion Boulevard by way of both a culvert crossing and at-grade mid-block protected pedestrian crossings, currently terminates at Vintage Oak Avenue. A secondary terminus to the Class I path is provided at Cobble Hill Way. Class II bike lanes provided along Carillion Boulevard provide connectivity to Class II bike facilities present along Walnut Avenue.

As part of the analysis conducted by GHD, existing bicycle conditions for the study corridor were analyzed utilizing a standardized Bicycle Level of Traffic Stress (LTS) analysis. The methodology used for the LTS analysis was adapted from the Oregon Department of Transportation (ODOT) *Analysis Procedure Manual, Version 2*, 2016. Bicycle LTS is generally a perception-based rating system of the safety, comfort, and convenience of transportation facilities from the perspective of the user. The approach outlined in the ODOT manual uses roadway network data, including the posted speed limit, number of travel lanes, and presence and character of bicycle lanes as a proxy for bicyclist comfort level in urban context, and average daily trip (ADT) and shoulder or bike lane width in rural settings. The Bicycle LTS methodology breaks road segments into one of four classifications or ratings for measuring the effects of traffic-based stress on bicycle riders, with 1 being the lowest stress or most comfortable, and 4 being the highest stress or least comfortable. The Bicycle LTS methodology is broken into three categories: segments (along), intersection approaches (turn lanes), and intersection crossings (unsignalized). Table-based criteria are applied separately for each category.

Under existing conditions, the calculated segment LTS for Carillion Boulevard ranges from 3 to 4. Thus, bicyclists may potentially experience moderate levels of traffic stress when riding along the Carillion Boulevard corridor.

The approach LTS is 4 for most intersections along the roadway, the exception of the intersections at Lake Park Avenue and Walnut Avenue, which experience an LTS of 3 for certain approaches. The crossing score along Carillion Boulevard is LTS 1 for all signalized intersections except for Walnut Avenue and Simmerhorn Road, which are defined by crossing scores of LTS 4 and LTS 3, respectively. Therefore, bicyclists may potentially experience moderate to high levels of traffic stress when approaching and crossing existing unsignalized intersections along Carillion Boulevard.

Future implementation of the proposed project would include installation of a buffered bike lane in each direction along the length of Carillion Boulevard, thereby providing a continuous bicycle network along the length of the roadway. As a result of the improvements, the LTS along all roadway segments of Carillion Boulevard would improve to LTS 2. In addition, the proposed roundabouts would include bike ramps and separated paths for cyclists to safely navigate the roundabouts, which would improve the intersection crossing and approach scores to LTS 1.

Generally, the proposed bicycle improvements would increase bicycle connectivity within the project region, and would provide opportunities to connect with future trails, bike paths, and other bicycle facilities in the project region, including planned Class II Bike Lanes along Mckenzie Road to the north of the City. Given that the proposed project would result in improved safety and convenience for bicyclists travelling along, and crossing, Carillion Boulevard, a less-than-significant impact would occur related to bicycle facilities.

Transit Facilities

Transit services within the City of Galt is provided by the South County Transit (SCT/Link), which operates a total of three fixed routes between Galt and the neighboring municipalities of Locke, Walnut Grove, Ryde, Isleton and the City of Sacramento. SCT/Link operates the following bus routes within the City:

- Delta Route – A fixed route service that provides access between Galt and the neighboring communities of Locke, Walnut Grove, Ryde, and Isleton. The Delta Route operates exclusively on weekdays within the hours of 6:20 AM to 7:10 PM. Primary stops on the Delta Route (within Galt) includes the Galt City Hall and the Galt Walmart and Raley's Shopping Centers.
- HWY 99 Express – A fixed route service that runs along SR 99 provides connectivity between Lodi, Galt, Elk Grove, and Sacramento. The SR 99 Express route operates exclusively on weekdays within the hours of 5:20 AM to 7:20 PM. Primary stops on the route (within Galt) include the Galt City Hall.
- Galt to Sacramento Commuter Express – A fixed route service that runs along SR 99 provides direct access between the Galt and Sacramento. The route operates exclusively on weekdays within the hours of 6:30 AM to 6:30 PM. Primary stops on the route (within Galt) include the Galt City Hall and the Twin Cities Park and Ride.

In addition to the routes noted above, SCT/Link provides a Dial-A-Ride service that operates exclusively on weekdays (from 6:30 AM to 6:30 PM) and Saturdays (from 8:00 AM to 4:30 PM). Transit services are not currently provided along Carillion Boulevard, within the extents of Twin Cities Road and Simmerhorn Road.

Given that transit services are not currently provided along Carillion Boulevard, the improvements included in the proposed project would not conflict with any existing bus stops or other transit facilities. Thus, a less-than-significant impact would occur.

Conclusion

Based on the above, the proposed project would not conflict with any City standards applicable to the study intersections in the project area. In addition, improvements included in the proposed project would not conflict with any programs, plans, ordinances, or policies addressing pedestrian, bicycle, or transit facilities. Thus, a ***less-than-significant*** impact would occur.

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Per Section 15064.3, analysis of vehicle miles traveled (VMT) attributable to a project is the most appropriate measure of transportation impacts. While a qualitative discussion of VMT has been provided below, the provisions of Section 15064.3 apply only prospectively; determination of impacts based on VTM is not required Statewide until July 1, 2020.

Per Section 15064.3(3), a lead agency may analyze a project's VMT qualitatively based on the availability of transit, proximity to destinations, etc. While changes to driving conditions that increase intersection delay are an important consideration for traffic operations and management, the method of analysis does not fully describe environmental effects associated with fuel consumption, emissions, and public health. Section 15064.3(3) changes the focus of transportation impact analysis in CEQA from measuring impact to drivers to measuring the impact of driving. As noted in question ‘a’ above, the proposed project would improve bicycle and pedestrian facilities along the length of Carillion Boulevard, thereby resulting in improved safety and convenience for bicyclists and pedestrians travelling within the City and encouraging use of alternative means of transportation.

Based on the above, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), and a ***less-than-significant*** impact would occur.

c. Based on existing collision data for the Carillion Boulevard Corridor between the limits of Twin Cities Road and Simmerhorn Road, for a 5-year period between January 1, 2012 and December 31, 2016, 12 reported injury (non-Property Damage Only) collisions occurred on the study roadway within the segment limits. A majority of the collisions (25 percent) occurred at the intersection of Lake Park Avenue and Carillion Boulevard. The number of injury collisions per year has remained consistently low along Carillion Boulevard, with lowest number of collisions occurring in 2015 with no collisions and the largest occurring in both 2012 and 2016 with four collisions each.

The improvements included in the proposed project would provide safer pedestrian and bicycle facilities, especially at the intersections, where motorists and non-motorists interact. Based on historical collision data analyzed by GHD for the proposed project, 66.7 percent of the collisions along Carillion Boulevard occurred at intersections. Installing roundabouts is a proven safety countermeasure for intersections which experience a high frequency of more severe collision types, such as broadside or left-turn type collisions. Installing traffic signals can also be used to prevent the most severe collision types; however, traffic signals can lead to more rear- end collision types and more congestion.

With the implementation of a road diet and roundabouts, pedestrians and bicyclists cross one lane at a time, with a median refuge provided on all approaches. With traffic signals, pedestrians and bicyclists must cross multiple lanes of traffic at once, and median refuges may not be present. Thus, the proposed project provides safer and shorter crossings for pedestrians and bicycles at intersections, while still maintaining the capacity demands of motorized travel. In addition, the proposed improvements would not result in any conflicts with emergency vehicle access along Carillion Boulevard. The proposed roundabouts would be designed to accommodate emergency vehicles, as well as school buses.

Based on the above, the proposed project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment), or result in inadequate emergency access. Therefore, a ***less-than-significant*** impact would occur.

XVIII. TRIBAL CULTURAL RESOURCES. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).	☐	✖	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	✖	☐	☐

Discussion

a,b. Tribal cultural resources are generally defined by Public Resources Code 21074 as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. As discussed in Section V, Cultural Resources, of this IS/MND, the CHRIS search conducted for the proposed project did not identify any known cultural resources within the proposed improvement areas.

It should be noted that under Assembly Bill (AB) 52, formal consultation with California Native American Tribes must be conducted by lead agencies for proposed projects. In particular, lead agencies are required to consult with Native American tribes early in the CEQA process if a Native American tribe has first requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in their geographic area. The City of Galt's tribal consultation request list, pursuant to AB 52/Public Resources Code Section 21080.3.1, currently includes the Torres Martinez Desert Cahuilla Indians and Wilton Rancheria. The City provided each of the tribes with notification regarding the proposed project, consistent with Section 21080.3.1 requirements. The mandatory 30-day response period for consultation under AB 52 closed, and requests for consultation on the proposed project were not received. In addition, a search of the NAHC Sacred Lands File indicated the presence of Native American sacred lands or traditional cultural properties in the immediate project vicinity.[18]

As discussed in Section V, Cultural Resources, to the south of Vauxhall Avenue, ground-disturbing activity would be required in order to accommodate widening of Carillion Boulevard to Simmerhorn Road and future extension of Carillion Boulevard further south. However, while the proposed road diet would alter the configuration of the roadway, the project would not result in additional ground-disturbing activity beyond what has been previously considered by the City and analyzed at a program level in the General Plan EIR. In addition, the Carillion Boulevard widening and extension would be subject to future

---

18 Native American Heritage Commission. *Carillion Boulevard Corridor Plan Project, Sacramento County*. August 29, 2019.

CEQA analysis as part of buildout of the East Galt Infill Annexation Area, including the Simmerhorn Ranch site.

The improvements included in the proposed project for the section of Carillion Boulevard north of Vauxhall Avenue would not require substantial trenching, excavation, or other ground disturbance with the potential to upset cultural resources; ground disturbance would be primarily limited to construction of the proposed roundabouts, with only limited right-of-way expansions required. The roundabouts would be installed within areas which have been subject to prior ground disturbance. Nevertheless, the possibility exists that future construction of the improvements included in the proposed project could result in a substantial adverse change in the significance of a tribal cultural resource if previously unknown cultural resources are uncovered during grading or other ground-disturbing activities. Thus, a ***potentially significant*** impact to tribal cultural resources could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

XVIII. *Implement Mitigation Measures V-1 and V-2.*

XIX. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	✖	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	✖
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	✖
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	✖	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a. The proposed project would include improvements along the length of Carillion Boulevard, some of which may require minor improvements to existing utility infrastructure within the roadway right-of-way. Specific utility improvements would be determined at a future time as project-level designs are available for specific improvement areas. However, any required utility improvements would be relatively minor, and would not require additional ground disturbance outside of the right-of-way. Upon completion of the proposed improvements, the project would not increase demand for utilities relative to existing conditions. Therefore, the proposed project would result in a ***less-than-significant*** impact related to requiring or resulting in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

b,c. The proposed project would not include any substantial demand for water supplies and would not result in generation of wastewater. Therefore, ***no impact*** would occur related to having sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years, or resulting in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

d,e. The proposed project would not result in any long-term generation of solid waste. While future construction of the improvements included in the project would result in short-term generation of construction waste, solid waste generation would be typical of other roadway improvement projects within the City and would be consistent with what has been anticipated in the City's General Plan and analyzed in the General Plan EIR. Future construction projects related to implementation of the proposed project would be required to comply with Policy PFS 5.7 of the Galt 2030 General Plan, which promotes the reduction of solid waste through construction debris recycling. Therefore, the proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. In addition, the project would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Thus, a ***less-than-significant*** impact would occur.

XX. WILDFIRE. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	✖
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	✖
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	✖
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	✖

Discussion

a-d. According to the CAL FIRE Fire and Resource Assessment Program, the project site is not located within or near a state responsibility area or lands classified as a Very High Fire Hazard Severity Zone (VHFHSZ).[19] The nearest VHFHSZ is approximately five miles east of the city limits. Therefore, the proposed project would not be subject to substantial risks related to wildfires, and a ***less-than-significant*** impact would occur.

[19] Cal Fire. *Sacramento County, Draft Fire Hazard Severity Zones in LRA.* October 2, 2007.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	✖	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	✖	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	✖	☐

Discussion

a. With the implementation of required mitigation, the proposed project would have a low potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. Overall, the City of Galt's incorporation of mitigation measures adopted as part of the proposed project would minimize the impacts on the environment as discussed throughout this IS/MND analysis, and the project's impact would be considered ***less than significant***.

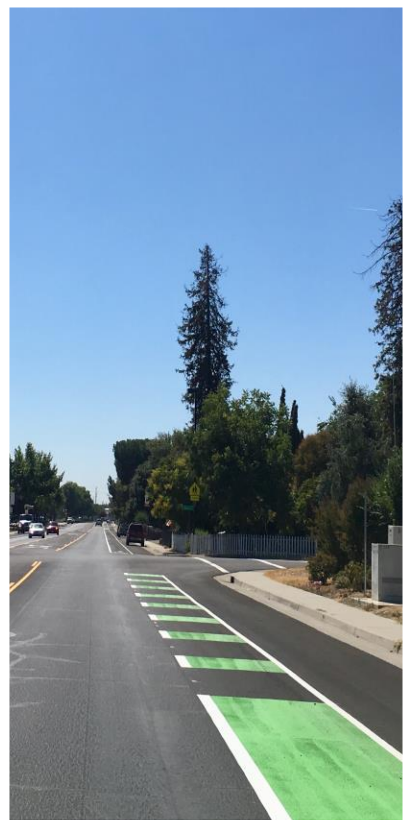
b. The proposed project, in conjunction with other development within the City of Galt, could incrementally contribute to cumulative impacts. However, mitigation measures for all potentially significant project-level impacts identified for the proposed project in this IS/MND have been included that would reduce impacts to less-than-significant levels. All future development projects not previously anticipated by the General Plan EIR or other environmental analyses in the City of Galt would be required to undergo the same environmental analysis and mitigate any potential impacts, as necessary. Therefore, the proposed project would not have any impacts that would be cumulatively considerable, and impacts would be ***less than significant***.

c. As described in this IS/MND, the proposed project would comply with all applicable General Plan policies, Municipal Code standards, other applicable local and State regulations, in addition to the mitigation measures included herein. In addition, as discussed in Section III, Air Quality, Section IX, Hazards and Hazardous Materials, and Section XIII, Noise, of this IS/MND, the proposed project would not cause substantial effects to human beings, including effects related to exposure to air pollutants, hazardous materials, traffic, and noise. Therefore, the proposed project would result in a ***less-than-significant*** impact.

Appendix

Carillion Boulevard Complete Street Corridor Study

Carillion Boulevard Complete Street Corridor Study



Raney Planning & Management

Final Report

Executive Summary

This Carillion Boulevard Complete Streets Corridor Study (Study) was initiated by the City of Galt to identify multimodal transportation enhancements so that all travel modes are accommodated, and will promote safe and convenient walking and bicycling for residents and visitors alike. The multimodal transportation enhancements can also help to reach the State's greenhouse gas emission reduction goals. This Study provides the framework and tools needed to further develop specific designs and provide a "Complete Street" along Carillion Boulevard. This study is funded by a Local Government Challenge Grant Funding Opportunity awarded to the City of Galt (City) by the State of California Energy Commission. The Grant was awarded to the City to prepare a Climate Action Plan, Corridor Plan, and Master Plan that support the City's 2030 General Plan implementation policies and goals in addition to regional and statewide climate and transportation policies and directives.

Carillion Boulevard is currently an auto-centric 2.2-mile corridor located between Twin Cities Road and Simmerhorn Road. It is mostly a wide four-lane arterial that currently serves single-family and multi-family residential, commercial/retail, schools, and parks. Travel speeds are high, bike lanes are narrow, and pedestrian crossings at intersections are long and without median refuges. Gaps in the pedestrian and bicycle network exist north of Lake Canyon Avenue and south of Vauxhall Avenue. Although landscape-buffered sidewalks and bicycle facilities are present along the majority of the corridor, the corridor remains auto-centric in use, with relatively low bicycle and pedestrian activity.

The focus of this study is to encourage less use of automobile travel by enhancing active transportation modes, like walking and cycling, creating a more family-friendly "Complete Street" roadway. Consideration of complete street corridor treatments, including a corridor-length road diet, would seek to improve the attractiveness of bike and pedestrian mobility choices, reduce cyclist and pedestrian levels of stress, and enhance corridor aesthetics while still retaining adequate capacity to serve existing and future vehicular demand. With this opportunity to shift local travel away from use of motor vehicles, vehicle emissions will be reduced and air quality enhanced.

This study summarizes existing and forecasted multimodal transportation conditions along the Carillion Boulevard corridor, including automobile performance metrics, gaps in bicycle and pedestrian connectivity and collision history. In addition, the Study discusses the community's involvement with the public outreach process, identifies multimodal improvement alternatives, and proposes a recommended Corridor Plan. This Corridor Study provides a framework within which to further develop specific designs. This document is intended to guide future improvements along the corridor as funds become available.

Various Complete Streets improvements along Carillion Boulevard were initially compared to find the best possible solutions for all modes of travel based on the Project Goals and current policies. Additionally, with future development in northeastern Galt and regional growth on SR 99, the volumes are projected to increase on Carillion Boulevard and adjacent facilities over the next twenty years. The increase of traffic volumes along Carillion Boulevard will increase the safety risk to pedestrians and bicyclists, and the vehicular delays for side street stop-controlled intersections will also increase to undesirable conditions, without any improvements.

Ultimately, two alternatives for the entire corridor were identified: Alternative 1 implements a road diet with roundabouts at most intersections and installs buffered bike lanes along the Carillion Boulevard corridor; and Alternative 2 retains the current four lanes, reduces the vehicle lane width to accommodate 6-foot bike lanes throughout, and installs traffic signals at most intersections. Total estimated costs for these alternatives are $34 million for Alternative 1 and $19.2 million for Alternative 2.

Upon comparison between the above two alternatives, based on the following criteria; 2040 Intersection Operations (LOS), travel time, bicycle and pedestrian Levels of Traffic Stress (LTS), and safety benefits, Alternatives 1 - Road Diet and Roundabouts is recommended over Alternative 2 to be the **Preferred Corridor Plan.** This analysis found that Alternative 1 established the following findings that led to its selection as the **Preferred Corridor Plan**:

- Achieves the best acceptable intersection operations from a Level of Service standpoint, both currently and through the Year 2040.
- Achieves the least corridor travel time along Carillion Boulevard overall, with slower and safer mid-block travel speeds and less intersection delays.
- Achieves the highest comfort levels for walking and cycling along the corridor with the best Levels of Traffic Stress (LTS) values.
- Achieves the highest corridor-wide safety standing by reducing speeds, creating greater separation of travel modes and providing roundabouts at intersections, which have been proven to reduce overall collisions and collision severity.

The following Figure ES-1 presents the conceptual layout of the **Preferred Corridor Plan**.

The **Preferred Corridor Plan**, in the future as indicated, provides the best Level of Service, the least overall travel time to travel the corridor and the safest conditions for all modes of travel. Roundabouts along the Carillion Boulevard corridor will slow travel speeds through intersections, significantly reducing the risk of more severe collisions resulting from turning traffic, as well as provide safer and shorter pedestrian and bicycle crossings. Additionally, the road diet and buffered bike lanes provide additional separation for cyclists from vehicular travel lanes. Buffered bike lanes, rather than separated bike lanes, were selected initially to maintain the most design flexibility of the road diet and reduce initial cost of implementation. If upon acceptance by the Community and availability of funding, additional improvements to create separated bike lanes could be added later.

In summary, the **Preferred Corridor Plan** for Carillion Boulevard presents a systemic approach to encouraging neighborhood friendly, active transportation modes, reduce speeding and vehicle emissions, while enhancing safety and meeting the capacity demands to achieve efficient motorized travel.

CARILLION BLVD COMPLETE STREET CORRIDOR STUDY
PREFERRED CORRIDOR PLAN (ALTERNATIVE 1)

500' 0 500'

1 inch = 500 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

Carillion Blvd Improvements: Twin Cities Rd to Boessow Rd

Project No. 11151293
Report No. -
Date 03.07.19

FIGURE ES-1

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 2:28 PM

Source:

Table of Contents

Figure Index

Table Index

Appendix Index

1. Introduction

The City of Galt has retained Raney Planning and Management with GHD, as their sub-consultant, to perform a traffic operations analysis to determine the feasibility of implementing a Complete Streets Program along the Carillion Boulevard corridor, in northeastern Galt. Carillion Boulevard is a four-lane arterial with walkways and bike lanes, which currently serves single-family residential, commercial/retail and schools. However, travel speeds are high and bike lanes are narrow, such that multimodal use of the corridor is minimal. Therefore, the focus of this study is to encourage less use of automobile travel by creating a more family-friendly “Complete Street” roadway.

This study is funded by a Local Government Challenge Grant Funding Opportunity awarded to the City of Galt (City) by the State of California Energy Commission. The Grant was awarded to the City to prepare a Climate Action Plan, Corridor Plan, and Master Plan that support the City’s 2030 General Plan implementation policies and goals in addition to regional and statewide climate and transportation policies and directives.

This Study, as part of the overall Grant award, seeks to identify multimodal transportation improvements, policies, and strategies along the Carillion Boulevard corridor that could reduce greenhouse gas emissions by encouraging travel mode shifts to active transportation, reducing congestion-related automobile emissions, and reducing dependency on automotive travel for short local trips.

This Complete Street Plan identifies the study’s purpose, need, and planning context, summarizes existing and forecasted multimodal transportation conditions along the Carillion Boulevard corridor, including automobile performance metrics, collision history, and existing active transportation infrastructure in the study area, discusses the community’s involvement with the public outreach process, identifies multimodal improvement alternatives, and proposes a recommended Plan.

1.1 Purpose and Need

The Carillion Boulevard Corridor, between Twin Cities Road and Simmerhorn Road, is a 2.2-mile arterial roadway that serves local neighborhoods and City-wide circulation. The land uses surrounding Carillion Boulevard are mostly single-family residential houses, schools, parks, and some neighborhood and commercial/retail. The corridor currently has narrow Class II bike lanes and landscape-buffered sidewalks, with two travel lanes in each direction and left turn pockets at most intersections.

The corridor remains auto-centric in use, with relatively low bicycle and pedestrian activity, despite the availability of bicycle and pedestrian infrastructure. Some potential factors in the low active transportation use of the corridor is the width of the roadway itself, high vehicle travel speeds, lack of neighborhood connectivity and visibility due to sound walls along the corridor, distance between pedestrian crossings, minimal width of existing bike lanes, and lack of signal-controlled pedestrian crossings. Consideration of “Complete Street” corridor treatments, including consideration of a corridor-length road diet, would seek to improve the attractiveness of bike and pedestrian mobility choices, reduce perceived and physical barriers to safe active transportation choices, reduce cyclist and pedestrian levels of stress, and enhance corridor aesthetics while still retaining adequate capacity to serve existing and future vehicular demand.

The following Project Goals have been identified to aid the implementation of the objectives listed within the project Purpose and Need:

- Recognize Greenhouse Gases Reduction and Air Quality Benefits – Metrics of the Plan need to include environmental benefits, including but not limited to, reduced use of motor vehicles, reduced traffic congestion, and reduced greenhouse gases.
- Improve Multimodal Connectivity – Improve multimodal connectivity by completing existing gaps in pedestrians paths and bicycle facilities between residences, public institutions, and retail destinations on Carillion Boulevard.
- Enhance Safety for All Modes of Travel – Identify circulation improvements that slow travel speeds and enhance safety for pedestrians, cyclists, and motor vehicles traversing or crossing the Carillion Boulevard Corridor.
- Provide Adequate Roadway Capacity for Diverse Travel Needs – As congestion is unacceptable, adequate capacity on Carillion Boulevard needs to be provided for local travel with intersection controls that promote both safe and efficient travel.
- Promote Economic Vitality and Visual Character – Design Carillion Boulevard to promote multimodal travel options, benefit local visual character, improve social interaction and public health, and bring economic vitality to Northeast Galt.
- Engage the Community – Lastly, but not least, community involvement is essential so that the findings and recommendations in the Plan are drawn from public consensus and reflect the desires of the community.

In addition to these project specific goals, this effort should also recognize and achieve both the State Transportation Planning Goals and the Federal Transportation Planning Goals.

1.2 Regulatory and Planning Framework

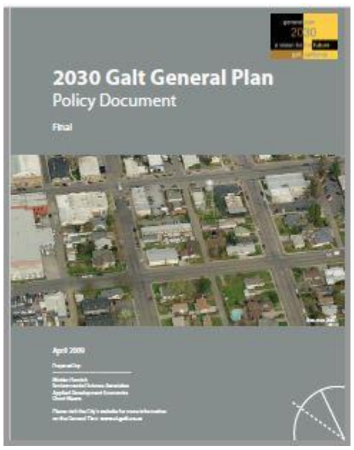
This section summarizes the current policies and planning documents that guide and/or regulate transportation planning decisions related to Complete Streets and Road Diets in Galt, as they pertain to this study. The following documents, policies, and goals will be incorporated and referenced for this study, to provide support and justification for proposed improvement concepts:

Local Government Challenge funded by the California Energy Commission

In February 2017, the California Energy Commission presented a grant funding opportunity to local governments by initiating the Small Government Leadership Challenge (SGLC) and the Energy Innovation Challenge (EIC) programs. Both of these programs were enabled by the State Energy Program funds made possible by the American Recovery and Reinvestment Act (ARRA) of 2009. The SGLC works to aid smaller governments with fewer resources than larger governments to design and implement their climate action plans or other planning efforts advancing greenhouse gas (GHG) reductions to meet state climate targets and goals. The EIC encourages the participation of larger local governments that have already set climate and energy goals and are working towards a Climate Action Plan (CAP) to obtain funding to further their endeavors.

The City of Galt applied for an SGLC grant to help fund the preparation of a CAP to aid the reduction of greenhouse gases within the City. The CAP is anticipated to provide the City with the necessary policy framework to reach compliancy with the GHG reduction targets established by State Legislatures such as AB 32, SB 350, and SB 32. The CAP also allows the City to aggressively work towards GHG emissions reductions through the implementation of the Transportation Corridor Management Plan and the Master Plan. SGLC funds obtained by the City through this grant program would also be used to fund the Transportation Corridor Management Plan along Carillion Boulevard.

2030 Galt General Plan



The 2030 Galt General Plan, which was adopted by the City in 2009 (and last amended in November 2017), presents a set of policies and programs that form a plan for long-term development within the City. The General Plan aims to meet local and regional planning requirements, and guides City development. Therefore, the General Plan provides the basis for decision-making on land use, housing, city services, public works, conservation, safety, and economic development. The Circulation Element provides objectives and policies related to roadway standards, Level of Service (LOS), circulation for alternative transportation systems and coordination with the Housing and Land Use Elements.

2030 Galt General Plan Circulation Element Policy for Complete Streets

The Circulation Element of the 2030 Galt General Plan presents the policy framework for the development of “complete streets” within the City of Galt. The General Plan identifies the following goals and policies in the implementation of Complete Streets within the City:

Goal C-8: To promote the creation of complete streets throughout the community which provide safe access to pedestrians, bicyclists, motorists, and bus riders of all ages and abilities.

Policy C-8.1: Attractive Streets
The City shall provide attractive streets designed to serve a broad spectrum of travel modes (e.g., bikes, pedestrians, transit, and people with disabilities) as well as automobiles.

Policy C-8.2: Bikeways along Major Streets
The City should provide Class II bike lanes along all collector and minor arterial streets. Class I bike paths should be considered along major arterials and along certain minor arterials.

Policy C-8.3: Street, Pedestrian, and Bicycle Facilities
The City shall create a network of street, pedestrian, and bicycle facilities that provides for multiple safe routes between various origins and destinations.

Policy C-8.4: Pedestrian and Bike Convenience at Intersections
The City should design and build new intersections and redesign existing intersections (as opportunities arise) to maximize pedestrian and bike convenience and safety relative to automobile needs

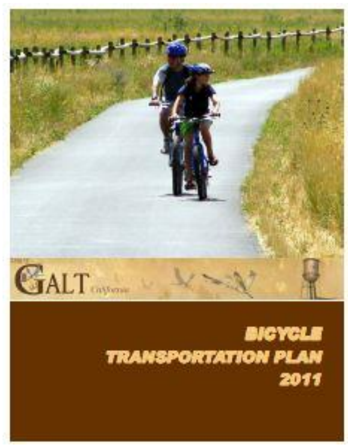
Policy C-8.5: Intersection Speed Reduction
The City should design intersections to reduce car speeds through the use of bulb- outs, reduced corner radii, and/or on-street parking.

Policy C-8.6: Bikeway and Pedestrian Trail Funding Mechanisms
The City should develop mechanisms to increase the funding for the creation and maintenance of bikeways and pedestrian trails.

Policy C-8.7: Bike Safety Outreach Program
The City should create an outreach program to promote bike safety and the use of bikes as a viable and attractive alternative to cars.

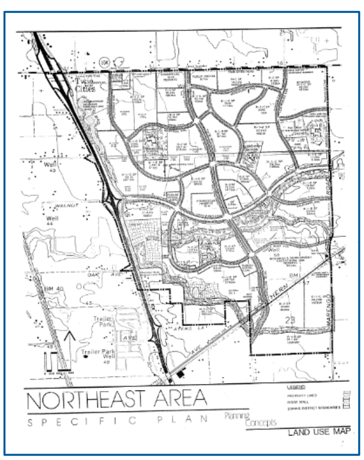
Policy C-8.8: Transit Access in New Developments
The City shall, where appropriate, require new developments that are located adjacent to arterial streets or existing/planned transit routes to include bus loading zones, shelters, lighting, and other amenities which make transit attractive and safe.

2011 City of Galt Bicycle Transportation Plan



The 2011 Bicycle Transportation Plan is a Master Planning Document that provides the framework and guidance for identifying existing bike infrastructure and building new bike facilities within the City. The Plan, which promotes the increased usage of bicycles as a transportation mode, provides recommendations for goals, policies, and implementation strategies to close gaps in existing bikeways to provide inter-community connections and multimodal access.

City of Galt Northeast Area Specific Plan

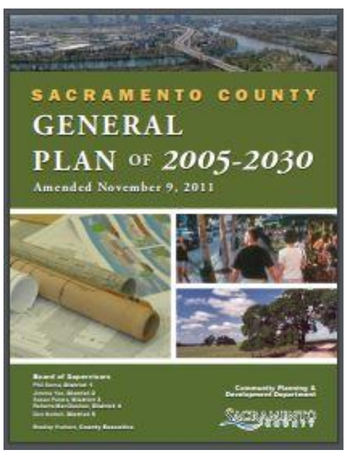


The City's Northeast Area Specific Plan, which was adopted in September 1987, provides the planning framework for the northeast area of the City, between SR 99, Marengo Road, and Twin Cities Road. This Master Planning document intends to provide guidance as an intermediary planning document between the General Plan and the Galt Zoning Ordinance. This Specific Plan, which establishes the northeast region to be the area of Galt between State Route 99 and Marengo Road, applies the large-scale regulations and policies outlined within the General Plan to the development of the relatively smaller region of Northeast area of Galt.

Eastview Specific Plan and Annexation

The City's Eastview Specific Plan (May 2016) provides the planning framework for the area east of the City, between Marengo Road, Cherokee Road, Twin Cities Road, and Amador Avenue. The land use plan proposes 1,744 dwelling units with a mix of densities and lot sizes and 125,000 square feet of retail commercial space, as well as 20.0 acres of parks distributed over four sites. The plan includes the 51 acre Liberty Ranch High School property and proposes a new 8.9 acre Elementary School site, and 41.4 acres of open space. In addition to the Environmental Impact Report (EIR) prepared for the Eastview project, a Plan for Services (PFS) was prepared for submittal and review by the Sacramento County LAFCo as part of the annexation process. The proposed annexation area would essentially fill in the northeastern corner of the City's Sphere of Influence, and complete the City's land base in that area, as anticipated in the General Plan.

County of Sacramento Year 2030 General Plan

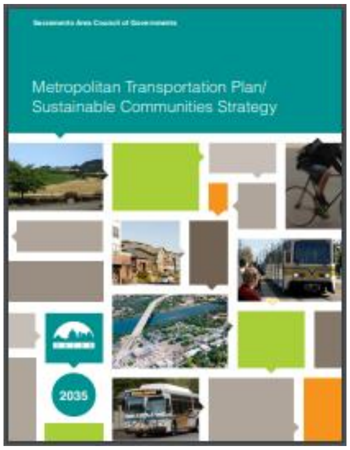


Similar to the City's General Plan, the County Year 2030 General Plan (which was last adopted in 2005) provides the framework for long-term development within the County of Sacramento. Within the General Plan, the Land Use and Housing Elements provide the basis for future developments that are planned to occur within the County, while the Circulation Element lays the decision-making framework for revitalizing roadways to reflect the transportation demands of this anticipated growth within Sacramento County. Additionally, the Circulation Element provides goals, objectives, and policies regarding roadway standards and LOS thresholds for roadways maintained by the County.

2011 County of Sacramento Bicycle Transportation Plan

Similar to the City's Bicycle Transportation Plan, the County's Bicycle Transportation Plan serves as a Master Planning Document that provides the planning framework for bikeways operating within Sacramento County. The Plan, which encourages the increased usage of bicycles within the County, currently maintains 203.9 miles of existing bikeways that are distributed among four different types of bike facilities. This Master Planning Document written to supplement the Circulation Element of the Sacramento County General Plan aims to improve the safety and usage of bicycle travel within Sacramento County.

Metropolitan Transportation Plan/ Sustainable Communities Strategy for 2035



Produced by the Sacramento County of Governments (SACOG), the Metropolitan Transportation Plan/Sustainable Community Strategy (MTP/SCS) provides a framework for improving environmental quality, sustainability and energy efficiency within the greater Sacramento County. The Plan, which promotes economic vitality and access and mobility within the County, provides more options for land use patterns that optimize transportation performance. To aid the implementation of the MTP/SCS, the Plan includes 21 policies and supportive strategies as a framework.

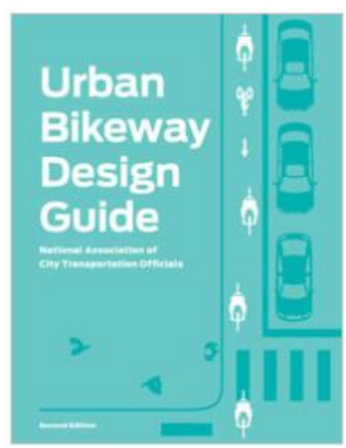
California AB 1358 – Complete Streets Act

The California Assembly Bill (AB) 1358 of 2008 is known as the Complete Streets Bill/Act. Effective January 1, 2011, AB 1358 requires revisions to a County's or City's Circulation Element to include provisions for the accommodation of all roadway users including bicyclists, pedestrians, and transit vehicles. The legislation impacts local general plans by adding the following language to Government Code section 65302(b)(2)(A) and (b)(2)(B):

"(A) Commencing January 1, 2011, upon any substantial revision of the circulation element, the legislative body shall modify the circulation element to plan for a balanced, multi-modal transportation network that meets the needs of all users of the streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the general plan;

(B) for the purposes of this paragraph, - users of streets, roads, and highways means bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors."

National Association of City Transportation Officials Urban Bikeway Design Guide



The NACTO Urban Bikeway Design Guide provides guidance to planning agencies in the design of bikeways within urban contexts. This design guide provides the following required features for the design of conventional bike lanes:

1. The desirable bike lane width adjacent to a curb face is 6 feet. The desirable ridable surface adjacent to a street edge or longitudinal joint is 4 feet, with a minimum width of 3 feet. In cities where illegal parking in bike lanes is a concern, 5 foot wide bike lanes may be preferred.

Additionally, this document lists the following design guidelines from the AASHTO (1999) Guide for the Development of Bicycle Facilities, to further clarify bike lane width requirements:

“The recommended width of a bike lane is 1.5 m (5 feet) from the face of a curb or guardrail to the bike lane stripe.”

“If the [longitudinal] joint is not smooth, 1.2 m (4 feet) of ridable surface should be provided.”

California AB 32 – Global Warming Solutions Act

The California Assembly Bill (AB) 32 of 2006 is known as the Global Warming Solutions Act. Effective January 1, 2010, AB 32 requires California to reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020 — a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario. AB 32 requires the California Air Resources Board (CARB or ARB) to develop regulations and market mechanisms to reduce California's greenhouse gas emissions to 1990 levels by the year of 2020, representing approximately a 30% reduction statewide, with mandatory caps beginning in 2012 for significant emissions sources. Climate Action Plans are a way for local governments to help California meet its AB 32 targets.

California SB 375 – Sustainable Communities and Climate Protection Act

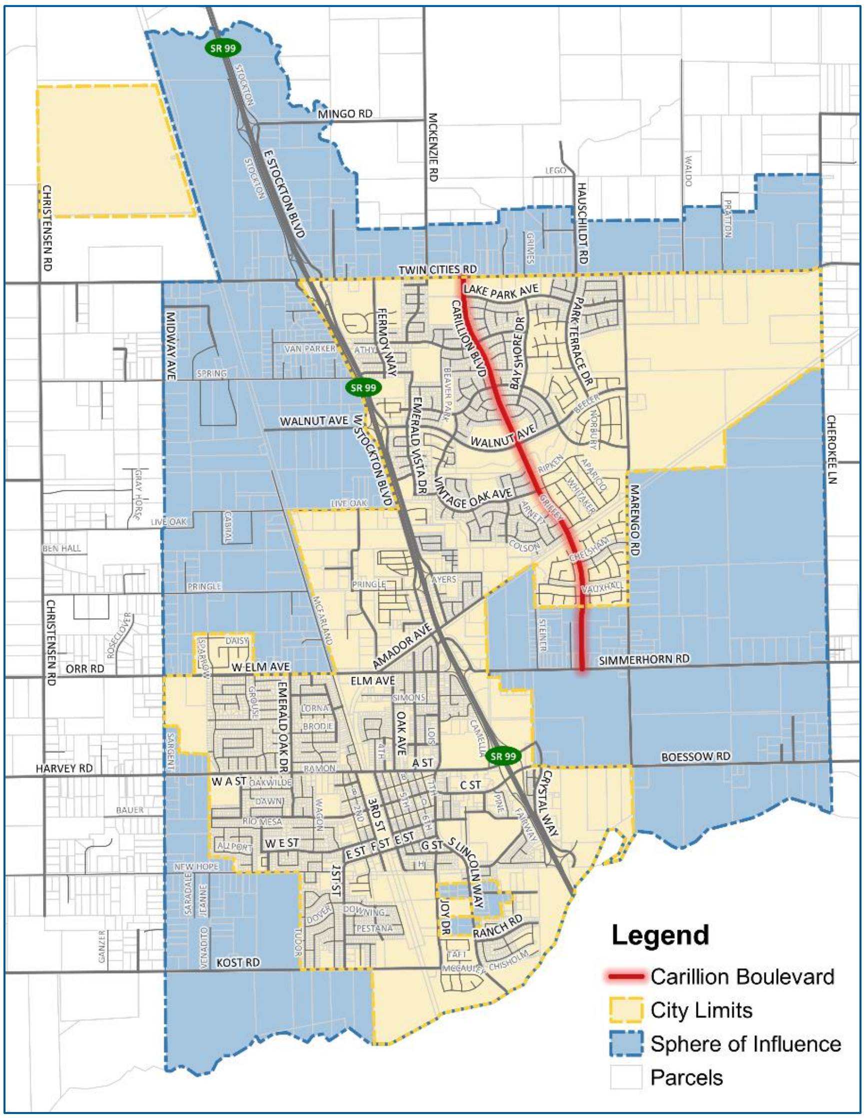
The California Senate Bill (SB) 375 of 2006 is known as the Sustainable Communities and Climate Protection Act. Effective January 1, 2010, SB 375 supports the State's climate action goals to reduce greenhouse gas (GHG) emissions through coordinated planning with the goal of creating more sustainable communities. Recognizing the need to reduce travel demand through smart city and regional planning, SB 375 requires each metropolitan planning organization (MPO) to meet GHG emission reduction targets through integrated transportation, land use and housing planning. Each of MPO must prepare a "sustainable communities strategy" (SCS) as an integral part of its regional transportation plan (RTP).

Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. While SB 375 sets planning requirements for MPO’s, it is ultimately up to local jurisdictions to implement many of the land use and transportation strategies.

2. Project Study Area & Demographics

The specific corridor being analyzed in this study is Carillion Boulevard. The overall study area included in the analysis includes most of the circulation system and intersections in the northeastern area of Galt, east of SR 99, between Twin Cities Road and Simmerhorn Road. This is roughly contiguous with the boundaries of the Northeast Area Specific Plan. The following section outlines the regional setting, demographic and economic context and provides the framework for analysis throughout this Study. Figure 2.1 presents the study area of Carillion Boulevard in relation to the City Limits and Sphere of Influence.

Figure 2.1 Carillion Boulevard Location



2.1 Regional Setting

Galt is located on SR 99 in southern Sacramento County between the cities of Elk Grove and Lodi. The City is located about 26 miles south of Sacramento, 24 miles north of Stockton, and about 100 miles east of the San Francisco Bay Area. The community is surrounded by agricultural lands on the north, south, and east, and the Cosumnes River Preserve to the northwest and west.

2.2 Demographic Setting and Population

According to the 2018 California Department of Finance Population Estimate Data, the population of Galt is estimated to be 23,647, within an area of approximately 5.9 square miles. In 2010, the City of Galt contained approximately 7,262 households, with an average household size of 3.24 persons. According to 2016 data, the median age in Galt is 32.8 years, which is younger than the state average of 35.2 years.

View of Downtown Galt from the corner of Fourth Street and C

2.2.1 Economic Setting

As highlighted within the Economic Development Element of the City's General Plan, the relatively rural location of Galt has resulted in the City facing challenges in attracting a major share of the County's economic development. Located between two major economic regions, the Sacramento metropolitan area and the northern San Joaquin Valley, Galt continues to attract residential growth, but has attracted relatively few new jobs, reflected in the City's imbalanced jobs/housing ratio of 0.46:1. While the City desires to improve this balance, this jobs/housing ratio is consistent with suburban development patterns in other parts of Sacramento County. SACOG has set a goal of a 1.4:1 jobs/housing ratio for the region. The County currently has a 1.22:1 jobs/housing ratio.

The Brewster Building, a thriving restaurant business in downtown Galt. Source: Applied Architecture

Currently, Downtown Galt has established itself has a vital and viable place to visit and conduct business. As revenues within Downtown Galt are primarily generated by visitors traveling through the City, the City's Goals and Policies aim to optimize retail commercial marketing to maintain these sources of income.

The northeast area of Galt consists primarily of low and high density residential developments with public spaces supplementing the general layout of these neighborhoods. As a result, within the Northeast area of the City, most of the revenue is generated by the commercial/retail developments that are located within proximity of SR 99 and SR 104 (Twin Cities Road).

2.2.2 Employment and Commute Trends

The City of Galt falls within the Sacramento-Arden-Arcade-Roseville Metropolitan Statistical Area. According to the Housing Element Update Background Report for the City of Galt, many of Galt's residents are employed outside of the City. According to the 2030 General Plan Existing Conditions Report, the City of Galt is predominantly a "bedroom community", with the majority of workers commuting outside the City to work in the metropolitan areas of Sacramento to the north and Stockton to the south. Much of the City's growth has occurred in both the Northeast and West portions of the City. With the adoption of the Northeast Area Specific Plan in the late 1980's, residential development in this area has been particularly active.

As specified within the Housing Element of the City's General Plan, most of the employment within Galt is related to retail, services, transportation, and agricultural industries. As a result, many Galt residents with administrative and professional jobs commute to Stockton or Sacramento for work. With the proximity of both Sacramento and Stockton as metropolitan employment hubs, relatively little growth in employment has occurred within the City. Therefore, the land development pattern remains skewed to residential development and being a "bedroom community". The Galt Market remains a major regional shopping attraction each week on Tuesday and Wednesday, making Tuesday/Wednesday traffic conditions in the City significantly worse than all the other days.

Table 2.1 and Figure 2.2 present the existing mode of travel split, based on the 2016 American Community Survey five-year estimates for selected economic characteristics, and compares the commuting patterns of the City of Galt to those of Sacramento County, California statewide and nationwide. The existing modal splits within Galt present how residents currently travel to work. Although commute patterns may also be correlated to commute times and distances to work, travel between non-work related trips will vary by mode.

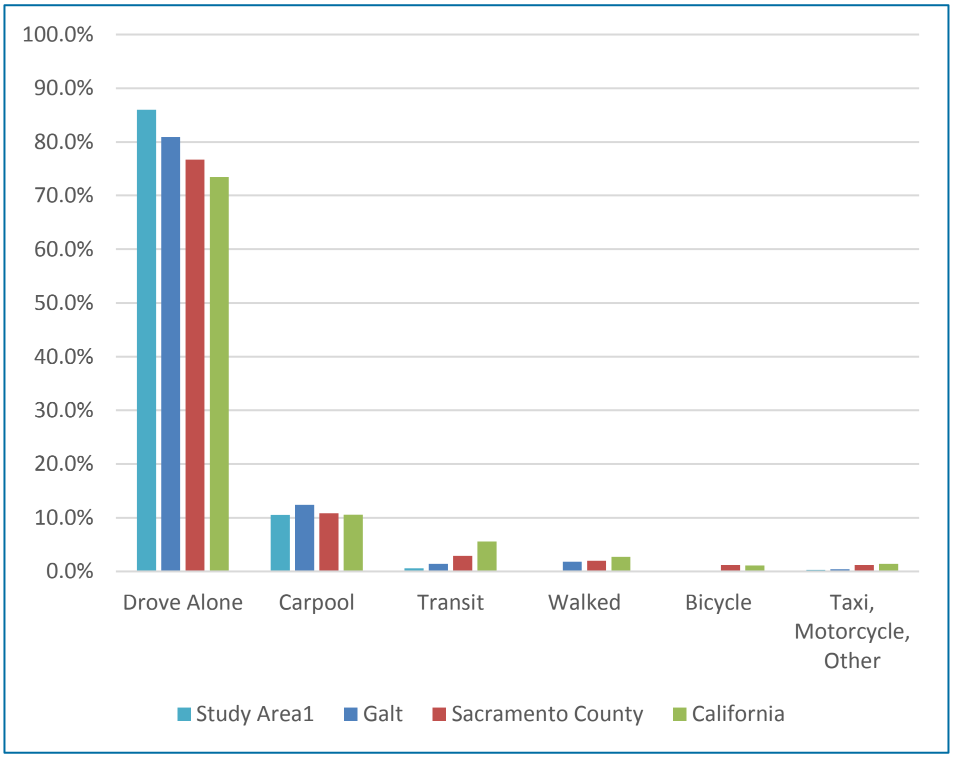
Note: The American Community Survey (ACS) represents commute mode choice only. Other trip purposes, besides commuting, may include different mode choices. Further detailed information from the Sacramento Regional Transportation Study, currently underway by the Sacramento Area Council of Governments, may be used to supplement the ACS data when made available.

Table 2.1 Means of Transportation to Work

2016 Means of Transportation to Work	Study Area[1]	City of Galt	Sacramento County	California
Drove Alone	86.0%	80.9%	76.7%	73.5%
Carpool	10.5%	12.4%	10.8%	10.6%
Transit	0.6%	1.4%	2.9%	5.6%
Walked	0.0%	1.8%	2.0%	2.7%
Bicycle	0.0%	0.1%	1.2%	1.1%
Taxi, Motorcycle, Other	0.3%	0.4%	1.2%	1.4%
Worked From Home	2.6%	3.6%	5.3%	5.4%
Worked in County	57.6%	56.1%	80.9%	82.6%
Lived in Place	97.1%	100.0%	98.4%	95.2%
Worked in Place	16.4%	18.8%	31.9%	35.1%
Mean Travel Time to Work (minutes)	32.6	31.9	26.5	28.4
Source: American Community Survey, 2016				
1. Study Area is defined generally as the Northeast area, represented by census Tract 94.07				

As presented in Table 1, the commute patterns within the study area and the City of Galt indicate that a higher number of people tend to drive to work, either alone or in a carpool, than the statewide average. The percentage of commuters choosing to commute via walking or transit usage is lower than the statewide and average. The average travel time to work within the City of Galt is approximately 32 minutes, which is higher than travel times recorded countywide and statewide.

Figure 2.2 Existing Modal Splits

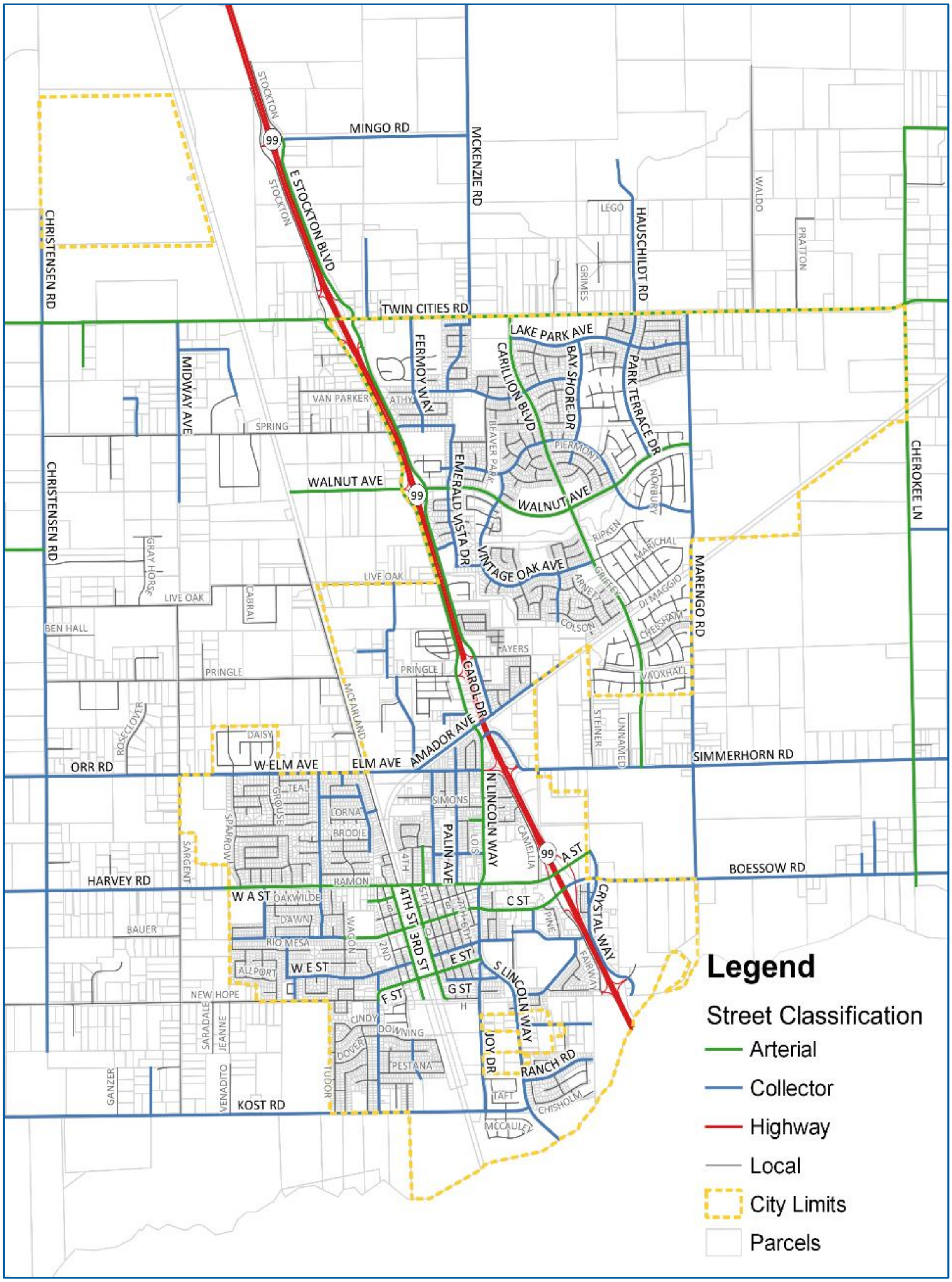


2.3 Transportation Setting

Roundabout interchange improvement at State Route 99 & Twin Cities Road.

Situated at the southern border of Sacramento County, the City of Galt is a suburban community with primary regional access provided by SR 99 and SR 104. SR 99 carries significant freight, commuter, and recreational traffic. Highway retail and commercial land uses along SR 99 benefit from easy access to the freeway and interregional recreational and commute travelers. Within northeast Galt, circulation is provided by multiple arterial and collector facilities that traverse the area in both the north-south and east-west directions. Figure 1.3 presents the City's roadway classification based on the General Plan.

Figure 2.3 Galt Roadway Classifications



Therefore, in addition to State Route 99, the following roadways provide much of the circulation within the northeast Galt:

- Twin Cities Road (State Route 104)
- Walnut Avenue
- Simmerhorn Road
- Carillion Boulevard
- Marengo Road

These arterial and collector facilities provide both access and circulation within residential, public institutional, retail, and employment-based land use types situated within northeast Galt. Further information on the above streets is provided within the *Study Intersections* and *Study Roadways* section of this report.

2.3.1 Roadway Classification

Per the City of Galt General Plan Circulation Element, roadways within the City are classified as follows:

Major Arterials are roadways that emphasize mobility with limited access. These include freeways, highways, expressways, and those arterials that are specifically designed to provide a high level of mobility with limited access to adjoining properties.

Minor Arterials are roadways that interconnect with and augment the major arterial system, while providing a somewhat lower level of travel mobility due to less stringent access limitations.

Collectors provide a balanced function of land access and mobility between residential neighborhoods and commercial, office professional, and industrial areas.

Local Streets have a primary function to provide direct access to abutting lands and connections to the higher order functional classifications.

2.3.2 Carillion Boulevard Roadway Characteristics

Carillion Boulevard is a divided, north-south arterial facility that generally serves northeast Galt. Currently, Carillion Boulevard connects between Twin Cities Road in the north and Simmerhorn Road to the south. The segment of Carillion Boulevard between Twin Cities Road and Vauxhall Avenue is a four-lane arterial section. South of Vauxhall Avenue, Carillion Boulevard currently tapers to a two-lane section to the T-intersection with Simmerhorn Road. The posted speed limit on Carillion Boulevard is 45 mph, and 25 mph in school areas. The existing rights-of-way along Carillion Boulevard within the specified study limits are as follows:

- Twin Cities Road to Vauxhall Avenue – varies between 65-105 feet (which includes landscaping and wide sidewalks, 8 feet)
- Vauxhall Avenue to Simmerhorn Road – currently 30 feet.

Carillion Boulevard is within the City limits between Twin Cities Road and Vauxhall Avenue. However, from Vauxhall Avenue to Simmerhorn Road, Carillion Boulevard is operated and maintained by Sacramento County. Per the City's current General Plan Circulation Element, Carillion Boulevard is planned to be extended southwest as a four-lane arterial from Simmerhorn Road to Boessow Road.

2.3.3 Study Area Roadway Characteristics

The following section presents the roadways that provide primary circulation within the vicinity of Carillion Boulevard.

State Route 99 (SR 99) is a major state freeway facility that traverses in the north-south direction through central and northern California. Regionally, SR 99 serves as the primary interregional auto and truck travel route that connects the Central Valley cities of Stockton, Modesto, Merced, and Fresno with the Sacramento urban area to the north and the Los Angeles/ Bakersfield urban basin to the south. Within Sacramento County, SR 99 represents a major north-south commuter route between downtown Sacramento and the Cities of Elk Grove and Galt. Within the City of Galt planning area, SR 99 serves as a vital north-south circulator, and has a four- lane divided freeway cross-section.

State Route 104 (SR 104/ Twin Cities Road) is a general two-lane expressway/arterial type roadway that runs east-west along the northern limit line of the City of Galt. SR 104 forms a full access interchange with SR 99 within the City of Galt, and extends eastwards through County lands to the City of Jackson in Amador County. SR 104 provides general connection between SR 99 and the newer, northeastern portions of the City of Galt. West of SR 99 interchange, SR 104 extends as Twin Cities Road that connects with Interstate 5. Twin Cities Road currently has a posted speed limit of 45 mph.

Marengo Road is a two-lane, north-south arterial facility that represents a parallel route to Carillion Boulevard, and connects northeast Galt with the Simmerhorn Road and Boessow Road corridors. Marengo Road forms a T-intersection with Twin Cities Road to the north, and terminates as a T-intersection with Boessow Road to the south.

Walnut Avenue is a divided four-lane arterial, except for a two-lane section immediately east of E. Stockton Boulevard. Walnut Avenue connects to SR 99 via hook ramps, but does not provide cross-freeway access.

Simmerhorn Road is a two-lane, east-west arterial facility that connects between SR 99 and Marengo Road. East of Marengo Road, Simmerhorn Road extends further east into County lands, past Cherokee Lane and Alta Mesa Road, and ultimately forming a T-intersection with Clay Station Road. Simmerhorn Road also extends northwest of the hook ramps with SR 99, forms an overcrossing across SR 99, and intersects with North Lincoln Way.

Elk Hills Drive is a two-lane, undivided north-south residential roadway that connects Carillion Boulevard to Walnut Avenue via single-family residential developments. Elk Hills Drive forms four-legged intersections with both Carillion Boulevard (to the north) and Walnut Avenue (to the south).Elk Hills Drive currently has a posted speed limit of 25 mph.

Lake Park Avenue is a two-lane, undivided east-west residential roadway that connects Carillion Boulevard to Marengo Road via single-family residential developments. Lake Park Avenue forms a

4-legged intersection with Carillion Boulevard (at the westerly terminus) and a three-legged intersection with Marengo Road (at the easterly terminus). Both of these intersections are currently unsignalized. This roadway currently has a posted speed limit of 25 mph.

Lake Canyon Avenue is a two-lane, undivided east-west residential roadway that spans between Bay Shore Drive and Fermoy Way. Lake Canyon Avenue forms a four-legged, unsignalized intersection with Carillion Boulevard. This roadway currently has a posted speed limit of 25 mph.

Fermoy Way is a two-lane, north-south residential roadway that spans between Twin Cities Road and Adare Way. Fermoy Way forms a three-legged, signalized intersection with Twin Cities Road (at the northern terminus), and a four-legged, unsignalized intersection with Adare Way (at the southern terminus). Fermoy Way provides access to the shopping center on Twin Cities Road, including the Walmart Supercenter, and access to Lake Canyon Avenue.

Vintage Oaks Drive is a two-lane, undivided, roadway that spans between Killebrew Way and Elk Hills Drive. Vintage Oaks Drive forms a four-legged, unsignalized intersection with Carillion Boulevard. This roadway currently has a posted speed limit of 25 mph.

3. Active Transportation & Existing Multimodal Facilities

Carillion Boulevard is a major roadway serving multiple residential developments located within northeast Galt. The following section presents key roadway characteristics and multimodal facilities that exist on Carillion Boulevard. A comprehensive network of bikeways and pedestrian paths has attempted to be planned, that are safe, convenient, and accessible for both commuter and recreational travel, to be essential parts of the community's transportation infrastructure. However, design standards for many of these multimodal facilities have changed since 1989, when the Northeast Galt Specific Plan area was developed, and therefore, needs to be updated and completed where gaps in the network exist.

From a bicyclist's perspective, Galt can be an attractive place to ride. The City is located on level terrain, in a relatively mild climate most of the year, and has a small town, rural atmosphere. The City is also fortunate to have a natural waterway feature along its southern boundary (Dry Creek) and a major drainage way with two distinct forks in the Northeast Area. These land formations provide recreational opportunities for bicyclists and pedestrians as well as providing direct linkages to major activity centers.

The following sections present the classification of bike and pedestrian facilities within the City of Galt, and an inventory of existing bike and pedestrian infrastructure along the roadways considered within this study.

3.1 Facility Classifications

The 2011 City of Galt Bicycle Transportation Plan encourages the use of bicycling and walking, and recognizes the following functional classes of bicycle and pedestrian facilities.

Class I – Bicycle Path. Class I facilities are multi-use facilities that provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.

Class II – Bicycle Lane. Class II facilities provide a striped and signed lane for one-way bicycle travel within the paved area of a roadway that shares the roadway with motor vehicles. The minimum width for bike lanes ranges between four and six feet depending upon the edge of roadway conditions (curbs). Class II bike lanes are demarcated by a six-inch white stripe, signage and pavement legends.

Class III – Bicycle Route. Class III facilities provide signs for shared use with motor vehicles within the same travel lane on a street or highway. Bike routes may be enhanced with warning or guide signs and shared lane marking pavement stencils. While Class III routes do not provide measure of separation, they have an important function in providing continuity to the bikeway network.

Class IV – Separated Bikeway. An exclusive bikeway for bicyclists that is separated from the roadway. Separations may include grade separation, flexible posts, physical barriers, or on-street parking.

Buffered Bike Lanes. Buffered bike lanes are conventional bike lanes paired with a designated buffer space separating the bicycle lane from the travel lane. A buffered bike lane provides a greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane[1]. Buffered bike lanes can also be designed to accommodate other low speed electric vehicles, in compliance with the California vehicle code. The MUTCD provides guidelines for demarcation of buffered bike lanes and the use of chevrons.

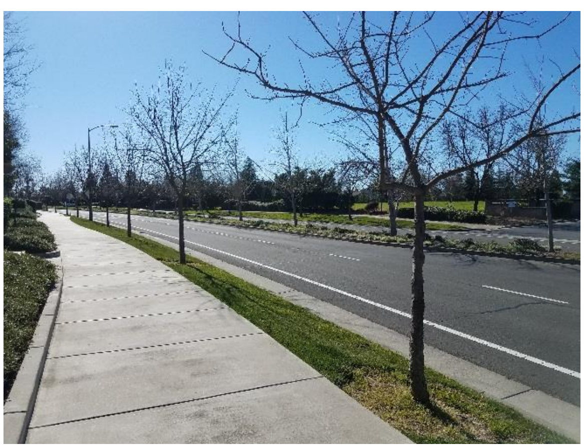
Pedestrian Path. A path that is physically separated by distance or barrier from a roadway. Pedestrian paths are different than sidewalks, and are typically constructed in conjunction with Class I Bicycle Paths.

Sidewalk. A sidewalk is identified to be a pedestrian-dedicated paved walkway that is located adjacent to a roadway. Sidewalks maybe constructed using either Portland cement concrete (PCC) or asphalt concrete pavement materials.

3.2 Carillion Boulevard Existing Bicycle and Pedestrian Facilities

The following section presents a brief overview of the existing bicycle and pedestrian facilities on Carillion Boulevard and an identification of their unique characteristics.

Existing Pedestrian Facilities



Concrete Sidewalks with Landscaping on Carillion Blvd

Pedestrian Cross-walk at Chelsham Ave & Carillion Blvd

Existing conditions indicate that the presence of continuous sidewalks exists along the majority of the easterly and westerly sides of Carillion Boulevard, within the limits of Twin Cities Road and Vauxhall Avenue. The majority of the sidewalks provided along Carillion Boulevard were typically meandering paths composed of asphalt concrete or Portland cement concrete, and separated by a

[1] Urban Bikeway Design Guide, National Association of City Transportation Officials, Second Edition, 2014.

landscape buffer. Additionally, absence of sidewalks was noted at the following locations along Carillion Boulevard:

- Sidewalks are absent for a length of approximately 700-feet on the westerly side of Carillion Boulevard, immediately south of the intersection of Lake Park Avenue & Carillion Boulevard.
- 0.30 mile length of Carillion Boulevard, on both the easterly and westerly sides, between Vauxhall Avenue & Simmerhorn Road

Marked crosswalks to aid crossing in multiple directions are provided at all of the existing intersections on Carillion Boulevard, except for the intersections of Lake Park Avenue/Carillion Boulevard and Simmerhorn Road/Carillion Boulevard.

Midblock Crosswalks

Pedestrian Push Button with Flashing Beacon Warning Sign

Staggered Mid-Block Crosswalk on Carillion Blvd

Existing conditions indicate the presence of a staggered, mid-block crosswalk on Carillion Boulevard, approximately 375 feet south of the intersection of Walnut Avenue & Carillion Boulevard. This mid-block crosswalk, which provides connectivity between Galt Community Park (on the easterly side of the roadway) and the paved shared use path adjacent to the creek (on the westerly side of the roadway) contains the following features that provide improved visibility and safety for pedestrians:

- Pedestrian Push Button with rectangular flashing beacons
- High visibility pavement marking patterns
- ADA compliant yellow warning tactile surfaces at curb ramps
- Hand rails to guide pedestrians to crosswalk and pedestrian refuge
- Double-faced reflective pavement markers on either side of crosswalk for improved nighttime visibility

The construction of this mid-block crosswalk was intended to coincide with the dis-use of the Deadman Gulch undercrossing at Carillion Boulevard. According to existing conditions and the 2011 Galt Bicycle Transportation Plan, the undercrossing is no longer viable as there is almost always water over the pathway in the culvert. Since its creation, the mid-block crosswalk has provided the optimum pathway to crossing Carillion Boulevard, especially for pedestrians and bicyclists within the vicinity of the Galt Community Park.

Existing Bike Facilities

Class II Bike Route Sign on SB Carillion Blvd

Class II Bike Lane Pavement and Roadway Signs on Carillion Blvd

Presently, Class II bike lanes exist in both northbound and southbound directions along Carillion Boulevard, which is a four-lane divided arterial. These Class II bike lanes, which originates at Twin Cities Road, extends for a length of 1.4 miles along Carillion Boulevard, before terminating at Vauxhall Avenue. The at-grade mid-block crossings are protected with Rectangular Rapid Flash Beacons (RRFB). The width (from the edge of pavement stripe to curb face) of this bike facility is approximately 4 feet. Currently, as the gutter pan splits the existing width of the bike lane, these existing bike facilities are substandard per the California Manual for Uniform Traffic Control Devices (MUTCD), which requires a 5-foot minimum bike lane width with the gutter. These existing Class II bike facilities along Carillion Boulevard are indicated by standard pavement markings and signage per CA MUTCD.

Soft shoulder warning sign on NB Carillion Blvd near Simmerhorn Rd

View of SB Carillion Blvd near Simmerhorn Rd

Between Vauxhall Avenue and Simmerhorn Road, bicyclists are presently forced to either share the road with motorists, or ride on the existing soft shoulder present on Carillion Boulevard between these limits. However, no signage is provided on either side of this 0.3-mile segment of Carillion Boulevard to indicate the need for bicyclists to share the roadway with motor vehicles. Carillion Boulevard (within the vicinity of Walnut Avenue) also connects with a local recreational Class I bike path. This bike facility, which originates at Elk Hills Drive (at the Galt Community Park) and extends past Carillion Boulevard via both a culvert crossing and at-grade mid-block protected pedestrian crossings, is observed to terminate at Vintage Oak Avenue. A secondary terminus to this Class I path is also provided at Cobble Hill Way. It is further observed that Class II bike lanes provided along Carillion Boulevard provide connectivity to Class II bike facilities present along Walnut Avenue.

Figure 3.1 and Figure 3.2 present the existing pedestrian facilities along Carillion Boulevard. Figure 3.3 and Figure 3.4 present the existing bicycle facilities along Carillion Boulevard.

3.3 Transit Facilities

Transit services within the City of Galt is provided by the South County Transit (SCT/Link), which operates a total of three fixed routes between Galt and the neighboring municipalities of Locke, Walnut Grove, Ryde, Isleton and the City of Sacramento. SCT/Link operates the following bus routes within the City:

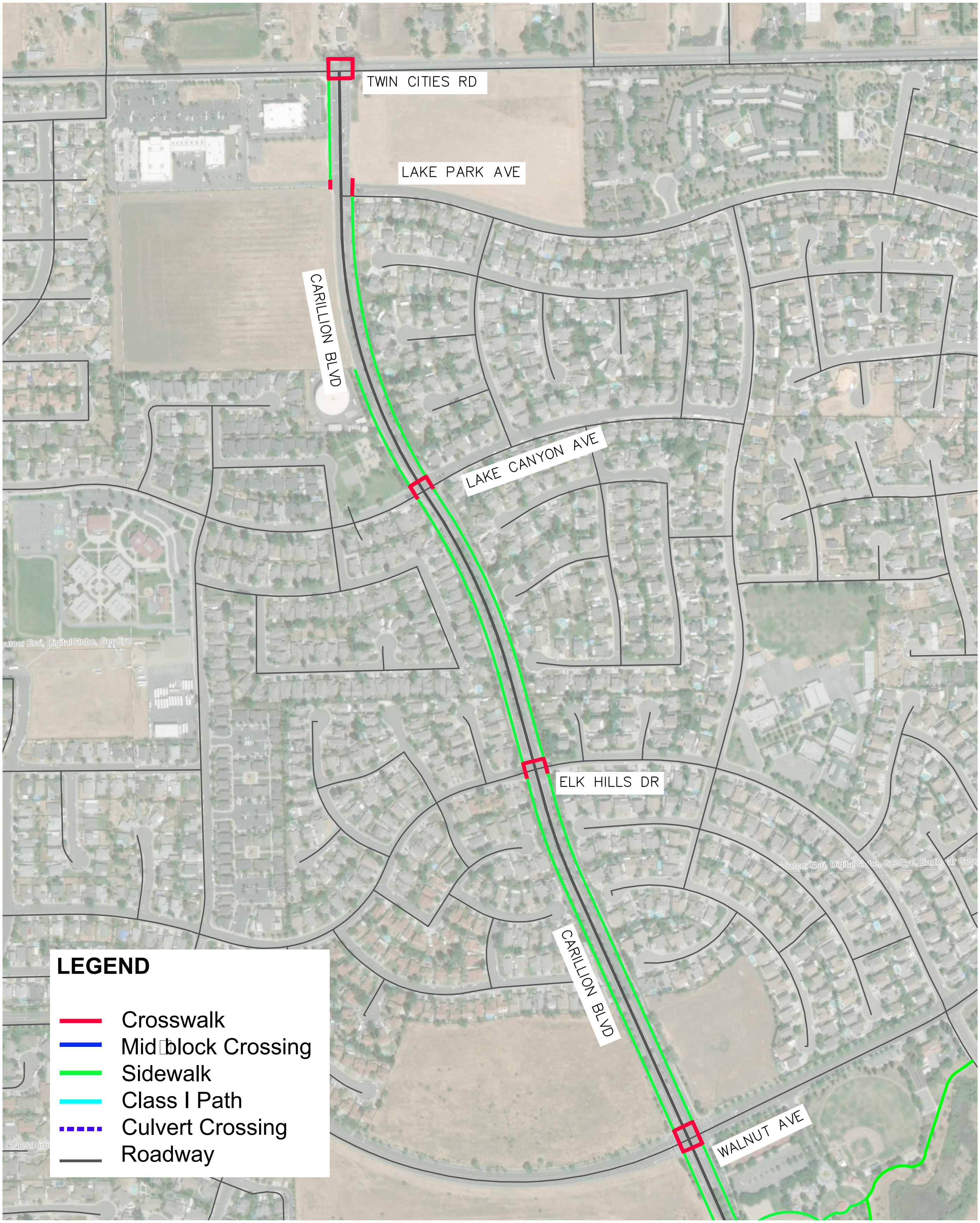
Delta Route – A fixed route service that provides access between Galt and the neighboring communities of Locke, Walnut Grove, Ryde and Isleton. This route operates exclusively on weekdays within the hours of 6:20 am -7:10 pm. Primary stops on this route (within Galt) includes the Galt City Hall and the Galt Walmart and Raley's Shopping Centers.

HWY 99 Express – A fixed route service that runs along State Route 99 provides connectivity between Lodi, Galt, Elk Grove and Sacramento. This route operates exclusively on weekdays within the hours of 5:20 am -7:20 pm. Primary stops on this route (within Galt) includes the Galt City Hall.

Galt to Sacramento Commuter Express – A fixed route service that runs along State Route 99 provides direct access between the Galt and Sacramento. This route operates exclusively on weekdays within the hours of 6:30 am -6:30 pm. Primary stops on this route (within Galt) includes the Galt City Hall and the Twin Cities Park and Ride.

SCT/Link also provides a Dial-A-Ride service that operates exclusively on weekdays (from 6:30 am – 6:30 pm) and Saturdays (from 8:00 am – 4:30 pm).

No transit services are currently provided along Carillion Boulevard, within the extents of Twin Cities Road and Simmerhorn Road.



N

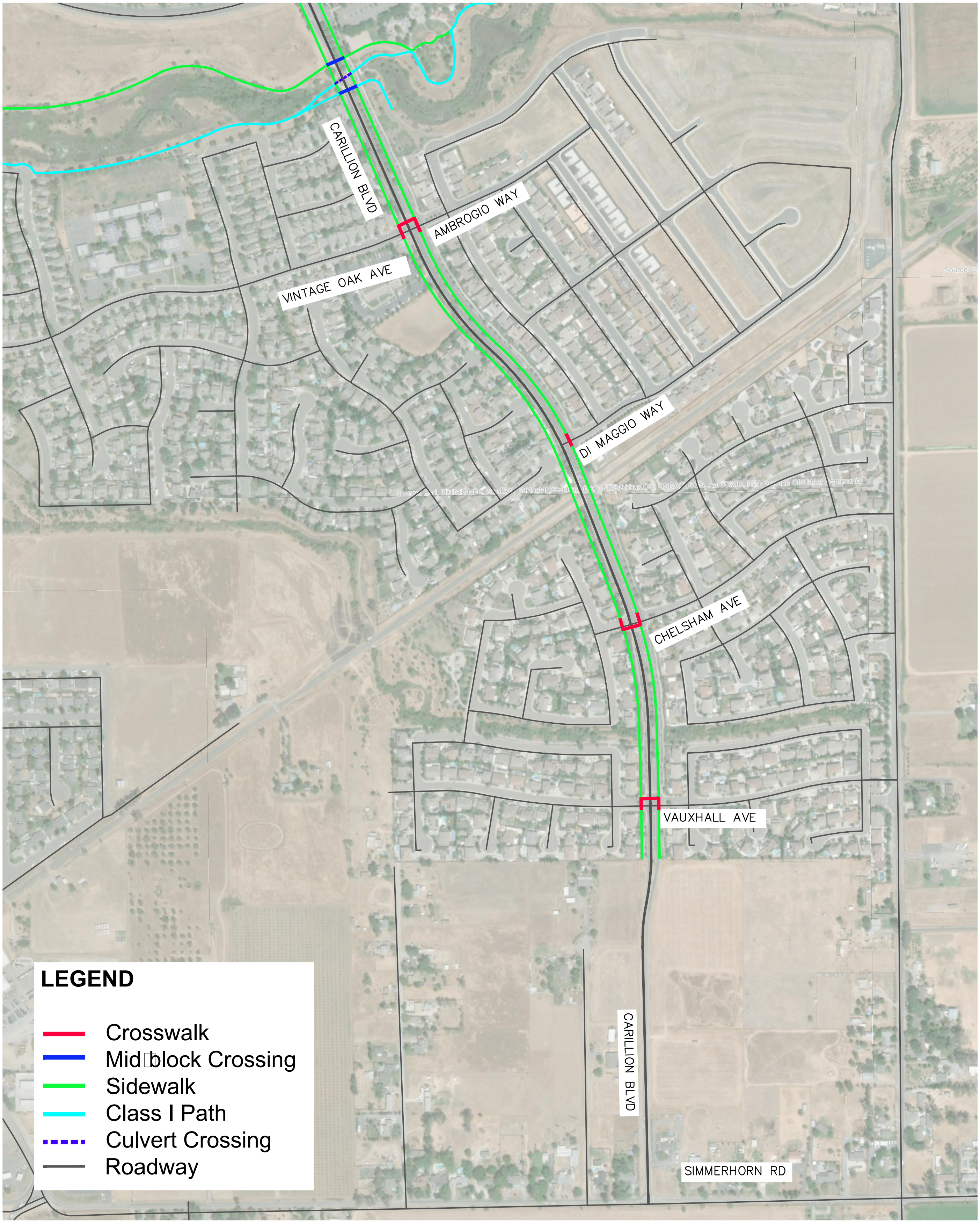
Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

EXISTING PEDESTRIAN FACILITIES: TWIN CITIES ROAD TO WALNUT AVENUE

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 3.1
Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 2:24 PM



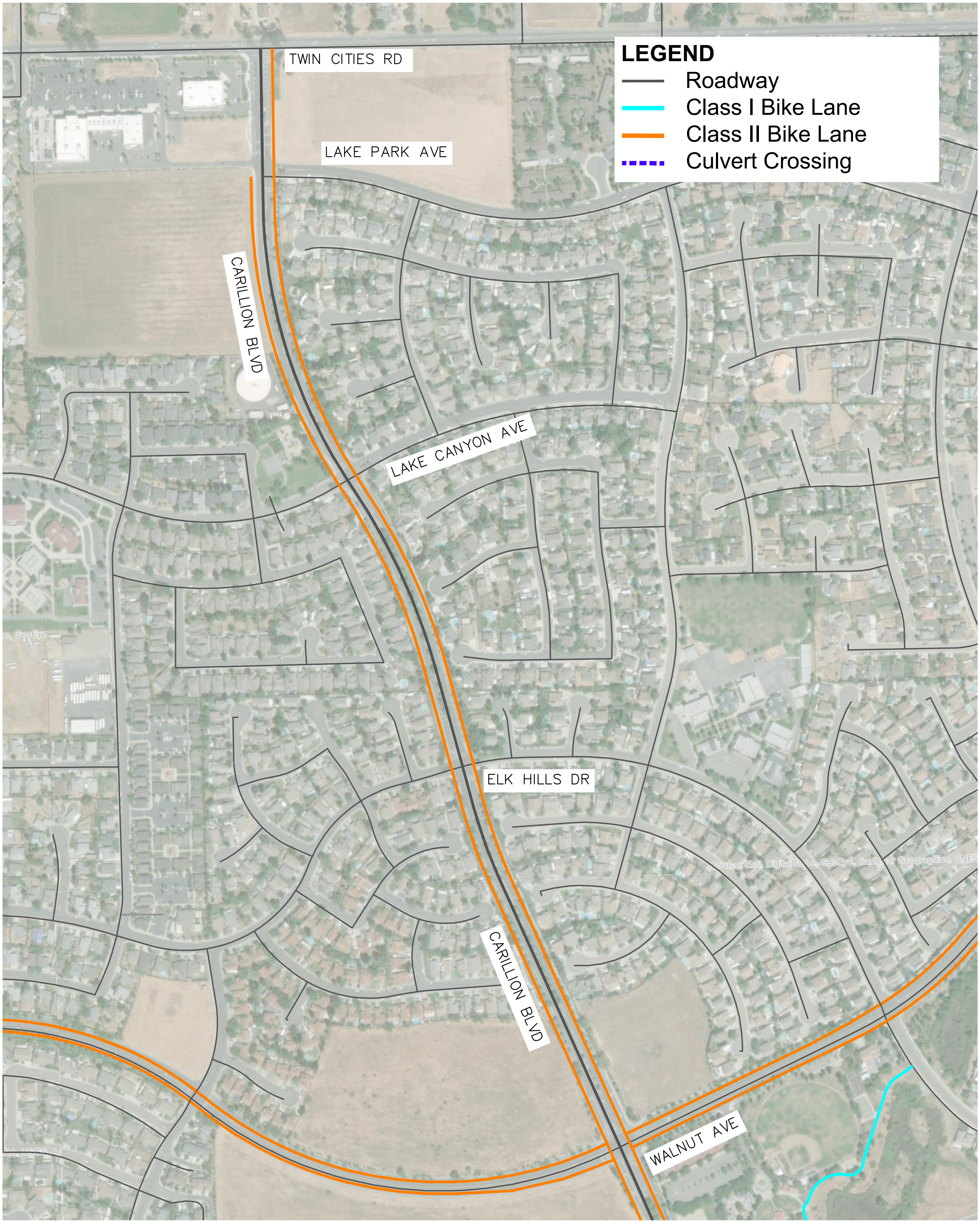
Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

EXISTING PEDESTRIAN FACILITIES: WALNUT AVENUE TO SIMMERHORN ROAD

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 3.2
Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 2:33 PM



N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

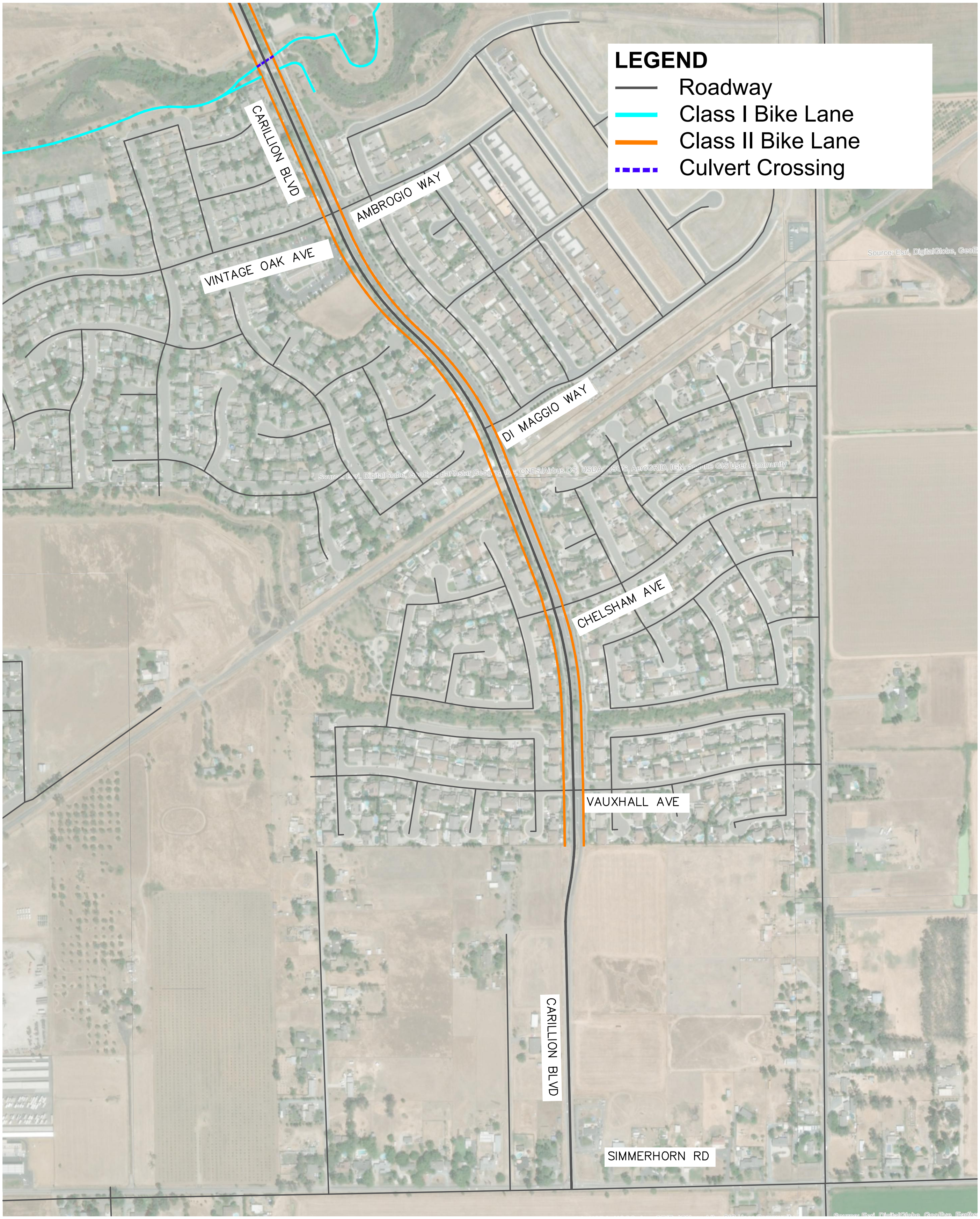
EXISTING BICYCLE FACILITIES: TWIN CITIES ROAD TO WALNUT AVENUE

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 3.3

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 2:43 PM



N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

EXISTING BICYCLE FACILITIES: WALNUT AVENUE TO SIMMERHORN ROAD

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 3.4

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 2:49 PM

4. Existing Conditions Analysis

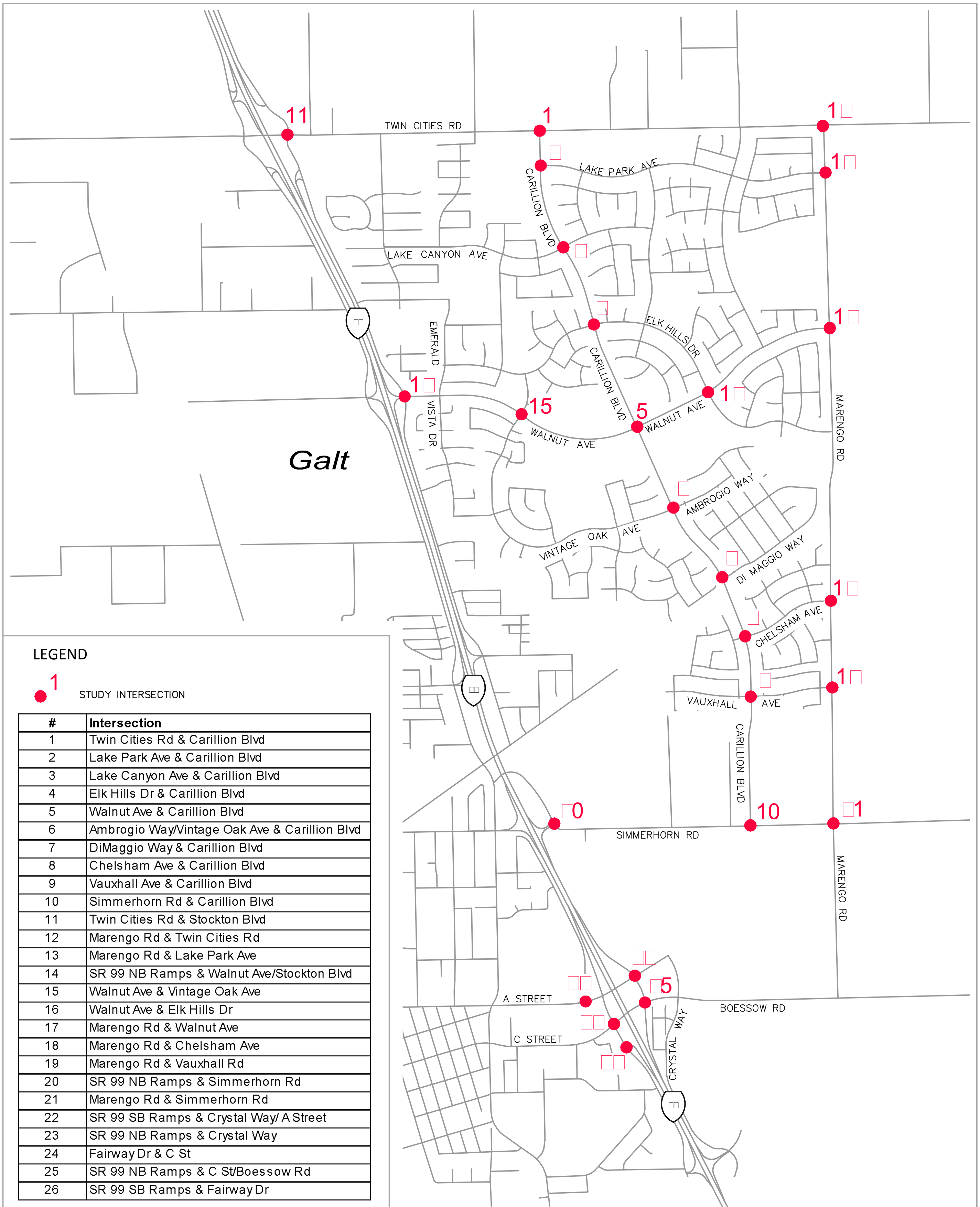
4.1 Existing Traffic Data Collection

The following list of critical study intersections were selected in coordination with the project team and City Staff for analysis within this study for both weekday AM and PM peak hours to establish an understanding of existing conditions. The traffic counts were collected on October 25, 2017, February 14, 2018, February 15, 2018, and April 5, 2018.

1. Twin Cities Road & Carillion Blvd
2. Lake Park Avenue & Carillion Blvd
3. Lake Canyon Avenue & Carillion Blvd
4. Elk Hills Drive & Carillion Blvd
5. Walnut Ave & Carillion Blvd
6. Ambrogio Way/Vintage Oak Ave & Carillion Blvd
7. DiMaggio Way & Carillion Blvd
8. Chelsham Avenue & Carillion Blvd
9. Vauxhall Avenue & Carillion Blvd
10. Simmerhorn Road & Carillion Blvd
11. Twin Cities Road & Stockton Boulevard
12. Marengo Road & Twin Cities Road
13. Marengo Road & Lake Park Avenue
14. SR 99 NB Ramps & Walnut Avenue/Stockton Blvd
15. Walnut Avenue & Vintage Oak Avenue
16. Walnut Avenue & Elk Hills Drive
17. Marengo Road & Walnut Avenue
18. Marengo Road & Chelsham Avenue
19. Marengo Road & Vauxhall Road
20. SR 99 NB Ramps & Simmerhorn Road
21. Marengo Road & Simmerhorn Road
22. SR 99 SB Off-Ramp & A Street
23. SR 99 NB On-Ramp & A Street
24. Fairway Drive & C Street
25. SR 99 NB Off-Ramp & C Street/Boessow Road
26. SR 99 SB On-Ramp & Fairway Drive

Additionally, in coordination with City staff and the Project Team, daily traffic counts were collected on February 14, 2018 at 12 roadway locations within the study area. The traffic counts are included in Appendix B.

Figure 4.1 presents an overview of the study area and analyzed study intersections. Figure 4.2 presents the existing intersection lane geometrics and traffic controls. Figure 4.3 presents the existing AM and PM peak hour volumes. Figure 4.4 presents the roadway ADT.



LEGEND

1 STUDY INTERSECTION

#	Intersection
1	Twin Cities Rd & Carillion Blvd
2	Lake Park Ave & Carillion Blvd
3	Lake Canyon Ave & Carillion Blvd
4	Elk Hills Dr & Carillion Blvd
5	Walnut Ave & Carillion Blvd
6	Ambrogio Way/Vintage Oak Ave & Carillion Blvd
7	DiMaggio Way & Carillion Blvd
8	Chelsham Ave & Carillion Blvd
9	Vauxhall Ave & Carillion Blvd
10	Simmerhorn Rd & Carillion Blvd
11	Twin Cities Rd & Stockton Blvd
12	Marengo Rd & Twin Cities Rd
13	Marengo Rd & Lake Park Ave
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd
15	Walnut Ave & Vintage Oak Ave
16	Walnut Ave & Elk Hills Dr
17	Marengo Rd & Walnut Ave
18	Marengo Rd & Chelsham Ave
19	Marengo Rd & Vauxhall Rd
20	SR 99 NB Ramps & Simmerhorn Rd
21	Marengo Rd & Simmerhorn Rd
22	SR 99 SB Ramps & Crystal Way/ A Street
23	SR 99 NB Ramps & Crystal Way
24	Fairway Dr & C St
25	SR 99 NB Ramps & C St/Boessow Rd
26	SR 99 SB Ramps & Fairway Dr

N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

STUDY INTERSECTION LOCATIONS

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 4.1

Source:

Filename: \\ghdnet\ghd\US\Roseville\Projects\Legacy\PRJ\2423\T2423\T2423TG001.dwg
Plot Date: 19 February 2019 - 1:53 PM

LE□END□

BICYCLE LANE

VEHICLE LANE

TRAFFIC SI□NAL

ROUNDABOUT

N

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY

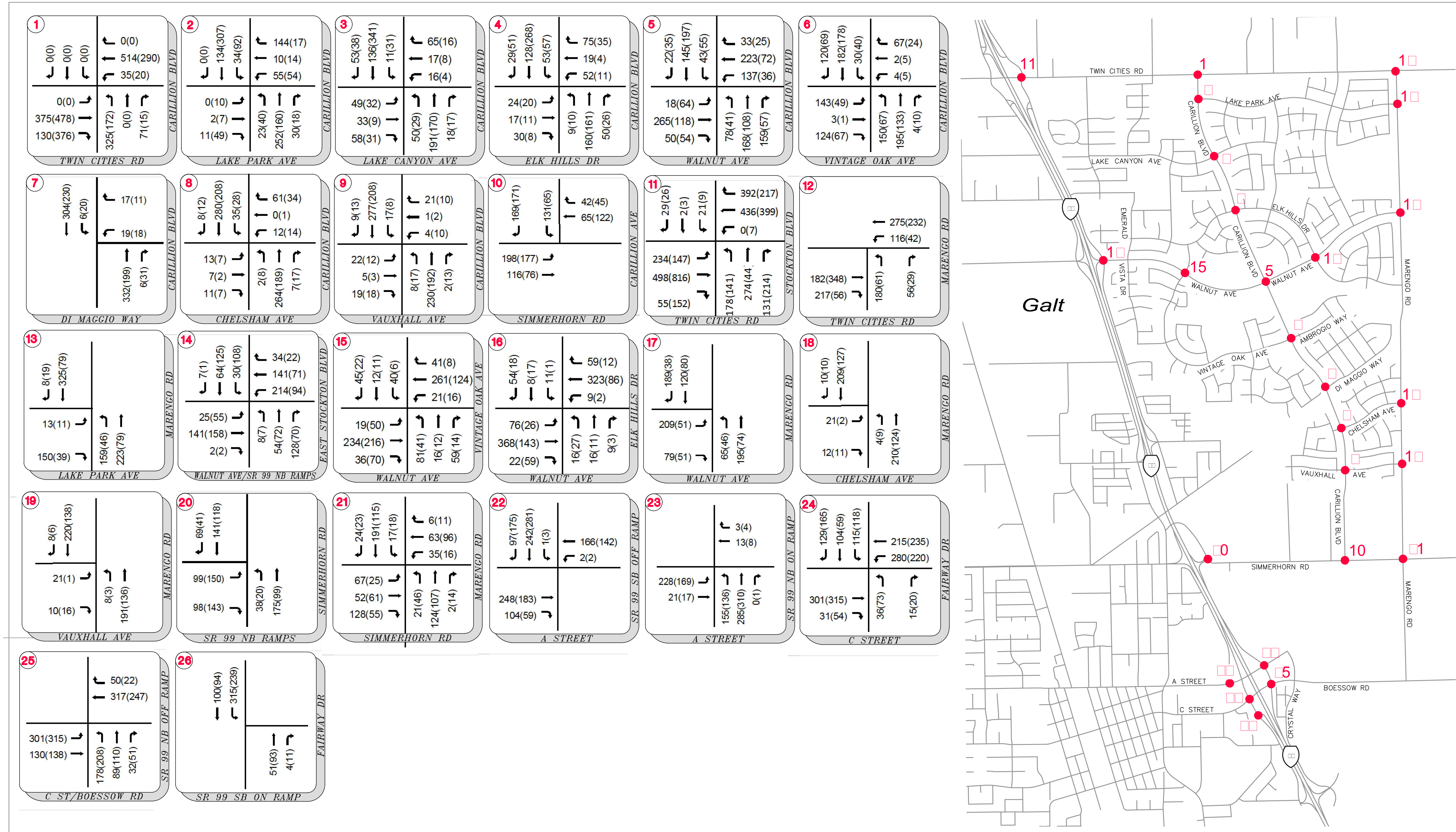
**EXISTING LANE GEOMETRICS
AND CONTROL**

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.2

Filename: \\ghdnet\ghd\US\Roseville\Projects\Legacy\PRJ\2423\T2423\T2423TG001.dwg Plot Date: 19 February 2019 - 1:54 PM

Source:



LEGEND
XX AM PEAK HOUR TRAFFIC VOLUMES
(XX) PM PEAK HOUR TRAFFIC VOLUMES

N

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY

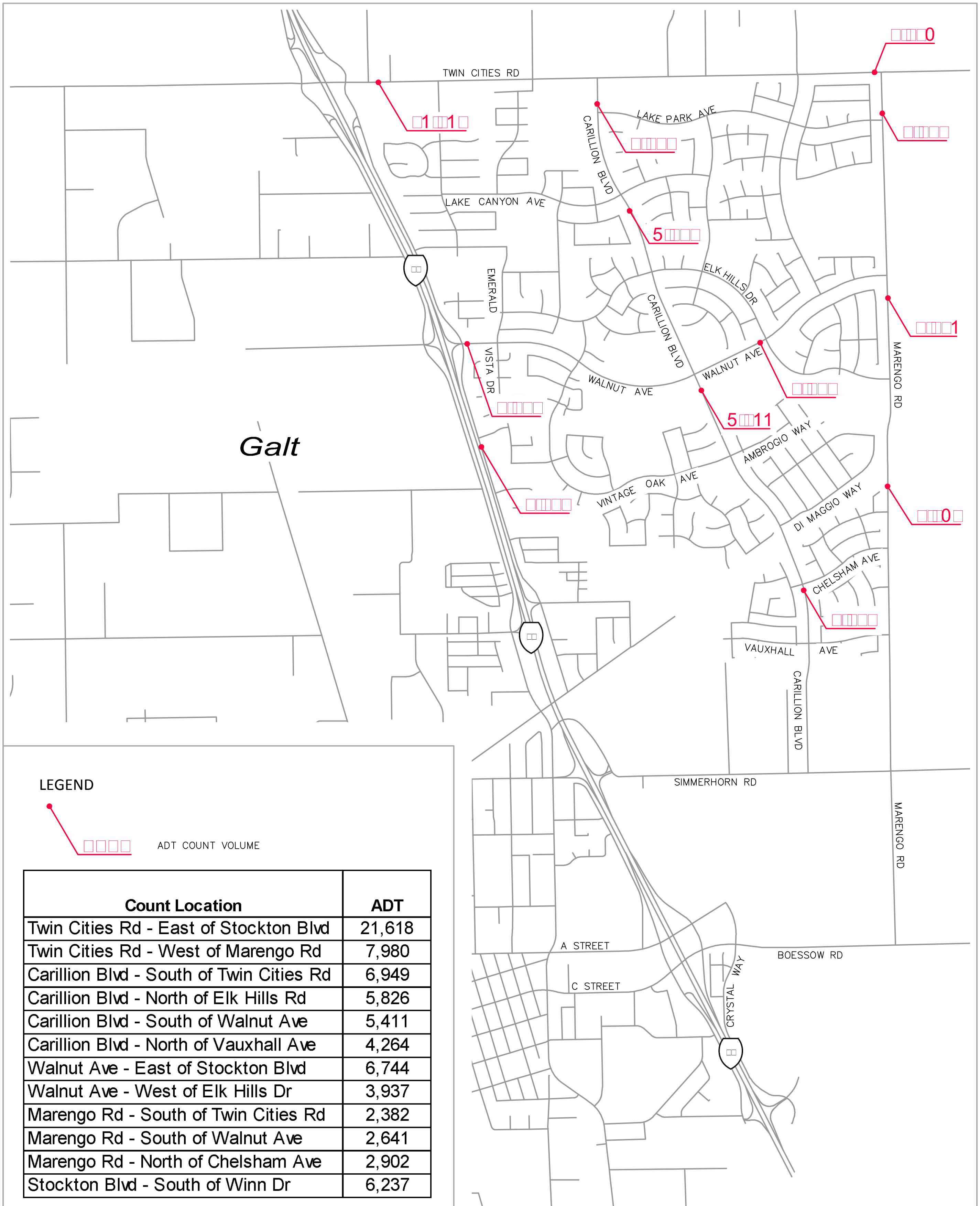
EXISTING PEAK HOUR
TRAFFIC VOLUMES

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.3

Source:

Filename: \\ghdnet\ghd\US\Roseville\Projects\Legacy\PRJ\2423\T2423\T2423TG001.dwg Plot Date: 19 February 2019 - 1:55 PM



Count Location	ADT
Twin Cities Rd - East of Stockton Blvd	21,618
Twin Cities Rd - West of Marengo Rd	7,980
Carillion Blvd - South of Twin Cities Rd	6,949
Carillion Blvd - North of Elk Hills Rd	5,826
Carillion Blvd - South of Walnut Ave	5,411
Carillion Blvd - North of Vauxhall Ave	4,264
Walnut Ave - East of Stockton Blvd	6,744
Walnut Ave - West of Elk Hills Dr	3,937
Marengo Rd - South of Twin Cities Rd	2,382
Marengo Rd - South of Walnut Ave	2,641
Marengo Rd - North of Chelsham Ave	2,902
Stockton Blvd - South of Winn Dr	6,237

N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

EXISTING AVERAGE DAILY TRAFFIC (ADT)

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 4.4

Source:

Filename: \\ghdnet\ghd\US\Roseville\Projects\Legacy\PRJ\2423\T2423\T2423TG001.dwg
Plot Date: 19 February 2019 - 1:55 PM

4.2 Existing Intersection Operations

Existing intersection operations were quantified utilizing HCM 6 methodologies based on peak hour traffic volumes collected by GHD in October 2017 and February and April of 2018. Existing AM and PM peak hour intersection operations were quantified utilizing the existing intersection lane geometrics and controls and the existing peak hour traffic volumes. Details on technical analysis parameters, methodology, and assumptions are provided in Appendix A. Table 4.1 presents a summary of the existing intersection analysis and LOS conditions.

Table 4.1 Existing Conditions Intersection Operations

ID#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
1	Twin Cities Rd & Carillion Blvd	Signal	D	16.9	B	-	10.1	B	-
2	Lake Park Ave & Carillion Blvd	TWSC	D	15.4	C	-	18.9	C	-
3	Lake Canyon Ave & Carillion Blvd	TWSC	D	17.9	C	-	15.0	B	-
4	Elk Hills Dr & Carillion Blvd	TWSC	D	19.3	C	-	15.4	C	-
5	Walnut Ave & Carillion Blvd	AWSC	D	9.9	A	-	7.7	A	-
6	Ambrogio Way/ Vintage Oak Ave & Carillion Blvd	AWSC	D	16.0	C	-	9.4	A	-
7	DiMaggio Way & Carillion Blvd	TWSC	D	13.1	B	-	10.8	B	-
8	Chelsham Ave & Carillion Blvd	TWSC	D	16.3	C	-	11.2	B	-
9	Vauxhall Ave & Carillion Blvd	TWSC	D	14.1	B	-	10.7	B	-
10	Simmerhorn Rd & Carillion Blvd	AWSC	D	14.3	B	-	10.2	B	-
11	Twin Cities Rd & Stockton Blvd	RNDBT	D	10.4	B	-	6.2	A	-
12	**Marengo Rd & Twin Cities Rd**	**AWSC**	**D**	**56.1**	**F**	**Yes**	11.8	B	-
13	**Marengo Rd & Lake Park Ave**	**TWSC**	**D**	**183.1**	**F**	**Yes**	9.5	A	-
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd	AWSC	E	12.7	B	-	11.7	B	-
15	Walnut Ave & Vintage Oak Ave	AWSC	D	12.6	B	-	8.9	A	-
16	**Walnut Ave & Elk Hills Dr**	**TWSC**	**D**	**37.8**	**E**	**No**	11.9	B	-
17	Marengo Rd & Walnut Ave	AWSC	D	18.4	C	-	8.2	A	-
18	Marengo Rd & Chelsham Ave	TWSC	D	12.3	B	-	9.0	A	-
19	Marengo Rd & Vauxhall Rd	TWSC	D	12.2	B	-	9.2	A	-
20	SR 99 NB Ramps & Simmerhorn Rd	TWSC	E	9.9	A	-	9.9	A	-

Table 4.1 Existing Conditions Intersection Operations

ID#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
21	Marengo Rd & Simmerhorn Rd	AWSC	D	11.9	B	-	9.2	A	-
22	SR 99 SB Ramps & Crystal Way/ A Street	Signal	E	7.7	A	-	7.6	A	-
23	SR 99 NB Ramps & Crystal Way	Signal	E	10.4	B	-	9.2	A	-
24	Fairway Dr & C St	Signal	E	15.2	B	**-**	11.0	B	-
25	SR 99 NB Ramps & C St/Boessow Rd	Signal	E	13.3	B	-	12.7	B	-
26	SR 99 SB Ramps & Fairway Dr	Signal	E	4.4	A	-	4.6	A	-

Notes:
1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control RNDBT = Roundabout
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, Roundabout
3. Warrant = Based on California MUTCD Warrant 3
*4. **Bold** signifies intersections operating beyond acceptable LOS threshold.*

As presented in Table 11, all study intersections are currently found to operate at or above the threshold LOS, except for the intersections listed below. All of these intersections that operate unacceptably are stop-sign controlled.

- Intersection 12 – Marengo Road & Twin Cities Road
- Intersection 13 – Marengo Road & Lake Park Avenue
- Intersection 16 – Walnut Avenue & Elk Hills Drive

The peak hour traffic signal warrant is met for Intersections 12 and 13 under existing conditions in the AM peak hour. Traffic in the AM peak hour along Marengo Road is mainly due to Liberty Ranch High School and other schools in the area.

4.3 Travel Time Run Analysis

Travel times of the Carillion Boulevard corridor were collected on February 15, 2018 from 7:00 to 9:00 a.m. for the AM peak period, and from 4:00 to 6:00 p.m. for the PM peak period. Additionally, travel times were collected between 2:30 and 3:00 p.m. to assess school related traffic for the same day. The travel time runs were conducted on a Thursday in order to obtain typical weekday traffic conditions. This day experienced reasonably good weather conditions. The travel time runs are included in Appendix B. The travel time runs were conducted using the test vehicle method and “Average-Car” or “Floating-Car” technique. These techniques are conducted by emulating an average driver either by traveling at the flow of traffic or by the driver’s judgement of the average speed of the traffic stream. This travel time and delay analysis is used to evaluate the quality of traffic movement along the Carillion Boulevard corridor and determine the locations, types, and extent of traffic delays. Seven travel time runs were performed during the AM and PM peak periods, and three during the school peak period. Table 4.2 and Table 4.3 present a summary of the corridor travel times for the Existing Conditions. Figure 4.5 presents a graph of the average travel speeds along the corridor.

Table 4.2 Existing Average Travel Times

#	Segment	Distance (miles)	Travel Time (sec) AM Peak Hour		Travel Time (sec) School Peak Hour		Travel Time (sec) PM Peak Hour	
			NB	SB	NB	SB	NB	SB
Carillion Blvd								
1	Twin Cities Rd to Lake Park Ave	0.1	32.55	12.22	21.01	11.37	27.52	11.76
2	Lake Park Ave to Lake Canyon Ave	0.3	22.72	22.49	21.92	22.52	21.06	22.01
3	Lake Canyon Ave to Elk Hills Dr	0.2	23.09	22.24	21.95	23.17	22.04	20.44
4	Elk Hills Dr to Walnut Ave	0.3	31.36	35.43	28.25	38.55	29.35	34.71
5	Walnut Ave to Vintage Oak Ave	0.3	35.27	32.10	35.79	33.77	32.03	34.01
6	Vintage Oak Ave to Di Maggio Way	0.3	26.81	22.81	29.00	24.64	29.12	25.96
7	Di Maggio Way to Chelsham Ave	0.2	15.59	14.76	16.14	15.53	15.20	13.86
8	Chelsham Ave to Vauxhall Ave	0.2	15.03	17.14	15.54	15.39	14.52	14.57
9	Vauxhall Ave to Simmerhorn Rd	0.4	38.06	35.94	36.27	41.38	35.25	38.76
Total Travel Time (sec)		2.2	240.50	215.13	225.87	226.33	226.09	216.07
Total Travel Time (min)			**04:00**	**03:35**	**03:46**	**03:46**	**03:46**	**03:36**

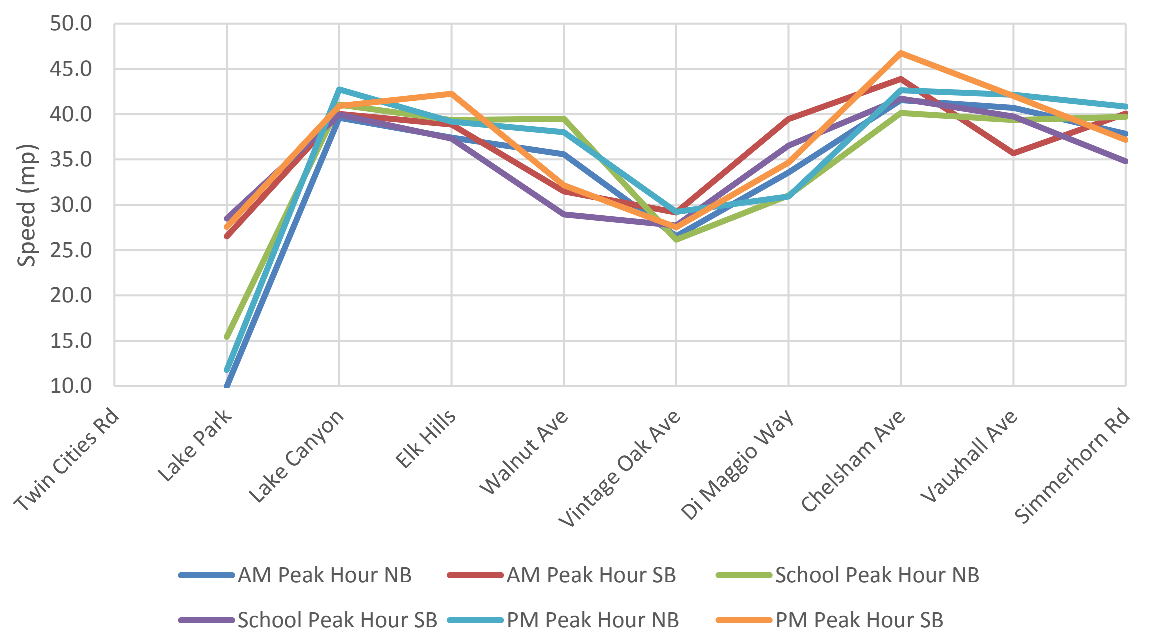
Table 4.3 Existing Average Travel Speeds

#	Segment	Distance (miles)	AM Peak Hour (mph)		School Peak Hour (mph)		PM Peak Hour (mph)	
			NB	SB	NB	SB	NB	SB
Carillion Blvd								
1	Twin Cities Rd to Lake Park Ave	0.1	10.0	26.5	15.4	28.5	11.8	27.6
2	Lake Park Ave to Lake Canyon Ave	0.3	39.6	40.0	41.1	40.0	42.7	40.9
3	Lake Canyon Ave to Elk Hills Dr	0.2	37.4	38.9	39.4	37.3	39.2	42.3
4	Elk Hills Dr to Walnut Ave	0.3	35.6	31.5	39.5	29.0	38.0	32.2
5	Walnut Ave to Vintage Oak Ave	0.3	26.5	29.2	26.2	27.7	29.2	27.5

Table 4.3 Existing Average Travel Speeds

#	Segment	Distance (miles)	AM Peak Hour (mph)		School Peak Hour (mph)		PM Peak Hour (mph)	
			NB	SB	NB	SB	NB	SB
6	Vintage Oak Ave to Di Maggio Way	0.3	33.6	39.5	31.0	36.5	30.9	34.7
7	Di Maggio Way to Chelsham Ave	0.2	41.6	43.9	40.1	41.7	42.6	46.7
8	Chelsham Ave to Vauxhall Ave	0.2	40.7	35.7	39.4	39.8	42.2	42.0
9	Vauxhall Ave to Simmerhorn Rd	0.4	37.8	40.1	39.7	34.8	40.8	37.2
Average Travel Speed (mph)		**2.2**	**33.6**	**36.1**	**34.6**	**35.0**	**35.3**	**36.8**

Figure 4.5 Carillion Boulevard Average Travel Speeds



As presented in the tables above, the average travel times ranged between 3:30 minutes and 4:00 minutes for all peak hours and in both directions, presenting a fairly consistent travel time along the corridor currently. The average travel speeds along Carillion Boulevard, between the study intersections, ranged between 10 mph and 46.7 mph, with an overall average of 35.2 mph. As shown in the graph above, speeds were slower between Vintage Oak Avenue and Walnut Avenue, and Lake Park Avenue and Twin Cities Road. The posted speed limit is 45 mph, and 25 mph in school areas. School pick-up travel speeds do not have an increased delay. From field observation, all travel delay due to the schools was experienced on the side streets.

4.4 Collision Analysis

Collision data for the Carillion Boulevard Corridor between the limits of Twin Cities Road and Simmerhorn Road were derived from the Statewide Integrated Traffic Records System (SWITRS) and Transportation Injury Mapping System (TIMS) for a 5-year period between January 1, 2012 and December 31, 2016. Collision Data was also gathered for the City and the County to present comparisons.

4.4.1 Study Area Collisions

Based on the collision data, there were 12 reported injury (non-Property Damage Only (PDO)) collisions on the study roadway within the segment limits, with a majority of those collisions occurring at the intersection of Lake Park Avenue & Carillion Boulevard (25%). As the primary focus of this study is on the Carillion Boulevard Corridor, the corridor collision statistics were compared with those of the City and the County.

4.4.2 Collision Trends

The number of injury collisions per year has remained consistently low along Carillion Boulevard with lowest number of collisions occurring in 2015 with no collisions and the largest occurring in both 2012 and 2016 with 4 collisions each. Table 4.4 presents the number of injury collisions per year within the Carillion Boulevard corridor, the Galt City Limits, and Sacramento County.

Table 4.4 Injury Collisions per Year

Collision Year	# of Injury Collisions			
	Carillion Boulevard	Carillion % of City	Galt City Limits	Sacramento County
2012	4	11%	36	6,345
2013	3	7%	41	6,580
2014	1	2%	44	6,777
2015	0	0%	53	8,010
2016	4	7%	59	8,733
Grand Total	12	5%	233	36,445

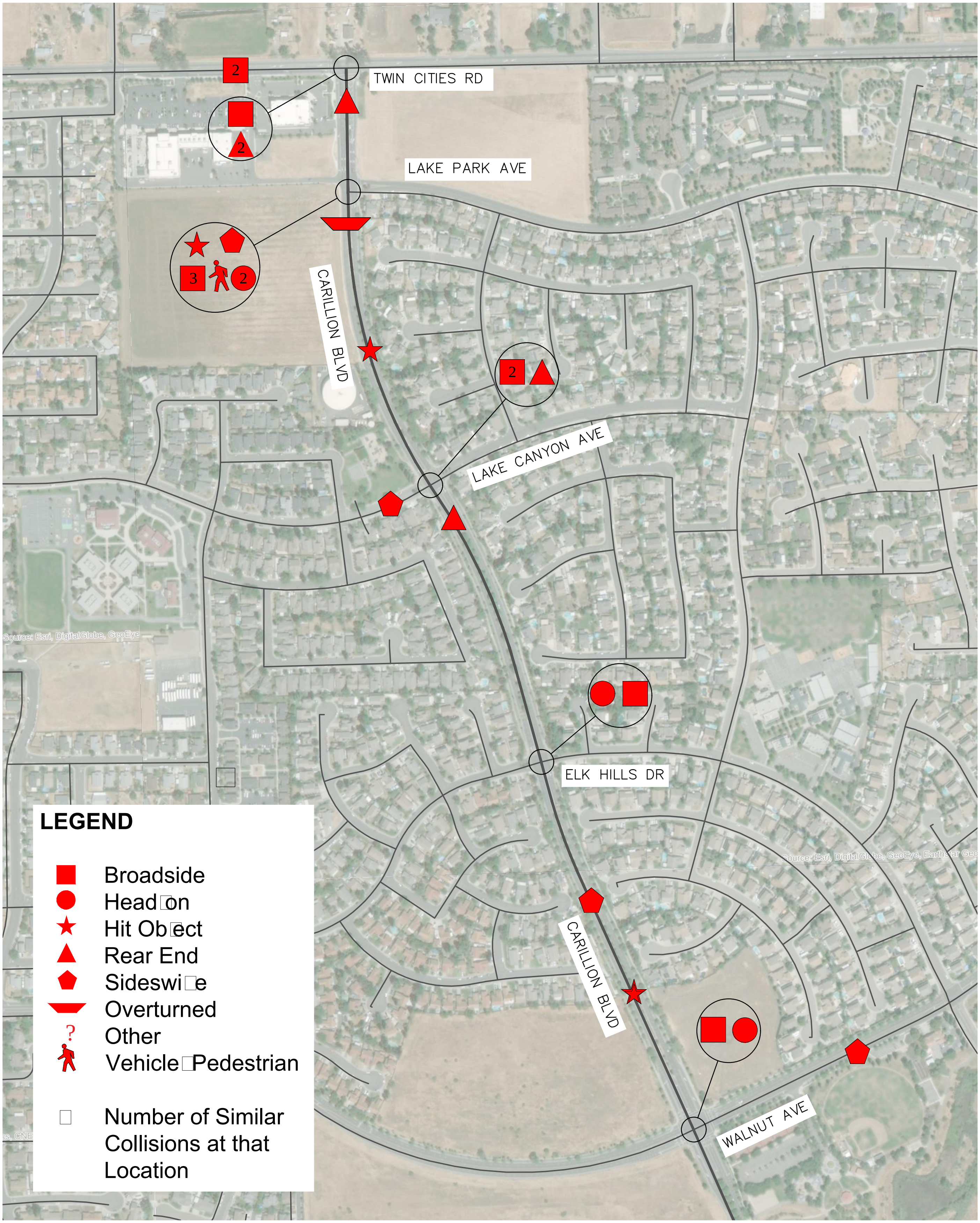
As presented in Table 4.4, while injury collisions along Carillion Boulevard have fluctuated over the years between 0 and 4, the City and County collision records indicate a steady annual increase in accidents. Due to the low number of total collisions along the corridor, a systemic approach towards identify crash risk and possible countermeasures may provide a more proactive assessment of possible intersection modifications along Carillion Boulevard. Geometric risk factors associated with specific collision types within the study area and in the City have not been identified in a Citywide

Systemic Safety analysis at this time. However, statewide guidance towards mitigated crash risk for specific collision types may apply to the study corridor. Table 4.5 presents the breakdown of the collision types for all injury collisions, excluding PDO.

Table 4.5 Collision Types (Excluding PDO)

	# of All Collisions (excluding PDO)					
Collision Type	Carillion	Carillion %	City Limits	City %	County	County %
Head-On	2	17%	17	7%	1,908	5%
Sideswipe	2	17%	16	7%	2,790	8%
Read End	1	8%	62	27%	13,388	37%
Broadside	6	50%	58	25%	9,280	25%
Hit Object	0	0%	38	16%	4,467	12%
Overturned	1	8%	12	5%	1,131	3%
Vehicle/Pedestrian	0	0%	17	7%	2,067	6%
Other	0	0%	13	6%	1,414	4%
Grand Total	12	100%	233	100%	36,445	100%

As presented in Table 4.5, the most common collision on Carillion, and the second most common in the City and the County, is a Broadside. Although Broadside collisions have not resulted in fatal or severe injury collisions along the corridor in the last 5 years, these crash types are highly associated with severe and fatal crash risk in urbanized areas. The most common crash type in the City and the County is Rear-End, which is typically not associated with high severity crash risk. Figure 4.6 and Figure 4.7 present the collisions by type along Carillion Boulevard.



Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

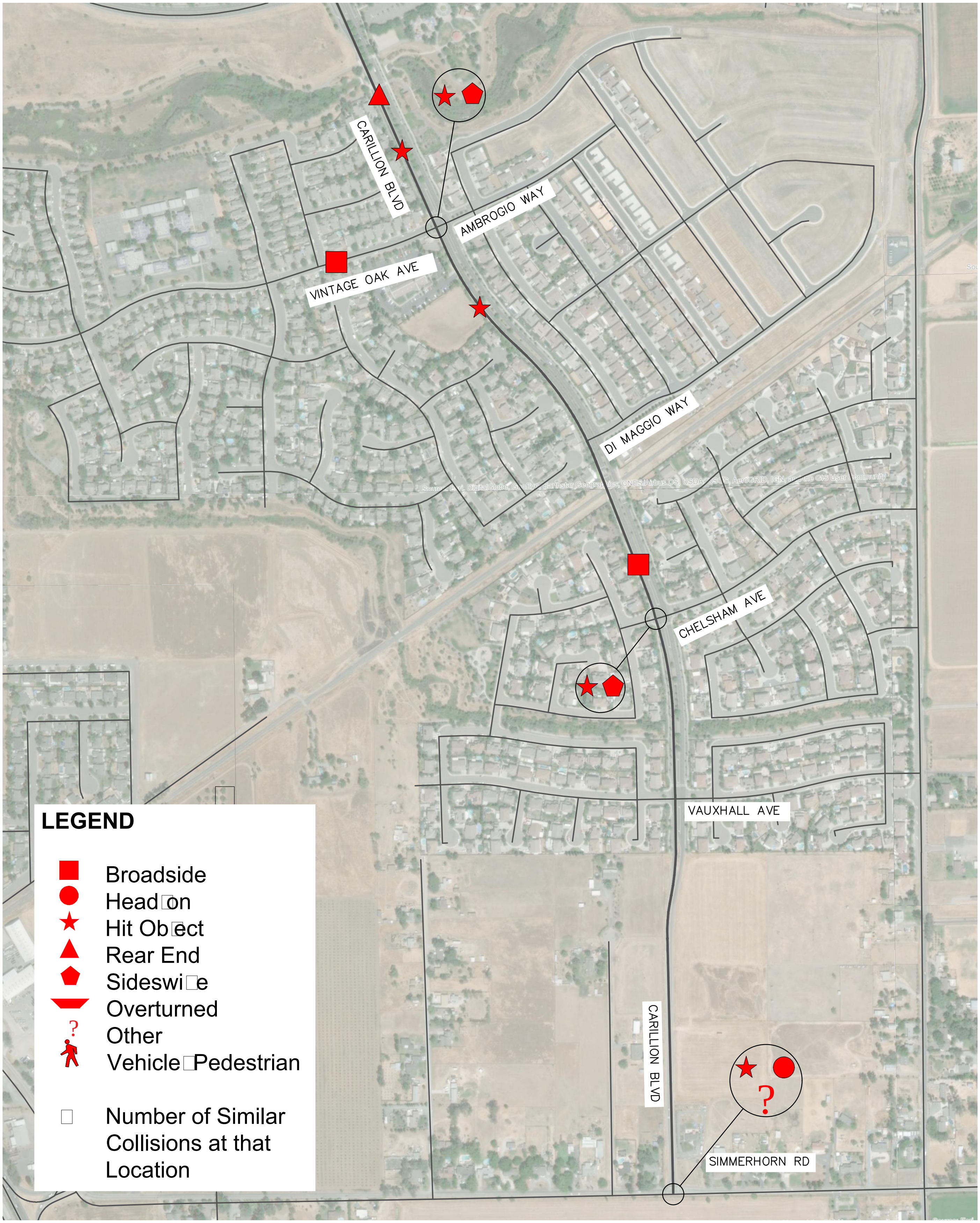
COLLISION BY TYPE: TWIN CITIES ROAD TO WALNUT AVENUE

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.6

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 1:56 PM



Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

COLLISION BY TYPE: WALNUT AVENUE TO SIMMERHORN ROAD

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.7

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 19 February 2019 - 1:57 PM

4.4.3 Collision Severity

Figure 4.8 presents the collision severity breakdown for the collisions along Carillion Boulevard. The Carillion Boulevard corridor presents higher percentages of property-damage-only (PDO) and Injury (Complaint of Pain) collisions.

Figure 4.8 Collision Severity on Carillion Boulevard

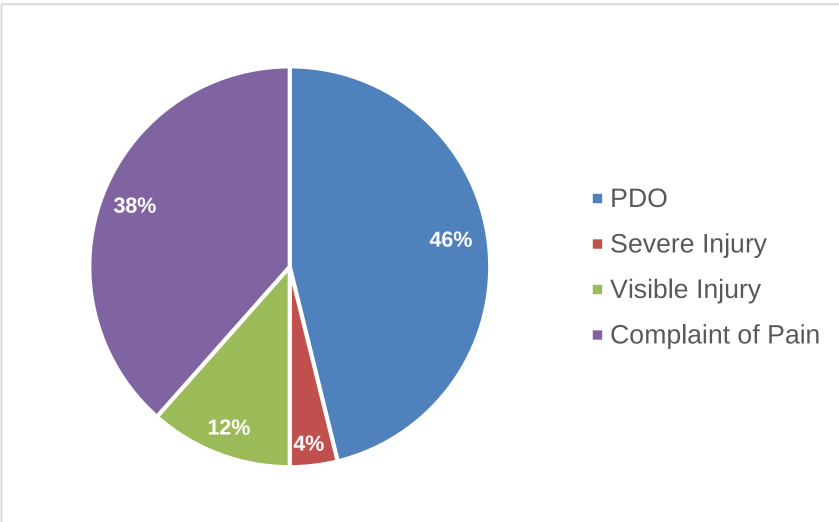


Figure 4.9 presents the breakdown for all non-PDO collisions of collisions located at intersections and non-intersections. Most of the collisions on Carillion Boulevard occurred at an intersection while in both the City and the County, most collisions occurred outside of intersections.

Figure 4.9 Percent of Collisions (Excluding PDO) at an Intersection

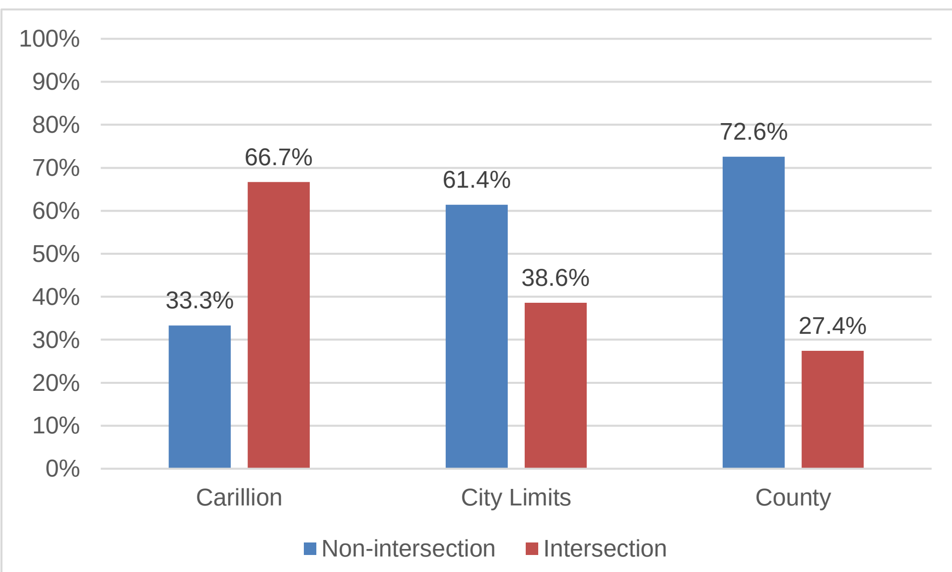
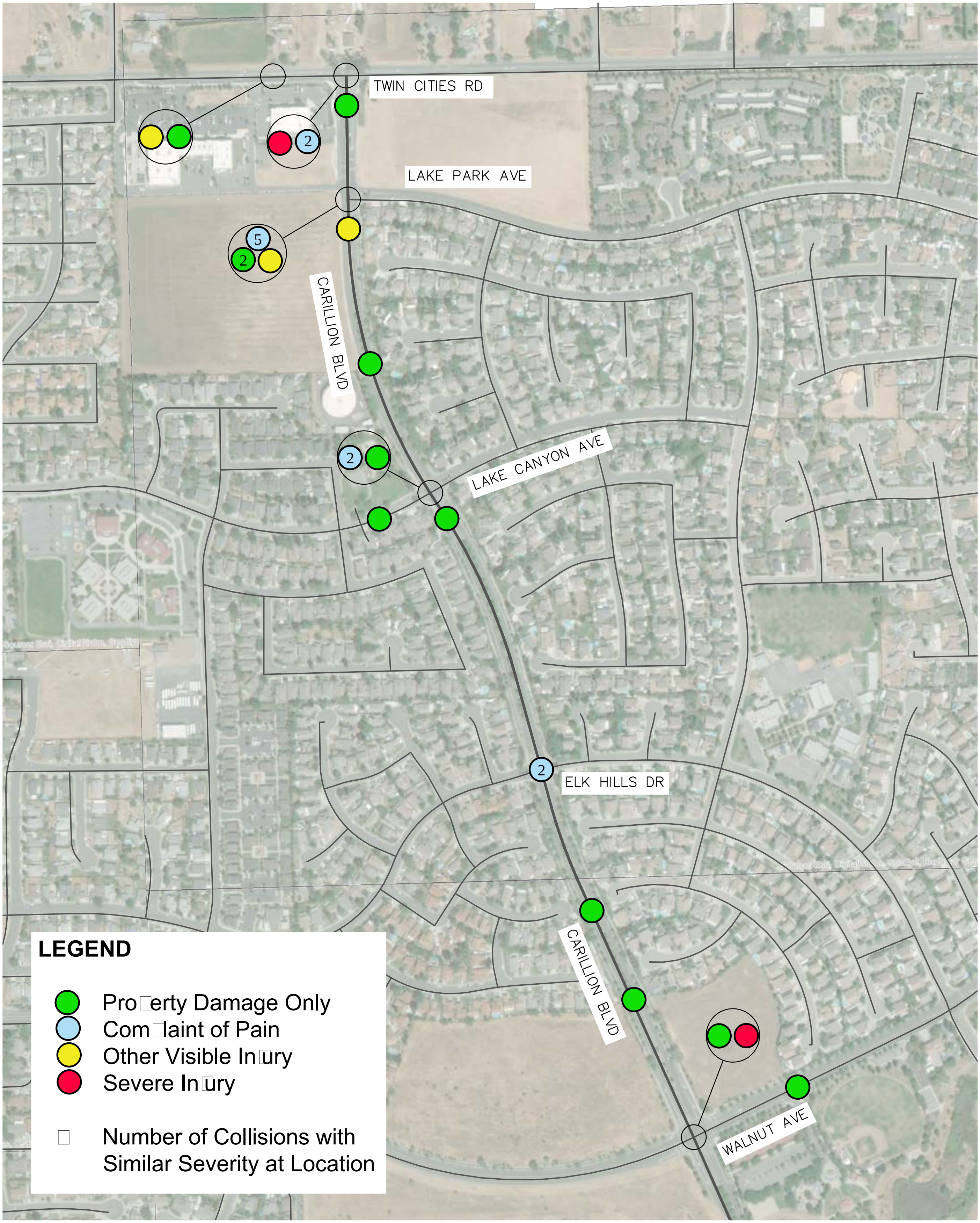


Figure 4.10 and Figure 4.11 present the collisions by severity along the Carillion Boulevard.



Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

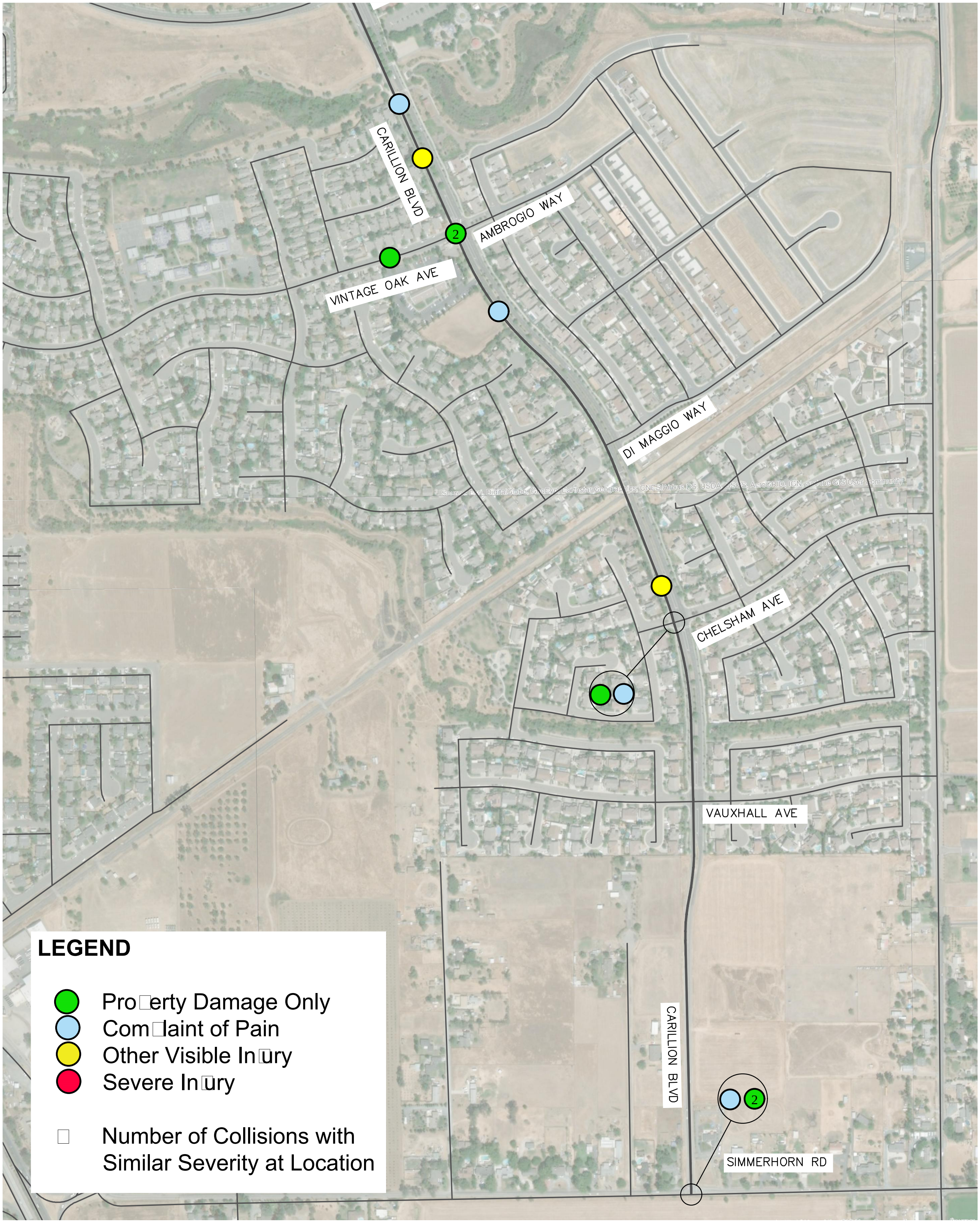
COLLISION BY SEVERITY: TWIN CITIES ROAD TO WALNUT AVENUE

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.10

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 23 April 2019 - 3:□2 PM



Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

COLLISION BY SEVERITY: WALNUT AVENUE TO SIMMERHORN ROAD

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 4.11

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 23 April 2019 - 3:□3 PM

4.4.4 Collision Rate

Collision rates were calculated in terms of "collisions per million vehicle miles traveled", and are based on the number of collisions per year, and the vehicle miles traveled per year (equal to the ADT volumes multiplied by the length of the segment), as presented in the following equation:

$$Collision\ Rate = \frac{(Number\ of\ Collisions) \times (1{,}000{,}000)}{Vehicle\ Miles\ Traveled}$$

The calculated collision rates were compared with statewide average rates compiled by the California Department of Transportation (Caltrans) as published in their most recent document *2014 Collision Data on California State Highways*. The document provides basic average collision rates for various types of roadways and intersections categorized by number of lanes, travel speed, etc., and are derived from the California SWITRS. As presented in Table 4.6, the collision rate is slightly lower for the Carillion Boulevard Corridor than the statewide average for similar facilities, adjusted for ADT.

Table 4.6 Collision Rate and Summary

Study Roadway	Length (mi)	Total Collisions (7 years)	Total # of Injuries (7 years)	ADT	Collision Rate (ACC/MVM)	Statewide Average Rate
Carillion Boulevard	2.2	40	22	5,6.12.5	1.27	1.31

4.5 Bicycle Level of Traffic Stress (LTS)

In addition to the vehicular intersection and roadway analysis, existing bicycle conditions for the study corridor is analyzed utilizing a standardized Bicycle Level of Traffic Stress (LTS) analysis. The methodology used for the LTS analysis was adapted from the Oregon Department of Transportation (ODOT) *Analysis Procedure Manual, Version 2*, 2016. Bicycle LTS is generally a perception-based rating system of the safety, comfort, and convenience of transportation facilities from the perspective of the user. The approach outlined in the ODOT manual uses roadway network data, including the posted speed limit, number of travel lanes, and presence and character of bicycle lanes as a proxy for bicyclist comfort level in urban context, and ADT and shoulder or bike lane width in rural settings. The Bicycle LTS methodology breaks road segments into one of four classifications or ratings for measuring the effects of traffic-based stress on bicycle riders, with 1 being the lowest stress or most comfortable, and 4 being the highest stress or least comfortable. Examples and brief descriptions for each level of traffic stress are presented in the graphic below.

LTS 1

- Comfortable for all ages and abilities
- Traffic Speeds are low and intersections easy to cross
- Can include residential streets, and separated bicycle paths/cycle tracks

LTS 2

- Comfortable for teenagers and most adults
- Traffic speeds are slightly higher, low speed differentials
- Can include collector-level streets with Bike Lanes or a CBD

LTS 3

- Comfortable for confident adult bicyclists
- Traffic speeds are moderate, roadways can be five lanes wide
- Can include low speed arterials with Bike Lanes or moderate speed non-multilane roadways

LTS 4

- Uncomfortable for most, suitable for experienced and skilled cyclists
- Higher traffic volumes and speeds, wider streets
- Can be perceived as unsafe and are difficult to cross
- Narrow or no Bike Lanes

The Bicycle LTS methodology is broken into three categories: segments (along), intersection approaches (turn lanes), and intersection crossings (unsignalized). Table-based criteria are applied separately for each category. Depending on the community context and the detail level desired, the overall methodology can usually be simplified based on the general consistency of facility types, as certain elements (i.e. no turn lanes, no bike lanes, limited speeds, etc.) may not exist in a particular community. If there are no turn lanes on an approach, then this portion of the methodology is skipped. Signalized intersections do not receive an LTS score. Signalized crossings usually do not create a barrier as the signal provides a protected way across and are not considered in the methodology. All roadways receive a segment score. However, not all roadways receive an approach or intersection crossing score. For example, a midblock portion of a street link receives a segment score, but because it does not intersect another street, nor does it have turn lanes, neither an intersection nor approach score is assigned.

The methodology for the criteria aggregate (overall LTS) follows the weakest link principle: the dimension with the worst level of stress governs. For example, if a segment has a LTS 2 but there is an intersection approach at the end of the segment at LTS 4, then the whole segment is considered at LTS 4. The LTS for each segment is presented in Table 4.7, and approach and intersection LTS analysis is presented in Table 4.8.

Table 4.7 Carillion Boulevard Bicycle LTS – Segment Summary

Zone	Segment Limits along Carillion Boulevard	Segment Scoring (Along)	
		NB	SB
1	Twin Cities Road to Lake Park Avenue	3	4
2	Lake Park Avenue to lake Canyon Avenue	3	3
3	Lake Canyon Avenue to Elk Hills Drive	3	3
4	Elk Hills Drive to Walnut Avenue	3	3
5	Walnut Avenue to Ambrogio Way/ Vintage Oak Drive	3	3
6	Ambrogio Way to DiMaggio Way	3	3
7	DiMaggio Way to Chelsham Avenue	3	3
8	Chelsham Avenue to Vauxhall Avenue	3	3
9	Vauxhall Avenue to Simmerhorn Road	4	4

The analysis presented within Table 4.7 indicates that bicyclists may potentially experience moderate levels of traffic stress when riding along the Carillion Boulevard corridor.

Table 4.8 Carillion Boulevard Bicycle LTS – Approach and Intersection Crossing Summary

Intx	Intersection	Approach Score (Turn Lanes)				Crossing Score (Unsignalized Intersections)	
		NB Left	NB Right	SB Left	SB Right	NB	SB
1	Twin Cities Rd & Carillion Blvd	N/A	N/A	N/A	N/A	N/A	N/A
2	Lake Park Ave & Carillion Blvd	4	4	3	4	1	1
3	Lake Canyon Ave & Carillion Blvd	4	4	4	4	1	1
4	Elk Hills Dr & Carillion Blvd	4	4	4	4	1	1
5	Walnut Ave & Carillion Blvd	4	3	4	3	4	4
6	Ambrogio Way/Vintage Oak Ave & Carillion Blvd	4	4	4	4	1	1
7	DiMaggio Way & Carillion Blvd	N/A	4	4	4	1	N/A
8	Chelsham Ave & Carillion Blvd	4	4	4	N/A	1	1
9	Vauxhall Ave & Carillion Blvd	4	4	4	4	1	1
10	Simmerhorn Rd & Carillion Blvd	N/A	N/A	4	4	N/A	3

The analysis presented within Table 4.8 indicates that bicyclists may potentially experience moderate to high levels of traffic stress when approaching and crossing existing unsignalized intersections along Carillion Boulevard.

As presented above, bicyclists using Carillion Boulevard for either commuter or recreational purposes are currently observed to experience moderate to high levels of traffic stress. However, by reducing the LTS, there exists the potential to encourage more bicycle activity along Carillion Boulevard. As LTS is governed primarily by roadway geometry, intersection control type and prevailing speeds, a roadway reconfiguration of Carillion Boulevard may potentially lower the level of traffic stress for the Carillion Boulevard Corridor.

Table 4.9 and Table 4.10 present a similar evaluation of the bicycle LTS along Walnut Avenue. As presented within both of these tables, bicyclists currently experience moderate to high levels of stress while traversing the Walnut Avenue corridor within the immediate vicinity of Carillion Boulevard.

Table 4.9 Walnut Avenue Bicycle LTS – Segment Summary

Zone	Segment Limits along Walnut Avenue	Segment Scoring (Along)	
		EB	WB
10	Carillion Boulevard to Vintage Oak Avenue	3	3
11	Carillion Boulevard to Elk Hills Drive	3	3

Table 4.10 Walnut Avenue Bicycle LTS – Approach and Intersection Crossing Summary

Intx	Intersection Number	Approach Score (Turn Lanes)				Crossing Score (Unsignalized Intersections)	
		EB Left	EB Right	WB Left	WB Right	EB	WB
5	Walnut Avenue & Carillion Blvd	4	2	4	2	2	2
23	Walnut Avenue & Vintage Oak Avenue	4	4	4	4	1	1
24	Walnut Avenue & Elk Hills Drive	4	4	4	4	1	1

As presented within both of these tables, bicyclists currently experience moderate to high levels of stress while traversing the Walnut Avenue corridor within the immediate vicinity of Carillion Boulevard.

Figure 4.12 and Figure 4.13 present the Bicycle LTS along Carillion Boulevard.

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

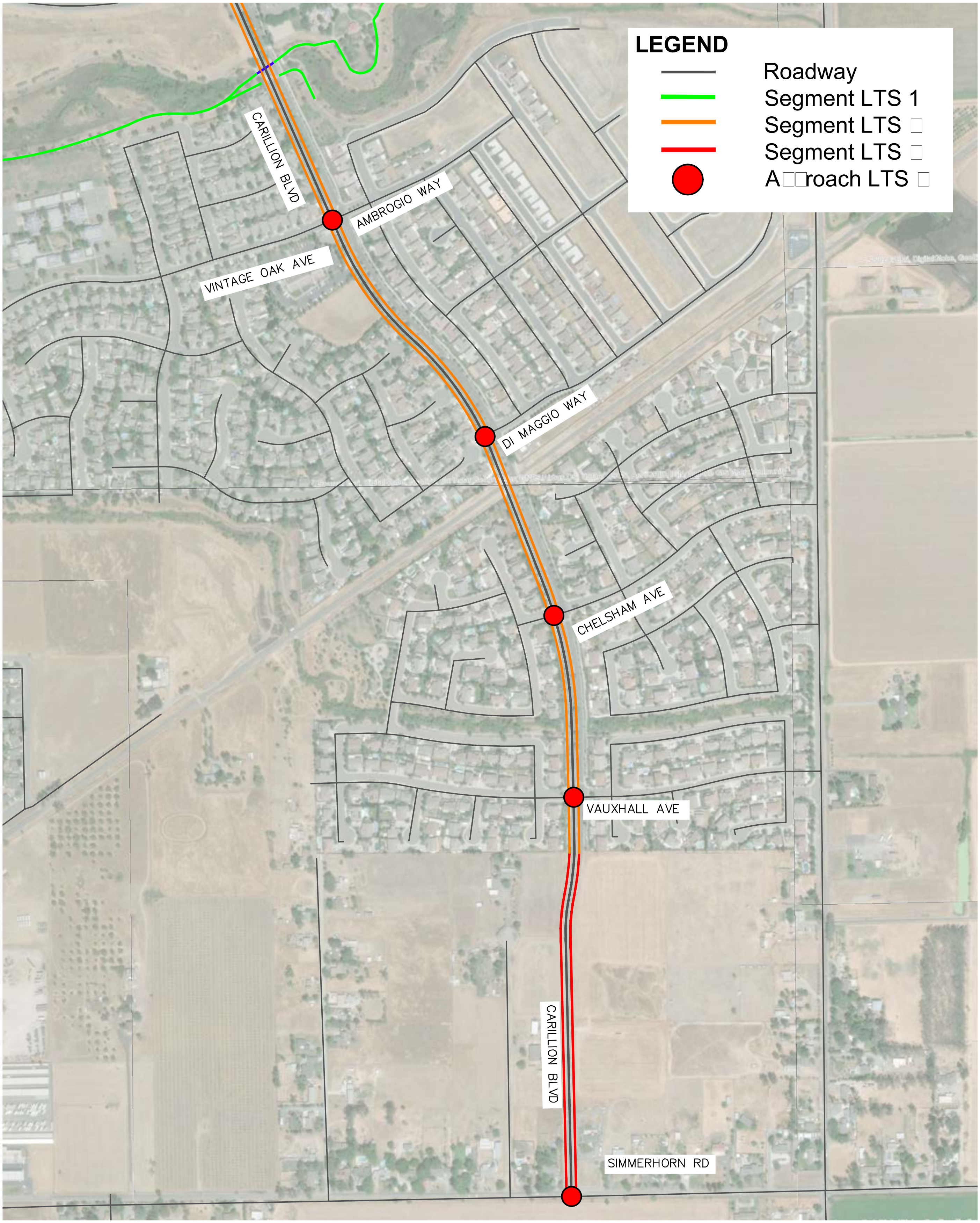
BICYCLE LTS:
TWIN CITIES ROAD TO WALNUT AVENUE

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 4.12

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 23 April 2019 - 3□3 PM



N

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

BICYCLE LTS:
WALNUT AVENUE TO SIMMERHORN ROAD

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 4.13

Source:

Filename: K:\PRJ\2423\2423EX001.dwg
Plot Date: 23 April 2019 - 3:□4 PM

4.6 Existing Conditions Analysis Summary

The major findings of this existing conditions analysis of the Carillion Boulevard Corridor, within the limits of Twin Cities Road in the City of Galt and Simmerhorn Road in the County of Sacramento, are as follows:

- Vehicular LOS is acceptable at all study intersections during the weekday AM and PM peak hour period, with the exception of the following intersections (which were all observed to be unacceptable during the AM peak hour only):
    - Marengo Road & Lake Park Avenue
    - Marengo Road & Twin Cities Road
    - Walnut Avenue & Elk Hills Drive
- As presented within Figure 3.1& Figure 3.2, several noticeable gaps exist in the sidewalk network along the easterly and westerly sides of Carillion Boulevard.
- As presented within Figure 3.4, no dedicated bicycle facilities currently exist along Carillion Boulevard within the limits of Vauxhall Avenue and Simmerhorn Road. This segment of Carillion Boulevard is beyond the limits of the City's Northeast Specific Plan and is therefore operated and maintained by Sacramento County. According to the Circulation Elements of the Sacramento County General Plan and the City of Galt Year 2030 General Plan, no new bikeway facilities are proposed along Carillion Boulevard, between Vauxhall Avenue and Simmerhorn Road.
- Within a seven-year period between the years 2011-20170, 40 collisions were recorded along Carillion Boulevard, between Twin Cities Road and Simmerhorn Road. However, the existing collision rate for Carillion Boulevard is slightly lower than the statewide average collision rate for similar facilities.
- As presented within Figure 4.12 and Figure 4.13, bicyclists are observed to experience moderate to high levels of traffic stress along both northbound and southbound Carillion Boulevard. As LTS is governed by several factors including roadway geometry, intersection control type and prevailing speeds, there exists a potential to lower the LTS by performing a roadway reconfiguration along Carillion Boulevard.

5. Community Outreach

The public outreach process was inclusive, interactive, and productive in order to build momentum for active transportation improvements, and gauge support for alternative concepts, while conveying technical issues in a clear and easy-to-understand manner. Various opportunities were provided for the community to give their input related to existing concerns along the corridor and potential improvements related to the study.

Four meetings were held to present the purpose and goals of the study, the findings of the existing technical analysis (collision data, existing multimodal facilities, LOS, etc.), the potential options for complete street improvements, and receive the community's concerns and answer questions. These four meetings are listed below:

- A meeting was held on Wednesday, November 14, 2018 with the Galt Joint Union Elementary School District staff.
- A public meeting was held on Monday, November 26, 2018, as part of the Galt Public Safety Committee meeting, at the City Police Department.
- A public meeting was held on Monday, December 3, 2018 with the Youth Commission.
- A public meeting was held on Monday, March 25, 2019 as part of the Galt Public Safety Committee meeting.

At these meetings, the community expressed concerns such as speeding vehicles along Carillion Boulevard, the safeness of crossing intersections, especially for schoolchildren, longer crossing distances, and design flexibility for school buses, and emergency service vehicles. Although people use the sidewalks along Carillion Boulevard, the bike lanes are considered too narrow and unsafe. Lastly, Carillion Boulevard as well as Walnut Avenue are considered as barriers or boundaries of neighborhoods rather than conduits for connecting neighborhoods. Parents indicated they do not allow their children to cross Carillion Boulevard to either go to school or visit friends.

On March 25, 2019, a second workshop was held to present alternative concepts to improve Carillion Boulevard in response to the community's concerns. Two alternatives were presented. The alternatives analyzed include two concepts: one with a road diet and roundabouts, and one without a road diet and traffic signals as control types. The meetings presented the findings in the form of PowerPoint presentation, and example slides from the public meetings are shown in Figure 5.1

Figure 5.1 Public Meeting Presentation Slides

6. Travel Forecasting

The purpose of this section is to determine the appropriate travel forecasts for the study area, based on projected development forecasts within the City Limits and Sphere of Influence (SOI). This section will discuss two forecast scenarios 1) Full Buildout land use scenario, and 2) 20-year development forecasts. The final travel forecasts will be utilized in this Complete Street Study to analyze forecasted conditions for transportation improvement concepts and alternatives comparison. Forecasts will be projected for the 12 roadway locations and at the 26 study intersections in the northeast area, including along Carillion Boulevard and the parallel facilities.

6.1 Galt 2030 General Plan

The City's current "2030 General Plan" was adopted in 2009 and presents the land use buildout and circulation plan within the City's Planning Area. Full build-out of the General Plan presents significant economic growth in Galt's Planning Area through 2030, with three prioritized development phases:

- Phase I: Development within the 2007 City Limits.
- Phase II: Areas outside City Limits but close to available public infrastructure, including the "Notch" area between Simmerhorn Road, Boessow Road, the east area south of Twin Cities Road and west of Cherokee Lane, the area north of Twin Cities Road and west of SR 99, and the industrial area west of SR 99 at Walnut Avenue. Land uses include highway commercial, industrial, and residential developments.
- Phase III: Areas beyond Phase II which will require major upgrades to the City's public infrastructure, facilities and services. Areas include north of Twin Cities Road up to Skunk Creek and west of the City. Land uses mainly include highway commercial developments and rural residential areas.

These three development phases or areas represent short- and long-term stages of development. The General Plan creates capacity to accommodate the projected growth through 2030. Although regional housing needs for Galt are projected to increase, about 90 percent of the City's residential capacity is currently built out (Phase I). The City's current list of approved projects includes 2,847 residential units, Eastview annexation, annexation of the industrial park west of SR 99, and two small commercial developments near Twin Cities Road. The City also recently received interest to annex and develop the "Notch" area with 499 new residential units proposed, as well as a large parcel north of Twin Cities Road at Marengo Road with an additional 200 residential units proposed there. This largely entails Phase I and Phase II development, apart from the area south of the Eastview development, east of Marengo Road.

Much of the proposed development in Phase III is large retail/commercial and office development that will result in significant employment concentrated along Highway 99. This is a targeted effort by the City to provide economic development opportunities in the City that will help improve the current low jobs/residents ratio. According to 2015 US Census data, approximately 88.5% of people who live in the City work outside of the City.

6.2 Regional Growth Estimates

Located between the metropolitan areas of Sacramento and Stockton, the City of Galt is predominantly a “bedroom community”, with the majority of workers commuting outside the City. Buildout of the General Plan projects a population growth from 18,425 in 2000 to 51,291 in 2030, and an employment increase from 2,960 to 46,705 between 2000 and 2030. The General Plan also presented population forecasts to increase by 16% between 2010 and 2015. Based on US Census data, the population for Galt in 2010 was 23,697, and in 2015 it was 25,224. This presents only a 6% growth in population over the five year period. According to 2016 US Census data, Galt has an estimated 7,934 housing units, and estimated 3,864 employed within the City. Full buildout of the Galt General Plan would result in doubling the population from 2015-2016 and an increase of 1,108% in employment from 2016 estimates.

According to Sacramento Area Council of Governments’ (SACOG) 2016 Metropolitan Transportation Plan/Sustainable Community Strategy (MTP/SCS), the total number of housing units for Galt’s City Limits and SOI is projected to increase to 10,894 by 2035 and 17,409 under full build-out. The total number of jobs is projected to increase to 8,149 by 2035 and to 36,712 under full build-out of the Galt General Plan. Table 6.1 presents the breakdown for Galt’s regional housing and employment forecasts as presented in the SACOG MTP/SCS.

Table 6.1 SACOG MTP/SCS Regional Housing and Employment Forecasts

Galt Area	Estimated Housing by 2035	Estimated Employment by 2035	Estimated Housing at Build-Out	Estimated Employment at Build-Out
City Limits	9,803	7,764	9,832	12,532
Eastview	1,091	0	2,000	140
Remaining SOI	0	385	5,577	24,040
Total	**10,894**	**8,149**	**17,409**	**36,712**

Source: Attachment A – Table 2, Appendix E-3: Land Use Forecast Background Documentation, *SACOG MTP/SCS*

Based on the appendices for the land use and forecasting documentation for the MTP/SCS, in 2012, there were a total of 8,007 housing units and 4,565 jobs within the Galt SOI and City Limits. The SACOG forecasts present an increase of 36% for housing and a 79% increase in jobs, between 2012 and 2035. Full buildout of the Galt General Plan would result in an increase of 117% in housing and 704% in employment from 2012. In total, the adopted MTP/SCS forecast for Galt includes 2,887 new housing units and 3,584 new jobs by 2035. Full build-out of the Galt General Plan was not assumed to occur by 2035 in the MTP/SCS, and does not appear appropriate for determining forecasts for the next 20 years.

6.3 2015 TCIP Update and 20-Year Development Forecast

GHD (formerly Omni-Means) was contracted by the City to perform a comprehensive update to the Citywide Traffic Capital Improvement Program (TCIP) in 2015. Since the time of the 2009 General Plan adoption, the national and regional economy went into a recession, slowing projected land development considerably. Because of this period of reduced economic growth and land development, the previously anticipated land development in the adopted General Plan has been set back, and only a limited portion of the previously anticipated General Plan growth has developed in the five years between the adoption of the General Plan and 2014.

In response to the slower development environment, the City contracted Goodwin Consulting Group in 2014 (through GHD, formerly Omni-Means) to prepare a market-based evaluation of probable land use absorption over the next 20 years. As expected, the evaluation determined that full buildout of the General Plan land uses was unlikely to occur based on market trends. The City used this absorption forecast, in conjunction with the City's own list of approved/pending projects, to identify a subset of the City's adopted General Plan Land Use Element's land use growth expected to develop over the next 20 years. This subset of the Land Use Element was henceforth referred as the "20-Year Development Forecast". Having established the quantity and location of the 20-Year Development Forecast land use growth, the City's Travel Demand Model was used to develop a 20-Year Traffic Forecast, and subsequent prioritized TCIP and development impact fee.

The City determined that the TCIP needed to be prioritized in order to determine a subset of the adopted improvements that would be required to support the 20-Year Development Forecast. The reasoning followed that if only a subset of the Land Use Element is projected to develop in the next 20 years, only a subset of the Circulation Element would be required to support it. Table 6.2 presents a summary of the General Plan and SACOG forecasts for housing and employment, and the percentage of SACOG forecasts to General Plan Buildout forecasts. Table 6.3 presents the 20-Year Development Forecasts as presented in the 2015 TCIP update, and the comparison to General Plan Buildout and the SACOG forecasts.

Table 6.2 General Plan and SACOG Development Forecast: Housing and Employment

General Plan Buildout (GPBO)		SACOG 2035 Forecast		% SACOG/GPBO	
Housing	Employment	Housing	Employment	Housing	Employment
18,347	40,846	10,894	8,149	59.4%	20.0%

Table 6.3 20-Year Development Forecast: Housing and Employment

20-Year Development (Goodwin Market Trend Analysis)		% 20-Year/GPBO		% 20-Year/SACOG	
Housing	Employment	Housing	Employment	Housing	Employment
10,594	8,928	57.7%	21.9%	97.6%	109.5%

As shown in Table 6.3, the 20-Year Development Forecasts, based on the 2015 TCIP, are consistent with the SACOG MTP/SCS projections, and the General Plan Buildout projections are significantly higher.

6.3.1 Updated 20-Year Development Forecast

In order to develop a 20-year horizon forecast for Carillion Boulevard and parallel facilities, the 20-Year Development Forecast based on the 2015 TCIP needed to be updated to reflect current development proposals. The 20-Year Development Forecast was checked for consistency with the City's current list of Approved/Pending projects, and any new development proposals or annexations. Based on the City's current development list, the projects that are added to the 2015 TCIP 20-Year Development Forecast include:

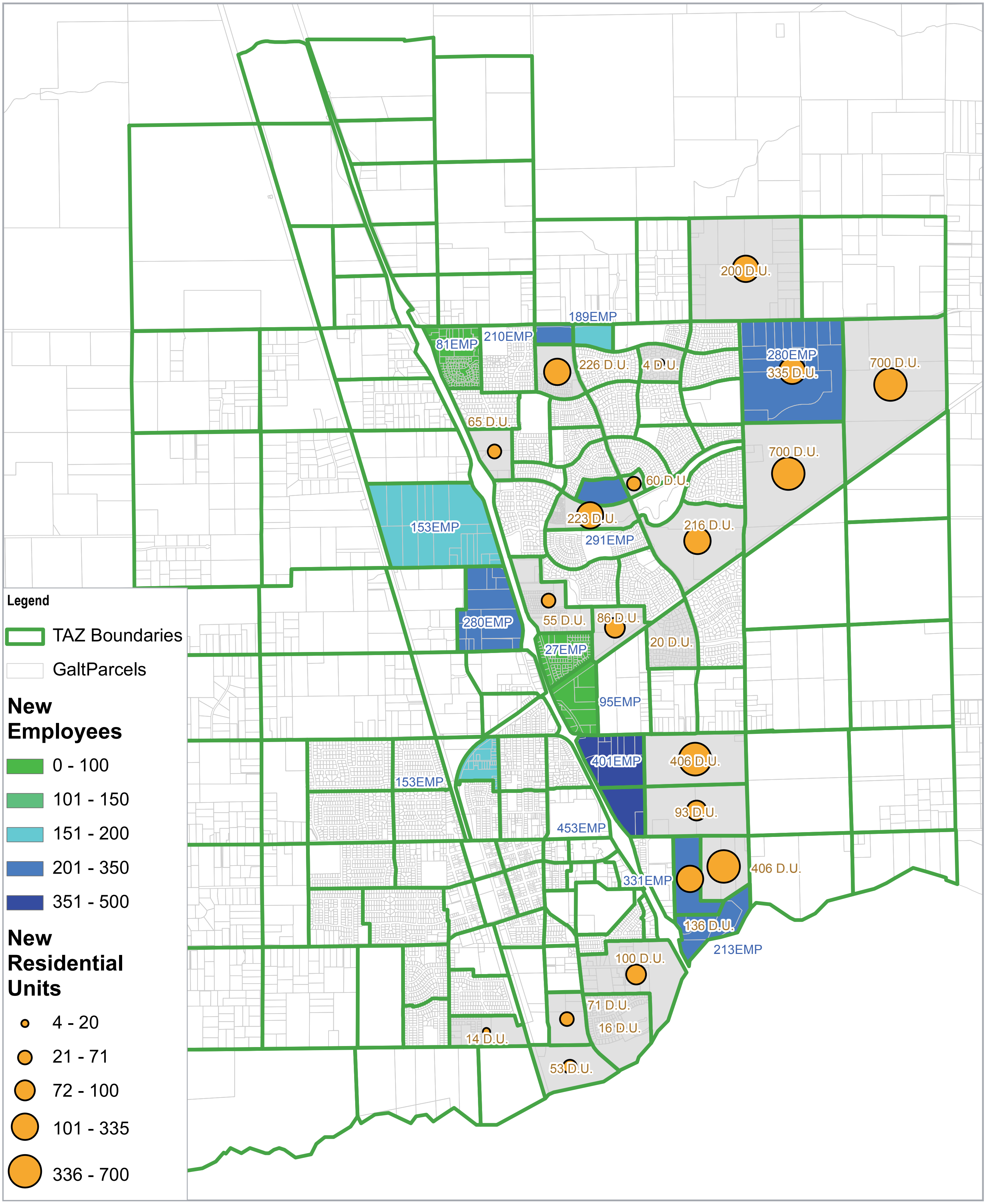
- Veranda at River Oaks (General Plan Amendment), 60 units
- Greenwood Cottages, 226 units
- Marengo Road/Twin Cities Road Annexation, 200 units
- Eastview Specific Plan total at 1,744 units.

Table 6.4 summarizes the updated 20-Year Development Forecast for the Galt area. These are the estimated housing and employment based on the 20-Year Development Forecast consistent with the 2015 TCIP update and the updated 20-Year Development Forecast with the City's updated list of approved/ pending developments. Minor changes in proposed land uses or projected development, specifically in southwestern Galt, were not included. The updated 20-Year Development Forecast presents a 10% increase in housing units by 2040 from the prior 20-Year Development Forecast.

Table 6.4 Updated 20-Year Development Forecast

Galt Area	20-Year Development Forecast in 2015 TCIP		Updated 20-Year Development Forecast Estimate		Increase from Original 20-Year Forecast	
	Estimated Housing by 2035	Estimated Employment by 2035	Estimated Housing by 2040	Estimated Employment by 2040	% Increase Housing	% Increase Employment
City Limits	8,426	7,173	8,520	7,173	1.1%	0%
Eastview	1,402	506	1,744	506	24.4%	0%
Remaining SOI	766	1,249	1,443	1,249	88.4%	0%
Total	**10,594**	**8,928**	**11,707**	**8,928**	**110%**	**0%**

Figure 6.1 presents the updated 20-Year Development Forecast growth in housing units and employment by location. Development should occur consistent with the City's ability to assimilate growth and maintain the small-town feeling and quality of life in Galt.



Paper Size ANSI A

0 0.15 0.3 0.45 0.6

Miles

N

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

CITY OF GALT
Carillion Boulevard Complete Streets Corridor Study

UPDATED 20-YEAR
DEVELOPMENT FORECASTS
(2015 - 2035)

Project No. 11157923
Revision No. -
Date 10/09/2018

FIGURE 6.1

K:\PRJ\2423\G2423\Updated TAZ Delta Calculations.mxd
Print date: 11 Oct 2018 - 12:58

Data source: . Created by: rsouthern

Table 6.5 presents the existing 2018 traffic counts, the projected traffic forecasts under the original 20-Year Development Forecast, the updated 20-Year Development Forecast, and the Full Buildout Forecasts for the study roadways.

Table 6.5 Updated 20-Year Development Forecast

Roadway	Existing ADT Count	20-Year Development Forecast (2015 TCIP)	Updated 20-Year Development Forecast (2040)	Updated 20-Year Development Forecast (2040) with Road Diet	Road Diet Diff%
Twin Cities Rd e/o Stockton Blvd	21,618	27,150	29,780	30,410	2%
Twin Cities Rd w/o Marengo Rd	7,980	13,000	16,940	16,470	-3%
Carillion Blvd s/o Twin Cities Rd	6,949	9,230	11,290	8,770	-22%
Carillion Blvd n/o Elk Hills Rd	5,826	9,230	12,510	8,530	-32%
Carillion Blvd s/o Walnut Ave	5,411	20,040	18,820	11,350	-40%
Carillion Blvd n/o Vauxhall Ave	4,264	15,590	13,280	5,140	-61%
Walnut Ave east of SR 99	6,744	16,160	23,770	26,080	10%
Walnut Ave east of Carillion Blvd	3,937	15,350	13,030	12,340	-5%
Marengo Rd s/o Twin Cities Rd	2,382	10,210	8,200	9,040	10%
Marengo Rd s/o Walnut Ave	2,641	3,510	14,670	15,630	7%
Marengo Rd n/o Chelsham Ave	2,902	8,110	17,520	18,460	5%

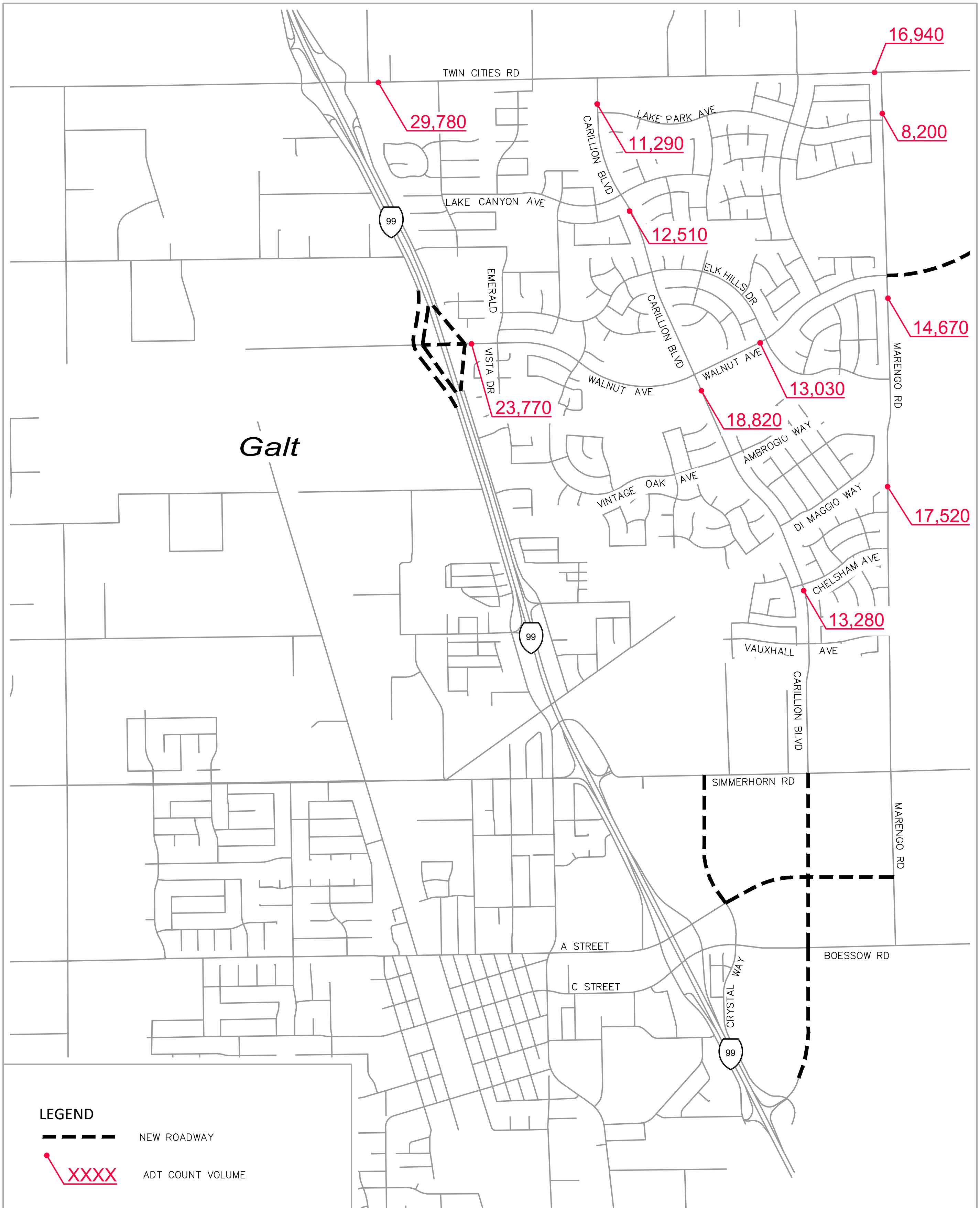
As shown in Table 3.1, the full buildout of the General Plan projects significant growth in land uses in the north and northeastern areas of Galt, and results in unreasonably high travel forecasts on Carillion Boulevard and parallel facilities for the 20-year horizon. Based on the information provided herein, it is recommended to use the updated 20-Year Development Forecast for travel projections along Carillion Boulevard and on the surrounding study area roadways.

6.4 20-Year Planned Transportation Improvements

The following lists the transportation improvements within the study area assumed to be in place under 2040 conditions. All the improvements are consistent with the City's TCIP.

- Walnut Avenue Interchange
  - Full interchange with northbound and southbound ramps, and an overpass
- Traffic Signal at Twin Cities Road and Marengo Road
- Traffic Signal at Walnut Avenue and Vintage Oak Avenue
- Traffic Signal at Walnut Avenue and Elk Hills Drive
- Traffic Signal at Marengo Road and Walnut Avenue
- Roundabout at Simmerhorn Road and SR 99 Northbound Ramps
- Traffic Signal at Marengo Road and Simmerhorn Road
- Widen Marengo Road to 4 Lanes
  - Two-Way Left-turn Lane or acceleration/receiving lane at Chelsham Avenue and at Vauxhall Avenue
- Carillion Boulevard Extension south to Crystal Way
- A Street Extension east to Marengo Road (connecting to Carillion Boulevard)
- Crystal Way Extension north to Simmerhorn Road
- Walnut Avenue Extension east per Eastview Specific Plan

Figure 6.2 presents the projected 2040 Average Daily Traffic (ADT) Forecasts in the study area, and Figure 6.3 presents the project 2040 ADT forecasts in the study area with a Road Diet on Carillion Boulevard.



Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

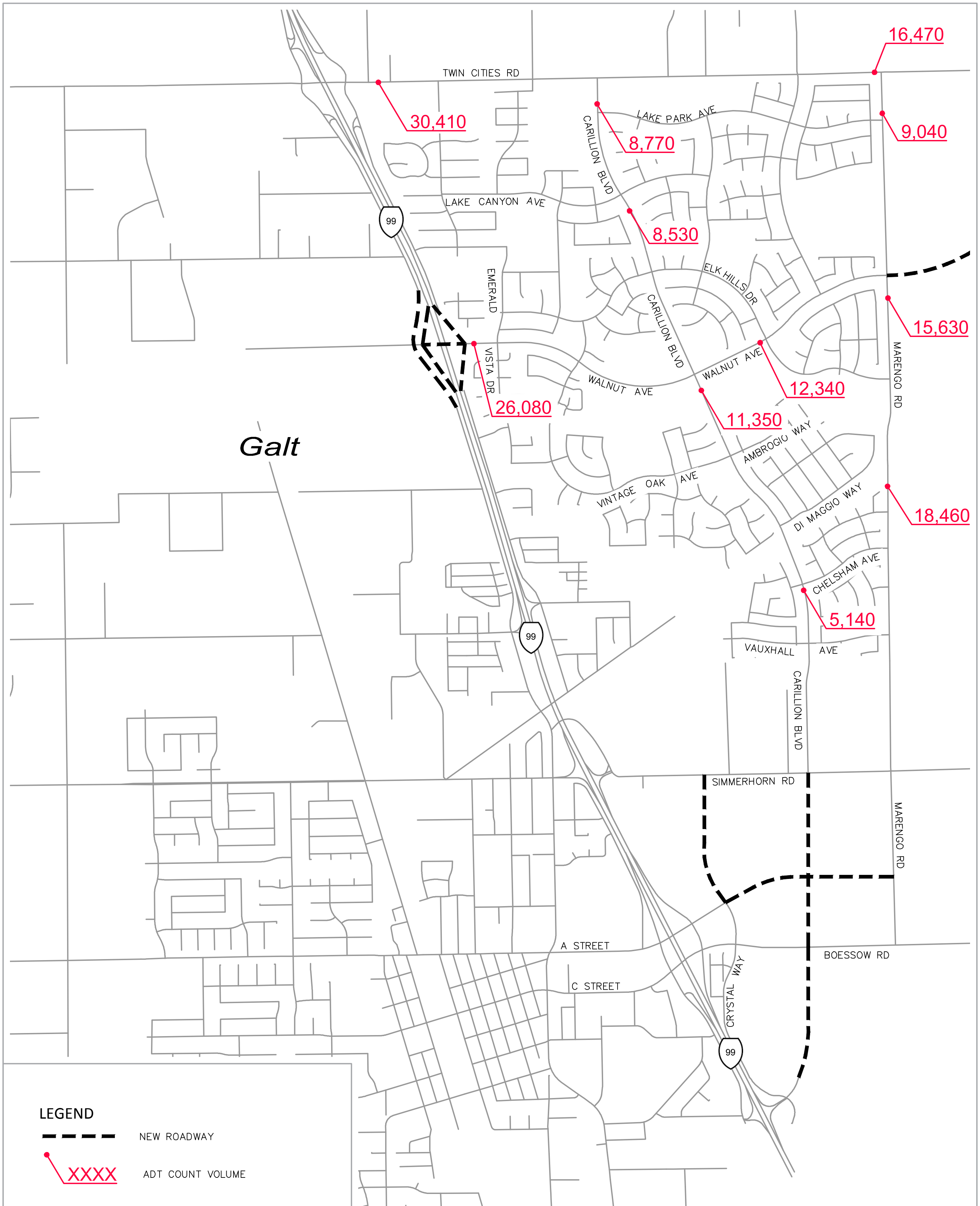
YEAR 2040 AVERAGE DAILY TRAFFIC (ADT) FORECASTS

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 6.2

Source:

Filename: K:\PRJ\2423\T2423\T2423TG001.dwg
Plot Date: 30 August 2019 - 3:05 PM



N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

YEAR 2040 WITH ROAD DIET AVERAGE DAILY TRAFFIC (ADT) FORECASTS

Project No. **11151293**
Report No. **005**
Date **02.19.2019**

FIGURE 6.3

Source:

Filename: K:\PRJ\2423\T2423\T2423TG001.dwg
Plot Date: 30 August 2019 - 3:06 PM

6.5 Forecasted (Year 2040) Intersection Operations

Intersection operations were quantified utilizing HCM 6 methodologies based on the 20-year peak hour traffic volumes forecasted for Year 2040. Forecasted AM and PM peak hour intersection operations were quantified based on the planned intersection and roadway improvements within the area to establish forecasted "baseline" operations, without any improvements pertaining to the alternatives identified within this Complete Streets Plan. Table 6.6 presents a summary of the Forecasted 2040 Baseline intersection analysis and LOS conditions.

Table 6.6 Forecasted 2040 Baseline Conditions Intersection Operations

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
1	Twin Cities Rd & Carillion Blvd	Signal	D	11.3	B	-	10.7	B	-
2	**Carillion Blvd & Lake Park Ave**	**TWSC**	**D**	**205.5**	**F**	**Yes**	**OVR**	**F**	**Yes**
3	**Carillion Blvd & Lake Canyon Ave**	**TWSC**	**D**	**105.1**	**F**	**Yes**	**112.8**	**F**	**Yes**
4	**Carillion Blvd & Elk Hills Dr**	**TWSC**	**D**	**55.3**	**F**	**Yes**	**46.9**	**E**	**Yes**
5	**Carillion Blvd & Walnut Ave**	**AWSC**	**D**	**126.8**	**F**	**Yes**	**214.9**	**F**	**Yes**
6	**Carillion Blvd & Ambrogio Way/Vintage Oak Ave**	**AWSC**	**D**	**181.9**	**F**	**Yes**	**113.8**	**F**	**Yes**
7	Carillion Blvd & DiMaggio Way	TWSC	D	21.8	C	-	19.7	C	-
8	**Carillion Blvd & Chelsham Ave**	**TWSC**	**D**	**60.0**	**F**	**No**	**35.3**	**E**	**No**
9	**Carillion Blvd & Vauxhall Ave**	**TWSC**	**D**	**46.3**	**E**	**No**	28.7	D	-
10	Carillion Blvd & Simmerhorn Rd	Signal	D	33.5	C	Yes	30.3	C	Yes
11	Twin Cities Rd & Stockton Blvd	RNDBT	D	15.3	B	-	5.5	A	-
12	Marengo Rd & Twin Cities Rd	Signal	D	37.5	D	Yes	23.6	C	Yes
13	Marengo Rd & Lake Park Ave	TWSC	D	22.1	C	-	12.2	B	-
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd	Signal	E	9.8	A	Yes	9.6	A	Yes
15	Walnut Ave & Vintage Oak Ave	Signal	D	26.1	C	Yes	21.6	C	Yes
16	Walnut Ave & Elk Hills Dr	Signal	D	18.7	B	Yes	15.5	B	No
17	Marengo Rd & Walnut Ave	Signal	D	21.0	C	Yes	20.2	C	Yes
18	Marengo Rd & Chelsham Ave	TWSC	D	20.4	C	-	15.2	C	-
19	Marengo Rd & Vauxhall Rd	TWSC	D	23.5	C	-	18.7	C	-
20	SR 99 NB Ramps & Simmerhorn Rd	RNDBT	E	6.7	A	-	6.5	A	-

Table 6.6 Forecasted 2040 Baseline Conditions Intersection Operations

#	Intersection	Control Type[1,2]	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met?[3]	Delay	LOS	Warrant Met?[3]
21	Marengo Rd & Simmerhorn Rd	Signal	D	24.2	C	Yes	33.4	C	Yes
22	SR 99 SB Ramps & Crystal Way/ A Street	Signal	E	10.9	B	-	10.8	B	-
23	SR 99 NB Ramps & Crystal Way	Signal	E	16.8	B	-	16.4	B	-
24	Fairway Dr & C St	Signal	E	31.2	C	**-**	50.9	D	-
25	SR 99 NB Ramps & C St/Boessow Rd	Signal	E	44.1	D	-	34.3	C	-
26	SR 99 SB Ramps & Fairway Dr	Signal	E	6.5	A	-	6.5	A	-

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control RNDBT = Roundabout

2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, Roundabout

3. Warrant = Based on California MUTCD Warrant 3

*4. **Bold** signifies intersections operating beyond acceptable LOS threshold.*

*5. **OVR** indicates delays greater than 300 seconds.*

As presented in Table 6.6, seven intersections along Carillion Boulevard between Lake Park Avenue and Vauxhall Avenue are projected to operate at LOS E or F during the AM and/or PM peak hours, without any further improvements. Peak hour traffic signal warrants are met for these intersections, except for Carillion Boulevard at Chelsham Avenue and at Vauxhall Avenue. Forecasted development within eastern Galt will add to the current traffic along all the major roadways within the study area, and result in substantial delays to the side streets, especially along Carillion Boulevard.

Improvements along Carillion Boulevard should not only address the capacity concerns, but also promote multimodal travel by providing enhanced safety for all users along and crossing the corridor. Consideration of “Complete Street” corridor treatments, including consideration of a corridor-length road diet, would seek to improve the attractiveness of bike and pedestrian mobility choices, reduce perceived and physical barriers to safe active transportation choices, reduce cyclist and pedestrian levels of stress, and enhance corridor aesthetics while still retaining adequate capacity to serve existing and future vehicular demand.

7. Complete Street Elements

A “Complete Street” is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the street’s function and context. Every Complete Street looks different, according to its context, community preferences, the types of road users, and their needs. These streetscape components can be used to unify the Carillion Boulevard corridor, as well as distinguish the different areas of the roadway for the different users (vehicles, bicyclists, pedestrians).

The proposed improvements to Carillion Boulevard include some elements of Complete Streets, which were selected based on feedback from the public and stakeholders, and given the context and constraints of the project area. For many projects across the United States, transportation planners and engineers prioritized the fast movement and efficiency of motor vehicles over the safety of neighbors, schoolchildren, and other users of the road. Complete streets work to create streets that continue to efficiently convey vehicular traffic, but are also welcoming and pleasant for everyone and, most importantly, safe for everyone.

Like any large-scale project, the proposed designs of Carillion Boulevard are made of a cumulative impact of smaller elements. These elements are founded on local and national guidelines and apply standard traffic engineering tools and designs. Key street features recommended in these guidelines are described below.

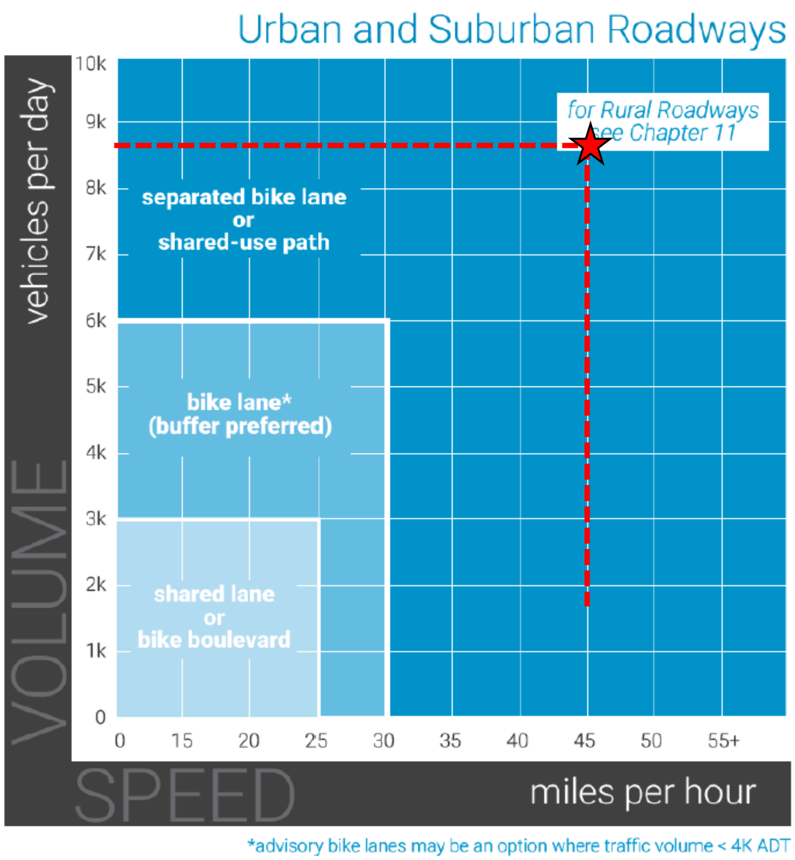
For more specific details about the tools, facilities, and design elements referred within, the following resources were used to help guide the improvements concepts:

- MassDOT Separated Bike Lane Planning & Design Guide, 2015
- NACTO Urban Bikeway Design Guide, Second Edition
- NACTO Urban Street Design Guide
- NACTO Urban Street Stormwater Guide
- Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts, FHWA, August 2016
- 2018 AASHTO Bike Guide
- 2012 AASHTO Guide for the Development of Bicycle Facilities
- 2004 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- Caltrans Complete Streets Resources and Complete Streets Elements Toolbox (Version 2.0)
- Complete Intersections, A Guide to Reconstruction Intersections and Interchanges for Bicycle and Pedestrians, Caltrans, 2010

7.1.1 Study Area Context

Carillion Boulevard currently has a 45 mph speed limit (outside school zones) and daily volumes range from 4,200 vehicles per day to 6,950 vehicles per day. Based on the Bicycle Facility Selection Chart from the 2018 AASHTO Bike Guide, shown in Figure 7.1 below, Carillion Boulevard falls under the facility type of separated bike lane or shared-use path.

Figure 7.1 Bicycle Facility Selection Chart



7.2 Types of Complete Street Elements

The following are types of street treatments and streetscape components that have become defining elements of Complete Streets.

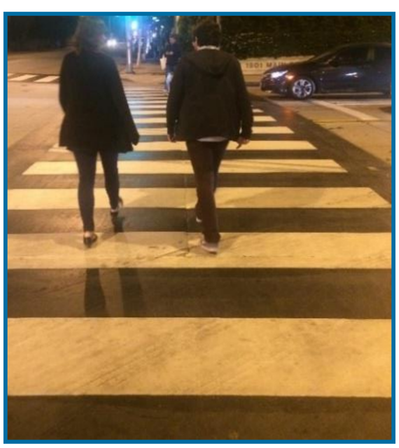
Curb Extensions and Median Refuge Areas improve visibility for pedestrians crossing and reduce pedestrian crossing distances. Curb Extensions also reduce vehicle speeds by reducing turning radius, which increase the chance of survival for a pedestrian in the event of a collision. Currently, there are two mid-block crossings with median refuge on Carillion Boulevard south of Walnut Avenue.

Pedestrian Median Refuge

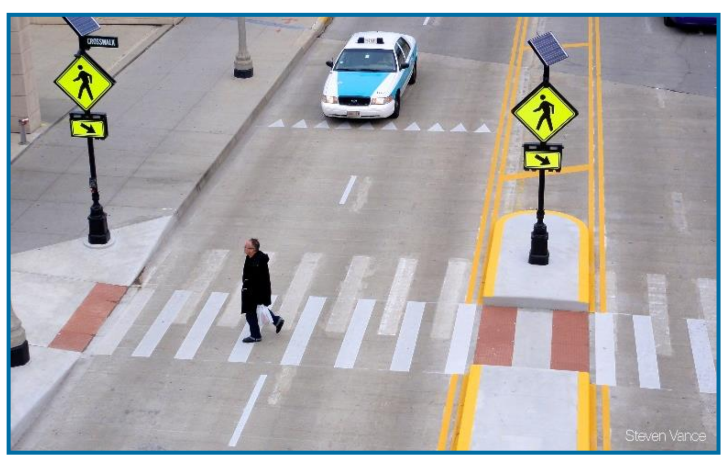
Curb Extension

High Visibility Crosswalks include additional paint, often in a zebra stripe pattern, that can enhance a motorist's awareness of a crosswalk. Near schools, crosswalks are painted yellow for additional visibility, and in accordance with the MUTCD. In-roadway lighting can further enhance crosswalk visibility.

Crossing Beacons like the Rectangular Rapid Flashing Beacon (RRFB) enhance the visibility of crosswalks marked by just paint. Flashing lights and additional signage alert motorists to the presence of crosswalks and pedestrian traffic. These are used for unsignalized or mid-block crossings. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system.



High Visibility Crosswalk



Crossing Beacons

Shared-Use/Multi-Use Paths (Class I Bikeway) provide exclusive right-of-way for bicyclists and pedestrians outside of the roadway, and with cross flows by motor traffic minimized. Class I facilities provide for both recreational and commuting opportunities.

Shared-Use Path

Separated Bikeway

On-Street Separated (Protected) Bikeways (Class IV) provide full physical separation between bicyclists and motor vehicles, but are part of the roadway network. Class IV bicycle facilities can also be two-way Cycle Tracks. On-Street Separated Bikeways, or Protected Bike Lanes, are increasingly common across California and provide additional protection and dedicated space via a raised median or curb, on-street parking, or a painted buffer with bollards, planters, signs or other physical protection or barrier.

Conventional Bike Lanes (Class II) provide a designated space for bicyclists to ride, helping to define where each mode of traffic can travel easily. Bike lanes can be installed along a curb or between parked cars and traffic. Bike lanes may be distinguished using color, lane markings, signage, and intersection treatments. Bike lanes should be 5 feet wide at a minimum with gutter (refer to *MUTCD Figure 9C-102(CA)* for further guidance).

Bike Lane

Buffered Bike Lane

Buffered Bike Lanes are conventional bike lanes paired with a designed buffer space which further separates the bike lane from the vehicular lane and/or parking lane. A buffered bike lane provides a safer and less stressful bicycle facility without constructing physical separation. The buffer area should be marked with diagonal or chevron hatching if 4 feet or wider. The buffer shall be a minimum of 18 inches (*MUTCD Figure 9C-104(CA)*).

Sharrow

Shared Lane Markings ("Sharrows") help remind motorists that bicyclists are allowed to use the full lane and remind bicyclists to avoid riding too close to parked cars for safety. The shared lane markings help bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane. These markings are primarily recommended on low-speed streets. Due to Carillion Boulevard's posted speed limits and heavy vehicle volumes, this feature is only included as an option to share the roadway when navigating the roundabout.

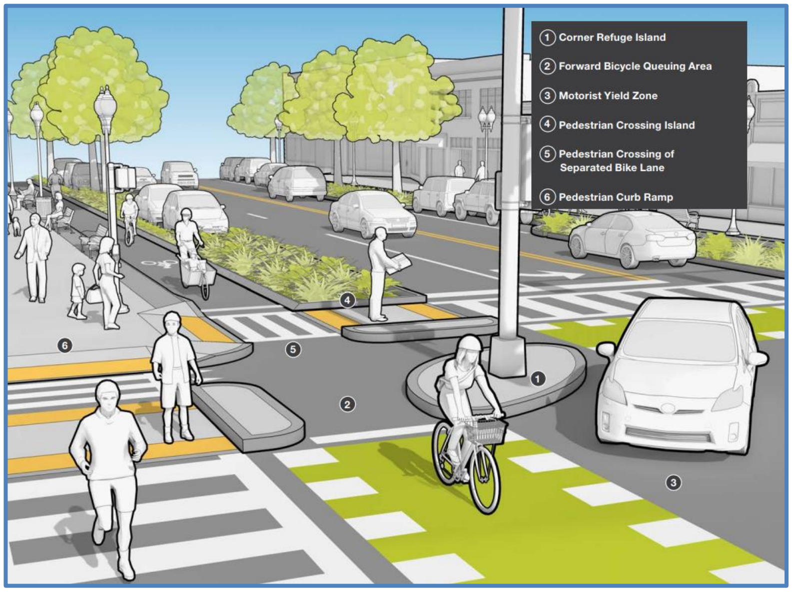
Green Colored Pavement for Bikeways may be installed within bicycle lanes or the extension of the bicycle lane through an intersection or transition trough a conflict area and approaching intersections as a supplement to bike lane markings.

The contrasting color makes the bike lane more conspicuous to all travelers, increasing awareness that bicyclists may be present. Green colored pavement is proposed in this Plan for bike lanes approaching intersections, and in conflict areas such as where traffic crosses the bike lane to enter a right turn lane. The pattern of the green colored pavement may be dotted/dashed in a manner that matches the pattern of the dotted lines per the MUTCD.

Green Colored Bike Lane Approaching Intersection

Bike Boxes provide priority to cyclists and safe left-turn movement at traffic signals

Bike Boxes designate an area for bicyclists to queue in front of automobiles, but behind the crosswalk at signalized intersections. Bike boxes provide cyclists a safe way to be visible to motorists by getting ahead of the queue during the red signal phase, and they reduce vehicle intrusion into crosswalks. Bike Boxes also improve safety for conflicts with right-turning vehicles when the traffic signal turns green. Bike boxes can be utilized to facilitate left turn positioning and gives priority to cyclists.

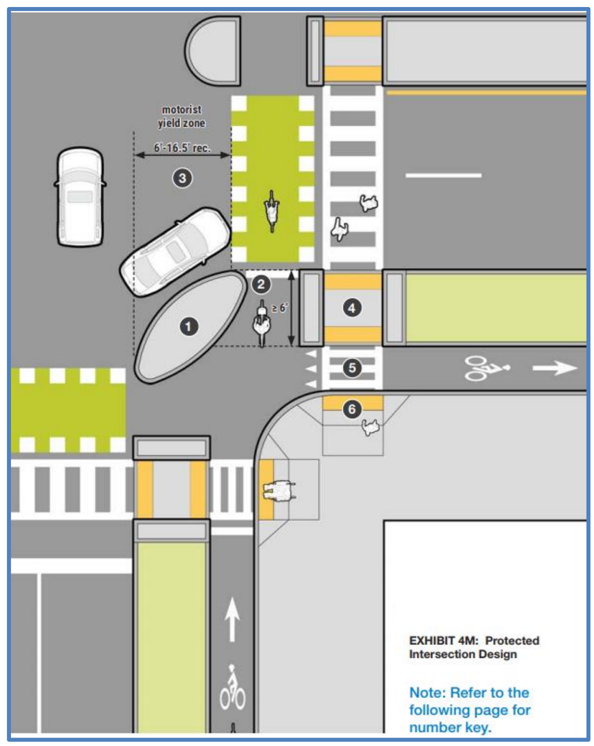


Protected Intersection; Source: MassDOT Separated Bike Lane Planning & Design Guide, 2015

Protected Intersections reduce turning conflicts between drivers and bicyclists by providing clear and protected paths for each user. These are relatively new to the United States and have been shown to reduce collisions. In conjunction with separated bikeways, the design provides corner islands that keep cyclists to the right and adjacent to the crosswalk, and also facilitates left turns. A similar, less intensive version can include Bike Boxes.

The design of protected intersections includes:

- Corner island functions as a curb extension,
- Positions people to be more visible to vehicles turning,
- Provides physical separation for cyclists from the traveled way at the intersection approach,
- Reduces speeds of turning vehicles,
- Reduces the crossing distance for both pedestrians and cyclists,
- Provides dedicated spaces for bicycles and pedestrians,
- Use of green colored pavement to delineate bicycle crossings and/or approaching the intersection, bike boxes, etc. and
- Design flexibility for specific vehicle types (buses, trucks, emergency vehicles), especially for smaller intersection approaches.



Protected Intersection; Source: MassDOT Separated Bike Lane Planning & Design Guide, 2015

Protected intersections applied to the neighborhood context of Carillion Boulevard will improve safety for all users.

Road Diets reduce the number of vehicular lanes; the most typical type of road diet converts street with four-lanes to two-lanes with center turn lane and bike lanes. Separating the left-turning vehicles from through traffic can reduce the chance of both rear end and left turning collisions. The extra space can also be used for planted medians, pedestrian refuges, or curb extensions. Currently, Carillion Boulevard has a wide cross-section with four travel lanes, a planted median, and left and/or right turn lanes at major intersections.

Roundabouts have been proven to reduce collisions, as well as the severity of collisions. Roundabouts also provide safer, two-stage crossings for pedestrians. Roundabouts have been proven to allow for a greater capacity of vehicle traffic, improving traffic flow without widening roadways. Trucks are also accommodated through the design and implementation of the truck apron. Speeding through the intersection is controlled throughout the design. Roundabouts improve safety overall.

Bike Ramps at Roundabouts provide entry and exit between the Bike Lanes on the roadways and the Class I path off-street. The design of the bike ramps are not subject to ADA requirements, but are designed per the guidelines outlined in NCHRP Report 672: *Roundabouts an Informational Guide*.

Bike Ramp approaching Roundabout

The Carillion Boulevard Complete Street Plan proposes to utilize many of these standard elements of Complete Streets to create a corridor that will help to improve the safety, convenience, and livelihood of Galt, while maintaining the neighborhood character and nature of the public realm. The proposed concepts will fill in any gaps in multimodal connectivity and enhance safety along the corridor. While it may be possible to implement some of these elements in an ad hoc manner, the cumulative improvements of the entire proposal will create the greatest benefit for the community and its stakeholders.

Central Island Landscape Treatments for Roundabouts provides both an aesthetic opportunity and a functional need to control driver visibility through the roundabout. Treatments can include planting (formal and informal), sculptures, community identification signage, gateway monuments, walls, and towers, specific engineering criteria control landscape amenity locations, height, and site visibility. Figure 7.2 presents typical landscape treatments for modern roundabouts.

The landscape treatment inside a modern roundabout provides **both** an aesthetic opportunity and a functional need to control driver visibility through the roundabout. Treatments can include planting (formal and informal), sculptures, community identification signage, gateway monuments, walls, and towers. specific engineering criteria control landscape amenity locations, height, and site visibility.

ABSTRACT - INERT MATERIALS AND SCULPTURES

THEMED SCULPTURES AND MONUMENT SIGNAGE

CONTEMPORARY LANDSCAPE WITH STRUCTURES

NATURALISTIC LANDSCAPE AND SCULPTURE

FORMAL LANDSCAPE PLANTING

MINIMALIST

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

TYPICAL CENTRAL ISLAND LANDSCAPE TREATMENT EXAMPLES

Project No. **11151293**
Report No. **005**
Date **02.20.2019**

FIGURE 7.2

Source:

8. Plan Alternatives & Recommendations

Although the existing vehicular traffic conditions operate at acceptable service levels along the Carillion Boulevard corridor, pedestrian and bicycle conditions are inadequate at several locations with lack of connectivity between residential, retail, recreational, and employment areas, as well as access to transit services. Implementation of various Complete Streets improvements along Carillion Boulevard were initially compared to find the best possible outcome for all modes of travel based on the Project Goals and current policies. Additionally, with future development in northeastern Galt and regional growth on SR 99, the volumes are projected to increase on Carillion Boulevard and adjacent facilities over the next twenty years. The increase of traffic volumes along Carillion Boulevard will increase the safety risk to pedestrians and bicyclists, and the vehicular delays for side street stop-controlled intersections will also increase to undesirable conditions, without any improvements.

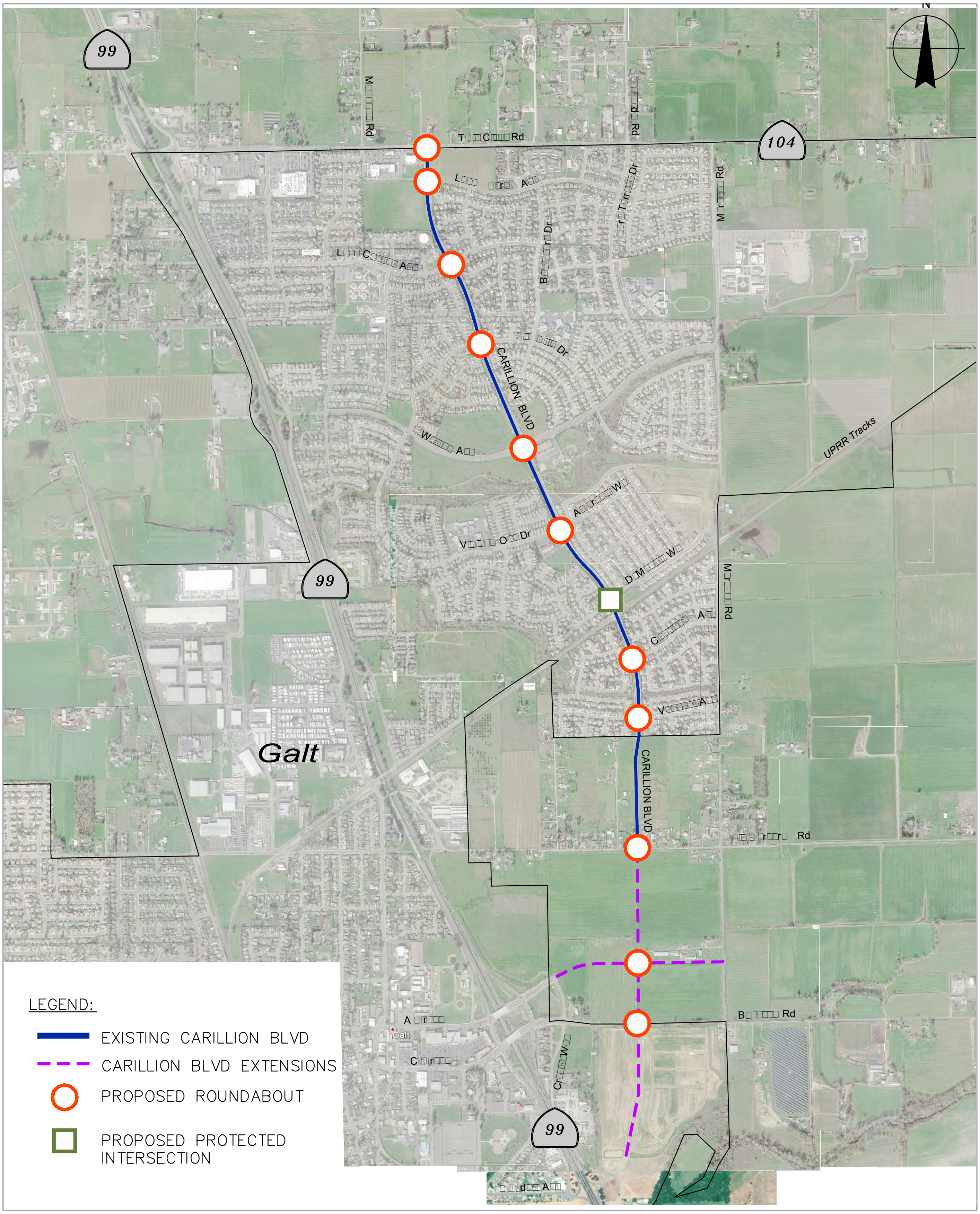
Ultimately, two alternatives for the entire corridor were identified: the first alternative implements a road diet with roundabouts at most intersections and installs buffered bike lanes; and the second alternative retains the current four lanes, reduces the lane width to accommodate 6-foot bike lanes throughout, and installs traffic signals at most intersections. The selection of buffered bike lanes, rather than separated bike lanes, was to maintain flexibility in the design of the road diet and reduce initial cost of implementation. If upon accepted by the Community and available funding, additional improvements to create separated bike lanes could be added later.

The proposed alternative concepts, including operational analysis and proposed multimodal improvements are detailed in this chapter. Based on the operational analysis and safety benefits of the two alternatives detailed in this chapter, one alternative was selected for final recommendation in the Carillion Boulevard Complete Street Plan and the proposed multimodal improvements are described in further detail in this Chapter. Overall, both alternatives include Class II bike lanes or better along Carillion Boulevard, green pavement markings as needed, and installing sidewalk where there are gaps in connectivity.

8.1 Alternative 1: Road Diet with Roundabouts and Buffered Bike Lanes

Alternative 1 proposes to implement a road diet along Carillion Boulevard. The road diet will convert the current four-lane facility into a two-lane facility and allow room for a buffered bike lane in each direction. The buffer will be 6 feet wide, and the bike lane will be 8 feet wide, and will accommodate bicycles, scooters, electric scooters, and other low-speed electric vehicles. Constructing roundabouts at all of the intersections along Carillion Boulevard, except for at Di Maggio Way, will provide additional capacity for the two-lane roadway, while also create a safer environment for pedestrians and bicyclists to cross. The 'T'-intersection of Carillion Boulevard at Di Maggio Way is proposed to be a protected intersection, which will provide separated pedestrian and bicycle facilities to enhance the safety of conflict areas between automobiles, bicycles and pedestrians at the intersection (proposed for both alternatives). Additionally, a mid-block crossing with a Rectangular Rapid Flashing Beacon (RRFB) is proposed north of Vauxhall Avenue (proposed for both alternatives), to provide for safer crossing along the Class I path along Deadman's Gulch.

Figure 8.1 presents an overview of the intersection improvements along Carillion Boulevard for Alternative 1. Figure 8.2 presents a conceptual layout of the Alternative 1 improvements along Carillion Boulevard. Additional layouts, which present closer views of the intersection improvements of Alternative 1 are provided in **Appendix E**. Figure 8.3 presents a perspective and cross-section of Carillion Boulevard with Alternative 1. Figure 8.4 presents a street-view perspective of Alternative 1. Figure 8.5 presents the 2040 peak hour traffic volumes at the study intersections with a road diet on Carillion Boulevard (Alternative 1).



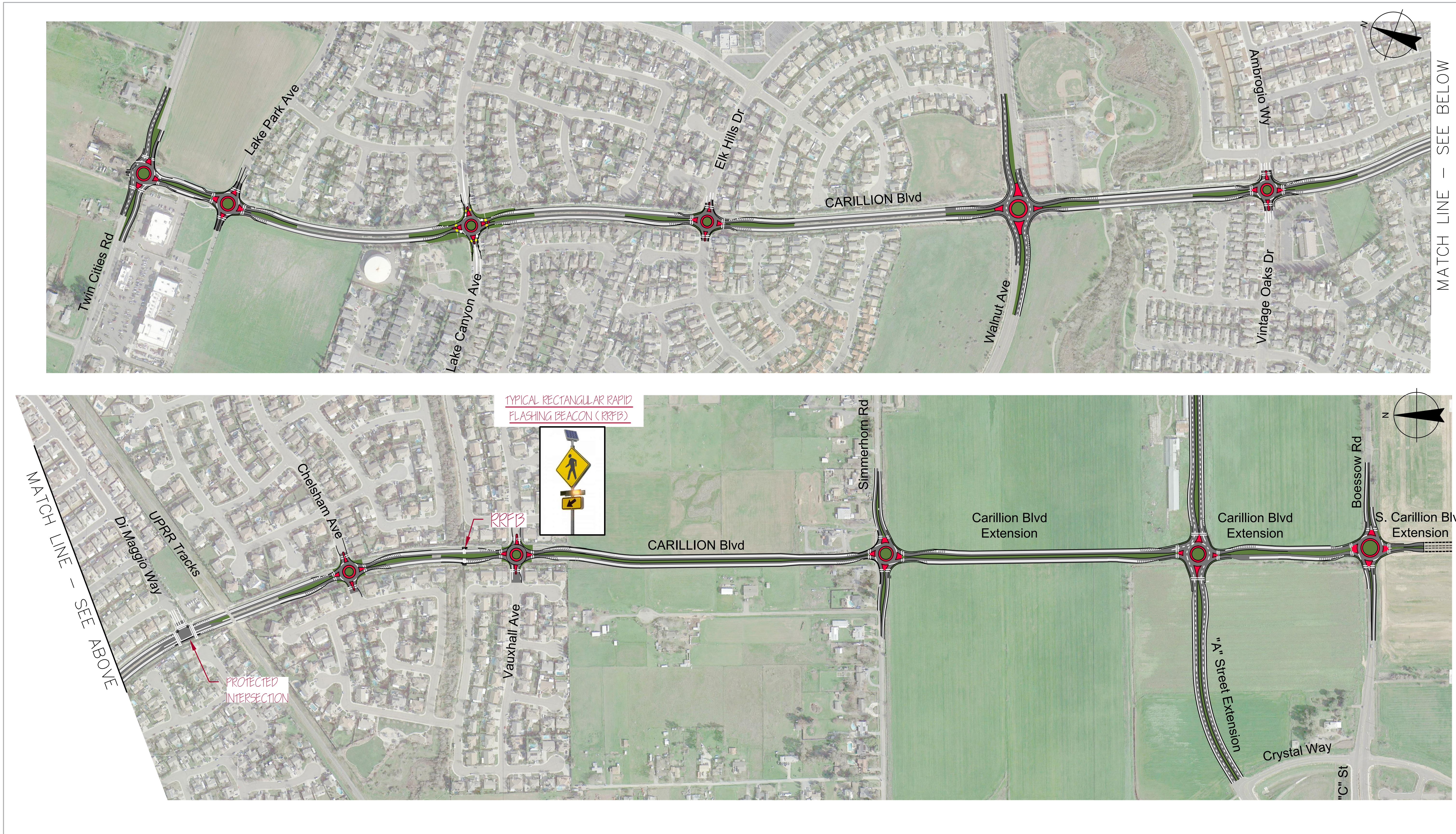
GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

Ma▯ ▯▯ Pr▯▯▯▯ed Inter▯e▯ti▯n Im▯r▯▯ement▯

Project No. **11151293**
Report No. ▯
Date **03.0▯.19**

FIGURE ▯.1



CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY ALTERNATIVE 1

500' 0 500'

1 inch = 500 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

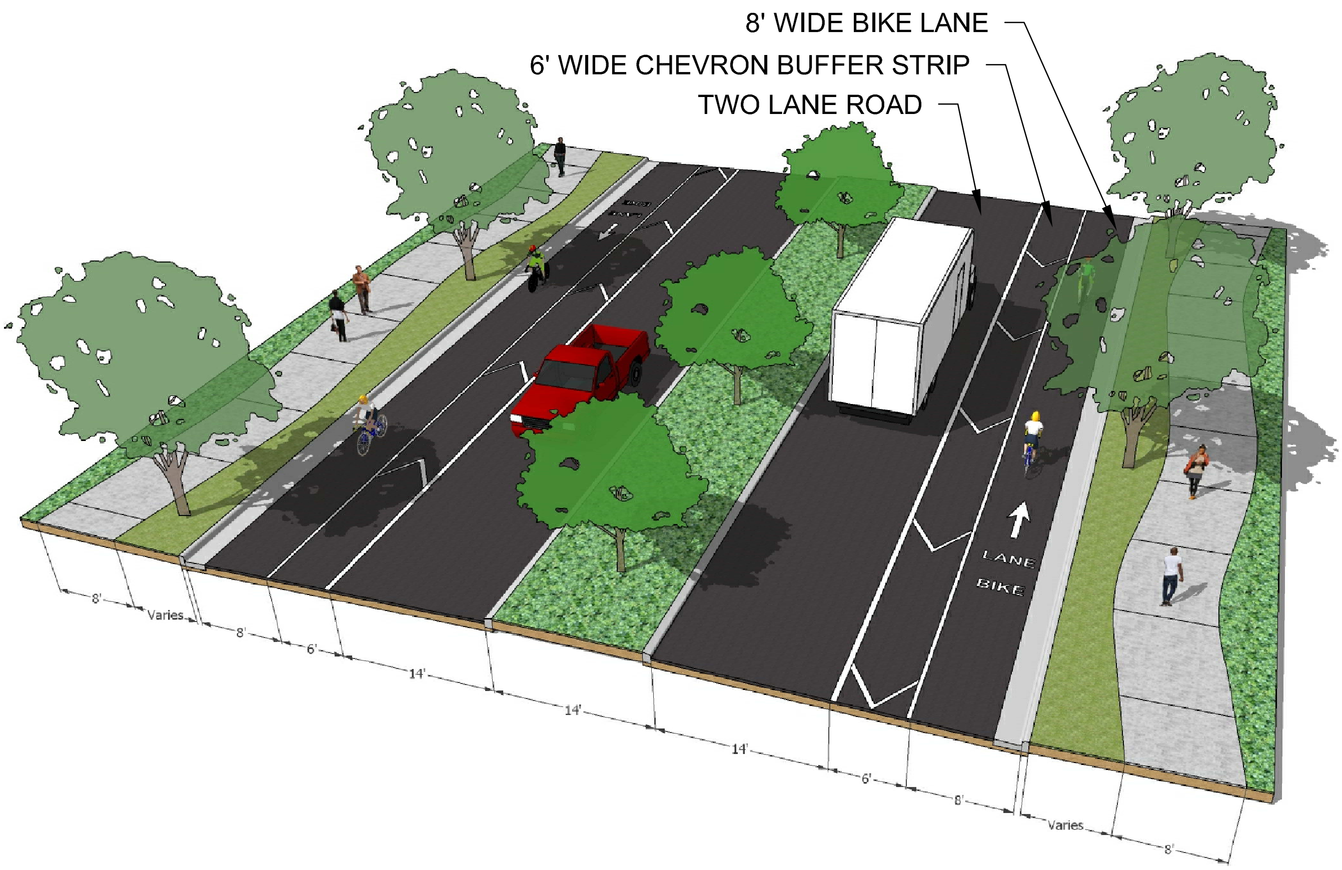
Carillion Blvd Improvements: Twin Cities Rd to Boessow Rd

Project No. 11151293
Report No. -
Date 03.07.19

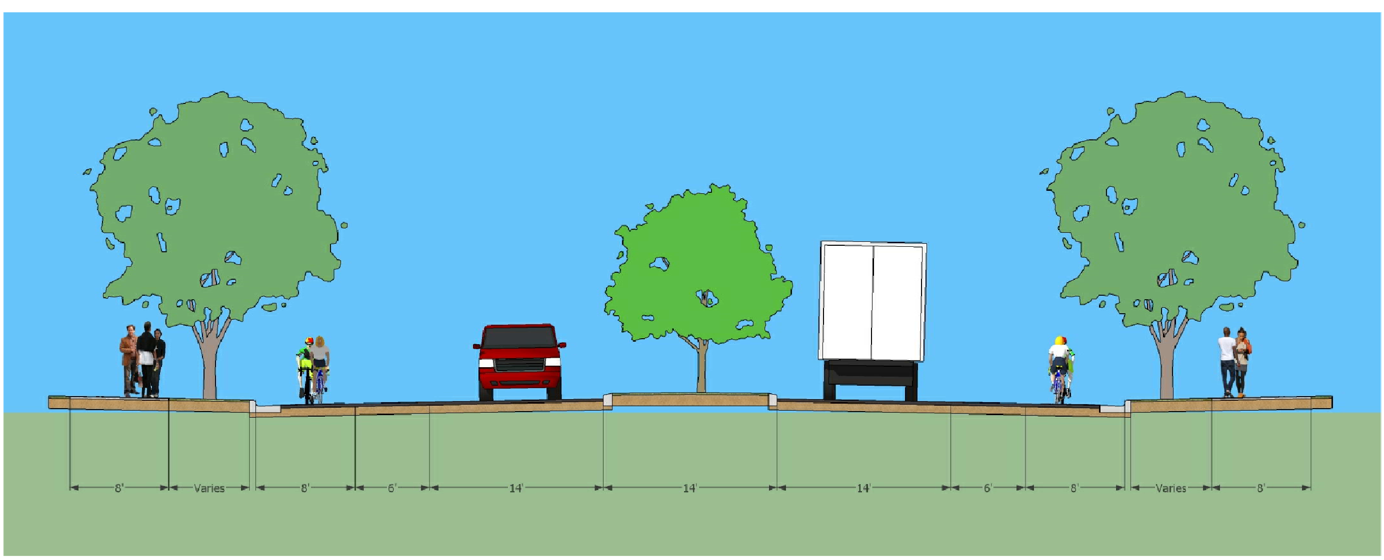
FIGURE 8.2

Source:

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 9:44 AM



ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES PERSPECTIVE



ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES CROSS-SECTION

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES

Project No. **11151293**
Report No. **005**
Date **08.05.2019**

FIGURE 8.3

Source:

Filename: K:\PRJ\2423\2423EX009.dwg
Plot Date: 5 August 2019 - 11:34 AM

EXISTING CONDITIONS

ALTERNATIVE 1: ROAD DIET - 2 LANES WITH BUFFERED BIKE LANES

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

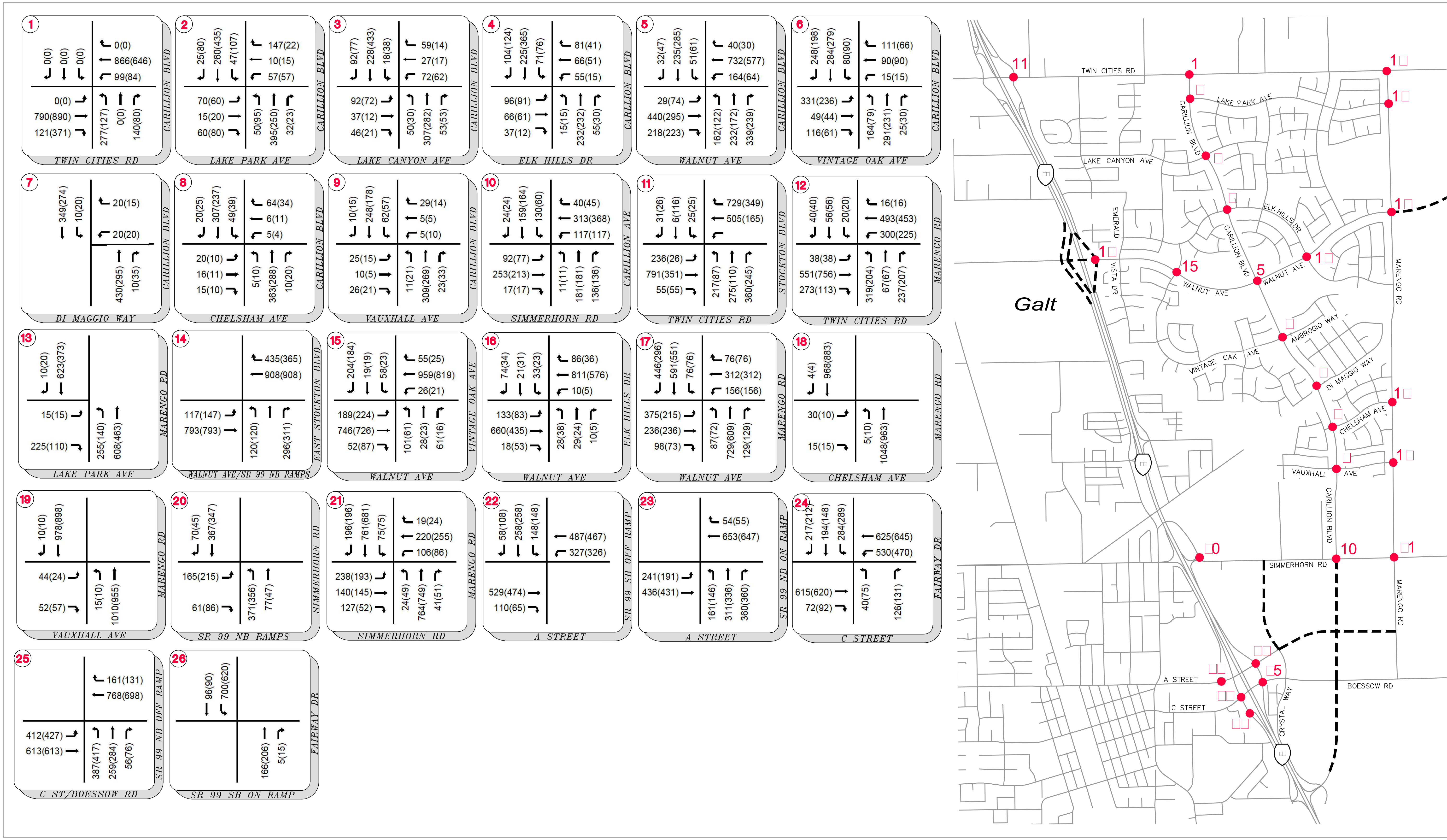
EXISTING CONDITIONS & ALT. 1: STREET VIEW PERSPECTIVES

Project No. 11151293
Report No. 005
Date 08.05.2019

FIGURE 8.4

Source:

Filename: K:\PRJ\2423\2423EX009.dwg
Plot Date: 5 August 2019 - 11:37 AM



LEGEND
XX AM PEAK HOUR TRAFFIC VOLUMES
(XX) PM PEAK HOUR TRAFFIC VOLUMES

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

YEAR 20[illegible]0 WITH ROAD DIET PEAK HOUR VOLUMES

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 8.5

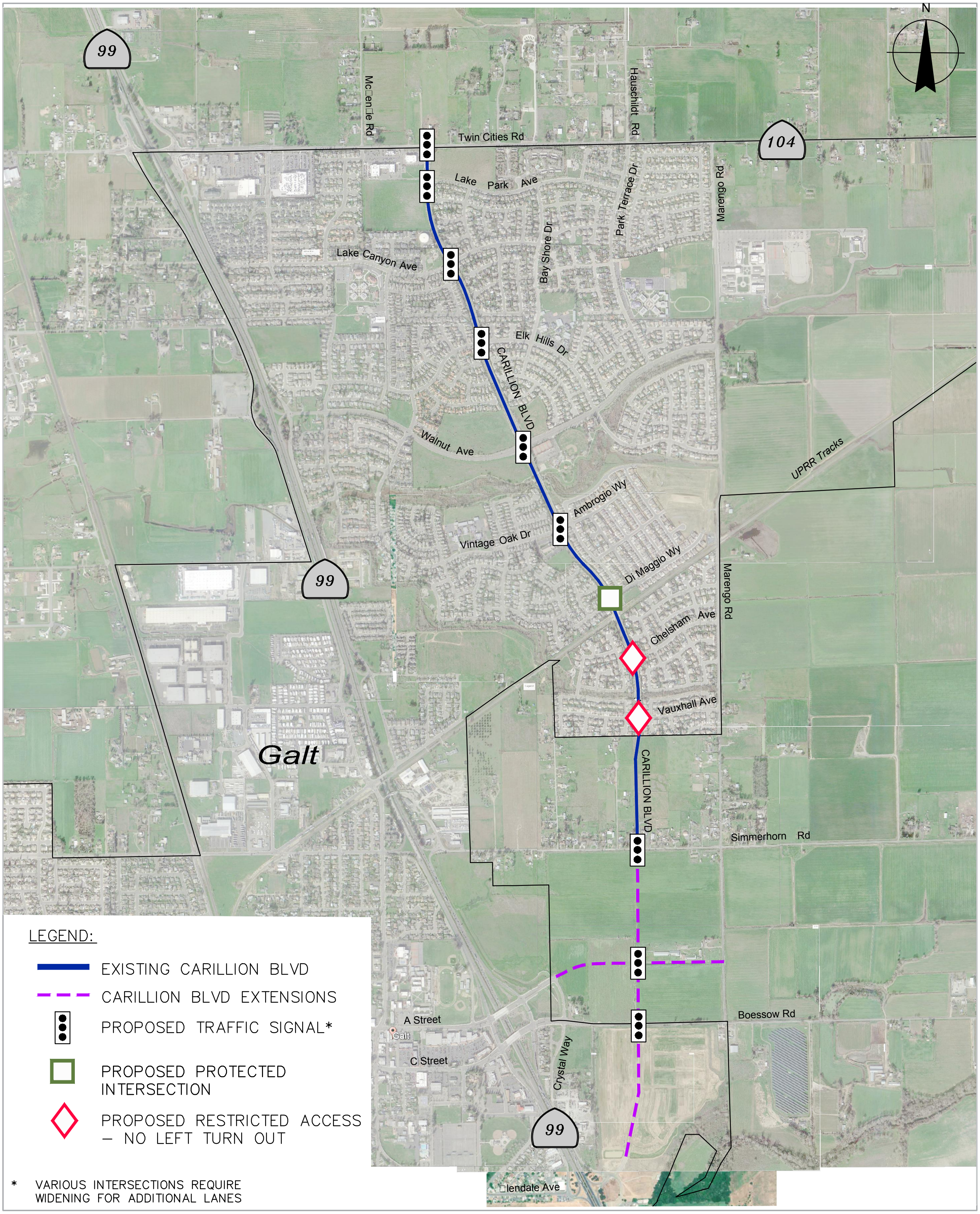
Source:

Filename: K:\PRJ\2423\ 2423\ 2423 001.dwg Plot Date: 24 April 2019

8.2 Alternative 2: Four Lanes with Traffic Signals and Bike Lanes

Alternative 2 propose to retain the four-lane cross-section along Carillion Boulevard, and provide a 6-foot bike lane by reducing the vehicular lanes to 11 feet wide. Constructing traffic signals at most of the intersections along Carillion Boulevard will help to alleviate delays on the side streets. This alternative also proposes to restrict left-turns-out at two unsignalized intersections of Carillion Boulevard at Chelsham Avenue and Carillion Boulevard at Vauxhall Avenue. The intersection of Carillion Boulevard at Di Maggio Way is proposed to be a protected intersection, which will provide separated pedestrian and bicycle facilities to enhance the safety of conflict areas between automobiles, bicycles and pedestrians at the intersection (proposed for both alternatives). Additionally, a mid-block crossing with a Rectangular Rapid Flashing Beacon (RRFB) is proposed north of Vauxhall Avenue (proposed for both alternatives).

Figure 8.6 presents an overview of the intersection improvements along Carillion Boulevard for Alternative 2. Figure 8.7 presents a conceptual layout of the Alternative 2 improvements along Carillion Boulevard. Figure 8.8 presents a perspective and cross-section of Carillion Boulevard with Alternative 1. Figure 8.9 presents the 2040 peak hour traffic volumes at the study intersections for Alternative 2.



LEGEND:

EXISTING CARILLION BLVD

CARILLION BLVD EXTENSIONS

PROPOSED TRAFFIC SIGNAL*

PROPOSED PROTECTED INTERSECTION

PROPOSED RESTRICTED ACCESS – NO LEFT TURN OUT

* VARIOUS INTERSECTIONS REQUIRE WIDENING FOR ADDITIONAL LANES

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

Map o□ Proposed Interse□tion Improvements

Project No. **11151293**
Report No. **-**
Date **03.07.19**

FIGURE 8.□

Filename: K:\PRJ\2423\2423EX00□.dwg Plot Date: 24 April 2019 - □:1□ PM

Source:

LEGEND:

PROPOSED TRAFFIC SIGNAL
– VARIOUS INTERSECTIONS REQUIRE WIDENING FOR ADDITIONAL LANES

CARILLION BLVD IMPROVEMENTS
EXISTING 4-LANE FACILITY
(RE-STRIPE WITH STANDARD BIKE LANE)

500' 0 500'
1 inch = 500 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

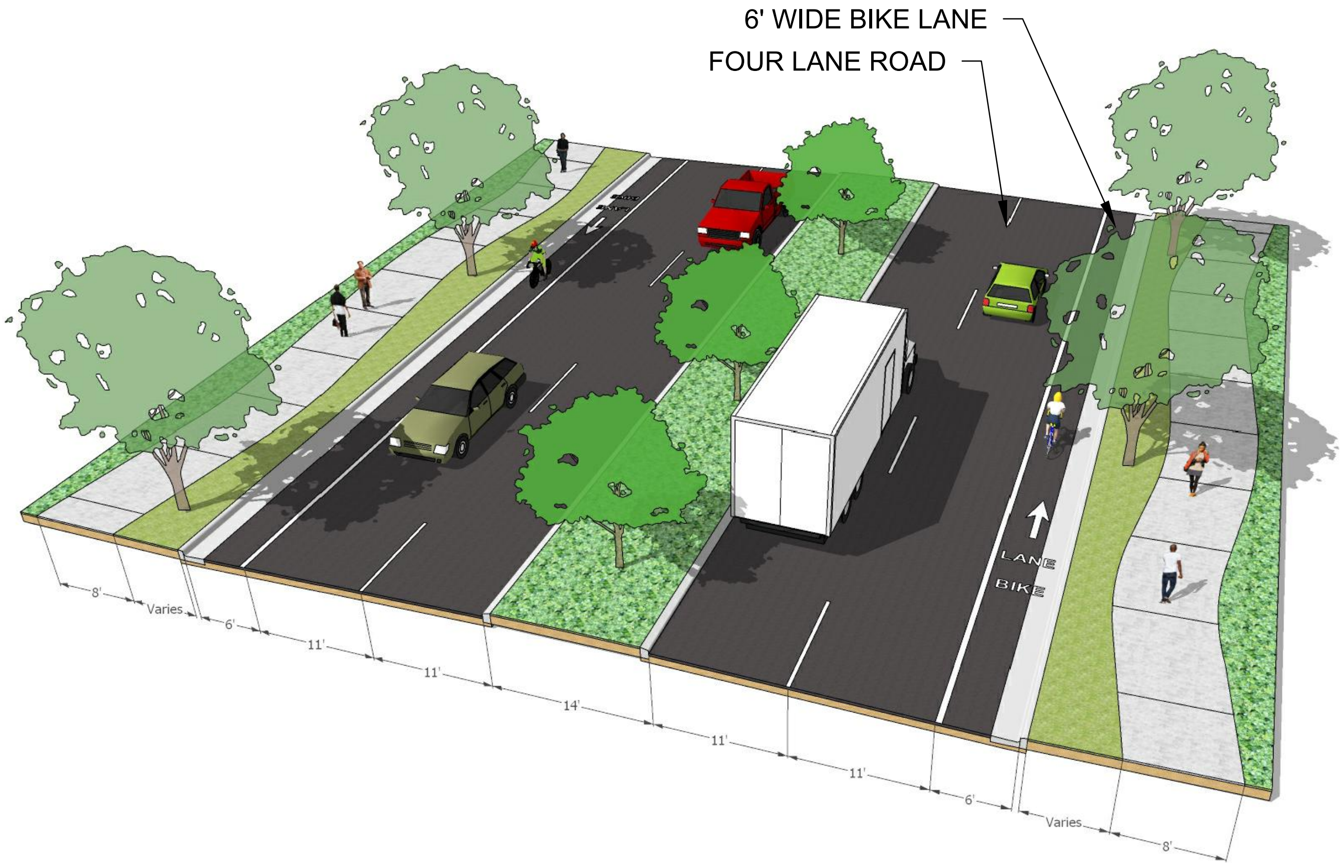
Carillion Blvd Improvements: Twin Cities to Boessow Rd

Project No. 11151293
Report No. -
Date 03.07.19

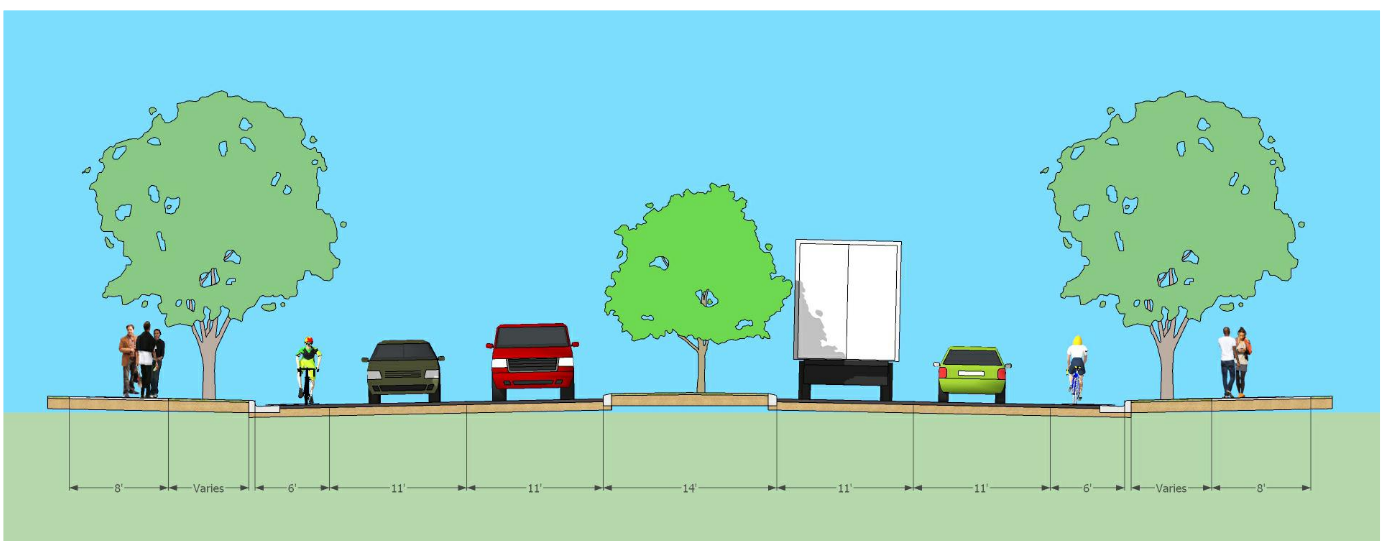
FIGURE 8.7

Source:

Filename: K:\PRJ\2423\2423EX007.dwg Plot Date: 30 August 2019 - 9:51 AM



4 LANES WITH 6' BIKE LANES PERSPECTIVE



4 LANES WITH 6' BIKE LANES CROSS-SECTION

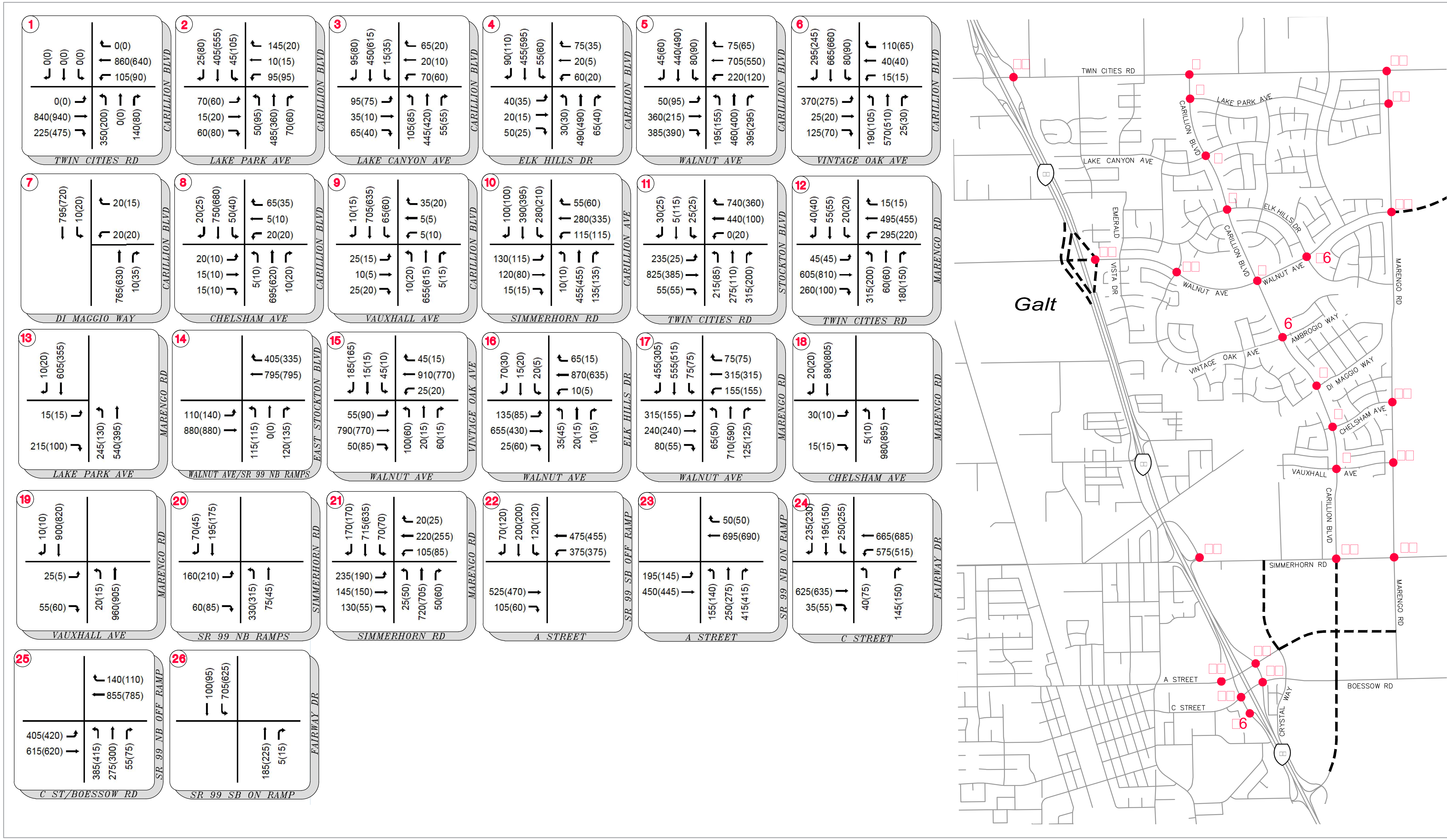
Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

4 LANES WITH 6' BIKE LANES

Project No. **11151293**
Report No. **005**
Date **02.20.2019**

FIGURE 8.8
Source:

Filename: K:\PRJ\2423\2423EX009.dwg
Plot Date: 23 April 2019 - 4:22 PM



LE□END□
□□ □AM □EAK □OUR □RAFFI□ □OLUME□
□XX□ □□M □EAK □OUR □RAFFI□ □OLUME□

N

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

YEAR 2040 PEAK HOUR VOLUMES

Project No. 11151293
Report No. 005
Date 02.19.2019

FIGURE 8.9

Source:

Filename: K:\PRJ\2423\ 2423\ 2423\ 001.dwg Plot Date: 24 April 2019 - □:01 PM

8.3 Operational Comparison of Alternatives

Traffic operations were analyzed for projected 20-year (Year 2040) forecasts for the two alternatives. Table 8.1 presents the comparison of intersection operations for Alternative 1 (Road Diet with Roundabouts) and Alternative 2 (4 Lanes Enhanced with Traffic Signals), under Year 2040 forecasted conditions, for the AM peak hour. Table 8.2 presents the comparison of intersection operations for Alternative 1 (Road Diet with Roundabouts) and Alternative 2 (4 Lanes Enhanced with Traffic Signals), under Year 2040 forecasted conditions, for the PM peak hour.

Table 8.1 Year 2040 Conditions Intersection Operations Alternatives Comparison – AM Peak Hour

			Alternative 1 (Road Diet & Roundabouts)			Alternative 2 (Traffic Signals)		
#	Intersection	Target LOS	Control Type[1,2]	Delay	LOS	Control Type[1,2]	Delay	LOS
1	Twin Cities Rd & Carillion Blvd	D	RNDBT	12.1	B	Signal	11.3	B
2	Carillion Blvd & Lake Park Ave	D	RNDBT	6.8	A	Signal	22.0	C
3	Carillion Blvd & Lake Canyon Ave	D	RNDBT	6.3	A	Signal	19.5	B
4	Carillion Blvd & Elk Hills Dr	D	RNDBT	6.4	A	Signal	16.3	B
5	Carillion Blvd & Walnut Ave	D	RNDBT	9.7	A	Signal	25.1	C
6	Carillion Blvd & Ambrogio Way/Vintage Oak Ave	D	RNDBT	13.3	B	Signal	46.8	D
7	Carillion Blvd & DiMaggio Way	D	TWSC	18.0	C	TWSC	21.8	C
8	Carillion Blvd & Chelsham Ave	D	RNDBT	5.5	A	TWSC	12.0	B
9	Carillion Blvd & Vauxhall Ave	D	RNDBT	5.2	A	TWSC	11.6	B
10	Carillion Blvd & Simmerhorn Rd	D	RNDBT	9.4	A	Signal	33.5	C
11	Twin Cities Rd & Stockton Blvd	D	RNDBT	16.3	B	RNDBT	15.3	B
12	Marengo Rd & Twin Cities Rd	D	Signal	43.5	D	Signal	37.5	D
13	Marengo Rd & Lake Park Ave	D	TWSC	24.9	C	TWSC	22.1	C
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd	E	Signal	14.2	B	Signal	9.8	A
15	Walnut Ave & Vintage Oak Ave	D	Signal	53.3	D	Signal	26.1	C
16	Walnut Ave & Elk Hills Dr	D	Signal	24.0	C	Signal	18.7	B
17	Marengo Rd & Walnut Ave	D	Signal	29.9	C	Signal	21.0	C
18	Marengo Rd & Chelsham Ave	D	TWSC	22.1	C	TWSC	20.4	C
19	Marengo Rd & Vauxhall Rd	D	TWSC	29.8	D	TWSC	23.5	C
20	SR 99 NB Ramps & Simmerhorn Rd	E	RNDBT	8.8	A	RNDBT	6.7	A
21	Marengo Rd & Simmerhorn Rd	D	Signal	48.6	D	Signal	24.2	C
22	SR 99 SB Ramps & Crystal Way/ A Street	E	Signal	10.9	B	Signal	10.9	B

Table 8.1 Year 2040 Conditions Intersection Operations Alternatives Comparison – AM Peak Hour

#	Intersection	Target LOS	Alternative 1 (Road Diet & Roundabouts) Control Type[1,2]	Delay	LOS	Alternative 2 (Traffic Signals) Control Type[1,2]	Delay	LOS
23	SR 99 NB Ramps & Crystal Way	E	Signal	15.6	B	Signal	16.8	B
24	Fairway Dr & C St	E	Signal	49.5	D	Signal	31.2	C
25	SR 99 NB Ramps & C St/Boessow Rd	E	Signal	29.1	C	Signal	44.1	D
26	SR 99 SB Ramps & Fairway Dr	E	Signal	6.3	A	Signal	6.5	A
Notes :								

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control RNDBT = Roundabout
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, Roundabout
3. Warrant = Based on California MUTCD Warrant 3
*4. **Bold** signifies intersections operating beyond acceptable LOS threshold.*

Table 8.2 Year 2040 Conditions Intersection Operations Alternatives Comparison – PM Peak Hour

#	Intersection	Target LOS	Alternative 1 (Road Diet & Roundabouts) Control Type[1,2]	Delay	LOS	Alternative 2 (Traffic Signals) Control Type[1,2]	Delay	LOS
1	Twin Cities Rd & Carillion Blvd	D	RNDBT	8.5	A	Signal	10.7	B
2	Carillion Blvd & Lake Park Ave	D	RNDBT	8.7	A	Signal	22.9	C
3	Carillion Blvd & Lake Canyon Ave	D	RNDBT	7.1	A	Signal	15.8	B
4	Carillion Blvd & Elk Hills Dr	D	RNDBT	7.1	A	Signal	13.3	B
5	Carillion Blvd & Walnut Ave	D	RNDBT	7.5	A	Signal	21.8	C
6	Carillion Blvd & Ambrogio Way/Vintage Oak Ave	D	RNDBT	8.9	A	Signal	24.8	C
7	Carillion Blvd & DiMaggio Way	D	TWSC	13.8	B	TWSC	19.7	C
8	Carillion Blvd & Chelsham Ave	D	RNDBT	4.9	A	TWSC	11.3	B
9	Carillion Blvd & Vauxhall Ave	D	RNDBT	4.9	A	TWSC	11.0	B
10	Carillion Blvd & Simmerhorn Rd	D	RNDBT	8.9	A	Signal	30.3	C
11	Twin Cities Rd & Stockton Blvd	D	RNDBT	5.5	A	RNDBT	5.5	A
12	Marengo Rd & Twin Cities Rd	D	Signal	27.9	C	Signal	23.6	C
13	Marengo Rd & Lake Park Ave	D	TWSC	12.7	B	TWSC	12.2	B
14	SR 99 NB Ramps & Walnut Ave/Stockton Blvd	E	Signal	16.7	B	Signal	9.6	A

Table 8.2 Year 2040 Conditions Intersection Operations Alternatives Comparison – PM Peak Hour

#	Intersection	Target LOS	Alternative 1 (Road Diet & Roundabouts)			Alternative 2 (Traffic Signals)		
			Control Type[1,2]	Delay	LOS	Control Type[1,2]	Delay	LOS
15	Walnut Ave & Vintage Oak Ave	D	Signal	29.1	C	Signal	21.6	C
16	Walnut Ave & Elk Hills Dr	D	Signal	34.1	C	Signal	15.5	B
17	Marengo Rd & Walnut Ave	D	Signal	24.4	C	Signal	20.2	C
18	Marengo Rd & Chelsham Ave	D	TWSC	16.2	C	TWSC	15.2	C
19	Marengo Rd & Vauxhall Rd	D	TWSC	23.2	C	TWSC	18.7	C
20	SR 99 NB Ramps & Simmerhorn Rd	E	RNDBT	8.5	A	RNDBT	6.5	A
21	Marengo Rd & Simmerhorn Rd	D	Signal	34.8	C	Signal	33.4	C
22	SR 99 SB Ramps & Crystal Way/ A Street	E	Signal	10.9	B	Signal	10.8	B
23	SR 99 NB Ramps & Crystal Way	E	Signal	15.4	B	Signal	16.4	B
24	Fairway Dr & C St	E	Signal	42.6	D	Signal	50.9	D
25	SR 99 NB Ramps & C St/Boessow Rd	E	Signal	23.5	C	Signal	34.3	C
26	SR 99 SB Ramps & Fairway Dr	E	Signal	6.4	A	Signal	6.5	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control RNDBT = Roundabout

2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, Roundabout

3. Warrant = Based on California MUTCD Warrant 3

*4. **Bold** signifies intersections operating beyond acceptable LOS threshold.*

As shown in Tables 8.1 and 8.2, under projected 2040 conditions, both Alternative 1 (Road Diet with Roundabouts) and Alternative 2 (Traffic Signals) provide adequate capacity for automobiles at the intersection level. Overall, the roundabouts present less intersection delays compared to the traffic signals. **The preferred alternative, from an intersection operations standpoint is Alternative 1(Road Diet with Roundabouts).**

8.3.1 Travel Time Analysis

As presented in the existing conditions analysis, the average travel times ranged between 3:30 minutes and 4:00 minutes for all peak hours in both directions, presenting a fairly consistent travel time along the corridor currently. With the addition of forecasted traffic for Year 2040, and with implementation of additional or altered intersection controls, travel times along Carillion Boulevard are projected to increase and speeds are projected to decrease, on average. With implementation of Alternative 1 (Road Diet with Roundabouts), travel times for Carillion Boulevard are projected to range between 5:30 minutes and 6:15 minutes. With implementation of Alternative 2 (4 Lanes with Traffic Signals), travel times for Carillion Boulevard are projected to range between 6:00 minutes and 7:30 minutes. Table 8.3 presents a summary of the travel times along Carillion Boulevard, comparing the two alternatives.

Table 8.3 Travel Times Alternatives Comparison

	AM Peak Hour		PM Peak Hour	
	NB	SB	NB	SB
Scenario:	*Alternative 1 (Road Diet with Roundabouts)*			
Running Time	04:36	04:22	04:37	04:22
Control Delay	01:35	01:12	01:08	01:12
Total Travel Time	06:11	05:33	05:44	05:34
Scenario:	*Alternative 2 (4 Lanes with Traffic Signals)*			
Running Time	04:09	03:45	03:40	03:31
Control Delay	03:21	03:08	02:06	02:31
Total Travel Time	07:30	06:53	05:46	06:02

The travel times and overall delays experienced along the Carillion Boulevard corridor for Alternative 1 are lower than Alternative 2. With traffic signals, more delays are experienced at the intersections than with roundabouts. Alternative 1 results in less travel time corridor-wide. Although implementation of roundabouts presents traffic calming through intersections and along the corridor, less control delay (delay at intersections due to the intersection control) is experienced traveling through a roundabout compared to a traffic signal. **The preferred alternative, from a corridor-wide travel time standpoint is Alternative 1 (Road Diet with Roundabouts).**

8.3.2 Bicycle Level of Traffic Stress (LTS)

Alternative 1 proposes to install a buffered bike lane in each direction along the length of Carillion Boulevard. Alternative 2 proposes to install standard 6' bike lanes along the length of Carillion Boulevard. Both alternatives provide a continuous bicycle network along Carillion Boulevard. However, the greater separation the bicycles have from automobiles results in a less stressful environment. Alternative 1 results in the segment score improving to LTS 2. Alternative 2 results in the segment score remaining at LTS 3. The roundabouts proposed for Alternative 1 will also provide bike ramps and separated paths for cyclists to safely navigate the roundabouts. This results in improving the intersection crossing and approach scores to LTS 1.

Similarly, pedestrians will also experience less stress from motorized traffic, with further separation from vehicles. The roundabouts proposed in Alternative 1 will also provide safer crossings for pedestrians, with median refuges, and significantly less crossing distances. **The preferred alternative from a bicycle and pedestrian LTS standpoint, is Alternative 1 (Road Diet with Roundabouts).**

8.3.3 Safety Benefits

Alternative 1 (Road Diet with Roundabouts) provides safer pedestrian and bicycle facilities, especially at the intersections, where motorists and non-motorists interact. Based on the historical collision data, 66.7% of the collisions along Carillion Boulevard occurred at intersections. Installing roundabouts is a proven safety countermeasure for intersections which experience a high frequency of more severe collision types such as broadside or left-turn type collisions. Installing traffic signals can also be used to prevent the most severe collision types, however, they can lead to more rear-end collision types and more congestion.

With the implementation of a road diet and roundabouts, pedestrians and bicyclists cross one lane at a time, with a median refuge provided on all approaches. With traffic signals, pedestrians and bicyclists must cross multiple lanes of traffic at once, and median refuges may not be present. Alternative 1 provides safer and shorter crossings for pedestrians and bicycles at intersections.

Alternative 1 presents a systemic approach to implementing safety countermeasures along Carillion Boulevard while still maintaining the capacity demands of motorized travel. Alternative 1 results in lower vehicular speeds through the intersections, less intersection delays, and therefore less greenhouse gas emissions due to idling vehicles, compared to the traffic signal alternative.

The preferred alternative, from a corridor-wide safety standpoint is Alternative 1 (Road Diet with Roundabouts).

9. Cost Estimates

A series of planning-level cost estimates have been prepared for the two alternative concepts for the Complete Street improvements along Carillion Boulevard. The preliminary cost estimates are included in **Appendix F**. The sources used for the creation of these cost estimates are the 2018 Contract Cost Data provided by the State of California Department of Transportation, Caltrans, and recent bid summary results of recent projects to determine the unit costs. The cost estimates are necessary to determine the funding required for either alternative concept.

All cost estimates include the cost of preliminary project design and approval, environmental considerations, final design, construction, administration, right-of-way, and construction management and inspection. Construction costs include basic roadway construction items such as paving, storm drainage, lighting, signing, and striping. Table 9.1 provides a summary of the cost estimates for each alternative. These cost estimates for each alternative have been separated into two components, a cost to retrofit the segment of Carillion Boulevard within the current City Limits that was improved to four lanes as a part of the Northeast Galt Specific Plan Communities Facilities District (CFD) and the segment south of Vauxhall Lane that currently remains in Sacramento County. As indicated, the retrofit portions within the City Limits for Alternatives 1 and 2 vary in cost substantially. The estimated cost, within the City Limits, for Alternative 1 is $17.1 million and for Alternative 2, the cost is $5.0 million. Within the County, where Carillion Boulevard will need to be widened and/or extended with new intersections, estimated costs for these segments will be more similar, at $16.9 million for Alternative 1 and $14.2 million for Alternative 2. Total estimated costs for these alternatives will therefore be $34 million for Alternative 1 and $19.2 million for Alternative 2.

Table 9.1 Cost Estimates for Alternatives

Alternative	Construction Costs	Right of Way	Support Costs	Total Project Cost
Alternative 1 Retrofit	$13,490,000	$172,000	$3,419,000	$17,081,000
Alternative 1 New Growth Area (County)	$10,470,000	$3,030,000	$3,376,000	$16,876,000

Alternative 1 Total	**$23,960,000**	**$3,202,000**	**$6,795,000**	**$33,957,000**
Alternative 2 Retrofit	$3,990,000	$0	$1,002,000	$4,992,000
Alternative 2 New Growth Area (County)	$8,640,000	$2,718,000	$2,880,000	$14,238,000
Alternative 2 Total	**$12,630,000**	**$2,718,000**	**$3,882,000**	**$19,230,000**

These above estimated costs for these alternatives have been separated into these two components of “Retrofit” and “New Growth” because the future funding of these improvements might be significantly different. For the “Retrofit” component, which is the segment of Carillion Boulevard already in the City, various funding options and grants might be available to future enhance Carillion Boulevard as a “Complete Street” and active transportation corridor. For the “New Growth” component, new development will have more direct responsibility for widening and extending the arterial roadways and improving major intersections through a variety of funding methods, from payment of Transportation Impact Fees (TIF), participation in a possible Community Facility District (CFD) and/or direct payment for frontage improvements. Additionally, if opportunity for grant funding support is available, that source of funding would also be pursued.

10. Corridor Plan Recommendation

Upon comparison between the above two alternatives, based on the above and following criteria; 2040 Intersection Operations (LOS), travel time, bicycle and pedestrian Levels of Traffic Stress (LTS), and safety benefits, Alternatives 1 - Road Diet and Roundabouts is recommended over Alternative 2 to be the **Preferred Corridor Plan.** This analysis found that Alternative 1 established the following findings:

- Achieves the best acceptable intersection operations from a Level of Service standpoint, both currently and through the Year 2040.
- Achieves the least corridor travel time along Carillion Boulevard overall, with slower and safer mid-block travel speeds and less intersection delays.
- Achieves the highest comfort levels for walking and cycling along the corridor with the best Levels of Traffic Stress (LTS) values.
- Achieves the highest corridor-wide safety standing by reducing speeds, creating greater separation of travel modes and providing roundabouts at intersections, which have been proven to reduce overall collisions and collision severity.

In summary, the **Preferred Corridor Plan** for Carillion Boulevard presents a systemic approach to encouraging neighborhood friendly, active transportation modes, reduce speeding and vehicle emissions, while enhancing safety and meeting the capacity demands to achieve efficient motorized travel.

Appendices

Appendix A
Technical Analysis Methodologies and Policies

Appendix A Technical Analysis Methodologies and Policies

The following section outlines the methodology and analysis parameters used to quantify the measures of effectiveness on study intersections for the analysis scenarios.

Level of Service Methodologies

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, representing progressively worsening traffic operations as determined by vehicle delay or congestion. LOS “A” represents free-flow operating conditions and LOS “F” represents over-capacity conditions. Levels of Service were calculated for all study intersection control types using the methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Sixth Edition, A Guide for Multimodal Mobility Analysis, 2016* (HCM 6).

Intersection LOS Methodologies

Level of Service (LOS) was calculated for all intersection control types using the methods documented in the HCM 6. For a signalized or all-way stop-controlled (AWSC) intersection, an LOS determination is based on the calculated averaged delay for all approaches and movements. For a two-way or one-way (T-intersection) stop controlled (TWSC) intersection, an LOS determination is based upon the calculated average delay for all movements of the worst-performing approach. The Synchro 10 (Trafficware) software program was used to implement the HCM 6 and Synchro analysis methodologies. Synchro 10 has the capability to produce results using HCM 2000, HCM 2010, and HCM 6 methodologies, as well as Synchro methodology, and takes into account intersection signal timing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. For intersections with channelized free right-turn movements which by-pass the intersection, HCM methodologies consider that vehicles using a free right turn movement will not contribute to vehicle delay at an intersection. The Synchro 10 outputs can be found in the Appendix. The vehicular delay-based LOS criteria for different types of intersection control are outlined in Table A.1.

Table A.1 Level of Service (LOS) Criteria for Intersections

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle		
				Signalized	Un-signalized	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	<10.0	<10.0	<10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and <20.0	>10.0 and <15.0	>10.0 and <15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and <35.0	>15.0 and <25.0	>15.0 and <25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and <55.0	>25.0 and <35.0	>25.0 and <35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and <80.0	>35.0 and <50.0	>35.0 and <50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	>80.0	>50.0	>50.0

Agency LOS Guidelines and Policies

City of Galt LOS Guidelines

The City of Galt 2030 General Plan contains the following Level of Service Policies pertinent to this study:

> **Policy C-1.3: Levels of Service:** *The City should develop and manage its roadway system to maintain LOS "E" on all streets and intersections within a quarter-mile of State Route 99, along A Street and C Street between State Route 99 to the railroad tracks, and along Lincoln Way between Pringle Avenue to Meladee Lane. The City should develop a LOS "D" or better on all other streets and intersections.*

Caltrans LOS Guidelines

Caltrans' Guide for the Preparation of Traffic Impact Studies contains the following policy pertaining to the LOS standards within Caltrans jurisdiction:

> *Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.*

For the purpose of this study, the City's LOS criteria are applied for all SR 99 Ramp intersections. Therefore, these intersections were analyzed at a threshold level of service of LOS E.

Technical Analysis Parameters and Assumptions

This section presents the technical parameters assumed for the evaluation of the study intersections for the analysis scenarios. All parameters not listed should be assumed as default or calculated values based on HCM methodology.

Table A.2 Technical Parameter Assumptions

Technical Parameters	Assumption
1. Intersection Peak Hour Factor (PHF)	Intersection Overall, based on Existing Counts
2. Intersection Heavy Vehicle Percentage	Intersection Overall, based on Existing Counts, min. 2%
3. Signal Timings	Based on current Caltrans signal timing plans
4. Grades	2% or less at all intersections

Warrant Analysis

A supplemental traffic signal "warrant" analysis was completed for unsignalized intersections determined to be operating at an unacceptable LOS. The term "signal warrant" refers to the list of established criteria used by public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection. This study has employed the signal warrant criteria presented in the latest edition of the California Manual on Uniform Traffic Control Devices (MUTCD) for all unsignalized study intersection.

The California MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this study utilizes the peak hour volume-based Warrant 3 as one representative type of traffic signal warrant analysis. It should be noted that the Peak Hour Volume Warrant was only applied when the intersection was found to be operating at an unacceptable LOS. Therefore, there may be instances when the unsignalized intersection operates at acceptable LOS conditions but still meets the Peak Hour Volume Warrant.

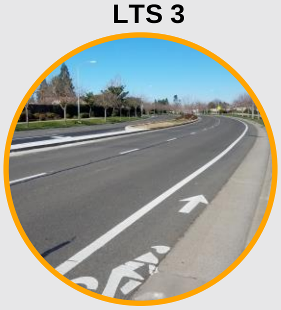
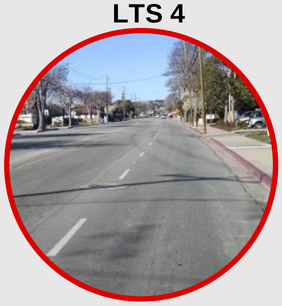
Bicycle Level of Traffic Stress (LTS) Methodology

The standardized methods used for the Bicycle Level of Traffic Stress (LTS) Analysis were adapted from the 2016 Oregon Department of Transportation (ODOT) *Analysis Procedure Manual, Version 2*. The original methodology can be obtained from the paper, “Low Stress Bicycling and Network Connectivity”, Mineta Transportation Institute, Report 11-19, May 2012. Bicycle LTS is generally a perception-based rating system of the safety, comfort, and convenience of transportation facilities from the perspective of the user. The approach outlined in the ODOT manual uses roadway network data, including the posted speed limit, number of travel lanes, and presence and character of bicycle lanes as a proxy for bicyclist comfort level in urban context, and ADT and shoulder or bike lane width in rural settings. The Bicycle LTS methodology breaks road segments into one of four classifications or ratings for measuring the effects of traffic-based stress on bicycle riders, with 1 being the lowest stress or most comfortable, and 4 being the highest stress or least comfortable.

LTS 1 is assigned to roads that would be suitable for most children to ride, and to multi-use paths that are separated from motorized traffic. LTS 2 is assigned to roads that could be comfortably ridden by the average adult population. LTS 3 is the level assigned to roads that would be acceptable to current “enthused and confident” cyclists while LTS 4 is assigned to segments that are only acceptable to “strong and fearless” bicyclists, who will tolerate riding on roadways with higher motor traffic volumes and speeds. Further separation generally means less stress for users. Examples and descriptions for each level of traffic stress are presented in Table A.3.

The Bicycle LTS methodology is broken into three categories: segments (along), intersection approaches (turn lanes), and intersection crossings (unsignalized). Table-based criteria are applied separately for each category. Depending on the community context and the detail level desired, the overall methodology can usually be simplified based on the general consistency of facility types, as certain elements (i.e. no turn lanes, no bike lanes, limited speeds, etc.) may not exist in a particular community. If there are no turn lanes on an approach, then this portion of the methodology is skipped. Signalized intersections do not receive an LTS score. Signalized crossings usually do not create a barrier as the signal provides a protected way across and are not considered in the methodology.

Table A.3 Bicycle Level of Traffic Stress (LTS) Criteria

LTS Score	Description
LTS 1  Comfortable for all ages and abilities	Represents little traffic stress and requires less attention, so is suitable for all cyclists. This includes children that are trained to safely cross intersections (around 10 yrs. old/5th grade) alone and supervising riding parents of younger children. Generally, the age of 10 is the earliest age that children can adequately understand traffic and make safe decisions which is also the reason that many youth bike safety programs target this age level. Traffic speeds are low and there is no more than one lane in each direction. Intersections are easy to cross by children and adults. Typical locations include residential local streets and separated bike paths/cycle tracks.
LTS 2  Comfortable for most adults	Represents little traffic stress but requires more attention than young children can handle, so is suitable for teen and adult cyclists with adequate bike handling skills. Traffic speeds are slightly higher but speed differentials are still low and roadways can be up to three lanes wide in total for both directions. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district.
LTS 3  Comfortable for confident bicyclists	Represents moderate stress and suitable for most observant adult cyclists. Traffic speeds are moderate but can be on roadways up to five lanes wide in both directions. Intersections are still perceived to be safe by most adults. Typical locations include low-speed arterials with bike lanes or moderate speed non-multilane roadways.
LTS 4  Uncomfortable for most	Represents high stress and suitable for experienced and skilled cyclists. Traffic speeds are moderate to high and can be on roadways from two to over five lanes wide in both directions. Intersections can be complex, wide, and or high volume/speed that can be perceived as unsafe by adults and are difficult to cross. Typical locations include high speed or multilane roadways with narrow or no bike lanes.

Source: "Low Stress Bicycling and Network Connectivity", Mineta Transportation Institute, Report 11-19, May 2012.

All roadways received a segment score. However, not all roadways received an approach or intersection crossing score. For example, a midblock portion of a street link received a segment score, but because it does not intersect another street, nor does it have turn lanes, neither an intersection nor approach score was assigned. The methodology uses the worst overall LTS value of each LTS category. For example, if a segment has a LTS 2 but there is an intersection approach at the end of the segment at LTS 4, then the whole segment is considered at LTS 4. The same applies for entire routes, which are typically reported in a single direction between two points of interest and can contain many segments and intersections. It is likely that the LTS will be different (i.e. right turn lane vs. left turn lane) in the two directions, so both directions should be reported.

Table A.4 and Table A.5 present the scoring criteria for segments, Table A.6 and Table A.7 present the scoring criteria for approaches, and Table A.8 and Table A.9 present the scoring criteria for crossing intersections. All tables are directly sourced from the ODOT *Analysis Procedure Manual*, Version 2, 2016. Additionally, only those tables from the ODOT manual that are applicable to the unique geometry of Carillion Boulevard are presented within this report.

Table A.4 Segment Criteria – Bike Lane Without Adjacent Parking Lane

	1 Lane per Direction				≥ 2 Lanes per Direction	
Prevailing or Posted Speed Limit (mph)	≥ 7' (Buffered bike lane)	5.5 – 7' Bike lane	≤ 5.5' Bike lane	Frequent bike lane blockage[1]	≥ 7' (Buffered bike lane)	< 7' Bike lane or frequent blockage[1]
≤ 30	LTS 1	LTS 1	LTS 2	LTS 3	LTS 1	LTS 3
35	LTS 2	LTS 3	LTS 3	LTS 3	LTS 2	LTS 3
≥ 40	LTS 3	LTS 4	LTS 4	LTS 4	LTS 3	LTS 4

1 Typically occurs in urban areas (i.e. delivery trucks, parking maneuvers, stopped buses).

Table A.5 Urban/Suburban Segment Criteria – Mixed Traffic

Prevailing or Posted Speed Limit (mph)	Unmarked Centerline	1 Lane per Direction	2 Lanes per Direction	3+ Lanes per Direction
≤ 25[1]	LTS 1	LTS 2	LTS 3	LTS 4
35	LTS 2	LTS 3	LTS 4	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4	LTS 4

1 Presence of "sharrow" markings may reduce the LTS by a level for 25 mph or less sections depending on overall area context.

Table A.6 Approach Criteria – Right Turn Lane

Right-turn lane configuration	Right-turn lane length (ft)	Bike Lane Approach Alignment[2]	Vehicle Turning Speed (mph)[3]	LTS
Single	≤ 150	Straight	≤ 15	2
Single	>150	Straight	≤ 20	3
Single	Any	Left	≤ 15	3
Single[1] or Dual Exclusive/ Shared	Any	Any	Any	4
1 Any other single right turn lane configuration not shown above. 2 The right turn criteria are based on whether the bike lane stays straight or shifts to the left. 3 This is vehicle speed at the corner, not the speed crossing the bike lane. Corner radius can also be used as a proxy for turning speeds.				

Table A.7 Approach Criteria – Left Turn Lane

Left Turn Lane Criteria Prevailing Speed or Speed Limit (mph)	No lane crossed1	1 lane crossed	2+ lanes crossed	Dual shared or exclusive left turn lane2
≤25	LTS 2	LTS 2	LTS 3	LTS 4
30	LTS 2	LTS 3	LTS 4	LTS 4
≥ 35	LTS 3	LTS 4	LTS 4	LTS 4
1 For shared through left lanes or where mixed traffic conditions occur (no bike lanes) 2 Any other single left turn lane configuration not shown above.				

Table A.8 Intersection Crossing Without a Median Refuge[1]

Prevailing or Posted Speed Limit (mph)	Total Lanes Crossed (Both Directions)		
	≤ 3 Lanes	4 -5 Lanes	≥ 6 Lanes
≤ 25	LTS 1	LTS 2	LTS 4
30	LTS 1	LTS 2	LTS 4
35	LTS 2	LTS 3	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4
[1] For street being crossed.			

Table A.9 Intersection Crossing With a Median Refuge[1]

Prevailing or Posted Speed Limit (mph)	Maximum Through/Turn Lanes Crossed per Direction		
	1-2 Lanes	2-3 Lanes	4+ Lanes
≤ 25	LTS 1	LTS 1	LTS 2
30	LTS 1	LTS 2	LTS 3
35	LTS 2	LTS 3	LTS 4
≥ 40	LTS 3	LTS 4	LTS 4

[1] For street being crossed.

[2] Refuge should be at least 10 feet to accommodate a wide range of bicyclists (i.e. bicycle with a trailer) for LTS 1, otherwise LTS=2 for refuges 6 to <10 feet.

Appendix B
Existing Data Collection

Metro Traffic Data Inc.

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

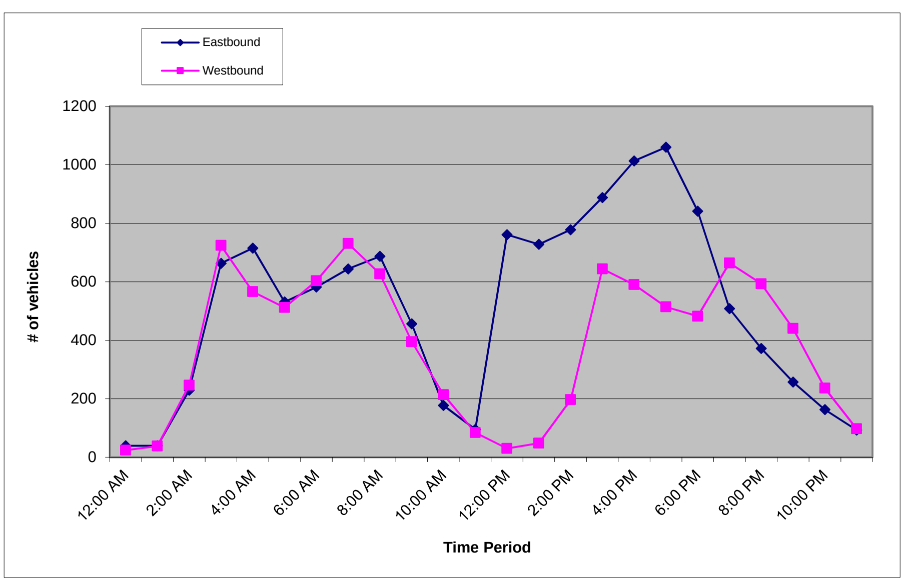
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION	Twin Cities Road - East of Stockton Blvd	**LATITUDE**	38.2910503
COUNTY	Sacramento	**LONGITUDE**	-121.3105483
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear
NUMBER OF LANES	4		

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	13	13	11	2	**39**	7	7	4	6	**24**	**63**
1:00 AM	8	7	8	16	**39**	13	4	9	12	**38**	**77**
2:00 AM	26	41	63	99	**229**	28	42	80	96	**246**	**475**
3:00 AM	131	189	152	191	**663**	143	167	168	246	**724**	**1387**
4:00 AM	272	157	140	146	**715**	173	135	132	126	**566**	**1281**
5:00 AM	134	126	134	137	**531**	107	129	136	140	**512**	**1043**
6:00 AM	125	130	167	160	**582**	140	139	151	173	**603**	**1185**
7:00 AM	166	161	155	162	**644**	218	175	166	172	**731**	**1375**
8:00 AM	190	174	166	157	**687**	177	138	167	145	**627**	**1314**
9:00 AM	166	116	106	68	**456**	124	108	79	84	**395**	**851**
10:00 AM	60	37	41	39	**177**	63	57	53	41	**214**	**391**
11:00 AM	39	21	16	19	**95**	38	23	16	7	**84**	**179**
12:00 PM	217	169	180	195	**761**	7	12	8	3	**30**	**791**
1:00 PM	186	182	177	183	**728**	11	9	11	17	**48**	**776**
2:00 PM	170	204	199	205	**778**	17	34	52	94	**197**	**975**
3:00 PM	239	197	214	238	**888**	111	158	154	221	**644**	**1532**
4:00 PM	253	232	261	267	**1013**	220	124	125	121	**590**	**1603**
5:00 PM	295	267	284	214	**1060**	124	129	134	127	**514**	**1574**
6:00 PM	237	236	180	188	**841**	117	93	131	141	**482**	**1323**
7:00 PM	155	141	109	103	**508**	129	161	189	185	**664**	**1172**
8:00 PM	89	98	111	74	**372**	147	161	137	148	**593**	**965**
9:00 PM	73	79	55	50	**257**	132	108	113	87	**440**	**697**
10:00 PM	44	38	49	32	**163**	81	54	50	51	**236**	**399**
11:00 PM	30	21	24	18	**93**	41	27	19	10	**97**	**190**
Total	**57.0%**				**12319**	**43.0%**				**9299**	
	21618										

AM%	**44.5%**	**AM Peak 1558**	**3:15 am to 4:15 am**	**AM P.H.F. 0.88**
PM%	**55.5%**	**PM Peak 1674**	**3:45 pm to 4:45 pm**	**PM P.H.F. 0.88**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

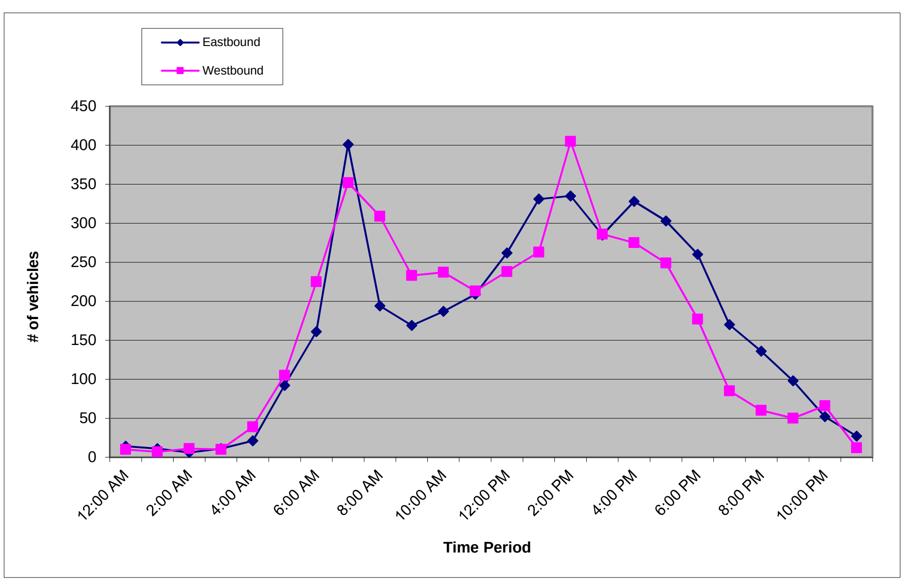
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Twin Cities Road – West of Marengo Road
LATITUDE 38.2912713
COUNTY Sacramento
LONGITUDE -121.2850097
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	3	4	1	6	**14**	1	3	4	2	**10**	**24**
1:00 AM	6	1	4	0	**11**	4	0	0	3	**7**	**18**
2:00 AM	3	0	1	2	**6**	7	1	2	1	**11**	**17**
3:00 AM	4	1	2	4	**11**	1	3	3	3	**10**	**21**
4:00 AM	6	7	4	4	**21**	9	7	8	15	**39**	**60**
5:00 AM	14	33	28	17	**92**	18	22	27	38	**105**	**197**
6:00 AM	19	51	47	44	**161**	55	68	55	47	**225**	**386**
7:00 AM	41	69	132	159	**401**	41	58	96	157	**352**	**753**
8:00 AM	52	54	49	39	**194**	129	75	39	66	**309**	**503**
9:00 AM	43	46	31	49	**169**	60	56	59	58	**233**	**402**
10:00 AM	50	50	40	47	**187**	60	46	62	69	**237**	**424**
11:00 AM	54	43	55	57	**209**	51	51	52	59	**213**	**422**
12:00 PM	66	68	58	70	**262**	76	51	59	52	**238**	**500**
1:00 PM	75	99	72	85	**331**	50	48	100	65	**263**	**594**
2:00 PM	90	102	73	70	**335**	147	114	69	75	**405**	**740**
3:00 PM	59	80	73	73	**285**	59	80	66	81	**286**	**571**
4:00 PM	72	72	97	87	**328**	83	80	54	58	**275**	**603**
5:00 PM	76	86	75	66	**303**	64	70	59	56	**249**	**552**
6:00 PM	56	76	63	65	**260**	72	39	35	31	**177**	**437**
7:00 PM	61	48	42	19	**170**	22	16	23	24	**85**	**255**
8:00 PM	20	43	35	38	**136**	24	12	12	12	**60**	**196**
9:00 PM	30	32	18	18	**98**	12	10	13	15	**50**	**148**
10:00 PM	18	9	12	13	**52**	25	24	13	4	**66**	**118**
11:00 PM	6	5	8	8	**27**	5	1	6	0	**12**	**39**
Total	**50.9%**				**4063**	**49.1%**				**3917**	
	7980										

AM%	**40.4%**	**AM Peak 854**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.68**
PM%	**59.6%**	**PM Peak 775**	**1:30 pm to 2:30 pm**	**PM P.H.F.**	**0.82**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

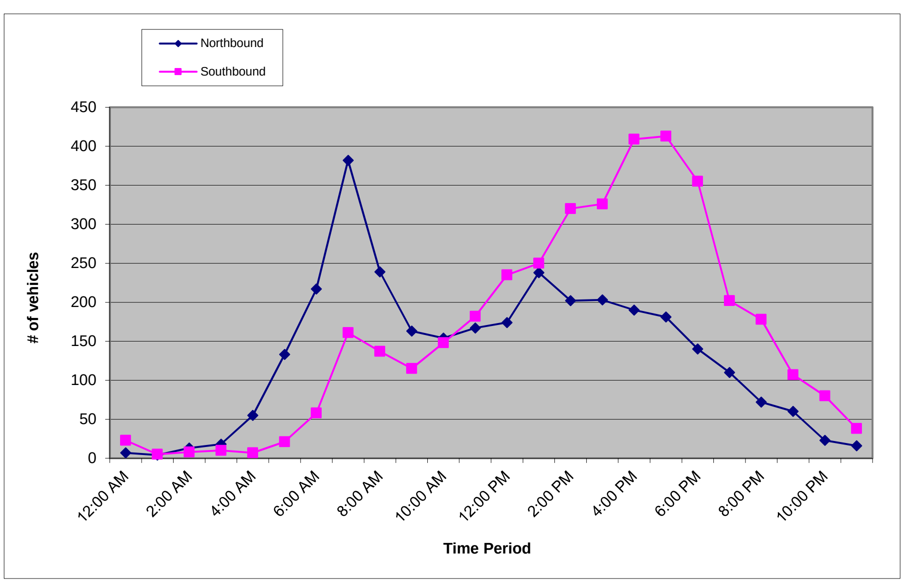
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Carillion Blvd – South of Twin Cities Road
LATITUDE 38.2903282
COUNTY Sacramento
LONGITUDE -121.297773
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 4

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	1	2	1	3	**7**	8	4	9	2	**23**	**30**
1:00 AM	2	0	1	1	**4**	0	2	1	2	**5**	**9**
2:00 AM	2	6	2	3	**13**	4	2	2	0	**8**	**21**
3:00 AM	2	4	6	6	**18**	5	2	1	2	**10**	**28**
4:00 AM	8	10	19	18	**55**	0	2	2	3	**7**	**62**
5:00 AM	23	31	42	37	**133**	1	6	7	7	**21**	**154**
6:00 AM	41	61	66	49	**217**	10	12	12	24	**58**	**275**
7:00 AM	69	84	97	132	**382**	24	28	44	65	**161**	**543**
8:00 AM	101	59	46	33	**239**	44	42	23	28	**137**	**376**
9:00 AM	46	35	36	46	**163**	31	25	29	30	**115**	**278**
10:00 AM	44	38	23	49	**154**	33	39	30	46	**148**	**302**
11:00 AM	37	41	48	41	**167**	35	51	41	55	**182**	**349**
12:00 PM	38	45	53	38	**174**	62	42	57	74	**235**	**409**
1:00 PM	64	74	54	46	**238**	69	51	64	66	**250**	**488**
2:00 PM	50	49	48	55	**202**	75	87	90	68	**320**	**522**
3:00 PM	38	50	48	67	**203**	79	73	90	84	**326**	**529**
4:00 PM	43	53	46	48	**190**	103	95	101	110	**409**	**599**
5:00 PM	36	44	49	52	**181**	87	119	112	95	**413**	**594**
6:00 PM	47	27	33	33	**140**	97	97	79	82	**355**	**495**
7:00 PM	31	36	15	28	**110**	66	57	38	41	**202**	**312**
8:00 PM	24	12	16	20	**72**	54	51	38	35	**178**	**250**
9:00 PM	18	7	12	23	**60**	34	32	20	21	**107**	**167**
10:00 PM	6	6	3	8	**23**	26	21	19	14	**80**	**103**
11:00 PM	4	1	5	6	**16**	14	8	8	8	**38**	**54**
Total	**45.5%**				**3161**	**54.5%**				**3788**	
	6949										

AM%	**34.9%**	**AM Peak 595**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.76**
PM%	**65.1%**	**PM Peak 605**	**4:45 pm to 5:45 pm**	**PM P.H.F.**	**0.93**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

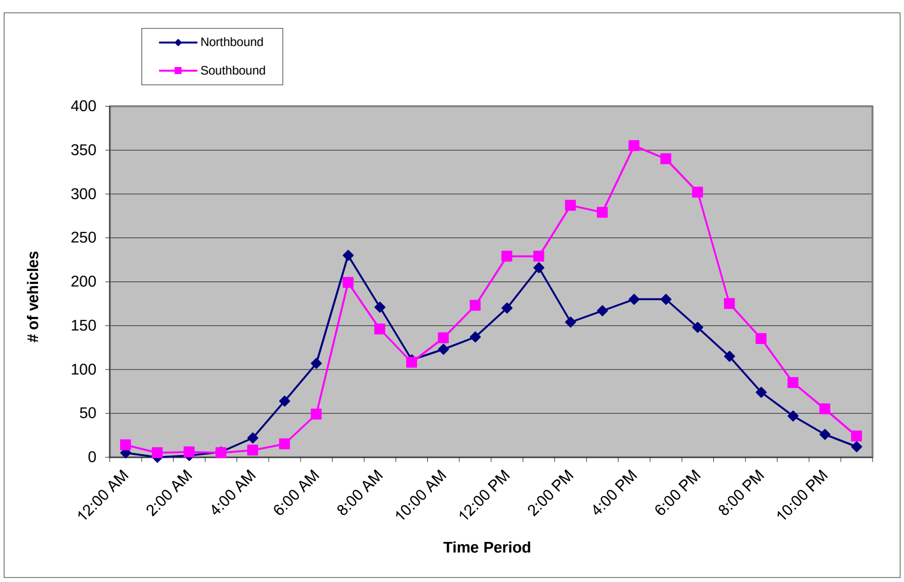
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Carillion Blvd – North of Elk Hills Road
LATITUDE 38.2839722
COUNTY Sacramento
LONGITUDE -121.2953684
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 4

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	0	1	0	4	**5**	4	6	3	1	**14**	19
1:00 AM	0	0	0	0	**0**	1	1	1	2	**5**	5
2:00 AM	0	1	1	0	**2**	1	2	3	0	**6**	8
3:00 AM	0	2	2	2	**6**	1	1	1	2	**5**	11
4:00 AM	3	4	5	10	**22**	1	3	3	1	**8**	30
5:00 AM	11	9	23	21	**64**	3	0	5	7	**15**	79
6:00 AM	24	27	33	23	**107**	6	16	7	20	**49**	156
7:00 AM	40	49	65	76	**230**	25	35	51	88	**199**	429
8:00 AM	70	39	34	28	**171**	62	33	24	27	**146**	317
9:00 AM	30	19	30	32	**111**	25	30	21	32	**108**	219
10:00 AM	26	30	29	38	**123**	29	30	26	51	**136**	259
11:00 AM	30	29	47	31	**137**	39	45	36	53	**173**	310
12:00 PM	32	54	41	43	**170**	50	52	55	72	**229**	399
1:00 PM	80	56	41	39	**216**	66	51	63	49	**229**	445
2:00 PM	32	41	41	40	**154**	74	88	72	53	**287**	441
3:00 PM	31	48	45	43	**167**	67	58	76	78	**279**	446
4:00 PM	38	48	34	60	**180**	86	79	91	99	**355**	535
5:00 PM	50	37	43	50	**180**	76	93	89	82	**340**	520
6:00 PM	41	36	36	35	**148**	77	83	60	82	**302**	450
7:00 PM	29	34	24	28	**115**	55	49	40	31	**175**	290
8:00 PM	21	18	17	18	**74**	40	36	31	28	**135**	209
9:00 PM	15	10	10	12	**47**	29	22	21	13	**85**	132
10:00 PM	8	7	6	5	**26**	14	14	15	12	**55**	81
11:00 PM	1	3	4	4	**12**	7	8	4	5	**24**	36
Total	42.3%				2467	57.7%				3359	
	5826										

AM%	**31.6%**	**AM Peak 496**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.76**
PM%	**68.4%**	**PM Peak 547**	**4:45 pm to 5:45 pm**	**PM P.H.F.**	**0.86**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

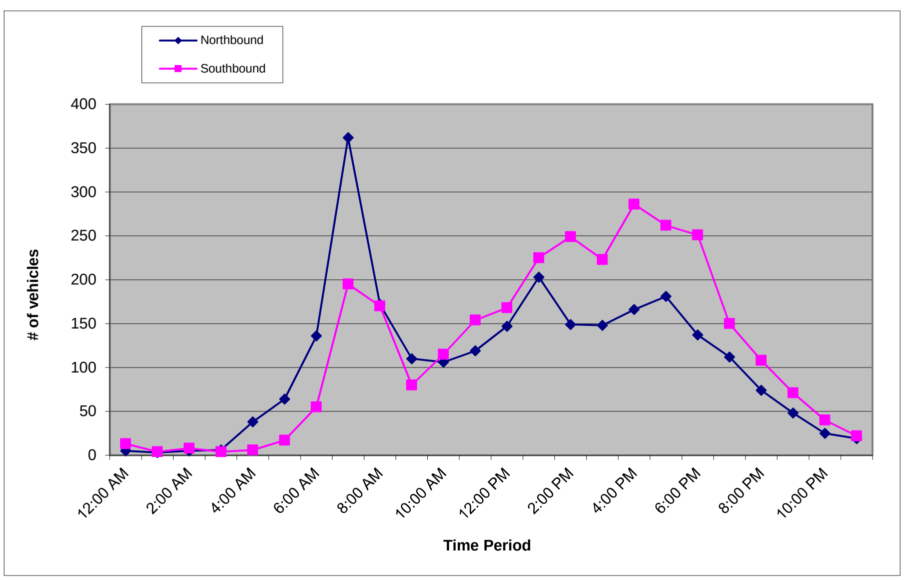
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION	Carillion Blvd – South of Walnut Avenue	**LATITUDE**	38.2775505
COUNTY	Sacramento	**LONGITUDE**	-121.2921658
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear
NUMBER OF LANES	4		

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	0	1	2	2	**5**	4	4	4	1	**13**	**18**
1:00 AM	2	0	1	0	**3**	1	0	1	2	**4**	**7**
2:00 AM	1	1	2	1	**5**	2	3	2	1	**8**	**13**
3:00 AM	0	3	3	0	**6**	1	0	1	2	**4**	**10**
4:00 AM	6	9	9	14	**38**	0	2	2	2	**6**	**44**
5:00 AM	12	10	23	19	**64**	3	0	7	7	**17**	**81**
6:00 AM	28	32	45	31	**136**	7	11	17	20	**55**	**191**
7:00 AM	38	78	113	133	**362**	20	32	57	86	**195**	**557**
8:00 AM	59	64	34	15	**172**	76	46	27	21	**170**	**342**
9:00 AM	25	25	31	29	**110**	15	20	18	27	**80**	**190**
10:00 AM	27	28	20	31	**106**	28	22	25	40	**115**	**221**
11:00 AM	24	41	29	25	**119**	28	41	48	37	**154**	**273**
12:00 PM	20	42	39	46	**147**	39	39	37	53	**168**	**315**
1:00 PM	73	63	31	36	**203**	68	69	47	41	**225**	**428**
2:00 PM	28	39	49	33	**149**	62	73	66	48	**249**	**398**
3:00 PM	34	42	39	33	**148**	64	40	62	57	**223**	**371**
4:00 PM	40	52	30	44	**166**	68	69	65	84	**286**	**452**
5:00 PM	35	43	51	52	**181**	53	69	72	68	**262**	**443**
6:00 PM	41	36	29	31	**137**	73	63	52	63	**251**	**388**
7:00 PM	32	36	19	25	**112**	47	38	37	28	**150**	**262**
8:00 PM	19	19	23	13	**74**	38	24	27	19	**108**	**182**
9:00 PM	14	14	11	9	**48**	17	16	25	13	**71**	**119**
10:00 PM	12	4	5	4	**25**	15	7	9	9	**40**	**65**
11:00 PM	2	3	6	8	**19**	4	8	5	5	**22**	**41**
Total	**46.8%**				**2535**	**53.2%**				**2876**	
	5411										

AM%	**36.0%**	**AM Peak 634**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.72**
PM%	**64.0%**	**PM Peak 452**	**4:00 pm to 5:00 pm**	**PM P.H.F.**	**0.88**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

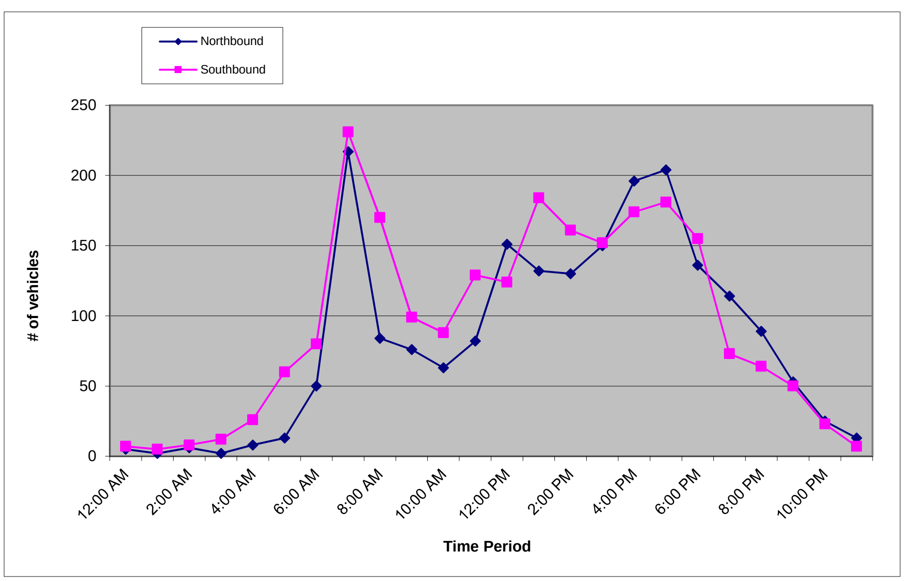
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Carillion Blvd – North of Vauxhall Avenue
LATITUDE 38.2682527
COUNTY Sacramento
LONGITUDE -121.2868966
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 4

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	0	3	1	1	**5**	4	3	0	0	**7**	12
1:00 AM	0	1	1	0	**2**	1	1	2	1	**5**	7
2:00 AM	1	0	3	2	**6**	3	1	3	1	**8**	14
3:00 AM	1	1	0	0	**2**	3	3	4	2	**12**	14
4:00 AM	2	2	1	3	**8**	4	5	7	10	**26**	34
5:00 AM	2	4	1	6	**13**	13	10	16	21	**60**	73
6:00 AM	5	17	17	11	**50**	10	23	21	26	**80**	130
7:00 AM	20	38	77	82	**217**	25	46	66	94	**231**	448
8:00 AM	27	33	14	10	**84**	74	46	24	26	**170**	254
9:00 AM	10	26	22	18	**76**	20	22	29	28	**99**	175
10:00 AM	15	10	13	25	**63**	27	21	13	27	**88**	151
11:00 AM	15	20	26	21	**82**	23	37	35	34	**129**	211
12:00 PM	24	31	32	64	**151**	27	27	33	37	**124**	275
1:00 PM	52	26	23	31	**132**	63	57	34	30	**184**	316
2:00 PM	26	36	44	24	**130**	38	39	44	40	**161**	291
3:00 PM	34	33	43	40	**150**	34	42	34	42	**152**	302
4:00 PM	45	57	44	50	**196**	51	40	44	39	**174**	370
5:00 PM	53	57	55	39	**204**	43	49	41	48	**181**	385
6:00 PM	44	32	27	33	**136**	47	44	30	34	**155**	291
7:00 PM	48	24	19	23	**114**	23	20	15	15	**73**	187
8:00 PM	18	23	23	25	**89**	25	11	21	7	**64**	153
9:00 PM	14	13	17	9	**53**	18	13	12	7	**50**	103
10:00 PM	4	6	11	4	**25**	10	7	3	3	**23**	48
11:00 PM	3	2	2	6	**13**	1	1	2	3	**7**	20
Total	46.9%				2001	53.1%				2263	
	4264										

AM%	**35.7%**	**AM Peak 504**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.72**
PM%	**64.3%**	**PM Peak 387**	**4:45 pm to 5:45 pm**	**PM P.H.F.**	**0.91**



24 Hour Volume Report

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

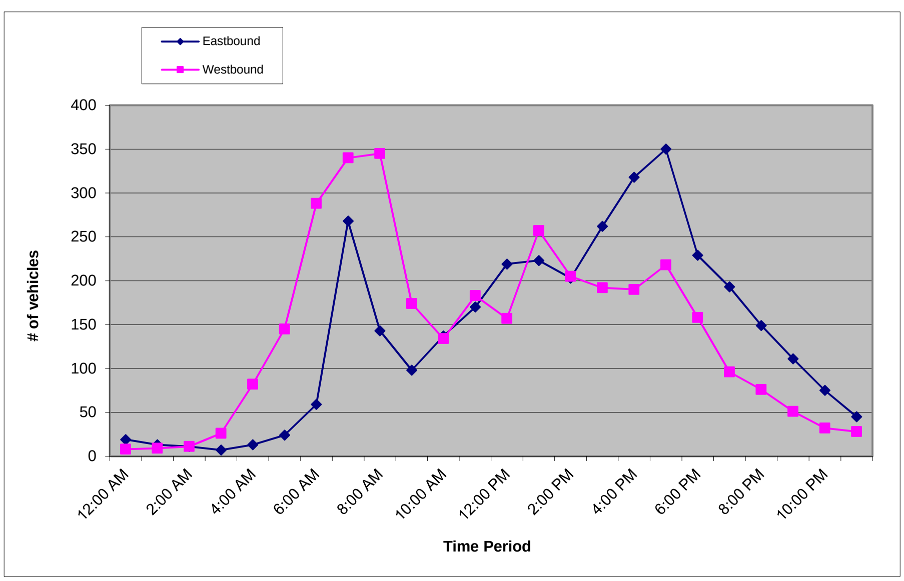
800-975-6938 Phone/Fax
www.metrotrafficdata.com

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Walnut Avenue – East of Stockton Blvd
LATITUDE 38.2801951
COUNTY Sacramento
LONGITUDE -121.3041298
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	6	8	3	2	19	5	1	0	2	8	27
1:00 AM	2	7	2	2	13	3	1	2	3	9	22
2:00 AM	4	1	5	1	11	2	1	6	2	11	22
3:00 AM	2	0	4	1	7	6	5	6	9	26	33
4:00 AM	2	4	4	3	13	17	19	25	21	82	95
5:00 AM	5	5	4	10	24	28	30	49	38	145	169
6:00 AM	13	18	11	17	59	61	76	79	72	288	347
7:00 AM	30	36	94	108	268	80	74	79	107	340	608
8:00 AM	58	46	20	19	143	121	97	77	50	345	488
9:00 AM	24	25	21	28	98	38	35	47	54	174	272
10:00 AM	32	37	32	36	137	40	30	33	31	134	271
11:00 AM	39	41	47	43	170	41	62	47	33	183	353
12:00 PM	35	50	52	82	219	45	37	44	31	157	376
1:00 PM	76	55	44	48	223	68	82	59	48	257	480
2:00 PM	35	43	60	65	203	54	66	44	41	205	408
3:00 PM	75	66	58	63	262	39	57	41	55	192	454
4:00 PM	87	84	65	82	318	46	61	42	41	190	508
5:00 PM	91	96	97	66	350	56	48	69	45	218	568
6:00 PM	59	63	46	61	229	53	42	39	24	158	387
7:00 PM	55	51	43	44	193	39	27	16	14	96	289
8:00 PM	40	38	30	41	149	24	21	21	10	76	225
9:00 PM	34	23	26	28	111	17	8	13	13	51	162
10:00 PM	18	26	22	9	75	14	5	8	5	32	107
11:00 PM	12	11	11	11	45	8	6	7	7	28	73
Total	49.5%				3339	50.5%				3405	
	6744										

AM%	**40.1%**	**AM Peak 710**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.83**
PM%	**59.9%**	**PM Peak 580**	**4:45 pm to 5:45 pm**	**PM P.H.F.**	**0.87**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Walnut Avenue – West of Elk Hills Drive

LATITUDE 38.279834

COUNTY Sacramento

LONGITUDE -121.2901072

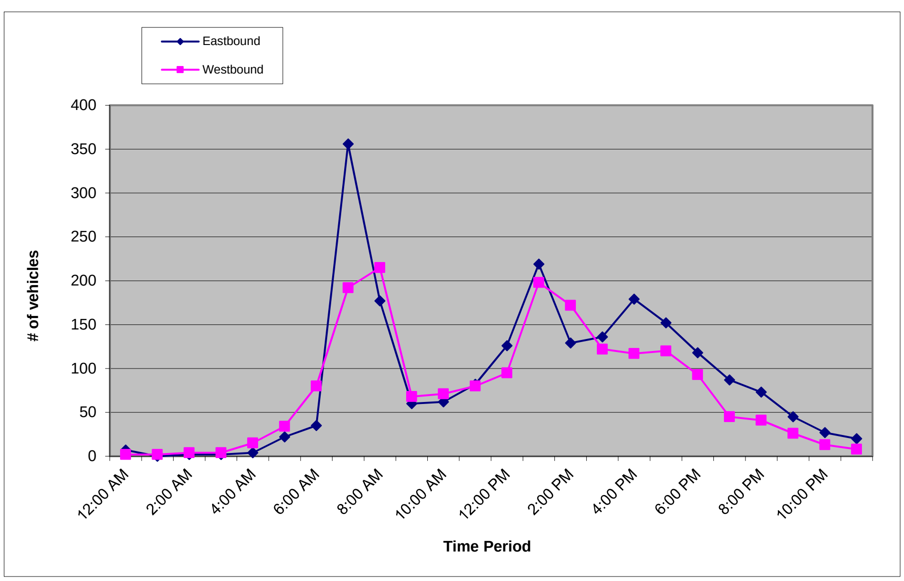
COLLECTION DATE Wednesday, February 14, 2018

WEATHER Clear

NUMBER OF LANES 4

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	2	4	0	1	**7**	1	1	0	0	**2**	**9**
1:00 AM	0	0	0	0	**0**	0	0	1	1	**2**	**2**
2:00 AM	1	0	1	0	**2**	1	3	0	0	**4**	**6**
3:00 AM	1	0	0	1	**2**	2	0	0	2	**4**	**6**
4:00 AM	0	2	2	0	**4**	5	1	5	4	**15**	**19**
5:00 AM	4	1	8	9	**22**	7	7	8	12	**34**	**56**
6:00 AM	5	10	13	7	**35**	17	19	23	21	**80**	**115**
7:00 AM	16	39	132	169	**356**	18	27	53	94	**192**	**548**
8:00 AM	77	70	16	14	**177**	93	84	23	15	**215**	**392**
9:00 AM	14	15	12	19	**60**	18	13	18	19	**68**	**128**
10:00 AM	12	20	12	18	**62**	13	18	22	18	**71**	**133**
11:00 AM	24	16	21	21	**82**	16	22	28	14	**80**	**162**
12:00 PM	17	23	34	52	**126**	35	20	20	20	**95**	**221**
1:00 PM	72	70	38	39	**219**	46	92	40	20	**198**	**417**
2:00 PM	43	26	29	31	**129**	70	53	26	23	**172**	**301**
3:00 PM	30	36	36	34	**136**	18	33	36	35	**122**	**258**
4:00 PM	46	52	29	52	**179**	30	34	20	33	**117**	**296**
5:00 PM	34	42	31	45	**152**	35	21	35	29	**120**	**272**
6:00 PM	46	25	24	23	**118**	39	22	16	16	**93**	**211**
7:00 PM	27	24	18	18	**87**	16	10	11	8	**45**	**132**
8:00 PM	12	23	20	18	**73**	15	10	10	6	**41**	**114**
9:00 PM	15	14	7	9	**45**	7	10	5	4	**26**	**71**
10:00 PM	11	11	3	2	**27**	5	3	5	0	**13**	**40**
11:00 PM	6	1	6	7	**20**	2	2	4	0	**8**	**28**
Total	**53.8%**				**2120**	**46.2%**				**1817**	
	3937										

AM%	**40.0%**	**AM Peak 772**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.73**
PM%	**60.0%**	**PM Peak 430**	**0:45 pm to 1:45 pm**	**PM P.H.F.**	**0.66**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

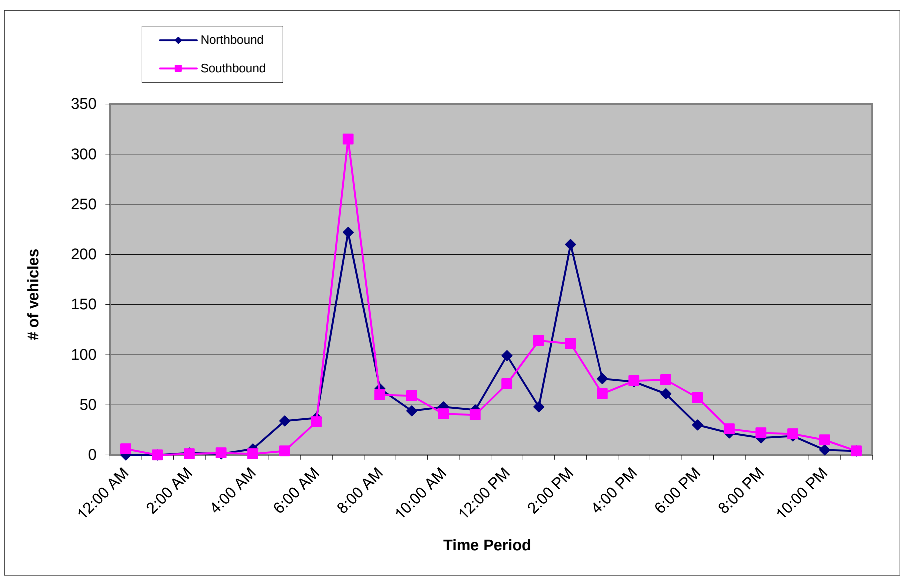
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Marengo Road – South of Twin Cities Road
COUNTY Sacramento
COLLECTION DATE Wednesday, February 14, 2018
NUMBER OF LANES 2
LATITUDE 38.2904987
LONGITUDE -121.2828438
WEATHER Clear

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	0	0	0	0	**0**	1	2	0	3	**6**	**6**
1:00 AM	0	0	0	0	**0**	0	0	0	0	**0**	**0**
2:00 AM	1	0	0	1	**2**	0	1	0	0	**1**	**3**
3:00 AM	0	0	1	0	**1**	1	0	1	0	**2**	**3**
4:00 AM	2	3	0	1	**6**	1	0	0	0	**1**	**7**
5:00 AM	4	7	10	13	**34**	0	0	2	2	**4**	**38**
6:00 AM	11	7	13	6	**37**	1	9	7	16	**33**	**70**
7:00 AM	13	19	61	129	**222**	11	27	112	165	**315**	**537**
8:00 AM	31	13	7	15	**66**	21	15	9	15	**60**	**126**
9:00 AM	12	13	12	7	**44**	15	18	9	17	**59**	**103**
10:00 AM	14	6	9	19	**48**	6	13	13	9	**41**	**89**
11:00 AM	19	9	9	8	**45**	12	7	7	14	**40**	**85**
12:00 PM	45	16	18	20	**99**	20	16	15	20	**71**	**170**
1:00 PM	12	13	17	6	**48**	16	13	29	56	**114**	**162**
2:00 PM	134	44	12	20	**210**	47	29	23	12	**111**	**321**
3:00 PM	18	25	15	18	**76**	17	16	14	14	**61**	**137**
4:00 PM	19	25	11	18	**73**	25	16	16	17	**74**	**147**
5:00 PM	15	22	10	14	**61**	21	21	14	19	**75**	**136**
6:00 PM	12	7	4	7	**30**	13	14	16	14	**57**	**87**
7:00 PM	13	3	4	2	**22**	8	7	7	4	**26**	**48**
8:00 PM	4	4	6	3	**17**	6	8	3	5	**22**	**39**
9:00 PM	6	3	3	7	**19**	6	7	3	5	**21**	**40**
10:00 PM	1	2	0	2	**5**	5	2	5	3	**15**	**20**
11:00 PM	0	1	2	1	**4**	0	2	1	1	**4**	**8**
Total	**49.1%**				**1169**	**50.9%**				**1213**	
	2382										

AM%	**44.8%**	**AM Peak 565**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.48**
PM%	**55.2%**	**PM Peak 362**	**1:30 pm to 2:30 pm**	**PM P.H.F.**	**0.50**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

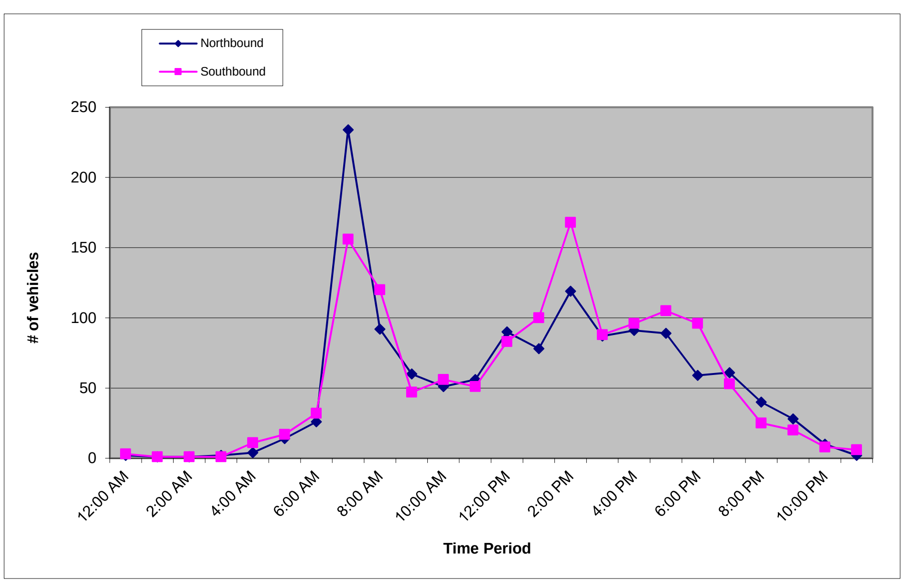
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION	Marengo Road – South of Walnut Avenue	**LATITUDE**	38.281351
COUNTY	Sacramento	**LONGITUDE**	-121.2825957
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear
NUMBER OF LANES	3		

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	1	1	0	0	**2**	1	0	1	1	**3**	**5**
1:00 AM	1	0	0	0	**1**	0	1	0	0	**1**	**2**
2:00 AM	0	0	0	1	**1**	0	0	1	0	**1**	**2**
3:00 AM	1	0	1	0	**2**	1	0	0	0	**1**	**3**
4:00 AM	2	0	2	0	**4**	1	3	3	4	**11**	**15**
5:00 AM	1	4	4	5	**14**	3	5	8	1	**17**	**31**
6:00 AM	2	3	11	10	**26**	6	10	8	8	**32**	**58**
7:00 AM	9	28	96	101	**234**	16	12	49	79	**156**	**390**
8:00 AM	38	26	8	20	**92**	54	31	17	18	**120**	**212**
9:00 AM	17	13	11	19	**60**	9	13	16	9	**47**	**107**
10:00 AM	19	7	13	12	**51**	11	14	15	16	**56**	**107**
11:00 AM	9	9	14	24	**56**	13	12	11	15	**51**	**107**
12:00 PM	20	23	20	27	**90**	38	14	15	16	**83**	**173**
1:00 PM	18	22	16	22	**78**	19	41	23	17	**100**	**178**
2:00 PM	52	27	21	19	**119**	79	43	27	19	**168**	**287**
3:00 PM	16	22	21	28	**87**	21	20	21	26	**88**	**175**
4:00 PM	24	20	19	28	**91**	35	22	26	13	**96**	**187**
5:00 PM	26	25	21	17	**89**	32	31	21	21	**105**	**194**
6:00 PM	16	17	14	12	**59**	29	29	19	19	**96**	**155**
7:00 PM	20	20	10	11	**61**	13	18	13	9	**53**	**114**
8:00 PM	14	9	10	7	**40**	8	6	4	7	**25**	**65**
9:00 PM	7	8	4	9	**28**	9	5	2	4	**20**	**48**
10:00 PM	2	6	0	2	**10**	1	4	2	1	**8**	**18**
11:00 PM	0	0	1	1	**2**	3	2	1	0	**6**	**8**
Total	**49.1%**				**1297**	**50.9%**				**1344**	
	2641										

AM%	**39.3%**	**AM Peak 474**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.66**
PM%	**60.7%**	**PM Peak 288**	**1:45 pm to 2:45 pm**	**PM P.H.F.**	**0.55**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

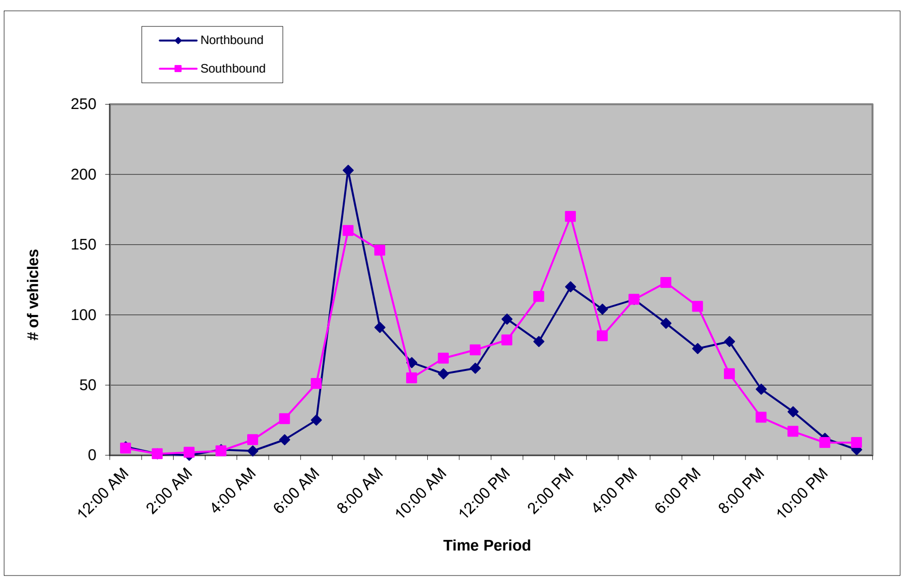
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION	Marengo Road – North of Chelsham Avenue	**LATITUDE**	38.2722948
COUNTY	Sacramento	**LONGITUDE**	-121.282703
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear
NUMBER OF LANES	3		

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	3	1	1	1	**6**	3	0	1	1	**5**	**11**
1:00 AM	1	0	0	0	**1**	0	1	0	0	**1**	**2**
2:00 AM	0	0	0	0	**0**	0	0	1	1	**2**	**2**
3:00 AM	2	1	1	0	**4**	2	0	0	1	**3**	**7**
4:00 AM	2	0	1	0	**3**	1	3	4	3	**11**	**14**
5:00 AM	1	4	3	3	**11**	4	7	11	4	**26**	**37**
6:00 AM	2	4	9	10	**25**	12	14	14	11	**51**	**76**
7:00 AM	8	25	82	88	**203**	19	23	50	68	**160**	**363**
8:00 AM	38	23	12	18	**91**	62	36	24	24	**146**	**237**
9:00 AM	18	16	11	21	**66**	12	14	17	12	**55**	**121**
10:00 AM	21	10	16	11	**58**	18	22	13	16	**69**	**127**
11:00 AM	9	8	17	28	**62**	26	15	18	16	**75**	**137**
12:00 PM	23	24	23	27	**97**	31	16	16	19	**82**	**179**
1:00 PM	21	22	18	20	**81**	26	37	28	22	**113**	**194**
2:00 PM	47	30	23	20	**120**	68	46	33	23	**170**	**290**
3:00 PM	21	26	26	31	**104**	22	23	21	19	**85**	**189**
4:00 PM	30	19	29	33	**111**	37	29	28	17	**111**	**222**
5:00 PM	23	28	28	15	**94**	33	34	25	31	**123**	**217**
6:00 PM	26	19	18	13	**76**	34	31	22	19	**106**	**182**
7:00 PM	26	26	15	14	**81**	18	19	12	9	**58**	**139**
8:00 PM	11	15	12	9	**47**	10	7	6	4	**27**	**74**
9:00 PM	9	9	3	10	**31**	7	5	2	3	**17**	**48**
10:00 PM	3	5	1	3	**12**	3	4	0	2	**9**	**21**
11:00 PM	1	1	1	1	**4**	3	1	3	2	**9**	**13**
Total	**47.8%**				**1388**	**52.2%**				**1514**	
	2902										

AM%	**39.1%**	**AM Peak 447**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.72**
PM%	**60.9%**	**PM Peak 290**	**2:00 pm to 3:00 pm**	**PM P.H.F.**	**0.63**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

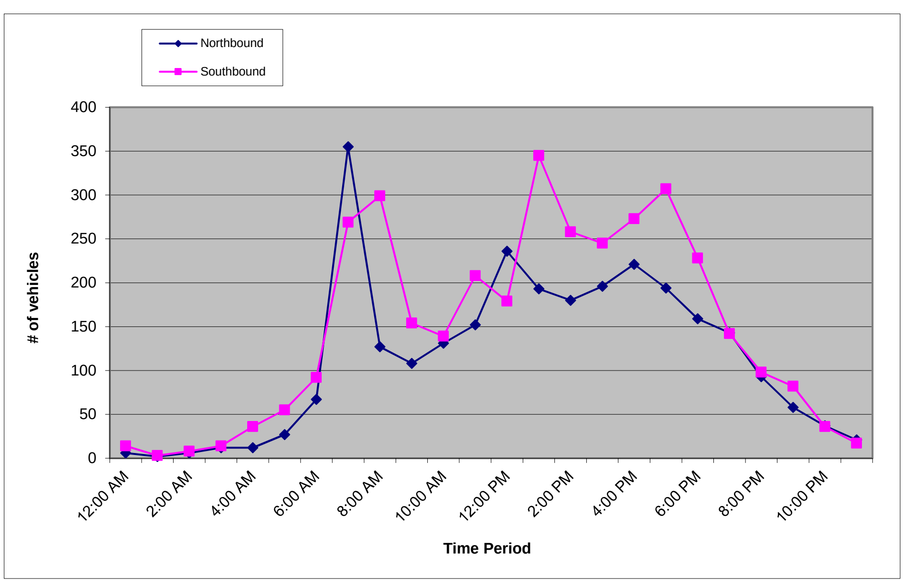
24 Hour Volume Report

Prepared For: **OMNI-MEANS, Ltd.**
943 Reserve Drive, Suite 100
Roseville, CA

LOCATION Stockton Blvd – South of Winn Drive
LATITUDE 38.2747332
COUNTY Sacramento
LONGITUDE -121.3035478
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear
NUMBER OF LANES 2

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	1	1	3	1	**6**	7	3	2	2	**14**	**20**
1:00 AM	1	0	0	1	**2**	0	1	0	2	**3**	**5**
2:00 AM	0	2	1	3	**6**	1	1	2	4	**8**	**14**
3:00 AM	1	1	6	4	**12**	3	5	2	4	**14**	**26**
4:00 AM	4	1	3	4	**12**	9	2	15	10	**36**	**48**
5:00 AM	2	6	9	10	**27**	15	9	13	18	**55**	**82**
6:00 AM	14	24	11	18	**67**	16	24	27	25	**92**	**159**
7:00 AM	79	86	81	109	**355**	37	42	66	124	**269**	**624**
8:00 AM	51	33	22	21	**127**	127	63	55	54	**299**	**426**
9:00 AM	25	23	30	30	**108**	30	31	36	57	**154**	**262**
10:00 AM	39	28	35	29	**131**	26	42	33	38	**139**	**270**
11:00 AM	45	36	37	34	**152**	49	69	61	29	**208**	**360**
12:00 PM	46	47	59	84	**236**	51	34	47	47	**179**	**415**
1:00 PM	77	51	38	27	**193**	93	113	76	63	**345**	**538**
2:00 PM	47	50	40	43	**180**	58	87	53	60	**258**	**438**
3:00 PM	41	53	58	44	**196**	64	61	57	63	**245**	**441**
4:00 PM	56	51	60	54	**221**	69	79	55	70	**273**	**494**
5:00 PM	57	45	51	41	**194**	70	78	78	81	**307**	**501**
6:00 PM	43	45	33	38	**159**	69	57	70	32	**228**	**387**
7:00 PM	43	45	26	29	**143**	44	43	31	24	**142**	**285**
8:00 PM	30	28	12	23	**93**	30	25	25	18	**98**	**191**
9:00 PM	21	14	15	8	**58**	29	18	19	16	**82**	**140**
10:00 PM	14	9	6	8	**37**	14	7	4	11	**36**	**73**
11:00 PM	9	5	2	5	**21**	7	3	5	2	**17**	**38**
Total	**43.9%**				**2736**	**56.1%**				**3501**	
	6237										

AM%	**36.8%**	**AM Peak 686**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.74**
PM%	**63.2%**	**PM Peak 579**	**0:45 pm to 1:45 pm**	**PM P.H.F.**	**0.85**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

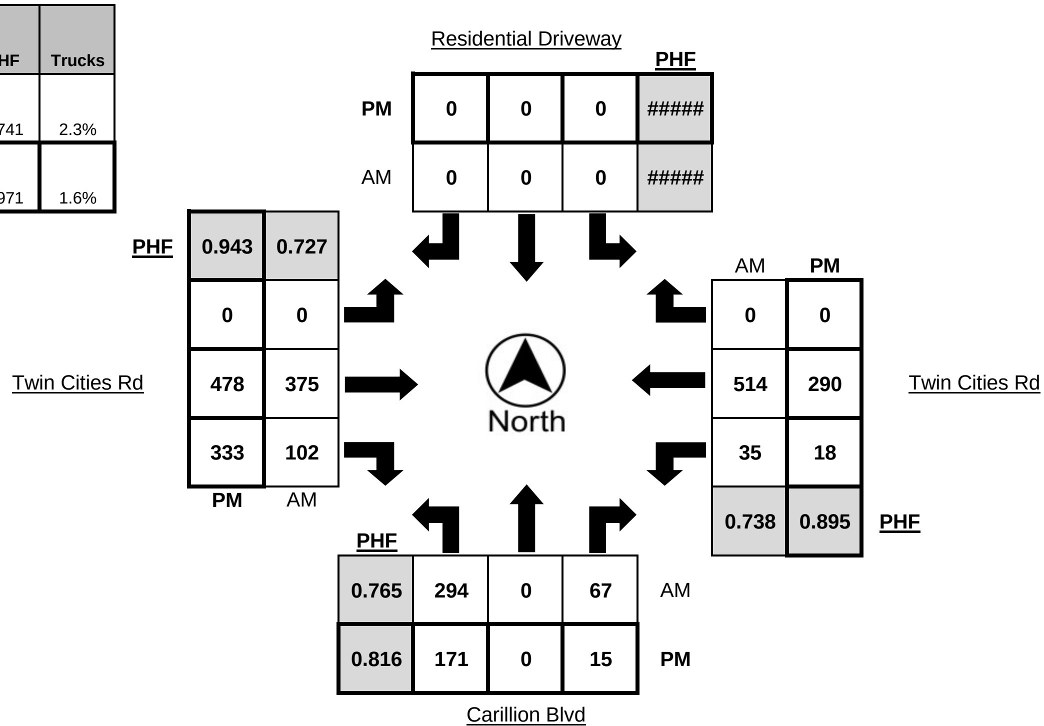
LOCATION	Carillion Blvd @ Twin Cities Rd	**LATITUDE**	38.291151°
COUNTY	Sacramento	**LONGITUDE**	-121.297796°
COLLECTION DATE	Wednesday, October 25, 2017	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	51	0	2	0	0	0	0	0	0	34	18	1	0	71	0	1
7:15 AM - 7:30 AM	54	0	2	0	0	0	0	0	0	66	24	4	1	81	0	0
7:30 AM - 7:45 AM	68	0	19	0	0	0	0	0	0	105	25	3	7	116	0	8
7:45 AM - 8:00 AM	84	0	34	2	0	0	0	0	0	133	31	3	14	172	0	5
8:00 AM - 8:15 AM	88	0	12	0	0	0	0	0	0	71	22	3	13	145	0	4
8:15 AM - 8:30 AM	41	0	2	0	0	0	0	0	0	62	22	10	3	96	0	7
8:30 AM - 8:45 AM	46	0	1	0	0	0	0	0	0	40	18	5	2	57	0	4
8:45 AM - 9:00 AM	34	0	2	1	0	0	0	0	0	38	26	9	2	66	0	0
TOTAL	**466**	**0**	**74**	**3**	**0**	**0**	**0**	**0**	**0**	**549**	**186**	**38**	**42**	**804**	**0**	**29**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	45	0	1	0	0	0	0	0	0	89	66	3	7	74	0	0
4:15 PM - 4:30 PM	41	0	1	1	0	0	0	0	0	98	80	5	7	86	0	1
4:30 PM - 4:45 PM	32	0	0	0	0	0	0	0	0	105	81	2	2	79	0	2
4:45 PM - 5:00 PM	29	0	1	0	0	0	0	0	0	88	70	1	5	84	0	1
5:00 PM - 5:15 PM	31	0	5	0	0	0	0	0	0	118	69	2	5	81	0	12
5:15 PM - 5:30 PM	55	0	2	0	0	0	0	0	0	116	99	0	2	58	0	1
5:30 PM - 5:45 PM	36	0	3	0	0	0	0	0	0	126	86	1	6	71	0	2
5:45 PM - 6:00 PM	49	0	5	0	0	0	0	0	0	118	79	1	5	80	0	2
TOTAL	**318**	**0**	**18**	**1**	**0**	**0**	**0**	**0**	**0**	**858**	**630**	**15**	**39**	**613**	**0**	**21**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	294	0	67	2	0	0	0	0	0	375	102	13	35	514	0	17
5:00 PM - 6:00 PM	171	0	15	0	0	0	0	0	0	478	333	4	18	290	0	17

	PHF	**Trucks**
AM	0.741	2.3%
PM	0.971	1.6%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

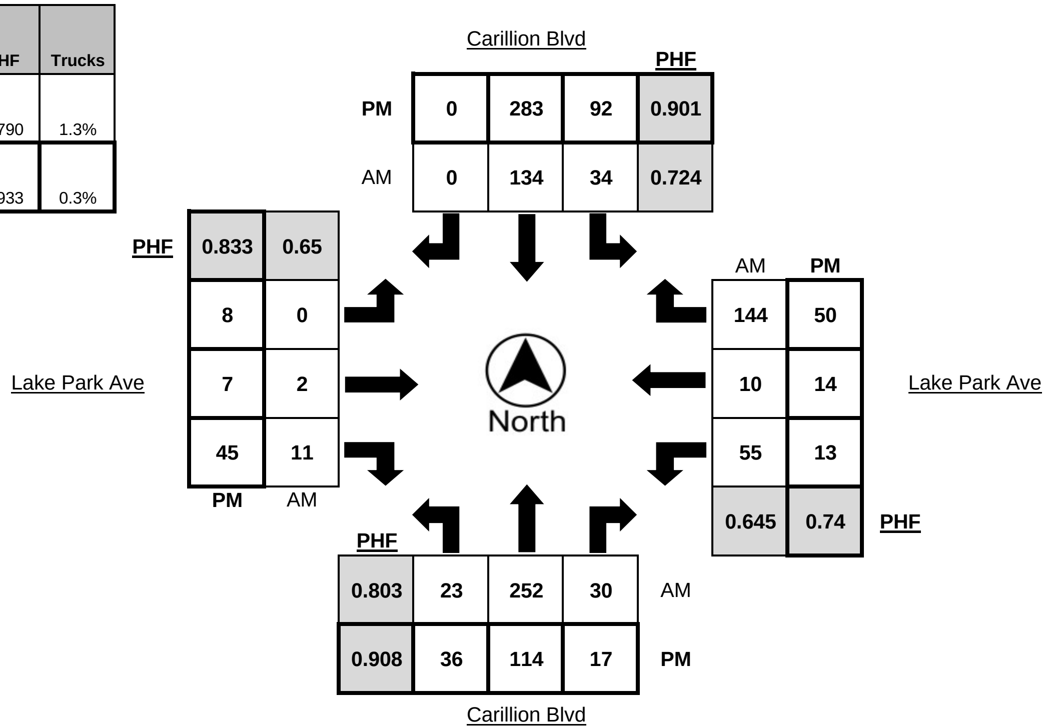
LOCATION	Lake Park Ave @ Carillion Blvd	**LATITUDE**	38.2898
COUNTY	Sacramento	**LONGITUDE**	-121.2977
COLLECTION DATE	Thursday, February 15, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	5	33	1	1	5	16	0	1	2	0	1	0	2	2	24	0
7:15 AM - 7:30 AM	2	37	3	0	4	23	0	1	0	1	0	0	3	1	31	1
7:30 AM - 7:45 AM	9	69	12	0	11	47	0	2	0	0	3	0	13	1	30	2
7:45 AM - 8:00 AM	4	82	9	1	7	33	0	0	0	1	3	0	27	5	49	0
8:00 AM - 8:15 AM	8	64	6	1	12	31	0	1	0	0	5	0	12	3	34	0
8:15 AM - 8:30 AM	4	27	2	1	8	27	0	1	1	0	2	0	6	1	23	0
8:30 AM - 8:45 AM	4	23	4	1	5	14	0	0	0	1	4	1	1	2	15	0
8:45 AM - 9:00 AM	4	18	1	0	4	14	0	0	0	0	3	0	2	1	7	0
TOTAL	**40**	**353**	**38**	**5**	**56**	**205**	**0**	**6**	**3**	**3**	**21**	**1**	**66**	**16**	**213**	**3**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	3	24	6	0	26	58	1	1	2	1	10	0	6	3	9	0
4:15 PM - 4:30 PM	3	27	7	0	19	68	1	0	2	1	8	0	5	0	26	0
4:30 PM - 4:45 PM	7	15	3	0	24	70	0	2	0	2	14	2	5	0	18	0
4:45 PM - 5:00 PM	6	34	3	0	22	73	0	1	1	3	14	0	6	4	16	0
5:00 PM - 5:15 PM	11	32	3	0	19	56	0	0	2	2	14	0	1	6	14	0
5:15 PM - 5:30 PM	11	22	7	0	26	78	0	0	2	1	10	0	1	0	8	0
5:30 PM - 5:45 PM	8	26	4	0	25	76	0	1	3	1	7	0	5	4	12	0
5:45 PM - 6:00 PM	10	19	4	0	24	74	0	1	0	2	16	0	6	3	22	0
TOTAL	**59**	**199**	**37**	**0**	**185**	**553**	**2**	**6**	**12**	**13**	**93**	**2**	**35**	**20**	**125**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	23	252	30	2	34	134	0	4	0	2	11	0	55	10	144	3
4:45 PM - 5:45 PM	36	114	17	0	92	283	0	2	8	7	45	0	13	14	50	0

	PHF	Trucks
AM	0.790	1.3%
PM	0.933	0.3%



Turning Movement Report

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

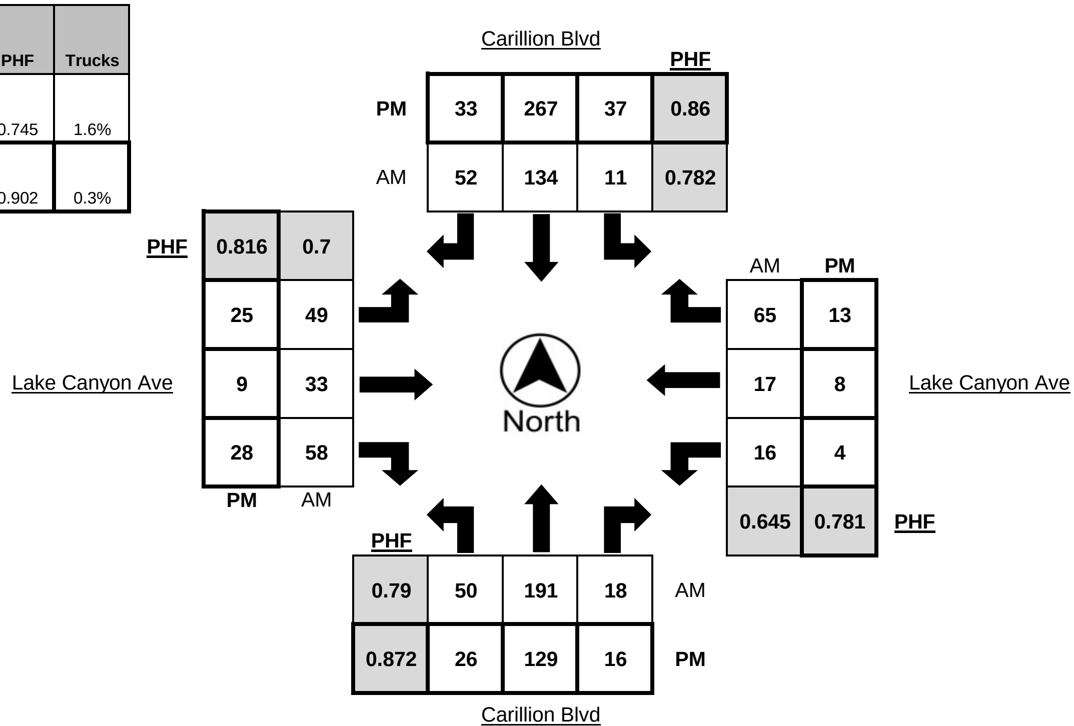
LOCATION Lake Canyon Ave @ Carillion Blvd
LATITUDE 38.2863
COUNTY Sacramento
LONGITUDE -121.2966
COLLECTION DATE Thursday, February 15, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	25	2	1	1	16	3	1	5	2	2	0	2	1	8	0
7:15 AM - 7:30 AM	6	27	3	1	1	23	3	2	7	3	7	1	4	2	6	0
7:30 AM - 7:45 AM	10	55	6	0	3	38	14	2	11	11	13	0	3	6	20	0
7:45 AM - 8:00 AM	27	52	3	3	4	42	17	1	22	7	21	0	6	6	26	0
8:00 AM - 8:15 AM	7	57	6	1	3	31	18	0	9	12	17	0	3	3	13	0
8:15 AM - 8:30 AM	2	25	1	1	1	25	6	1	3	2	4	0	0	3	4	0
8:30 AM - 8:45 AM	5	20	1	2	2	16	3	1	5	2	2	0	3	0	4	1
8:45 AM - 9:00 AM	1	16	2	0	3	14	4	0	3	1	1	0	0	2	3	0
TOTAL	**59**	**277**	**24**	**9**	**18**	**205**	**68**	**8**	**65**	**40**	**67**	**1**	**21**	**23**	**84**	**1**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	3	27	2	0	8	53	8	0	3	1	6	0	2	3	3	0
4:15 PM - 4:30 PM	2	24	6	0	5	63	13	0	8	2	10	0	2	1	4	0
4:30 PM - 4:45 PM	11	17	9	0	9	68	11	1	3	5	5	0	4	3	2	0
4:45 PM - 5:00 PM	8	35	6	0	7	82	9	1	5	3	4	0	1	0	5	0
5:00 PM - 5:15 PM	5	29	5	0	8	58	7	0	10	3	6	0	1	3	2	0
5:15 PM - 5:30 PM	5	31	2	0	7	56	12	0	7	1	10	0	1	4	3	0
5:30 PM - 5:45 PM	8	34	3	0	15	71	5	1	3	2	8	0	1	1	3	0
5:45 PM - 6:00 PM	6	26	5	0	8	73	15	0	0	2	9	0	1	0	5	0
TOTAL	**48**	**223**	**38**	**0**	**67**	**524**	**80**	**3**	**39**	**19**	**58**	**0**	**13**	**15**	**27**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	50	191	18	5	11	134	52	5	49	33	58	1	16	17	65	0
4:45 PM - 5:45 PM	26	129	16	0	37	267	33	2	25	9	28	0	4	8	13	0

	PHF	**Trucks**
AM	0.745	1.6%
PM	0.902	0.3%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
OMNI-Means
943 Reserve Drive
Roseville, CA 95678

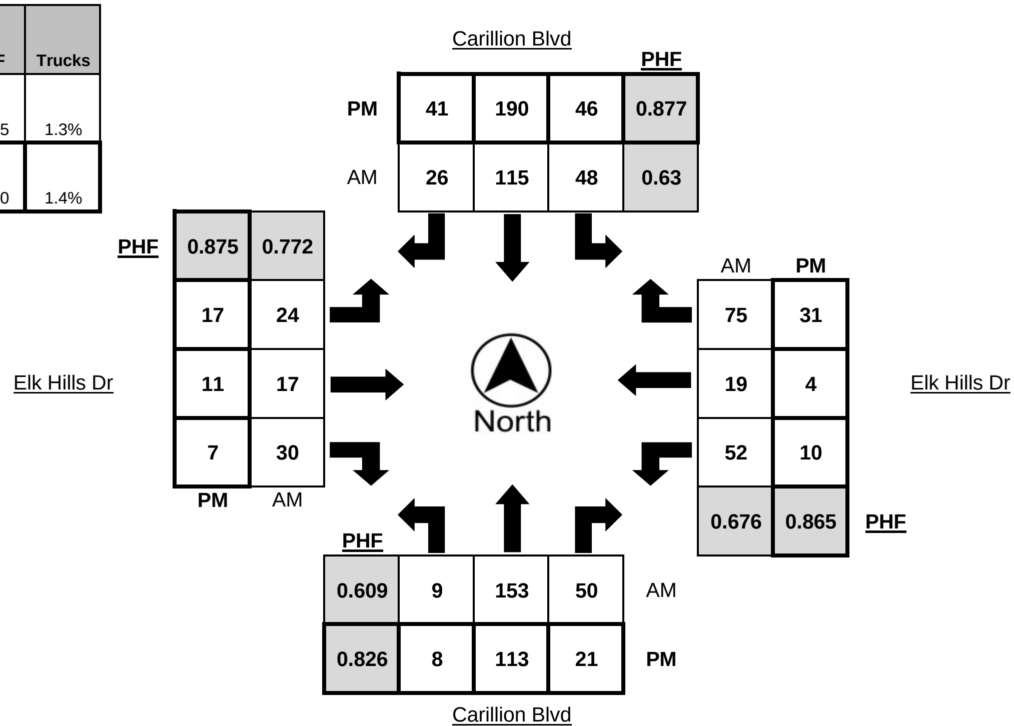
LOCATION Carillion Blvd @ Elk Hills Dr | **LATITUDE** 38.283048°
COUNTY Sacramento | **LONGITUDE** -121.295033°
COLLECTION DATE Wednesday, October 25, 2017 | **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	13	3	0	2	19	4	1	4	1	0	0	4	2	5	0
7:15 AM - 7:30 AM	1	23	6	0	5	18	2	0	4	1	7	0	4	3	8	0
7:30 AM - 7:45 AM	1	34	16	0	17	25	2	0	3	8	12	0	11	3	21	2
7:45 AM - 8:00 AM	4	62	21	1	20	45	10	1	6	7	7	1	25	8	21	0
8:00 AM - 8:15 AM	3	34	7	2	6	27	12	1	11	1	4	0	12	5	25	0
8:15 AM - 8:30 AM	1	18	3	0	4	16	4	2	2	3	2	1	3	4	9	0
8:30 AM - 8:45 AM	0	11	3	0	5	14	0	3	1	2	2	0	4	1	9	1
8:45 AM - 9:00 AM	1	13	2	1	3	23	2	2	1	1	0	0	5	2	7	0
TOTAL	**11**	**208**	**61**	**4**	**62**	**187**	**36**	**10**	**32**	**24**	**34**	**2**	**68**	**28**	**105**	**3**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	2	24	2	0	4	50	12	2	6	1	2	0	1	1	4	0
4:15 PM - 4:30 PM	2	22	5	1	9	49	7	1	6	2	3	0	1	2	5	0
4:30 PM - 4:45 PM	2	24	5	0	13	48	10	2	7	2	0	0	4	2	6	0
4:45 PM - 5:00 PM	2	30	3	1	15	43	15	2	1	2	5	0	2	1	9	0
5:00 PM - 5:15 PM	4	22	7	0	10	37	7	1	4	4	0	0	3	1	4	0
5:15 PM - 5:30 PM	0	37	6	0	8	62	9	0	5	3	2	1	1	0	12	0
5:30 PM - 5:45 PM	0	30	4	0	13	54	6	1	1	2	3	0	1	3	2	0
5:45 PM - 6:00 PM	1	25	6	0	10	54	6	0	7	0	5	0	1	1	6	0
TOTAL	**13**	**214**	**38**	**2**	**82**	**397**	**72**	**9**	**37**	**16**	**20**	**1**	**14**	**11**	**48**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	9	153	50	3	48	115	26	2	24	17	30	1	52	19	75	2
4:30 PM - 5:30 PM	8	113	21	1	46	190	41	5	17	11	7	1	10	4	31	0

	PHF	Trucks
AM	0.655	1.3%
PM	0.860	1.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

LOCATION Carillion Blvd @ Walnut Ave **LATITUDE** 38.278786°

COUNTY Sacramento **LONGITUDE** -121.292820°

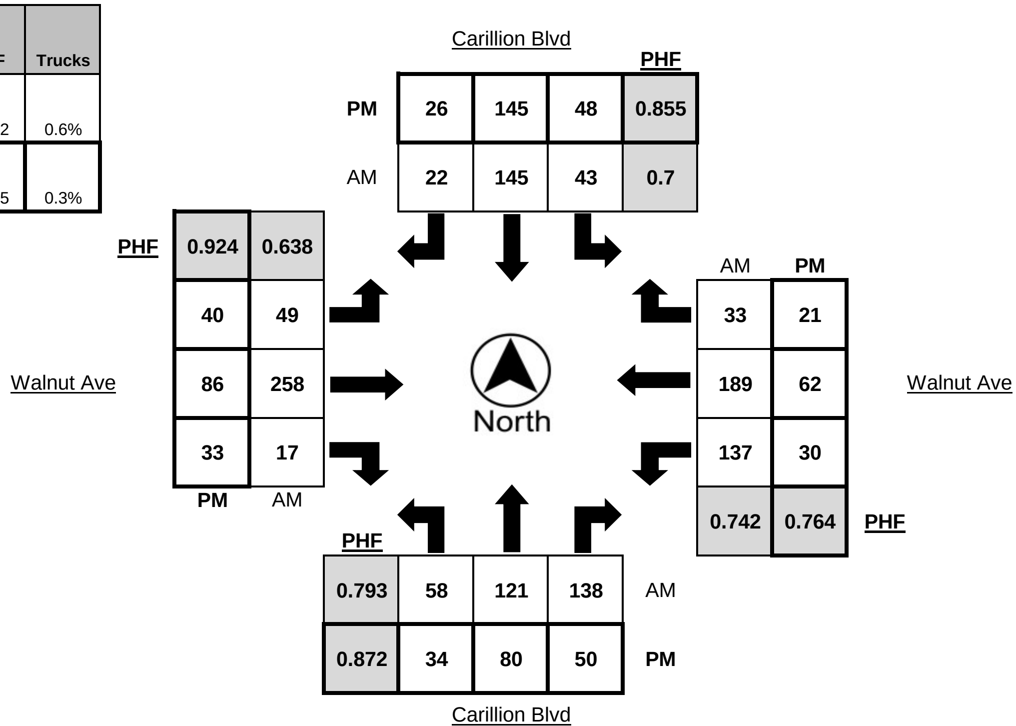
COLLECTION DATE Wednesday, October 25, 2017 **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	18	17	3	1	0	29	0	1	5	7	3	0	1	17	5	0
7:15 AM - 7:30 AM	24	21	25	0	6	11	5	1	2	18	7	0	10	13	2	1
7:30 AM - 7:45 AM	20	34	34	1	20	42	4	1	14	76	8	0	32	36	9	0
7:45 AM - 8:00 AM	16	46	38	0	17	49	9	1	25	97	5	1	40	49	11	0
8:00 AM - 8:15 AM	12	20	44	0	4	43	8	0	5	53	3	0	47	64	10	1
8:15 AM - 8:30 AM	10	21	22	2	2	11	1	0	5	32	1	0	18	40	3	0
8:30 AM - 8:45 AM	10	10	1	1	5	18	3	0	5	6	3	0	5	14	1	0
8:45 AM - 9:00 AM	10	14	6	1	5	12	3	1	4	5	3	1	7	9	3	0
TOTAL	**120**	**183**	**173**	**6**	**59**	**215**	**33**	**5**	**65**	**294**	**33**	**2**	**160**	**242**	**44**	**2**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	14	22	3	0	8	42	8	0	7	19	9	0	5	14	1	0
4:15 PM - 4:30 PM	5	12	5	0	8	39	3	0	13	25	8	0	6	14	3	0
4:30 PM - 4:45 PM	9	17	8	0	10	36	5	2	9	17	15	0	6	12	4	0
4:45 PM - 5:00 PM	3	17	7	0	10	39	7	0	12	13	9	0	9	9	6	0
5:00 PM - 5:15 PM	14	11	11	0	9	28	2	0	12	22	9	0	14	15	8	0
5:15 PM - 5:30 PM	10	28	9	0	14	39	11	0	11	23	8	0	3	17	4	0
5:30 PM - 5:45 PM	8	18	10	0	10	36	7	0	11	19	7	1	8	15	4	0
5:45 PM - 6:00 PM	2	23	20	1	15	42	6	0	6	22	9	0	5	15	5	0
TOTAL	**65**	**148**	**73**	**1**	**84**	**301**	**49**	**2**	**81**	**160**	**74**	**1**	**56**	**111**	**35**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	58	121	138	3	43	145	22	2	49	258	17	1	137	189	33	1
5:00 PM - 6:00 PM	34	80	50	1	48	145	26	0	40	86	33	1	30	62	21	0

	PHF	Trucks
AM	0.752	0.6%
PM	0.925	0.3%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

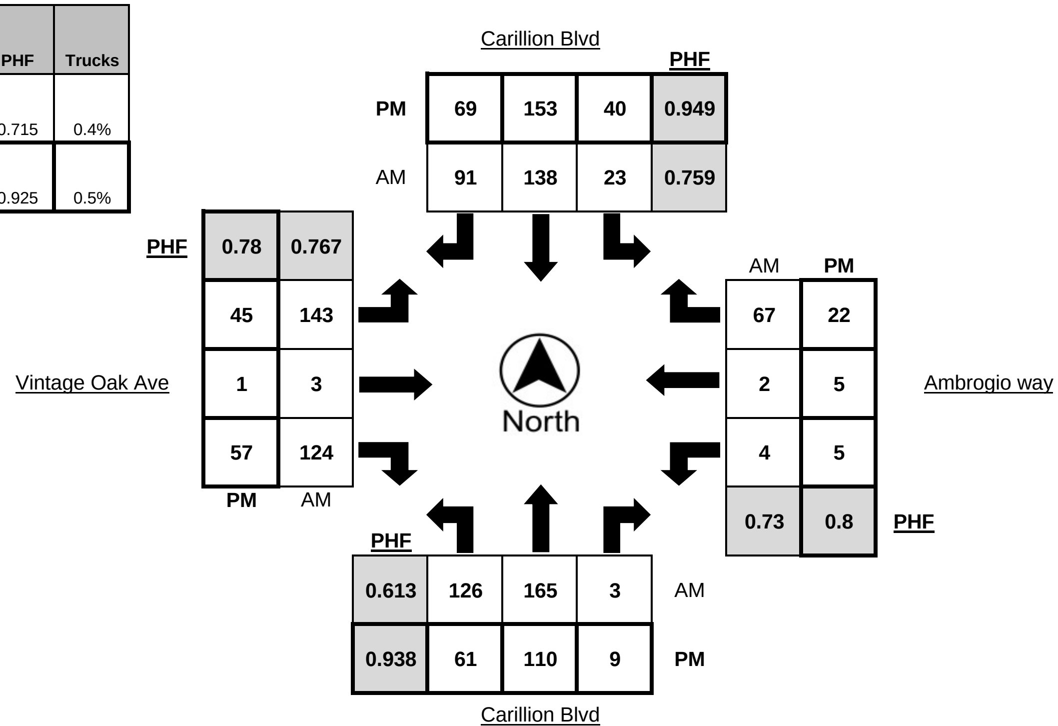
LOCATION Ambrogio Way @ Carillion Blvd
LATITUDE 38.2754
COUNTY Sacramento
LONGITUDE -121.2909
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	7	20	0	0	3	10	5	1	8	0	10	0	1	0	10	0
7:15 AM - 7:30 AM	17	28	2	1	3	14	15	0	35	2	12	0	3	0	13	1
7:30 AM - 7:45 AM	49	41	0	0	4	22	29	0	49	0	39	0	0	0	24	0
7:45 AM - 8:00 AM	51	69	0	0	7	48	27	0	37	1	46	0	1	2	22	0
8:00 AM - 8:15 AM	9	27	1	0	9	54	20	1	22	0	27	0	0	0	8	1
8:15 AM - 8:30 AM	7	36	1	0	7	31	9	1	15	0	7	0	3	0	13	0
8:30 AM - 8:45 AM	3	17	1	0	4	16	5	0	10	0	6	0	2	0	7	0
8:45 AM - 9:00 AM	5	8	1	0	5	15	3	1	3	0	6	0	4	0	3	0
TOTAL	**148**	**246**	**6**	**1**	**42**	**210**	**113**	**4**	**179**	**3**	**153**	**0**	**14**	**2**	**100**	**2**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	14	21	1	0	9	39	25	0	9	0	11	0	3	0	6	0
4:15 PM - 4:30 PM	18	33	1	2	8	40	20	1	14	0	10	0	1	0	3	0
4:30 PM - 4:45 PM	14	21	1	0	7	42	13	0	8	1	11	0	0	1	4	0
4:45 PM - 5:00 PM	14	24	2	1	14	39	26	0	10	0	7	0	0	0	6	0
5:00 PM - 5:15 PM	17	22	3	0	10	36	13	0	9	0	13	0	1	3	3	0
5:15 PM - 5:30 PM	15	30	3	0	10	42	17	0	8	1	24	0	0	1	5	0
5:30 PM - 5:45 PM	17	28	2	0	11	40	16	0	16	0	8	0	1	1	8	0
5:45 PM - 6:00 PM	12	30	1	2	9	35	23	0	12	0	12	0	3	0	6	1
TOTAL	**121**	**209**	**14**	**5**	**78**	**313**	**153**	**1**	**86**	**2**	**96**	**0**	**9**	**6**	**41**	**1**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	126	165	3	1	23	138	91	1	143	3	124	0	4	2	67	2
5:00 PM - 6:00 PM	61	110	9	2	40	153	69	0	45	1	57	0	5	5	22	1

	PHF	Trucks
AM	0.715	0.4%
PM	0.925	0.5%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

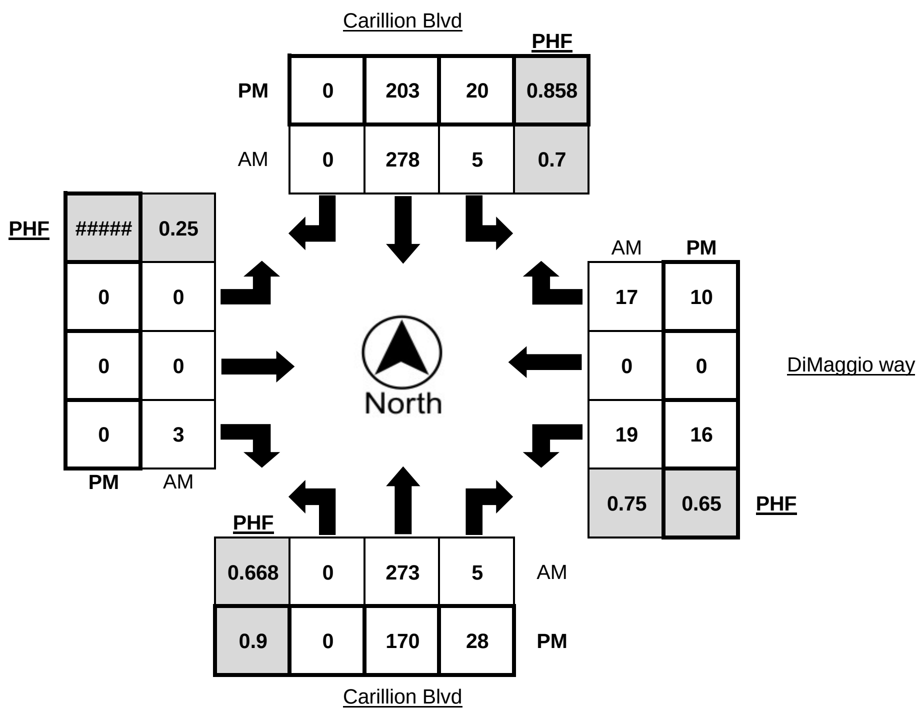
LOCATION Di Maggio Way @ Carillion Blvd
LATITUDE 38.2725
COUNTY Sacramento
LONGITUDE -121.2884
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	26	1	0	1	20	0	1	0	0	0	0	4	0	3	0
7:15 AM - 7:30 AM	0	50	1	1	1	31	0	0	0	0	0	0	7	0	2	0
7:30 AM - 7:45 AM	0	97	1	0	1	63	0	0	0	0	0	0	8	0	4	0
7:45 AM - 8:00 AM	0	102	2	0	1	100	0	0	0	0	3	3	6	0	6	0
8:00 AM - 8:15 AM	0	34	0	0	0	75	0	1	0	0	0	0	2	0	2	0
8:15 AM - 8:30 AM	0	40	2	0	3	40	0	0	0	0	0	0	3	0	5	0
8:30 AM - 8:45 AM	0	18	2	0	3	23	0	0	0	0	0	0	1	0	2	0
8:45 AM - 9:00 AM	0	12	1	0	0	22	0	0	0	0	0	0	1	0	0	0
TOTAL	**0**	**379**	**10**	**1**	**10**	**374**	**0**	**2**	**0**	**0**	**3**	**3**	**32**	**0**	**24**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	36	7	1	3	50	0	0	0	0	0	0	3	0	1	0
4:15 PM - 4:30 PM	0	50	8	1	2	50	0	0	0	0	0	0	3	0	3	0
4:30 PM - 4:45 PM	0	36	6	0	3	51	0	0	0	0	0	0	1	0	1	0
4:45 PM - 5:00 PM	0	35	3	0	4	42	0	0	0	0	0	0	4	0	3	1
5:00 PM - 5:15 PM	0	42	8	0	5	48	0	0	0	0	0	0	3	0	0	0
5:15 PM - 5:30 PM	0	48	7	0	7	58	0	0	0	0	0	0	4	0	1	0
5:30 PM - 5:45 PM	0	45	8	2	4	48	0	0	0	0	0	0	5	0	5	0
5:45 PM - 6:00 PM	0	35	5	1	4	49	0	0	0	0	0	0	4	0	4	0
TOTAL	**0**	**327**	**52**	**5**	**32**	**396**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**0**	**18**	**1**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	273	5	0	5	278	0	1	0	0	3	3	19	0	17	0
5:00 PM - 6:00 PM	0	170	28	3	20	203	0	0	0	0	0	0	16	0	10	0

	PHF	Trucks
AM	0.682	0.7%
PM	0.894	0.7%



Turning Movement Report

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Prepared For:
OMNI-Means
943 Reserve Drive
Roseville, CA 95678

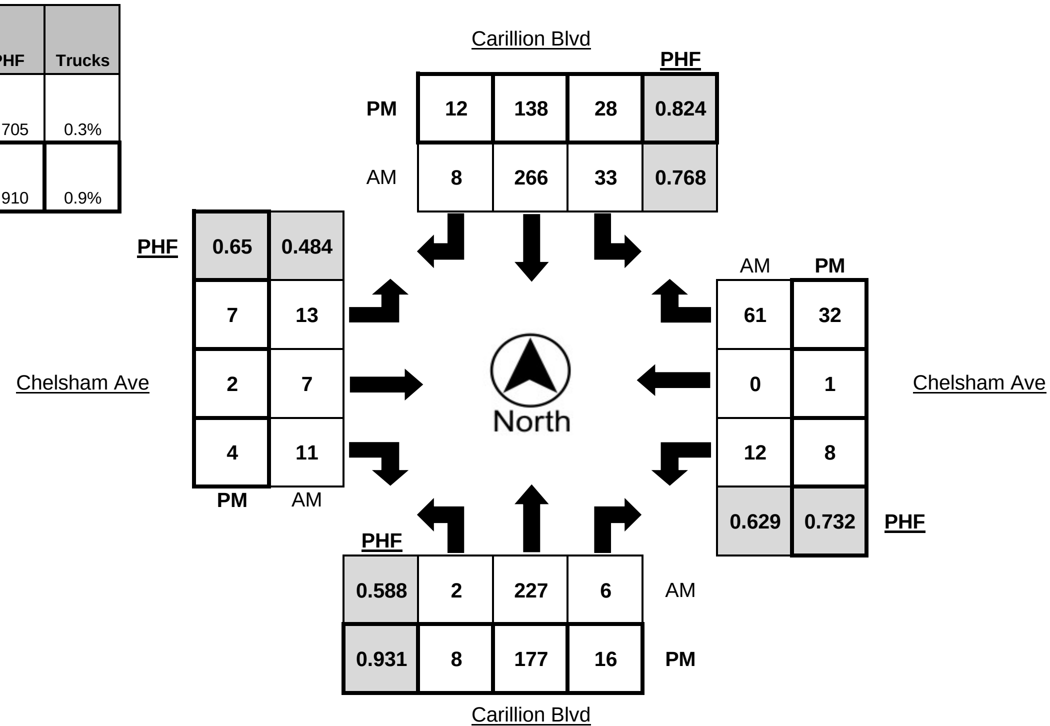
LOCATION	Chelsham Ave @ Carillion Blvd	**LATITUDE**	38.2700
COUNTY	Sacramento	**LONGITUDE**	-121.2872
COLLECTION DATE	Thursday, February 15, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	10	3	2	4	25	1	1	4	0	4	0	4	0	9	1
7:15 AM - 7:30 AM	0	31	1	0	2	36	0	0	3	0	5	0	4	0	9	0
7:30 AM - 7:45 AM	2	71	3	0	10	60	0	0	6	5	5	0	6	0	23	0
7:45 AM - 8:00 AM	0	98	2	0	9	86	4	1	4	2	1	0	1	0	22	0
8:00 AM - 8:15 AM	0	27	0	1	12	84	4	0	0	0	0	0	1	0	7	0
8:15 AM - 8:30 AM	0	29	1	0	2	43	3	1	3	0	2	0	1	0	5	0
8:30 AM - 8:45 AM	1	18	3	1	2	28	1	1	0	0	5	0	3	0	4	0
8:45 AM - 9:00 AM	0	18	1	0	0	29	0	0	2	0	2	0	0	0	3	0
TOTAL	**3**	**302**	**14**	**4**	**41**	**391**	**13**	**4**	**22**	**7**	**24**	**0**	**20**	**0**	**82**	**1**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	4	27	4	2	7	34	2	0	1	1	1	0	2	1	3	0
4:15 PM - 4:30 PM	1	38	5	0	13	35	0	0	0	0	1	0	3	0	4	0
4:30 PM - 4:45 PM	3	44	4	0	3	36	5	2	1	2	0	0	3	0	5	0
4:45 PM - 5:00 PM	1	41	7	0	7	35	1	0	5	0	0	0	3	0	11	0
5:00 PM - 5:15 PM	3	41	3	0	8	26	3	1	1	0	0	0	1	1	10	0
5:15 PM - 5:30 PM	1	51	2	1	10	41	3	0	0	0	4	0	1	0	6	0
5:30 PM - 5:45 PM	5	46	5	0	4	29	1	0	0	0	1	0	2	0	6	0
5:45 PM - 6:00 PM	1	31	3	0	3	44	2	0	1	0	2	0	4	0	3	0
TOTAL	**19**	**319**	**33**	**3**	**55**	**280**	**17**	**3**	**9**	**3**	**9**	**0**	**19**	**2**	**48**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	2	227	6	1	33	266	8	1	13	7	11	0	12	0	61	0
4:30 PM - 5:30 PM	8	177	16	1	28	138	12	3	7	2	4	0	8	1	32	0

	PHF	Trucks
AM	0.705	0.3%
PM	0.910	0.9%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

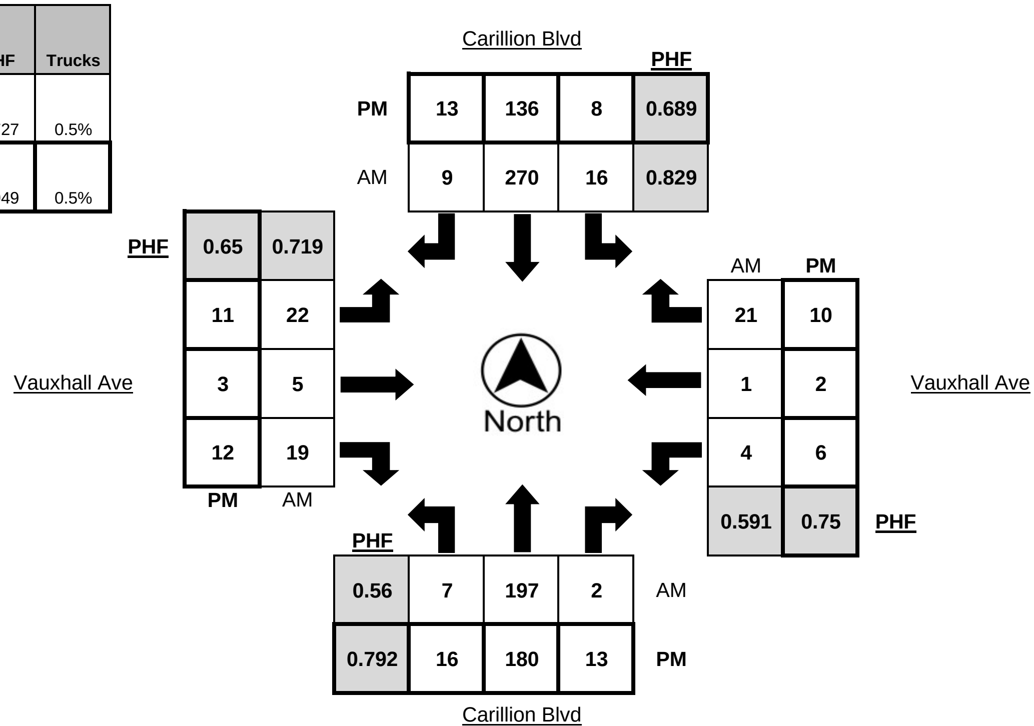
LOCATION	Vauxhall Ave @ Carillion Blvd	**LATITUDE**	38.2676
COUNTY	Sacramento	**LONGITUDE**	-121.2869
COLLECTION DATE	Thursday, February 15, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	10	1	0	0	32	1	0	2	0	3	0	3	0	2	0
7:15 AM - 7:30 AM	2	27	1	2	0	40	0	0	1	1	7	0	5	0	4	0
7:30 AM - 7:45 AM	1	55	1	0	5	68	2	0	10	1	5	0	0	1	10	0
7:45 AM - 8:00 AM	1	91	0	0	7	76	3	1	6	2	3	0	0	0	8	0
8:00 AM - 8:15 AM	1	22	1	0	4	83	2	0	5	0	6	0	2	0	1	0
8:15 AM - 8:30 AM	4	29	0	1	0	43	2	1	1	2	5	0	2	0	2	0
8:30 AM - 8:45 AM	2	19	1	1	3	32	2	1	2	0	5	0	0	0	1	0
8:45 AM - 9:00 AM	1	14	1	0	1	28	2	0	2	1	3	0	0	0	2	0
TOTAL	**12**	**267**	**6**	**4**	**20**	**402**	**14**	**3**	**29**	**7**	**37**	**0**	**12**	**1**	**30**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	4	35	4	0	3	28	2	0	0	0	1	0	0	0	1	0
4:15 PM - 4:30 PM	7	43	2	3	3	34	5	0	3	0	6	1	1	0	0	0
4:30 PM - 4:45 PM	6	48	3	0	2	35	2	1	1	0	2	0	0	0	2	0
4:45 PM - 5:00 PM	3	51	1	0	4	31	4	0	2	0	1	0	1	1	1	0
5:00 PM - 5:15 PM	5	43	4	0	3	24	1	0	5	0	5	0	2	0	1	0
5:15 PM - 5:30 PM	4	51	2	1	2	35	5	0	2	0	2	0	1	0	4	0
5:30 PM - 5:45 PM	5	56	5	1	2	23	5	0	3	2	0	0	2	1	1	0
5:45 PM - 6:00 PM	2	30	2	0	1	54	2	0	1	1	5	0	1	1	4	0
TOTAL	**36**	**357**	**23**	**5**	**20**	**264**	**26**	**1**	**17**	**3**	**22**	**1**	**8**	**3**	**14**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	7	197	2	1	16	270	9	2	22	5	19	0	4	1	21	0
5:00 PM - 6:00 PM	16	180	13	2	8	136	13	0	11	3	12	0	6	2	10	0

	PHF	**Trucks**
AM	0.727	0.5%
PM	0.949	0.5%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

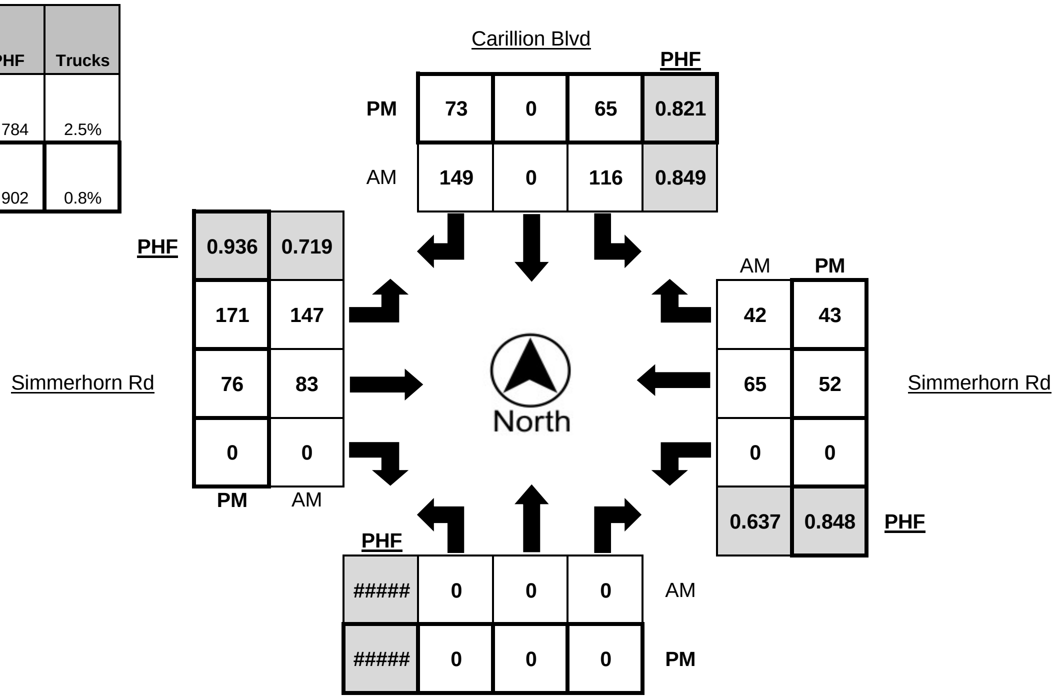
LOCATION Carillion Blvd @ Simmerhorn Rd
COUNTY Sacramento
COLLECTION DATE Wednesday, October 25, 2017
LATITUDE 38.262203°
LONGITUDE -121.286945°
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	0	0	7	0	19	0	16	5	0	0	0	10	2	0
7:15 AM - 7:30 AM	0	0	0	0	17	0	33	0	21	8	0	1	0	11	5	1
7:30 AM - 7:45 AM	0	0	0	0	27	0	33	0	51	29	0	6	0	14	14	1
7:45 AM - 8:00 AM	0	0	0	0	37	0	40	0	48	25	0	1	0	24	18	0
8:00 AM - 8:15 AM	0	0	0	0	35	0	43	1	27	21	0	3	0	16	5	1
8:15 AM - 8:30 AM	0	0	0	0	10	0	37	0	14	12	0	0	0	10	5	2
8:30 AM - 8:45 AM	0	0	0	0	13	0	23	2	14	16	0	0	0	10	3	1
8:45 AM - 9:00 AM	0	0	0	0	11	0	19	1	8	8	0	1	0	14	3	1
TOTAL	**0**	**0**	**0**	**0**	**157**	**0**	**247**	**4**	**199**	**124**	**0**	**12**	**0**	**109**	**55**	**7**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	0	22	0	18	0	33	14	0	1	0	12	8	1
4:15 PM - 4:30 PM	0	0	0	0	12	0	14	0	43	12	0	0	0	20	7	2
4:30 PM - 4:45 PM	0	0	0	0	14	0	20	0	34	16	0	1	0	16	8	2
4:45 PM - 5:00 PM	0	0	0	0	18	0	20	1	31	21	0	0	0	14	5	0
5:00 PM - 5:15 PM	0	0	0	0	17	0	25	0	46	17	0	0	0	12	16	2
5:15 PM - 5:30 PM	0	0	0	0	11	0	10	0	43	23	0	1	0	15	9	0
5:30 PM - 5:45 PM	0	0	0	0	19	0	23	0	35	22	0	0	0	10	10	0
5:45 PM - 6:00 PM	0	0	0	0	18	0	15	0	47	14	0	0	0	15	8	1
TOTAL	**0**	**0**	**0**	**0**	**131**	**0**	**145**	**1**	**312**	**139**	**0**	**3**	**0**	**114**	**71**	**8**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	0	0	0	116	0	149	1	147	83	0	11	0	65	42	3
5:00 PM - 6:00 PM	0	0	0	0	65	0	73	0	171	76	0	1	0	52	43	3

	PHF	Trucks
AM	0.784	2.5%
PM	0.902	0.8%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

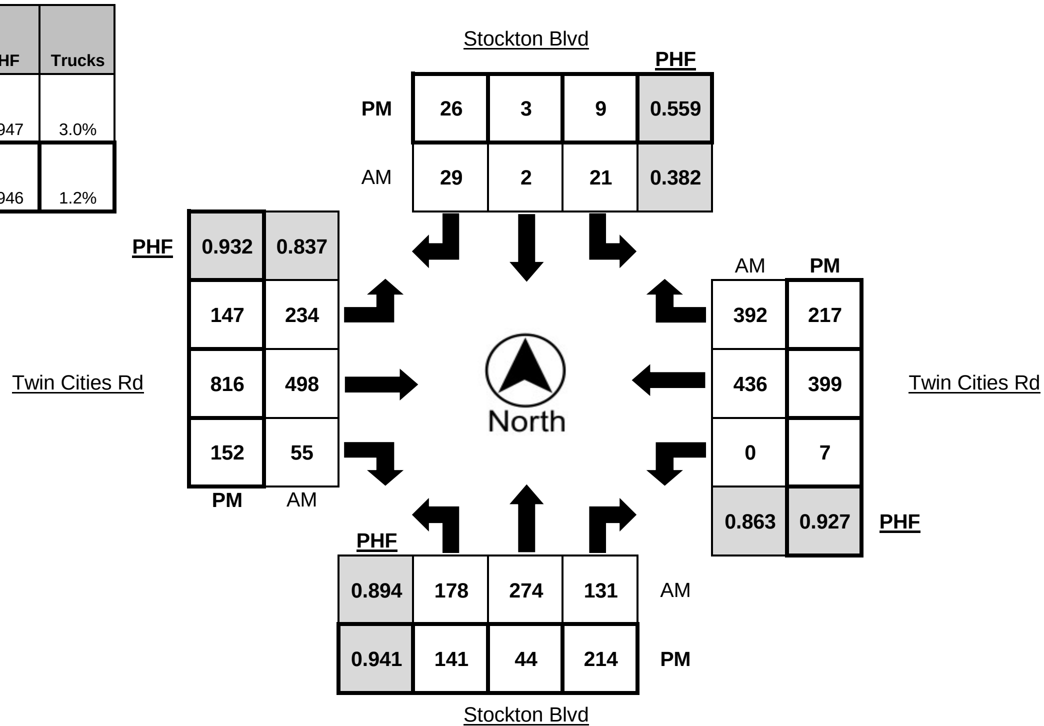
LOCATION Twin Cities Rd @ Stockton Blvd
LATITUDE 38.290967°
COUNTY Sacramento
LONGITUDE -121.311153°
COLLECTION DATE Thursday, April 05, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	46	91	36	13	7	0	8	0	66	73	8	4	0	48	78	4
7:15 AM - 7:30 AM	45	77	41	9	17	1	16	1	52	129	9	8	0	94	85	4
7:30 AM - 7:45 AM	36	64	35	8	2	1	6	0	72	137	26	4	0	84	93	4
7:45 AM - 8:00 AM	46	72	26	4	1	0	4	1	59	141	13	6	0	130	102	4
8:00 AM - 8:15 AM	51	61	29	4	1	0	3	1	51	91	7	7	0	128	112	2
8:15 AM - 8:30 AM	49	49	43	8	1	1	5	2	32	70	12	4	0	79	66	3
8:30 AM - 8:45 AM	35	21	30	8	0	0	1	0	29	62	8	8	1	75	56	2
8:45 AM - 9:00 AM	35	12	31	5	0	0	4	1	28	63	10	8	0	63	57	4
TOTAL	**343**	**447**	**271**	**59**	**29**	**3**	**47**	**6**	**389**	**766**	**93**	**49**	**1**	**701**	**649**	**27**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	33	16	60	1	2	0	5	1	31	124	29	1	0	93	50	2
4:15 PM - 4:30 PM	25	10	58	1	1	0	2	0	36	191	40	3	2	87	73	2
4:30 PM - 4:45 PM	33	15	58	2	4	3	10	0	29	189	35	4	0	98	70	2
4:45 PM - 5:00 PM	23	7	55	3	1	0	3	0	37	207	38	4	2	104	55	2
5:00 PM - 5:15 PM	41	13	48	1	2	0	9	1	34	215	32	2	1	92	37	3
5:15 PM - 5:30 PM	44	9	53	1	2	0	4	0	47	205	47	2	4	105	55	0
5:30 PM - 5:45 PM	36	17	48	2	0	0	1	0	28	180	32	6	2	92	55	5
5:45 PM - 6:00 PM	41	8	58	3	2	0	1	0	19	158	40	2	1	105	39	1
TOTAL	**276**	**95**	**438**	**14**	**14**	**3**	**35**	**2**	**261**	**1469**	**293**	**24**	**12**	**776**	**434**	**17**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	178	274	131	25	21	2	29	3	234	498	55	25	0	436	392	14
4:30 PM - 5:30 PM	141	44	214	7	9	3	26	1	147	816	152	12	7	399	217	7

	PHF	Trucks
AM	0.947	3.0%
PM	0.946	1.2%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

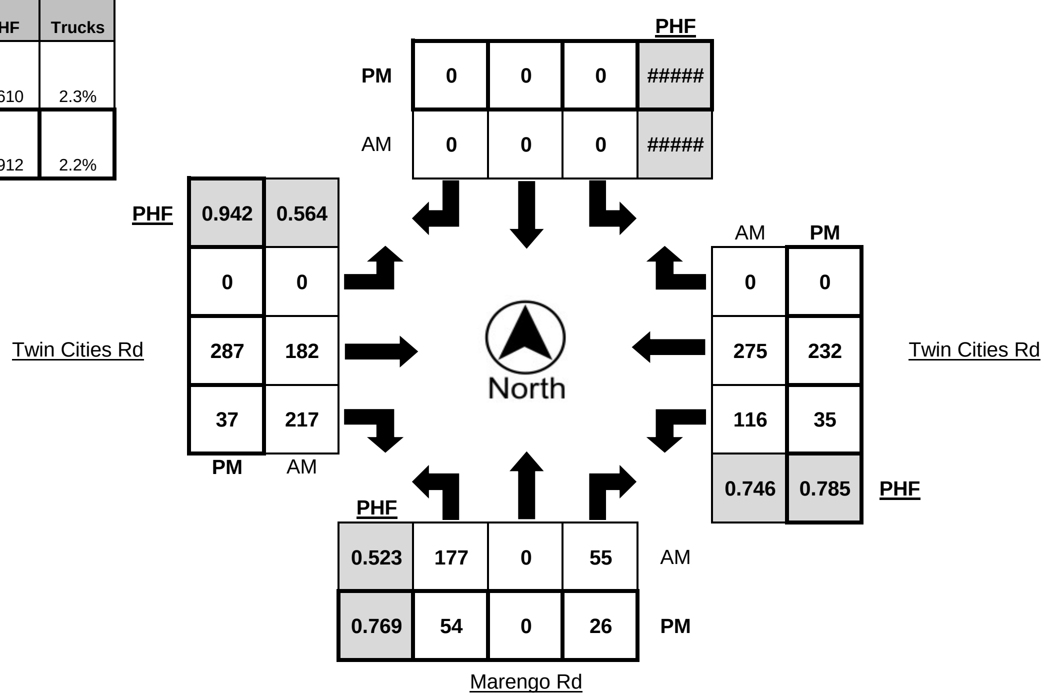
LOCATION Marengo Rd @ Twin Cities Rd
LATITUDE 38.2913
COUNTY Sacramento
LONGITUDE -121.2828
COLLECTION DATE Thursday, February 15, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	7	0	2	0	0	0	0	0	0	42	2	5	4	39	0	1
7:15 AM - 7:30 AM	11	0	6	0	0	0	0	0	0	29	21	0	8	48	0	2
7:30 AM - 7:45 AM	46	0	15	0	0	0	0	0	0	48	62	4	42	67	0	3
7:45 AM - 8:00 AM	88	0	23	3	0	0	0	0	0	57	120	0	56	75	0	3
8:00 AM - 8:15 AM	32	0	11	1	0	0	0	0	0	48	14	3	10	85	0	4
8:15 AM - 8:30 AM	8	0	2	0	0	0	0	0	0	52	2	3	5	50	0	0
8:30 AM - 8:45 AM	5	0	5	0	0	0	0	0	0	33	4	3	1	41	0	1
8:45 AM - 9:00 AM	5	0	3	0	0	0	0	0	0	34	6	2	3	41	0	2
TOTAL	**202**	**0**	**67**	**4**	**0**	**0**	**0**	**0**	**0**	**343**	**231**	**20**	**129**	**446**	**0**	**16**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	20	0	6	1	0	0	0	0	0	61	17	0	4	52	0	1
4:15 PM - 4:30 PM	8	0	6	0	0	0	0	0	0	74	11	2	12	73	0	3
4:30 PM - 4:45 PM	22	0	4	0	0	0	0	0	0	66	8	3	8	60	0	3
4:45 PM - 5:00 PM	15	0	8	0	0	0	0	0	0	71	8	1	8	46	0	1
5:00 PM - 5:15 PM	9	0	8	1	0	0	0	0	0	76	10	0	7	53	0	1
5:15 PM - 5:30 PM	13	0	9	0	0	0	0	0	0	59	19	0	5	39	0	2
5:30 PM - 5:45 PM	12	0	8	0	0	0	0	0	0	62	8	2	11	54	0	3
5:45 PM - 6:00 PM	12	0	11	0	0	0	0	0	0	62	9	3	10	38	0	1
TOTAL	**111**	**0**	**60**	**2**	**0**	**0**	**0**	**0**	**0**	**531**	**90**	**11**	**65**	**415**	**0**	**15**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	177	0	55	4	0	0	0	0	0	182	217	7	116	275	0	12
4:15 PM - 5:15 PM	54	0	26	1	0	0	0	0	0	287	37	6	35	232	0	8

	PHF	Trucks
AM	0.610	2.3%
PM	0.912	2.2%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

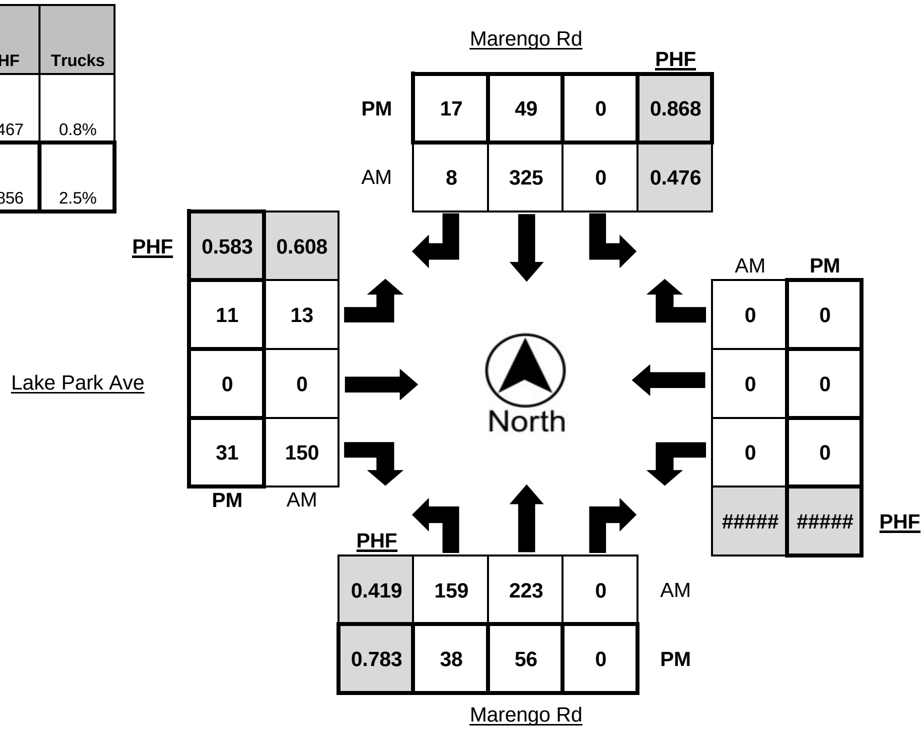
LOCATION Marengo Rd @ Lake Park Ave
LATITUDE 38.2893
COUNTY Sacramento
LONGITUDE -121.2828
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	3	7	0	0	0	10	1	0	5	0	6	0	0	0	0	0
7:15 AM - 7:30 AM	8	16	0	0	0	22	2	1	3	0	16	0	0	0	0	0
7:30 AM - 7:45 AM	34	59	0	0	0	109	3	3	4	0	55	0	0	0	0	0
7:45 AM - 8:00 AM	102	126	0	1	0	174	1	2	1	0	66	0	0	0	0	0
8:00 AM - 8:15 AM	15	22	0	0	0	20	2	0	5	0	13	0	0	0	0	0
8:15 AM - 8:30 AM	3	9	0	0	0	13	2	0	4	0	4	0	0	0	0	0
8:30 AM - 8:45 AM	2	5	0	0	0	7	2	0	2	0	5	0	0	0	0	0
8:45 AM - 9:00 AM	3	14	0	0	0	12	2	0	1	0	12	0	0	0	0	0
TOTAL	**170**	**258**	**0**	**1**	**0**	**367**	**15**	**6**	**25**	**0**	**177**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	5	16	0	0	0	20	4	1	2	0	3	0	0	0	0	0
4:15 PM - 4:30 PM	10	20	0	1	0	11	4	0	3	0	9	0	0	0	0	0
4:30 PM - 4:45 PM	6	8	0	0	0	12	2	3	4	0	5	0	0	0	0	0
4:45 PM - 5:00 PM	12	15	0	0	0	13	6	0	2	0	1	0	0	0	0	0
5:00 PM - 5:15 PM	10	13	0	0	0	13	5	1	2	0	16	0	0	0	0	0
5:15 PM - 5:30 PM	7	18	0	0	0	17	4	0	4	0	5	0	0	0	0	0
5:30 PM - 5:45 PM	9	8	0	0	0	12	1	0	2	0	6	0	0	0	0	0
5:45 PM - 6:00 PM	6	9	0	0	0	13	6	0	4	0	5	0	0	0	0	0
TOTAL	**65**	**107**	**0**	**1**	**0**	**111**	**32**	**5**	**23**	**0**	**50**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	159	223	0	1	0	325	8	6	13	0	150	0	0	0	0	0
4:15 PM - 5:15 PM	38	56	0	1	0	49	17	4	11	0	31	0	0	0	0	0

	PHF	Trucks
AM	0.467	0.8%
PM	0.856	2.5%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

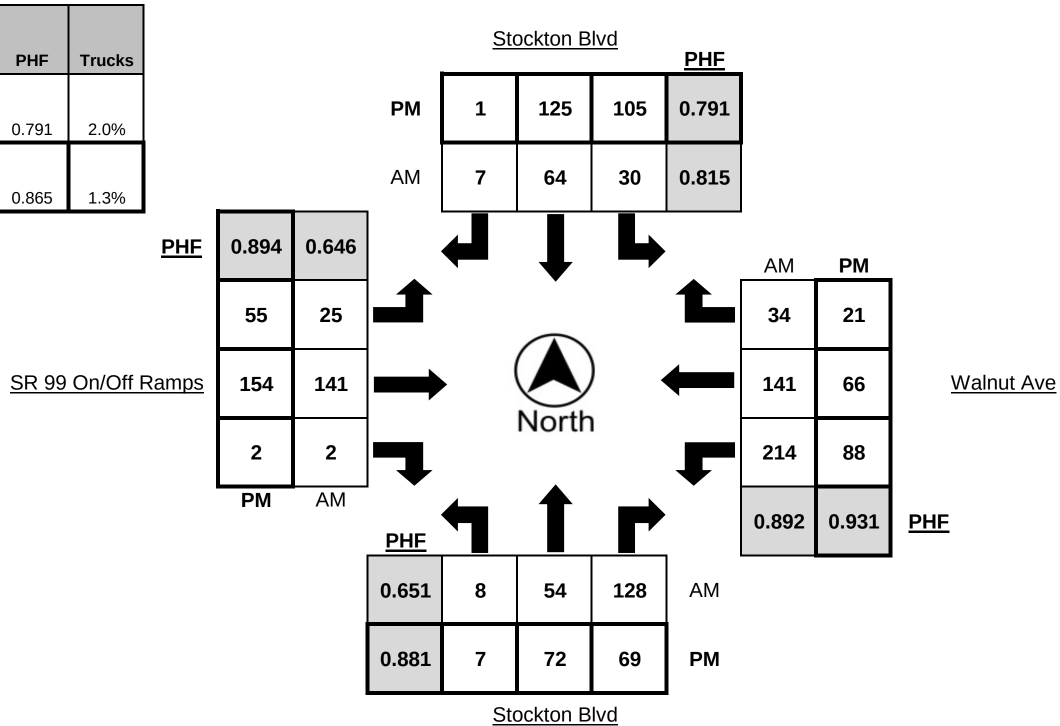
LOCATION Walnut Ave @ Stockton Blvd / 99 NB Ramps
LATITUDE 38.280162°
COUNTY Sacramento
LONGITUDE -121.305022°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	9	12	4	1	6	10	0	0	4	6	0	0	19	53	3	1
7:15 AM - 7:30 AM	1	15	20	3	13	6	0	0	3	14	0	0	26	41	6	1
7:30 AM - 7:45 AM	5	15	41	1	13	13	4	0	6	36	1	1	34	44	11	1
7:45 AM - 8:00 AM	3	19	51	1	12	18	1	1	11	53	1	0	60	28	11	0
8:00 AM - 8:15 AM	0	9	24	2	3	26	1	0	1	32	0	7	73	30	6	1
8:15 AM - 8:30 AM	0	11	12	1	2	7	1	0	7	20	0	1	47	39	6	0
8:30 AM - 8:45 AM	0	7	8	0	5	9	1	2	2	5	0	0	19	20	3	2
8:45 AM - 9:00 AM	1	4	2	1	3	13	0	0	1	12	0	0	22	20	6	3
TOTAL	**19**	**92**	**162**	**10**	**57**	**102**	**8**	**3**	**35**	**178**	**2**	**9**	**300**	**275**	**52**	**9**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	1	9	16	0	18	16	1	0	15	29	0	1	23	19	2	0
4:15 PM - 4:30 PM	2	14	18	1	27	29	0	0	8	33	0	0	22	13	4	0
4:30 PM - 4:45 PM	4	18	15	4	32	29	0	0	10	35	1	1	21	20	4	1
4:45 PM - 5:00 PM	1	24	17	0	14	19	0	0	17	35	0	0	20	18	4	0
5:00 PM - 5:15 PM	1	12	14	1	32	32	0	0	12	41	1	0	20	13	8	1
5:15 PM - 5:30 PM	1	18	23	1	27	45	1	0	16	43	0	1	27	15	5	0
5:30 PM - 5:45 PM	2	12	19	0	26	34	0	0	6	32	1	0	31	16	4	1
5:45 PM - 6:00 PM	3	22	25	0	13	19	0	0	10	37	0	0	33	10	3	0
TOTAL	**15**	**129**	**147**	**7**	**189**	**223**	**2**	**0**	**94**	**285**	**3**	**3**	**197**	**124**	**34**	**3**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:30 AM - 8:30 AM	8	54	128	5	30	64	7	1	25	141	2	9	214	141	34	2
4:30 PM - 5:30 PM	7	72	69	6	105	125	1	0	55	154	2	2	88	66	21	2

	PHF	Trucks
AM	0.791	2.0%
PM	0.865	1.3%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

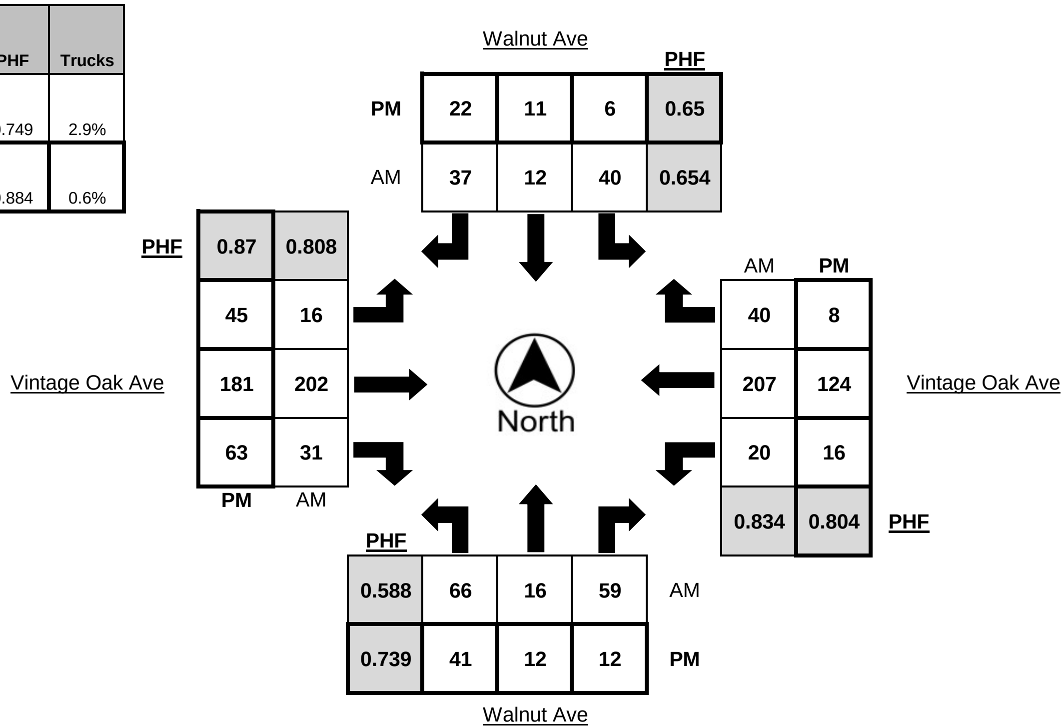
LOCATION Walnut Ave @ Vintage Oak Ave
LATITUDE 38.2794
COUNTY Sacramento
LONGITUDE -121.2988
COLLECTION DATE Thursday, February 15, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	15	2	1	0	3	1	12	1	0	7	4	0	1	40	1	1
7:15 AM - 7:30 AM	13	0	3	0	3	3	23	0	2	19	9	0	0	33	1	1
7:30 AM - 7:45 AM	18	2	18	0	14	2	11	0	4	61	12	1	3	43	8	0
7:45 AM - 8:00 AM	21	9	30	1	16	8	10	0	1	62	12	4	7	60	13	2
8:00 AM - 8:15 AM	16	3	6	0	5	0	10	0	6	47	5	6	5	57	8	4
8:15 AM - 8:30 AM	11	2	5	0	5	2	6	0	5	32	2	0	5	47	11	4
8:30 AM - 8:45 AM	7	0	1	0	1	2	2	0	1	11	4	1	1	25	2	1
8:45 AM - 9:00 AM	11	1	3	0	1	2	9	0	1	6	0	0	1	17	2	0
TOTAL	**112**	**19**	**67**	**1**	**48**	**20**	**83**	**1**	**20**	**245**	**48**	**12**	**23**	**322**	**46**	**13**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	9	4	3	0	5	2	10	0	8	28	16	0	2	26	0	0
4:15 PM - 4:30 PM	5	2	3	0	6	3	7	0	9	32	9	0	2	34	8	1
4:30 PM - 4:45 PM	7	2	1	0	3	3	3	0	6	39	12	0	4	28	3	0
4:45 PM - 5:00 PM	5	1	3	0	2	1	8	0	7	52	9	0	6	27	2	0
5:00 PM - 5:15 PM	8	3	2	0	3	0	6	1	13	50	20	0	6	27	3	0
5:15 PM - 5:30 PM	11	5	6	1	1	4	5	0	14	43	18	0	3	41	2	0
5:30 PM - 5:45 PM	10	3	1	0	1	1	3	0	10	37	15	0	3	23	2	0
5:45 PM - 6:00 PM	12	1	3	0	1	6	8	0	8	51	10	1	4	33	1	0
TOTAL	**67**	**21**	**22**	**1**	**22**	**20**	**50**	**1**	**75**	**332**	**109**	**1**	**30**	**239**	**21**	**1**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	66	16	59	1	40	12	37	0	16	202	31	11	20	207	40	10
5:00 PM - 6:00 PM	41	12	12	1	6	11	22	1	45	181	63	1	16	124	8	0

	PHF	Trucks
AM	0.749	2.9%
PM	0.884	0.6%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

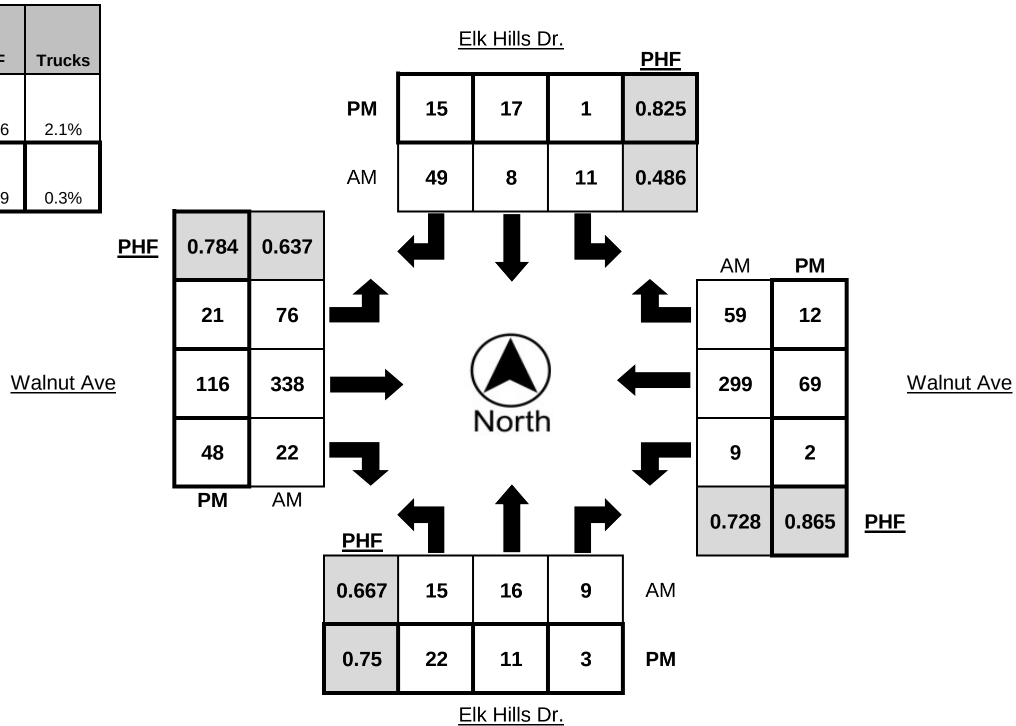
LOCATION Walnut Ave @ Elk Hills Dr
LATITUDE 38.280277°
COUNTY Sacramento
LONGITUDE -121.289068°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	9	1	0	0	0	1	5	0	1	7	1	0	0	8	1	0
7:15 AM - 7:30 AM	6	3	0	0	3	2	3	1	7	42	4	0	0	15	3	0
7:30 AM - 7:45 AM	6	5	2	0	4	1	5	0	20	98	5	1	2	58	24	1
7:45 AM - 8:00 AM	3	7	5	0	4	1	10	0	44	116	11	1	6	93	27	1
8:00 AM - 8:15 AM	4	1	2	0	2	5	28	0	10	83	4	7	0	90	6	2
8:15 AM - 8:30 AM	2	3	0	0	1	1	6	0	2	41	2	1	1	58	2	5
8:30 AM - 8:45 AM	3	1	1	0	2	2	5	0	1	9	1	0	2	10	0	3
8:45 AM - 9:00 AM	3	0	0	0	0	1	5	1	1	9	2	1	0	13	0	0
TOTAL	**36**	**21**	**10**	**0**	**16**	**14**	**67**	**2**	**86**	**405**	**30**	**11**	**11**	**345**	**63**	**12**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	3	0	0	0	2	2	4	0	3	20	6	0	0	14	0	0
4:15 PM - 4:30 PM	7	1	0	0	1	5	2	0	7	19	10	0	0	13	3	1
4:30 PM - 4:45 PM	5	1	0	0	1	4	0	0	8	18	11	0	1	19	2	0
4:45 PM - 5:00 PM	5	3	0	0	2	1	2	1	3	9	12	1	1	15	2	0
5:00 PM - 5:15 PM	8	2	0	0	1	4	5	0	7	26	11	0	0	21	3	0
5:15 PM - 5:30 PM	6	1	1	0	0	5	1	0	3	27	11	0	1	16	6	0
5:30 PM - 5:45 PM	3	2	1	0	0	4	6	0	7	24	10	0	0	15	2	1
5:45 PM - 6:00 PM	5	6	1	0	0	4	3	0	4	39	16	0	1	17	1	0
TOTAL	**42**	**16**	**3**	**0**	**7**	**29**	**23**	**1**	**42**	**182**	**87**	**1**	**4**	**130**	**19**	**2**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:30 AM - 8:30 AM	15	16	9	0	11	8	49	0	76	338	22	10	9	299	59	9
5:00 PM - 6:00 PM	22	11	3	0	1	17	15	0	21	116	48	0	2	69	12	1

	PHF	Trucks
AM	0.696	2.1%
PM	0.869	0.3%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

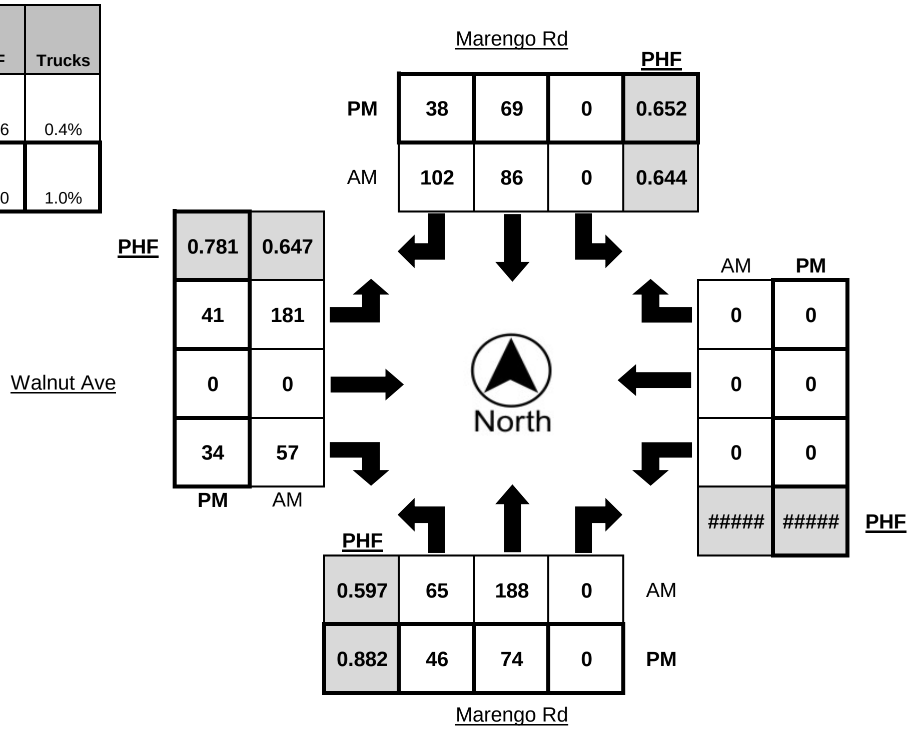
LOCATION Walnut Ave @ Marengo Blvd
LATITUDE 38.282840°
COUNTY Sacramento
LONGITUDE -121.282644°
COLLECTION DATE Wednesday, October 25, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	2	8	0	0	0	10	2	0	2	0	2	0	0	0	0	0
7:15 AM - 7:30 AM	7	23	0	1	0	9	13	0	38	0	6	0	0	0	0	0
7:30 AM - 7:45 AM	21	62	0	1	0	24	29	1	60	0	12	0	0	0	0	0
7:45 AM - 8:00 AM	17	89	0	0	0	28	45	0	71	0	21	0	0	0	0	0
8:00 AM - 8:15 AM	20	14	0	0	0	25	15	0	12	0	18	0	0	0	0	0
8:15 AM - 8:30 AM	22	8	0	0	0	8	6	0	3	0	20	0	0	0	0	0
8:30 AM - 8:45 AM	3	8	0	0	0	6	2	0	4	0	7	0	0	0	0	0
8:45 AM - 9:00 AM	0	10	0	0	0	4	0	0	2	0	10	1	0	0	0	0
TOTAL	**92**	**222**	**0**	**2**	**0**	**114**	**112**	**1**	**192**	**0**	**96**	**1**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	6	16	0	0	0	18	8	0	9	0	4	0	0	0	0	0
4:15 PM - 4:30 PM	3	15	0	0	0	12	7	0	7	0	8	0	0	0	0	0
4:30 PM - 4:45 PM	7	15	0	0	0	17	5	0	6	0	7	0	0	0	0	0
4:45 PM - 5:00 PM	5	21	0	1	0	19	5	0	5	0	6	0	0	0	0	0
5:00 PM - 5:15 PM	9	14	0	0	0	26	15	0	11	0	6	0	0	0	0	0
5:15 PM - 5:30 PM	10	24	0	1	0	16	9	0	9	0	15	0	0	0	0	0
5:30 PM - 5:45 PM	10	20	0	0	0	13	8	1	10	0	8	0	0	0	0	0
5:45 PM - 6:00 PM	17	16	0	0	0	14	6	1	11	0	5	0	0	0	0	0
TOTAL	**67**	**141**	**0**	**2**	**0**	**135**	**63**	**2**	**68**	**0**	**59**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	65	188	0	2	0	86	102	1	181	0	57	0	0	0	0	0
5:00 PM - 6:00 PM	46	74	0	1	0	69	38	2	41	0	34	0	0	0	0	0

	PHF	Trucks
AM	0.626	0.4%
PM	0.910	1.0%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

LOCATION	Marengo Rd @ Chelsham Ave	**LATITUDE**	38.2715
COUNTY	Sacramento	**LONGITUDE**	-121.2827
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	7	0	0	0	19	0	0	1	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	1	25	0	0	0	22	0	0	0	0	6	0	0	0	0	0
7:30 AM - 7:45 AM	0	71	0	3	0	50	3	1	9	0	1	0	0	0	0	0
7:45 AM - 8:00 AM	3	79	0	0	0	62	5	4	9	0	5	0	0	0	0	0
8:00 AM - 8:15 AM	0	37	0	0	0	63	2	0	3	0	4	0	0	0	0	0
8:15 AM - 8:30 AM	1	23	0	0	0	34	0	3	0	0	2	0	0	0	0	0
8:30 AM - 8:45 AM	1	12	0	0	0	25	0	0	0	0	2	0	0	0	0	0
8:45 AM - 9:00 AM	0	18	0	0	0	25	0	0	0	0	2	0	0	0	0	0
TOTAL	**7**	**272**	**0**	**3**	**0**	**300**	**10**	**8**	**22**	**0**	**22**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	3	28	0	0	0	35	1	0	0	0	1	0	0	0	0	0
4:15 PM - 4:30 PM	1	17	0	0	0	27	2	1	2	0	1	0	0	0	0	0
4:30 PM - 4:45 PM	2	28	0	0	0	28	1	1	1	0	1	0	0	0	0	0
4:45 PM - 5:00 PM	1	32	0	0	0	17	1	0	1	0	3	0	0	0	0	0
5:00 PM - 5:15 PM	3	23	0	0	0	30	1	0	0	0	1	0	0	0	0	0
5:15 PM - 5:30 PM	2	28	0	0	0	34	1	0	0	0	6	0	0	0	0	0
5:30 PM - 5:45 PM	5	27	0	0	0	25	0	0	0	0	4	0	0	0	0	0
5:45 PM - 6:00 PM	1	12	0	0	0	31	1	0	3	0	1	0	0	0	0	0
TOTAL	**18**	**195**	**0**	**0**	**0**	**227**	**8**	**2**	**7**	**0**	**18**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	4	210	0	3	0	209	10	8	21	0	12	0	0	0	0	0
4:30 PM - 5:30 PM	8	111	0	0	0	109	4	1	2	0	11	0	0	0	0	0

	PHF	**Trucks**
AM	0.715	2.4%
PM	0.863	0.4%

Marengo Rd

				PHF
PM	**4**	**109**	**0**	**0.807**
AM	**10**	**209**	**0**	**0.817**

Chelsham Ave

	PM	AM
PHF	**0.542**	**0.589**
	2	**21**
	0	**0**
	11	**12**

North

	AM	PM
	0	**0**
	0	**0**
	0	**0**
PHF	**#####**	**#####**

PHF				
0.652	**4**	**210**	**0**	AM
0.902	**8**	**111**	**0**	**PM**

Marengo Rd

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

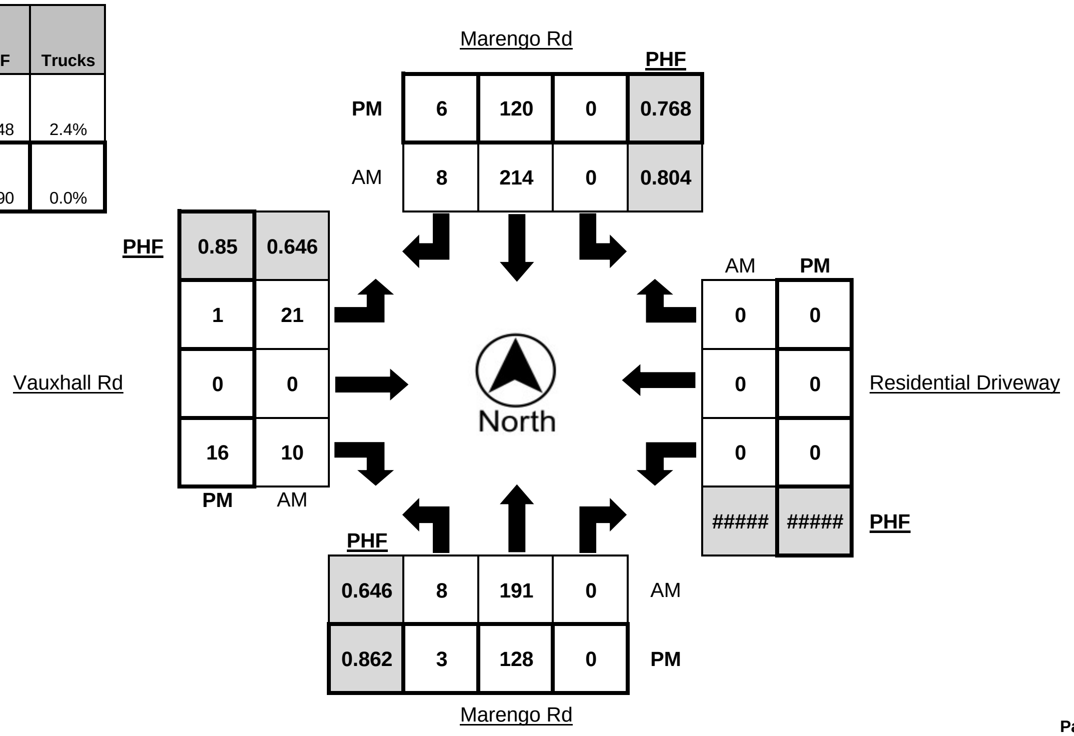
LOCATION Marengo Rd @ Vauxhall Ave
LATITUDE 38.2679
COUNTY Sacramento
LONGITUDE -121.2826
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	7	0	1	0	18	1	0	0	0	2	0	0	0	0	0
7:15 AM - 7:30 AM	1	22	0	0	0	35	0	3	4	0	1	0	0	0	0	0
7:30 AM - 7:45 AM	1	64	0	3	0	52	1	1	9	0	3	0	0	0	0	0
7:45 AM - 8:00 AM	5	72	0	0	0	63	2	4	7	0	2	0	0	0	0	0
8:00 AM - 8:15 AM	1	33	0	0	0	64	5	0	1	0	4	0	0	0	0	0
8:15 AM - 8:30 AM	0	24	0	0	0	34	0	3	1	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	13	0	0	0	27	0	0	0	0	3	0	0	0	0	0
8:45 AM - 9:00 AM	0	16	0	0	0	28	0	0	3	0	3	0	0	0	0	0
TOTAL	**9**	**251**	**0**	**4**	**0**	**321**	**9**	**11**	**25**	**0**	**18**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	2	34	0	0	0	32	2	0	1	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	3	20	0	0	0	32	0	1	0	0	3	0	0	0	0	0
4:30 PM - 4:45 PM	2	29	0	0	0	28	1	2	0	0	3	0	0	0	0	0
4:45 PM - 5:00 PM	0	35	0	0	0	18	1	0	0	0	3	0	0	0	0	0
5:00 PM - 5:15 PM	1	26	0	0	0	33	1	0	0	0	4	0	0	0	0	0
5:15 PM - 5:30 PM	0	31	0	0	0	38	3	0	1	0	4	0	0	0	0	0
5:30 PM - 5:45 PM	2	36	0	0	0	31	1	0	0	0	5	0	0	0	0	0
5:45 PM - 6:00 PM	1	15	0	0	0	31	1	0	1	0	3	0	0	0	0	0
TOTAL	**11**	**226**	**0**	**0**	**0**	**243**	**10**	**3**	**3**	**0**	**25**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	8	191	0	3	0	214	8	8	21	0	10	0	0	0	0	0
4:45 PM - 5:45 PM	3	128	0	0	0	120	6	0	1	0	16	0	0	0	0	0

	PHF	Trucks
AM	0.748	2.4%
PM	0.890	0.0%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

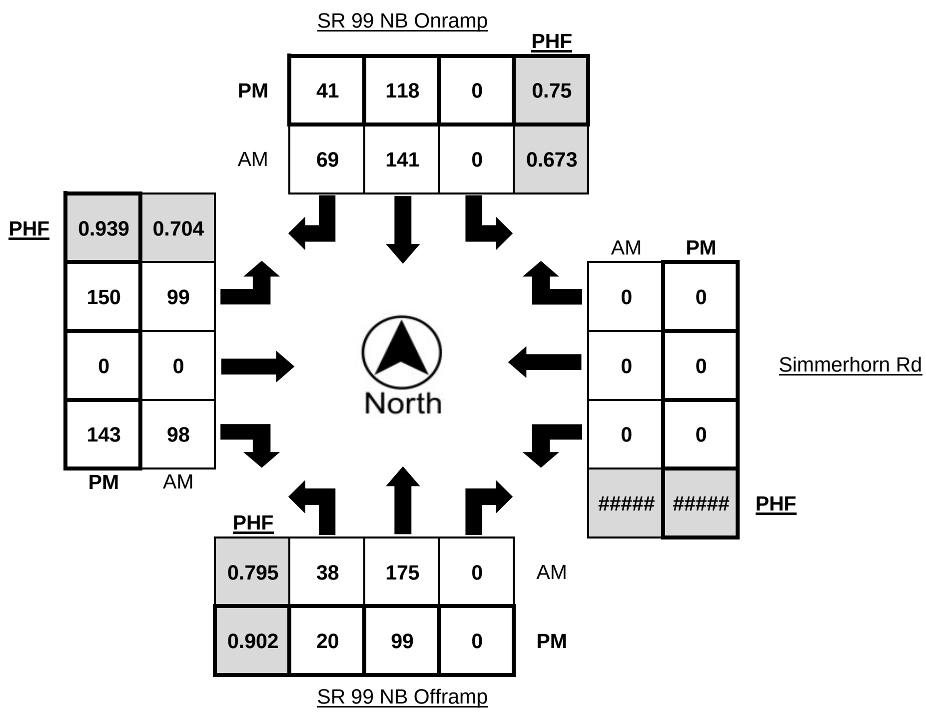
LOCATION SR 99 NB Ramps @ Simmerhorn Rd
LATITUDE 38.2624
COUNTY Sacramento
LONGITUDE -121.2974
COLLECTION DATE Thursday, February 15, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	11	17	0	1	0	11	14	4	22	0	9	3	0	0	0	0
7:15 AM - 7:30 AM	17	30	0	3	0	19	10	2	19	0	17	3	0	0	0	0
7:30 AM - 7:45 AM	10	40	0	0	0	52	26	4	27	0	29	4	0	0	0	0
7:45 AM - 8:00 AM	5	44	0	1	0	47	16	0	33	0	37	3	0	0	0	0
8:00 AM - 8:15 AM	6	61	0	1	0	23	17	0	20	0	15	5	0	0	0	0
8:15 AM - 8:30 AM	11	35	0	5	0	18	10	1	15	0	17	6	0	0	0	0
8:30 AM - 8:45 AM	11	29	0	1	0	11	9	0	26	0	23	3	0	0	0	0
8:45 AM - 9:00 AM	2	27	0	0	0	7	9	0	18	0	13	1	0	0	0	0
TOTAL	**73**	**283**	**0**	**12**	**0**	**188**	**111**	**11**	**180**	**0**	**160**	**28**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	8	20	0	0	0	33	7	0	28	0	25	0	0	0	0	0
4:15 PM - 4:30 PM	8	31	0	2	0	22	11	1	35	0	39	3	0	0	0	0
4:30 PM - 4:45 PM	3	27	0	1	0	26	9	1	31	0	26	2	0	0	0	0
4:45 PM - 5:00 PM	3	29	0	0	0	25	8	0	41	0	35	1	0	0	0	0
5:00 PM - 5:15 PM	5	26	0	0	0	35	18	1	32	0	33	0	0	0	0	0
5:15 PM - 5:30 PM	6	27	0	1	0	25	10	1	34	0	40	0	0	0	0	0
5:30 PM - 5:45 PM	6	17	0	0	0	33	5	0	43	0	35	4	0	0	0	0
5:45 PM - 6:00 PM	5	50	0	1	0	14	7	0	25	0	32	1	0	0	0	0
TOTAL	**44**	**227**	**0**	**5**	**0**	**213**	**75**	**4**	**269**	**0**	**265**	**11**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	38	175	0	5	0	141	69	6	99	0	98	15	0	0	0	0
4:45 PM - 5:45 PM	20	99	0	1	0	118	41	2	150	0	143	5	0	0	0	0

	PHF	Trucks
AM	0.842	4.2%
PM	0.958	1.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

LOCATION Simmerhorn Rd @ Marengo Rd **LATITUDE** 38.2622

COUNTY Sacramento **LONGITUDE** -121.2826

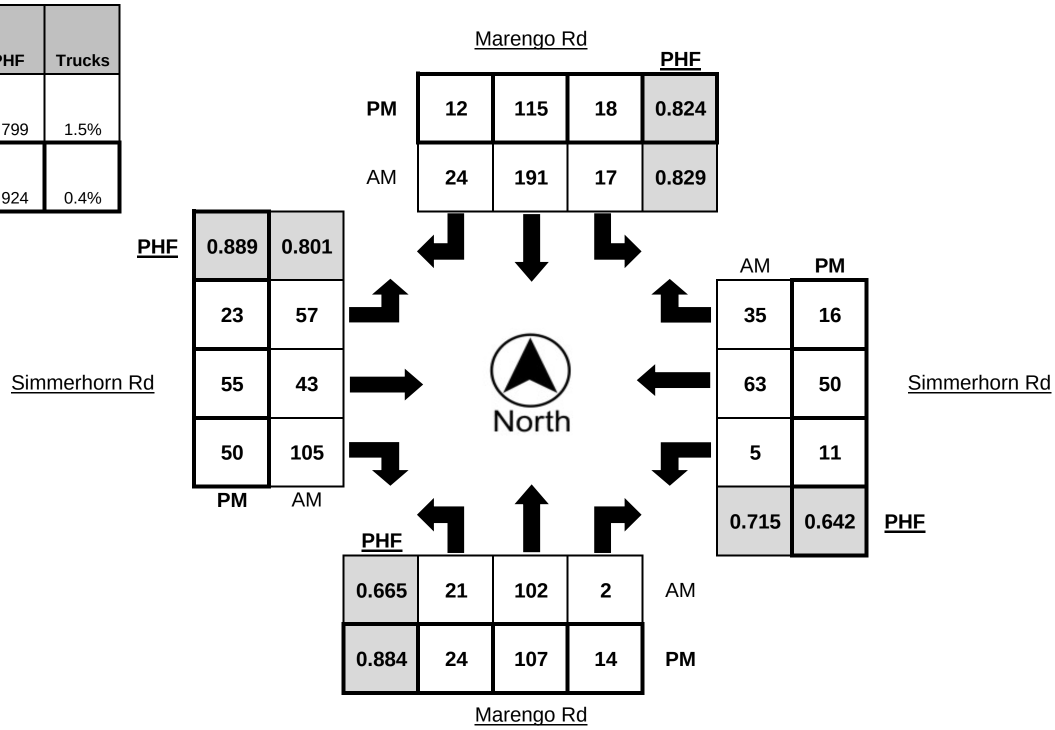
COLLECTION DATE Wednesday, February 14, 2018 **WEATHER** Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	4	0	1	1	14	2	0	2	5	6	0	2	7	2	0
7:15 AM - 7:30 AM	2	14	0	0	2	31	5	1	7	4	16	0	2	18	4	1
7:30 AM - 7:45 AM	4	34	0	0	4	51	4	1	23	11	30	2	1	14	11	1
7:45 AM - 8:00 AM	14	33	0	0	6	48	11	4	22	16	22	0	2	18	16	0
8:00 AM - 8:15 AM	1	21	2	0	5	61	4	0	5	12	37	0	0	13	4	0
8:15 AM - 8:30 AM	2	19	0	0	4	20	8	2	2	9	13	0	2	9	3	0
8:30 AM - 8:45 AM	0	6	0	0	2	26	4	2	1	7	11	2	1	8	4	0
8:45 AM - 9:00 AM	0	11	2	0	1	27	4	1	2	7	10	0	0	6	5	0
TOTAL	**24**	**142**	**4**	**1**	**25**	**278**	**42**	**11**	**64**	**71**	**145**	**4**	**10**	**93**	**49**	**2**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	10	28	1	0	3	23	7	0	9	14	13	0	2	11	4	1
4:15 PM - 4:30 PM	5	14	2	0	3	30	3	1	5	11	14	1	2	16	2	0
4:30 PM - 4:45 PM	1	31	2	0	3	28	5	2	4	17	11	0	3	11	2	0
4:45 PM - 5:00 PM	8	29	2	0	4	17	1	0	3	7	11	0	6	19	5	0
5:00 PM - 5:15 PM	3	26	3	0	4	30	3	0	7	16	12	0	2	8	1	1
5:15 PM - 5:30 PM	8	22	3	0	4	35	3	1	7	16	13	0	2	15	6	0
5:30 PM - 5:45 PM	5	30	6	0	6	33	5	0	6	16	14	0	1	8	4	0
5:45 PM - 6:00 PM	4	15	1	0	3	32	3	0	2	10	19	0	2	8	1	0
TOTAL	**44**	**195**	**20**	**0**	**30**	**228**	**30**	**4**	**43**	**107**	**107**	**1**	**20**	**96**	**25**	**2**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	21	102	2	0	17	191	24	6	57	43	105	2	5	63	35	2
4:45 PM - 5:45 PM	24	107	14	0	18	115	12	1	23	55	50	0	11	50	16	1

	PHF	**Trucks**
AM	0.799	1.5%
PM	0.924	0.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

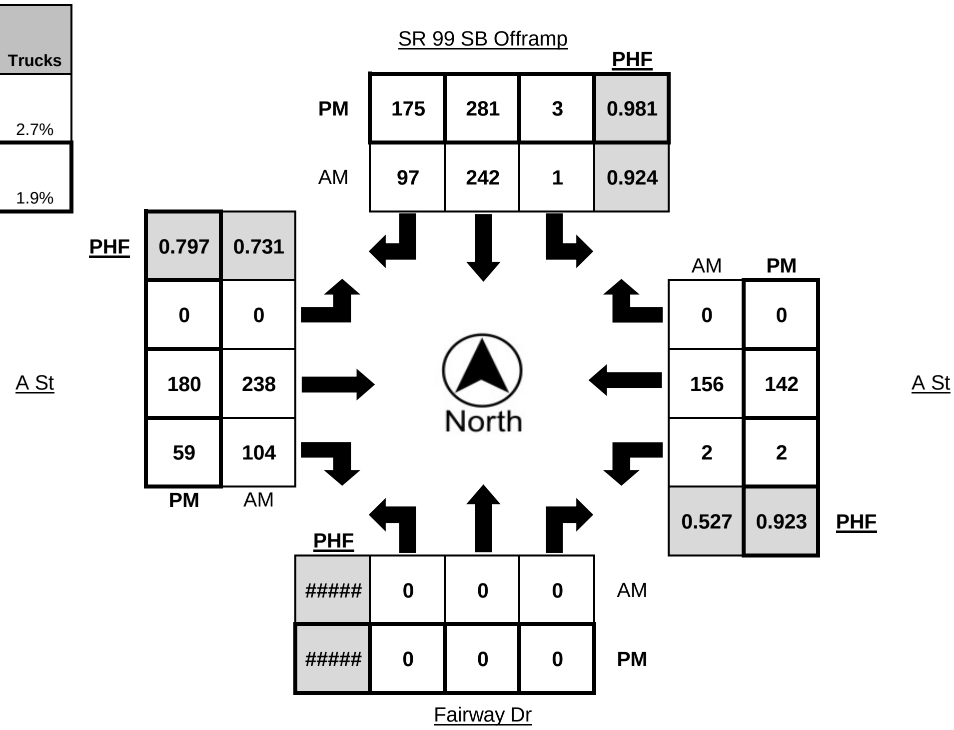
LOCATION SR 99 SB Offramp @ Crystal Way / A St
LATITUDE 38.2552
COUNTY Sacramento
LONGITUDE -121.2949
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	0	0	0	23	15	1	0	44	18	1	0	13	0	0
7:15 AM - 7:30 AM	0	0	0	0	1	33	19	1	0	54	19	1	0	27	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	42	36	2	0	53	34	0	1	47	0	2
7:45 AM - 8:00 AM	0	0	0	0	0	61	29	2	0	80	37	4	1	74	0	1
8:00 AM - 8:15 AM	0	0	0	0	0	67	13	1	0	59	14	3	0	21	0	1
8:15 AM - 8:30 AM	0	0	0	0	1	72	19	2	0	46	19	4	0	14	0	1
8:30 AM - 8:45 AM	0	0	0	0	2	76	17	1	0	21	13	2	0	8	0	0
8:45 AM - 9:00 AM	0	0	0	0	1	93	19	4	0	24	19	1	1	13	0	0
TOTAL	**0**	**0**	**0**	**0**	**5**	**467**	**167**	**14**	**0**	**381**	**173**	**16**	**3**	**217**	**0**	**5**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	0	1	55	30	4	0	39	20	0	0	29	0	0
4:15 PM - 4:30 PM	0	0	0	0	1	76	39	1	0	43	10	1	0	39	0	1
4:30 PM - 4:45 PM	0	0	0	0	1	72	42	3	0	37	15	1	0	33	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	66	51	1	0	41	18	3	2	33	0	1
5:00 PM - 5:15 PM	0	0	0	0	1	67	43	3	0	59	16	1	0	37	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	54	45	1	0	47	15	1	0	36	0	1
5:30 PM - 5:45 PM	0	0	0	0	1	57	41	0	0	36	11	0	1	29	0	0
5:45 PM - 6:00 PM	0	0	0	0	1	71	46	0	0	38	17	0	1	36	0	0
TOTAL	**0**	**0**	**0**	**0**	**6**	**518**	**337**	**13**	**0**	**340**	**122**	**7**	**4**	**272**	**0**	**3**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	0	0	0	1	242	97	7	0	238	104	11	2	156	0	5
4:15 PM - 5:15 PM	0	0	0	0	3	281	175	8	0	180	59	6	2	142	0	2

	PHF	**Trucks**
AM	0.745	2.7%
PM	0.944	1.9%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
OMNI-Means
943 Reserve Drive
Roseville, CA 95678

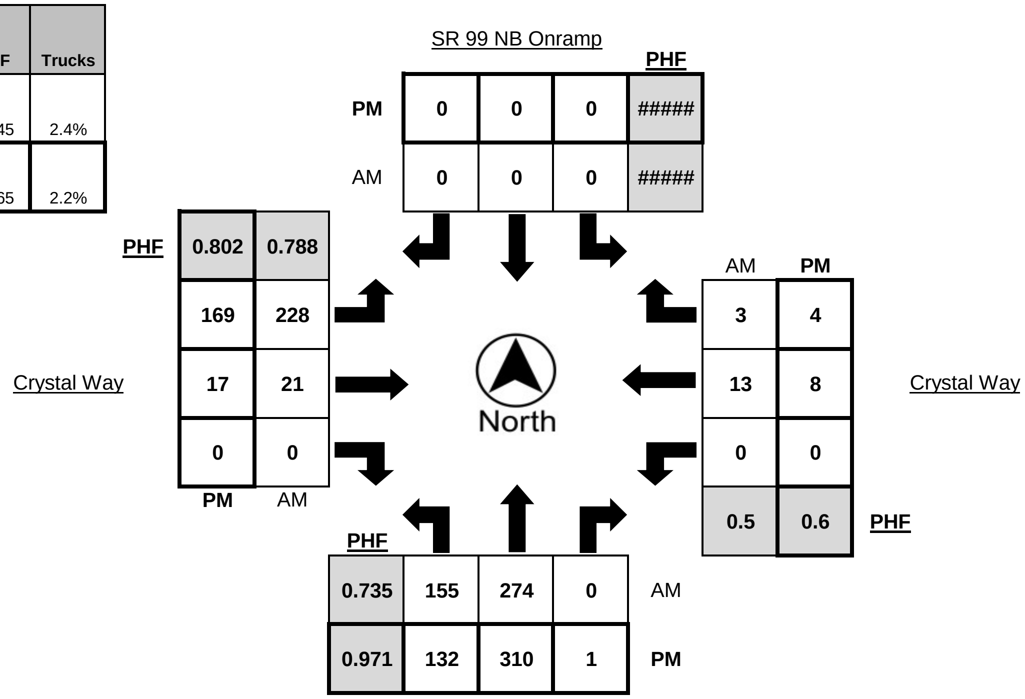
LOCATION SR 99 NB Onramp @ Crystal Way
LATITUDE 38.2560
COUNTY Sacramento
LONGITUDE -121.2932
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	10	40	0	0	0	0	0	0	44	2	0	0	0	3	1	0
7:15 AM - 7:30 AM	25	50	0	1	0	0	0	0	52	4	0	1	0	2	1	0
7:30 AM - 7:45 AM	43	72	0	2	0	0	0	0	46	4	0	0	0	5	0	0
7:45 AM - 8:00 AM	65	81	0	2	0	0	0	0	70	9	0	3	0	6	2	0
8:00 AM - 8:15 AM	22	71	0	5	0	0	0	0	60	4	0	3	0	0	0	0
8:15 AM - 8:30 AM	13	73	0	1	0	0	0	0	40	5	0	2	0	1	0	0
8:30 AM - 8:45 AM	7	53	0	0	0	0	0	0	24	3	0	0	0	0	0	0
8:45 AM - 9:00 AM	13	59	0	2	0	0	0	0	25	0	0	0	0	2	2	0
TOTAL	**198**	**499**	**0**	**13**	**0**	**0**	**0**	**0**	**361**	**31**	**0**	**9**	**0**	**19**	**6**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	21	91	0	2	0	0	0	0	36	5	0	0	0	5	1	0
4:15 PM - 4:30 PM	37	79	0	3	0	0	0	0	37	6	0	1	0	2	1	0
4:30 PM - 4:45 PM	33	69	0	4	0	0	0	0	37	1	0	1	0	1	0	0
4:45 PM - 5:00 PM	33	80	1	3	0	0	0	0	38	4	0	1	0	2	0	0
5:00 PM - 5:15 PM	36	70	0	0	0	0	0	0	53	5	0	1	0	1	0	0
5:15 PM - 5:30 PM	32	80	0	6	0	0	0	0	47	3	0	1	0	3	1	0
5:30 PM - 5:45 PM	31	80	0	2	0	0	0	0	31	5	0	0	0	2	3	0
5:45 PM - 6:00 PM	36	74	0	1	0	0	0	0	41	1	0	1	0	1	0	0
TOTAL	**259**	**623**	**1**	**21**	**0**	**0**	**0**	**0**	**320**	**30**	**0**	**6**	**0**	**17**	**6**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	155	274	0	10	0	0	0	0	228	21	0	7	0	13	3	0
4:45 PM - 5:45 PM	132	310	1	11	0	0	0	0	169	17	0	3	0	8	4	0

	PHF	Trucks
AM	0.745	2.4%
PM	0.965	2.2%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

OMNI-Means
943 Reserve Drive
Roseville, CA 95678

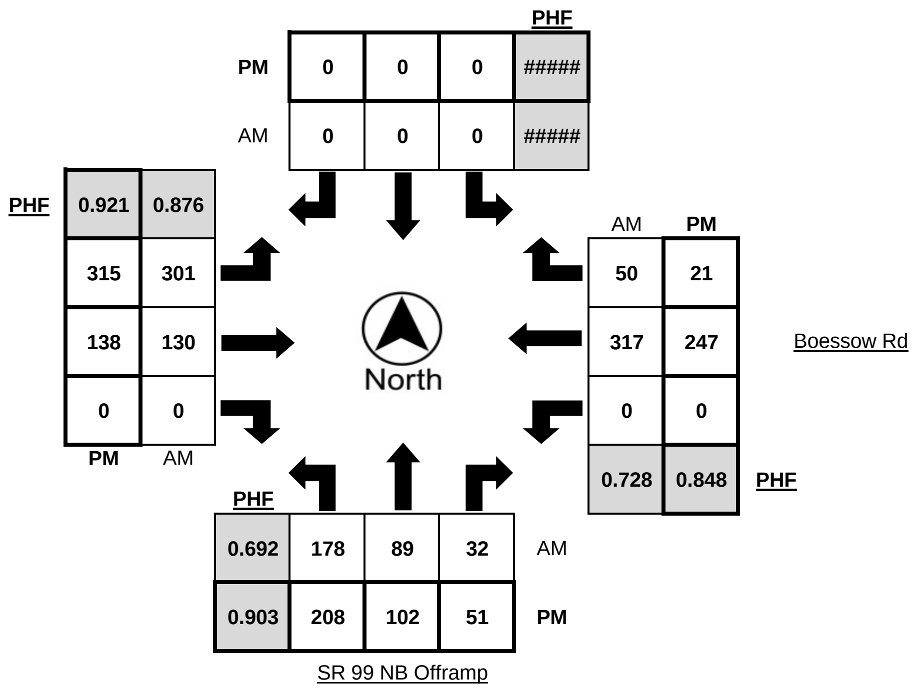
LOCATION	SR 99 NB Offramp @ C St / Boessow Rd	**LATITUDE**	38.2549
COUNTY	Sacramento	**LONGITUDE**	-121.2926
COLLECTION DATE	Wednesday, February 14, 2018	**WEATHER**	Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	28	7	9	1	0	0	0	0	44	12	0	0	0	24	1	1
7:15 AM - 7:30 AM	32	14	7	0	0	0	0	0	49	18	0	1	0	51	7	1
7:30 AM - 7:45 AM	44	27	10	2	0	0	0	0	73	36	0	0	0	70	14	3
7:45 AM - 8:00 AM	52	43	13	0	0	0	0	0	81	42	0	2	0	88	21	3
8:00 AM - 8:15 AM	37	12	3	0	0	0	0	0	74	28	0	4	0	116	10	1
8:15 AM - 8:30 AM	45	7	6	2	0	0	0	0	73	24	0	1	0	43	5	2
8:30 AM - 8:45 AM	63	4	3	1	0	0	0	0	56	12	0	0	0	45	0	1
8:45 AM - 9:00 AM	70	9	3	1	0	0	0	0	60	24	0	1	0	54	3	0
TOTAL	**371**	**123**	**54**	**7**	**0**	**0**	**0**	**0**	**510**	**196**	**0**	**9**	**0**	**491**	**61**	**12**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	56	22	10	1	0	0	0	0	87	41	0	1	0	38	3	0
4:15 PM - 4:30 PM	43	27	12	1	0	0	0	0	78	28	0	2	0	68	8	1
4:30 PM - 4:45 PM	53	30	16	2	0	0	0	0	71	33	0	4	0	58	2	1
4:45 PM - 5:00 PM	39	28	14	0	0	0	0	0	83	33	0	3	0	45	4	0
5:00 PM - 5:15 PM	61	28	11	1	0	0	0	0	71	40	0	1	0	50	7	0
5:15 PM - 5:30 PM	47	27	12	1	0	0	0	0	82	38	0	5	0	60	4	1
5:30 PM - 5:45 PM	46	22	17	0	0	0	0	0	84	39	0	2	0	64	4	0
5:45 PM - 6:00 PM	54	25	11	0	0	0	0	0	78	21	0	1	0	73	6	0
TOTAL	**399**	**209**	**103**	**6**	**0**	**0**	**0**	**0**	**634**	**273**	**0**	**19**	**0**	**456**	**38**	**3**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	178	89	32	4	0	0	0	0	301	130	0	7	0	317	50	9
5:00 PM - 6:00 PM	208	102	51	2	0	0	0	0	315	138	0	9	0	247	21	1

	PHF	**Trucks**
AM	0.807	1.8%
PM	0.980	1.1%



Turning Movement Report

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Prepared For:
OMNI-Means
943 Reserve Drive
Roseville, CA 95678

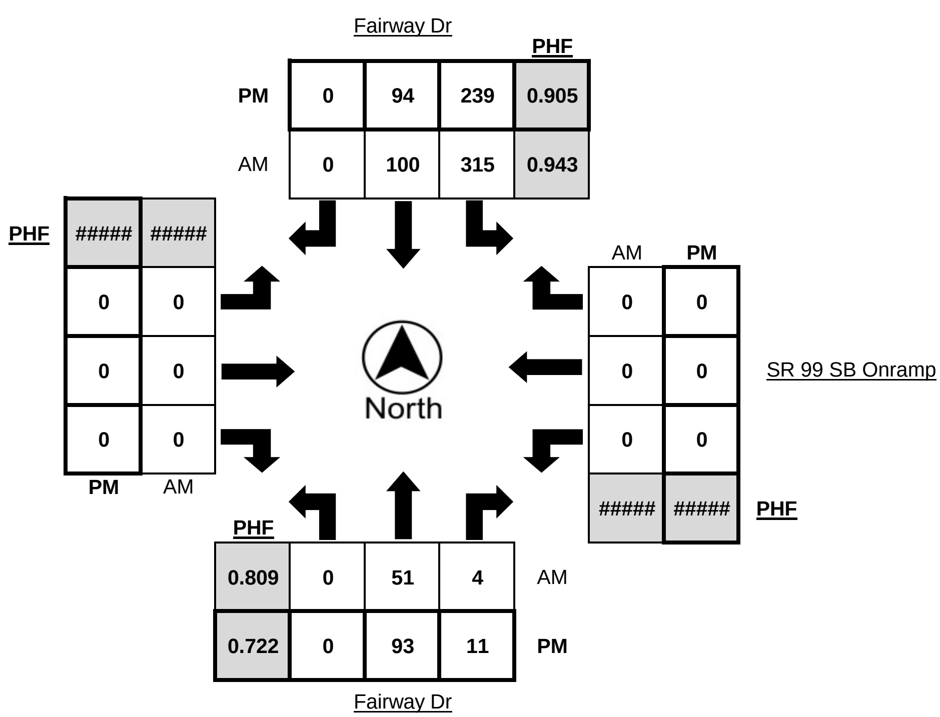
LOCATION SR 99 SB Onramp @ Fairway Dr / C St
LATITUDE 38.2531
COUNTY Sacramento
LONGITUDE -121.2936
COLLECTION DATE Wednesday, February 14, 2018
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	8	0	0	56	16	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	10	2	0	70	20	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	15	0	0	88	19	0	2	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	16	1	0	76	32	0	3	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	10	1	0	81	29	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	5	0	0	54	28	0	3	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	7	0	0	59	33	0	7	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	12	0	1	46	41	0	2	0	0	0	0	0	0	0	0
TOTAL	**0**	**83**	**4**	**1**	**530**	**218**	**0**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	0	32	4	1	61	18	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	17	4	1	66	23	0	2	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	20	2	3	62	30	0	3	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	24	1	2	50	23	0	1	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	17	1	0	73	19	0	2	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	11	2	0	53	28	0	2	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	18	1	1	60	16	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	15	1	1	48	30	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**154**	**16**	**9**	**473**	**187**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	0	51	4	0	315	100	0	5	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	93	11	7	239	94	0	6	0	0	0	0	0	0	0	0

	PHF	Trucks
AM	0.940	1.1%
PM	0.950	3.0%



Appendix C
Synchro Outputs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	375	130	35	514	0	325	0	71	0	0	0
Future Volume (veh/h)	0	375	130	35	514	0	325	0	71	0	0	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	507	176	47	695	0	439	0	96	0	0	0
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	4	630	534	121	939	0	511	0	401	0	474	0
Arrive On Green	0.00	0.34	0.34	0.07	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	1418	0	1585	0	1870	0
Grp Volume(v), veh/h	0	507	176	47	695	0	439	0	96	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1418	0	1585	0	1870	0
Q Serve(g_s), s	0.0	11.7	3.9	1.2	14.0	0.0	12.0	0.0	2.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.7	3.9	1.2	14.0	0.0	12.0	0.0	2.3	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	630	534	121	939	0	511	0	401	0	474	0
V/C Ratio(X)	0.00	0.81	0.33	0.39	0.74	0.00	0.86	0.00	0.24	0.00	0.00	0.00
Avail Cap(c_a), veh/h	376	1777	1506	564	1777	0	511	0	401	0	474	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	14.3	11.7	21.1	9.4	0.0	18.8	0.0	14.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.7	0.4	0.0	13.2	0.0	0.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	1.0	0.4	3.4	0.0	5.9	0.0	0.7	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.2	11.9	21.9	9.8	0.0	31.9	0.0	14.2	0.0	0.0	0.0
LnGrp LOS	A	B	B	C	A	A	C	A	B	A	A	A
Approach Vol, veh/h		683			742			535			0	
Approach Delay, s/veh		14.4			10.6			28.8			0.0	
Approach LOS		B			B			C				

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.8	21.7		17.8	0.0	29.6		17.8
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12
Max Q Clear Time (g_c+I1), s	3.2	13.7		0.0	0.0	16.0		14.0
Green Ext Time (p_c), s	0.0	2.1		0.0	0.0	2.8		0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	11	55	10	144	23	252	30	34	134	0
Future Vol, veh/h	0	2	11	55	10	144	23	252	30	34	134	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	145	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	79	79	79	79	79	79	79	79	79
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	3	14	70	13	182	29	319	38	43	170	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	480	672	85	570	653	180	170	0	0	358	0	0
Stage 1	256	256	-	397	397	-	-	-	-	-	-	-
Stage 2	224	416	-	173	256	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	471	378	960	406	387	835	1412	-	-	1205	-	-
Stage 1	729	697	-	603	604	-	-	-	-	-	-	-
Stage 2	761	593	-	815	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	343	356	960	381	365	834	1412	-	-	1204	-	-
Mov Cap-2 Maneuver	343	356	-	381	365	-	-	-	-	-	-	-
Stage 1	714	672	-	590	591	-	-	-	-	-	-	-
Stage 2	570	580	-	772	672	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	15.4	0.6	1.6
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1412	-	-	761	607	1204	-	-
HCM Lane V/C Ratio	0.021	-	-	0.022	0.436	0.036	-	-
HCM Control Delay (s)	7.6	-	-	9.8	15.4	8.1	-	-
HCM Lane LOS	A	-	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	2.2	0.1	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	33	58	16	17	65	50	191	18	11	136	53
Future Vol, veh/h	49	33	58	16	17	65	50	191	18	11	136	53
Conflicting Peds, #/hr	0	0	7	0	0	1	0	0	1	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	45	78	22	23	88	68	258	24	15	184	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	531	672	138	559	696	143	259	0	0	283	0	0
Stage 1	253	253	-	407	407	-	-	-	-	-	-	-
Stage 2	278	419	-	152	289	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	431	376	885	412	364	879	1303	-	-	1276	-	-
Stage 1	729	696	-	592	596	-	-	-	-	-	-	-
Stage 2	705	588	-	835	672	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	349	351	877	320	340	877	1299	-	-	1275	-	-
Mov Cap-2 Maneuver	349	351	-	320	340	-	-	-	-	-	-	-
Stage 1	689	686	-	561	564	-	-	-	-	-	-	-
Stage 2	576	557	-	698	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.9	13.4	1.5	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1299	-	-	466	563	1275	-	-
HCM Lane V/C Ratio	0.052	-	-	0.406	0.235	0.012	-	-
HCM Control Delay (s)	7.9	-	-	17.9	13.4	7.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.9	0.9	0	-	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	17	30	52	19	75	9	160	50	53	128	29
Future Vol, veh/h	24	17	30	52	19	75	9	160	50	53	128	29
Conflicting Peds, #/hr	0	0	5	0	0	0	0	0	4	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	37	26	46	80	29	115	14	246	77	82	197	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	553	742	129	598	726	166	245	0	0	327	0	0
Stage 1	387	387	-	317	317	-	-	-	-	-	-	-
Stage 2	166	355	-	281	409	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	418	344	900	388	352	852	1326	-	-	1237	-	-
Stage 1	611	611	-	671	655	-	-	-	-	-	-	-
Stage 2	822	631	-	705	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	316	315	893	322	322	849	1322	-	-	1232	-	-
Mov Cap-2 Maneuver	316	315	-	322	322	-	-	-	-	-	-	-
Stage 1	603	568	-	662	645	-	-	-	-	-	-	-
Stage 2	671	622	-	592	555	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	19.3	0.3	2.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	434	473	1232	-	-
HCM Lane V/C Ratio	0.01	-	-	0.252	0.475	0.066	-	-
HCM Control Delay (s)	7.8	-	-	16.1	19.3	8.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	2.5	0.2	-	-

5: Carillion Blvd & Walnut Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	13.4	9.7	7.5	9.5	9.9

Intersection	
Intersection Delay, s/veh	16
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	143	3	124	4	2	67	150	195	4	30	182	120
Future Vol, veh/h	143	3	124	4	2	67	150	195	4	30	182	120
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	199	4	172	6	3	93	208	271	6	42	253	167
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	16.5	13	16.1	16.2
HCM LOS	C	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	98%	0%	67%	0%	100%	0%	0%
Vol Thru, %	0%	100%	94%	2%	0%	33%	0%	0%	100%	34%
Vol Right, %	0%	0%	6%	0%	100%	0%	100%	0%	0%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	130	69	146	124	6	67	30	121	181
LT Vol	150	0	0	143	0	4	0	30	0	0
Through Vol	0	130	65	3	0	2	0	0	121	61
RT Vol	0	0	4	0	124	0	67	0	0	120
Lane Flow Rate	208	181	96	203	172	8	93	42	169	251
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.477	0.388	0.205	0.476	0.347	0.021	0.211	0.097	0.367	0.513
Departure Headway (Hd)	8.25	7.738	7.697	8.451	7.252	9.196	8.146	8.347	7.835	7.358
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	435	464	465	426	494	388	438	428	458	489
Service Time	6.025	5.512	5.47	6.225	5.025	6.989	5.938	6.12	5.607	5.13
HCM Lane V/C Ratio	0.478	0.39	0.206	0.477	0.348	0.021	0.212	0.098	0.369	0.513
HCM Control Delay	18.4	15.4	12.5	18.7	13.9	12.2	13.1	12	15.1	17.7
HCM Lane LOS	C	C	B	C	B	B	B	B	C	C
HCM 95th-tile Q	2.5	1.8	0.8	2.5	1.5	0.1	0.8	0.3	1.7	2.9

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	17	332	6	6	304
Future Vol, veh/h	19	17	332	6	6	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	28	25	488	9	9	447

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	735	249	0	0	497	0
Stage 1	493	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	357	754	-	-	1070	-
Stage 1	582	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	354	754	-	-	1070	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	354	754	1070	-
HCM Lane V/C Ratio	-	-	0.079	0.033	0.008	-
HCM Control Delay (s)	-	-	16	9.9	8.4	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	7	11	12	0	61	2	264	7	35	280	8
Future Vol, veh/h	13	7	11	12	0	61	2	264	7	35	280	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	6	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	19	10	15	17	0	86	3	372	10	49	394	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	691	893	204	689	893	197	406	0	0	388	0	0
Stage 1	499	499	-	389	389	-	-	-	-	-	-	-
Stage 2	192	394	-	300	504	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	333	281	806	334	281	814	1156	-	-	1174	-	-
Stage 1	525	544	-	609	609	-	-	-	-	-	-	-
Stage 2	794	606	-	687	542	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	287	266	805	306	266	809	1155	-	-	1167	-	-
Mov Cap-2 Maneuver	287	266	-	306	266	-	-	-	-	-	-	-
Stage 1	523	521	-	604	604	-	-	-	-	-	-	-
Stage 2	708	601	-	633	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	11.7	0.1	0.9
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1155	-	-	363	637	1167	-	-
HCM Lane V/C Ratio	0.002	-	-	0.121	0.161	0.042	-	-
HCM Control Delay (s)	8.1	-	-	16.3	11.7	8.2	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	5	19	4	1	21	8	230	2	17	277	9
Future Vol, veh/h	22	5	19	4	1	21	8	230	2	17	277	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	30	7	26	5	1	29	11	315	3	23	379	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	612	773	197	579	778	160	392	0	0	319	0	0
Stage 1	432	432	-	340	340	-	-	-	-	-	-	-
Stage 2	180	341	-	239	438	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	379	330	814	400	328	860	1170	-	-	1245	-	-
Stage 1	575	583	-	651	640	-	-	-	-	-	-	-
Stage 2	807	640	-	746	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	357	320	813	372	318	859	1169	-	-	1244	-	-
Mov Cap-2 Maneuver	357	320	-	372	318	-	-	-	-	-	-	-
Stage 1	569	572	-	644	634	-	-	-	-	-	-	-
Stage 2	771	634	-	700	569	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	10.6	0.3	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	457	678	1244	-	-
HCM Lane V/C Ratio	0.009	-	-	0.138	0.053	0.019	-	-
HCM Control Delay (s)	8.1	-	-	14.1	10.6	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0.1	-	-

Intersection	
Intersection Delay, s/veh	14.3
Intersection LOS	B

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	198	116	0	65	42	131	169
Future Vol, veh/h	198	116	0	65	42	131	169
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	254	149	0	83	54	168	217
Number of Lanes	0	1	0	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	16	9.8	14.2
HCM LOS	C	A	B

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	63%	0%	44%
Vol Thru, %	37%	61%	0%
Vol Right, %	0%	39%	56%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	314	107	300
LT Vol	198	0	131
Through Vol	116	65	0
RT Vol	0	42	169
Lane Flow Rate	403	137	385
Geometry Grp	1	1	1
Degree of Util (X)	0.596	0.205	0.548
Departure Headway (Hd)	5.333	5.373	5.129
Convergence, Y/N	Yes	Yes	Yes
Cap	676	667	704
Service Time	3.362	3.411	3.162
HCM Lane V/C Ratio	0.596	0.205	0.547
HCM Control Delay	16	9.8	14.2
HCM Lane LOS	C	A	B
HCM 95th-tile Q	4	0.8	3.4

Intersection	
Intersection Delay, s/veh	56.1
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	182	217	116	275	180	56
Future Vol, veh/h	182	217	116	275	180	56
Peak Hour Factor	0.61	0.61	0.61	0.61	0.61	0.61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	298	356	190	451	295	92
Number of Lanes	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	19.1	111.2	27.5
HCM LOS	C	F	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	76%	0%	0%	30%
Vol Thru, %	0%	100%	0%	70%
Vol Right, %	24%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	236	182	217	391
LT Vol	180	0	0	116
Through Vol	0	182	0	275
RT Vol	56	0	217	0
Lane Flow Rate	387	298	356	641
Geometry Grp	2	7	7	5
Degree of Util (X)	0.735	0.574	0.615	1.152
Departure Headway (Hd)	7.171	7.23	6.51	6.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	507	501	559	564
Service Time	5.171	4.93	4.21	4.518
HCM Lane V/C Ratio	0.763	0.595	0.637	1.137
HCM Control Delay	27.5	19.2	19.1	111.2
HCM Lane LOS	D	C	C	F
HCM 95th-tile Q	6.1	3.6	4.1	21.6

Intersection	
Int Delay, s/veh	36.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	150	159	223	325	8
Future Vol, veh/h	13	150	159	223	325	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	28	319	338	474	691	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1850	700	708	0	-	0
Stage 1	700	-	-	-	-	-
Stage 2	1150	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	82	441	895	-	-	-
Stage 1	494	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	51	441	895	-	-	-
Mov Cap-2 Maneuver	51	-	-	-	-	-
Stage 1	307	-	-	-	-	-
Stage 2	303	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	183.1	4.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	895	-	274	-	-
HCM Lane V/C Ratio	0.378	-	1.266	-	-
HCM Control Delay (s)	11.4	-	183.1	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1.8	-	16.8	-	-

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	141	2	214	141	34	8	54	128	30	64	7
Future Vol, veh/h	25	141	2	214	141	34	8	54	128	30	64	7
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	178	3	271	178	43	10	68	162	38	81	9
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.1	13.7	12.1	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	4%	15%	100%	0%	30%
Vol Thru, %	28%	84%	0%	81%	63%
Vol Right, %	67%	1%	0%	19%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	168	214	175	101
LT Vol	8	25	214	0	30
Through Vol	54	141	0	141	64
RT Vol	128	2	0	34	7
Lane Flow Rate	241	213	271	222	128
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.376	0.349	0.486	0.358	0.223
Departure Headway (Hd)	5.628	5.904	6.457	5.812	6.271
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	637	606	558	618	569
Service Time	3.691	3.967	4.211	3.566	4.345
HCM Lane V/C Ratio	0.378	0.351	0.486	0.359	0.225
HCM Control Delay	12.1	12.1	15.2	11.8	11.2
HCM Lane LOS	B	B	C	B	B
HCM 95th-tile Q	1.7	1.6	2.6	1.6	0.8

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	234	36	21	261	41	81	16	59	40	12	45
Future Vol, veh/h	19	234	36	21	261	41	81	16	59	40	12	45
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	312	48	28	348	55	108	21	79	53	16	60
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	12.1	12.4	14.2	12.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	41%
Vol Thru, %	10%	0%	100%	68%	0%	100%	68%	12%
Vol Right, %	38%	0%	0%	32%	0%	0%	32%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	19	156	114	21	174	128	97
LT Vol	81	19	0	0	21	0	0	40
Through Vol	16	0	156	78	0	174	87	12
RT Vol	59	0	0	36	0	0	41	45
Lane Flow Rate	208	25	208	152	28	232	171	129
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.398	0.049	0.371	0.262	0.053	0.41	0.291	0.25
Departure Headway (Hd)	6.88	6.931	6.42	6.194	6.87	6.359	6.13	6.964
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	520	514	557	576	519	564	582	512
Service Time	4.663	4.712	4.201	3.974	4.649	4.137	3.908	4.758
HCM Lane V/C Ratio	0.4	0.049	0.373	0.264	0.054	0.411	0.294	0.252
HCM Control Delay	14.2	10.1	13	11.2	10	13.5	11.4	12.1
HCM Lane LOS	B	B	B	B	A	B	B	B
HCM 95th-tile Q	1.9	0.2	1.7	1	0.2	2	1.2	1

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	368	22	9	323	59	16	16	9	11	8	54
Future Vol, veh/h	76	368	22	9	323	59	16	16	9	11	8	54
Conflicting Peds, #/hr	0	0	10	0	0	7	0	0	15	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	70	70	70	70	70	70	70	70	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	526	31	13	461	84	23	23	13	16	11	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	552	0	0	567	0	0	1034	1348	304	1044	1321	282
Stage 1	-	-	-	-	-	-	770	770	-	536	536	-
Stage 2	-	-	-	-	-	-	264	578	-	508	785	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1021	-	-	1008	-	-	188	151	695	185	157	718
Stage 1	-	-	-	-	-	-	362	411	-	499	524	-
Stage 2	-	-	-	-	-	-	721	502	-	518	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1014	-	-	998	-	-	145	131	679	140	136	712
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	131	-	140	136	-
Stage 1	-	-	-	-	-	-	320	363	-	443	514	-
Stage 2	-	-	-	-	-	-	637	492	-	419	357	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.2	37.8	21.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	1014	-	-	998	-	-	308
HCM Lane V/C Ratio	0.351	0.107	-	-	0.013	-	-	0.279
HCM Control Delay (s)	37.8	9	-	-	8.7	-	-	21.1
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.5	0.4	-	-	0	-	-	1.1

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	209	79	65	195	120	189
Future Vol, veh/h	209	79	65	195	120	189
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	332	125	103	310	190	300
Number of Lanes	1	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	2
HCM Control Delay	21	17.2	17
HCM LOS	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	17%
Vol Right, %	0%	0%	0%	100%	0%	83%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	195	209	79	80	229
LT Vol	65	0	209	0	0	0
Through Vol	0	195	0	0	80	40
RT Vol	0	0	0	79	0	189
Lane Flow Rate	103	310	332	125	127	363
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.21	0.586	0.684	0.216	0.239	0.623
Departure Headway (Hd)	7.329	6.817	7.418	6.198	6.764	6.173
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	526	484	576	527	582
Service Time	5.126	4.613	5.196	3.975	4.557	3.966
HCM Lane V/C Ratio	0.212	0.589	0.686	0.217	0.241	0.624
HCM Control Delay	12.1	18.9	24.9	10.7	11.7	18.8
HCM Lane LOS	B	C	C	B	B	C
HCM 95th-tile Q	0.8	3.7	5.1	0.8	0.9	4.3

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	12	4	210	209	10
Future Vol, veh/h	21	12	4	210	209	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	17	6	292	290	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	601	152	304	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	447	868	1255	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	444	868	1255	-	-	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1255	-	540	-	-
HCM Lane V/C Ratio	0.004	-	0.085	-	-
HCM Control Delay (s)	7.9	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	10	8	191	220	8
Future Vol, veh/h	21	10	8	191	220	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	13	11	255	293	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	570	293	304	0	-	0
Stage 1	293	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	483	746	1257	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	478	746	1257	-	-	-
Mov Cap-2 Maneuver	478	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	12.2		0.3		0	
HCM LOS	B					

Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		1257	-	541	-	-
HCM Lane V/C Ratio		0.008	-	0.076	-	-
HCM Control Delay (s)		7.9	0	12.2	-	-
HCM Lane LOS		A	A	B	-	-
HCM 95th %tile Q(veh)		0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	175	117	116	141	69
Future Vol, veh/h	38	175	117	116	141	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	16965	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	45	208	139	138	168	82

Major/Minor	Minor2		Major2	
Conflicting Flow All	208	208	-	0
Stage 1	208	208	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.44	6.54	-	-
Critical Hdwy Stg 1	5.44	5.54	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.536	4.036	-	-
Pot Cap-1 Maneuver	776	685	-	-
Stage 1	822	726	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	776	0	-	-
Mov Cap-2 Maneuver	776	0	-	-
Stage 1	822	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBT	WBR
Capacity (veh/h)	776	-	-	-
HCM Lane V/C Ratio	0.058	-	-	-
HCM Control Delay (s)	9.9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	52	128	35	63	6	21	124	2	17	191	24
Future Vol, veh/h	67	52	128	35	63	6	21	124	2	17	191	24
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	65	160	44	79	8	26	155	3	21	239	30
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.5	10.4	11	12.6
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	27%	34%	7%
Vol Thru, %	84%	21%	61%	82%
Vol Right, %	1%	52%	6%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	147	247	104	232
LT Vol	21	67	35	17
Through Vol	124	52	63	191
RT Vol	2	128	6	24
Lane Flow Rate	184	309	130	290
Geometry Grp	1	1	1	1
Degree of Util (X)	0.289	0.448	0.21	0.436
Departure Headway (Hd)	5.654	5.226	5.812	5.413
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	634	689	615	664
Service Time	3.708	3.275	3.871	3.461
HCM Lane V/C Ratio	0.29	0.448	0.211	0.437
HCM Control Delay	11	12.5	10.4	12.6
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.2	2.3	0.8	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	248	104	2	166	0	0	0	0	1	242	97
Future Volume (veh/h)	0	248	104	2	166	0	0	0	0	1	242	97
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	331	139	3	221	0				1	323	105
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75				0.75	0.75	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	865	386	24	1426	0				482	716	229
Arrive On Green	0.00	0.25	0.25	0.01	0.40	0.00				0.27	0.27	0.27
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2628	840
Grp Volume(v), veh/h	0	331	139	3	221	0				1	215	213
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1704
Q Serve(g_s), s	0.0	2.1	1.9	0.0	1.0	0.0				0.0	2.7	2.7
Cycle Q Clear(g_c), s	0.0	2.1	1.9	0.0	1.0	0.0				0.0	2.7	2.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.49
Lane Grp Cap(c), veh/h	0	865	386	24	1426	0				482	481	465
V/C Ratio(X)	0.00	0.38	0.36	0.12	0.16	0.00				0.00	0.45	0.46
Avail Cap(c_a), veh/h	0	3081	1374	1172	4823	0				2585	2579	2493
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.3	8.2	13.0	5.0	0.0				7.0	7.9	8.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	2.3	0.0	0.0				0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.4	0.0	0.2	0.0				0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.4	8.4	15.3	5.0	0.0				7.0	8.2	8.2
LnGrp LOS	A	A	A	B	A	A				A	A	A
Approach Vol, veh/h		470			224						429	
Approach Delay, s/veh		8.4			5.1						8.2	
Approach LOS		A			A						A	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	4.2	10.5	11.7	14.6
Change Period (Y+Rc), s	4.0	4.0	4.5	4.0
Max Green Setting (Gmax), s	9.0	23.0	38.5	36.0
Max Q Clear Time (g_c+I1), s	2.0	4.1	4.7	3.0
Green Ext Time (p_c), s	0.0	1.5	1.5	0.9

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	228	21	0	0	13	3	155	285	0	0	0	0
Future Volume (veh/h)	228	21	0	0	13	3	155	285	0	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	304	28	0	0	17	4	196	396	0			
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	690	1481	0	0	273	122	486	1020	0			
Arrive On Green	0.20	0.42	0.00	0.00	0.08	0.08	0.27	0.27	0.00			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	3741	0			
Grp Volume(v), veh/h	304	28	0	0	17	4	196	396	0			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	0			
Q Serve(g_s), s	2.5	0.2	0.0	0.0	0.1	0.1	3.0	2.8	0.0			
Cycle Q Clear(g_c), s	2.5	0.2	0.0	0.0	0.1	0.1	3.0	2.8	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	690	1481	0	0	273	122	486	1020	0			
V/C Ratio(X)	0.44	0.02	0.00	0.00	0.06	0.03	0.40	0.39	0.00			
Avail Cap(c_a), veh/h	947	3570	0	0	2272	1013	1952	4100	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh	11.5	5.6	0.0	0.0	14.1	14.0	9.8	9.7	0.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	5.6	0.0	0.0	14.1	14.1	10.0	9.8	0.0			
LnGrp LOS	B	A	A	A	B	B	A	A	A			
Approach Vol, veh/h		332			21			592				
Approach Delay, s/veh		11.2			14.1			9.9				
Approach LOS		B			B			A				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		18.8			11.2	7.6		14.1				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		2.2			4.5	2.1		5.0				
Green Ext Time (p_c), s		0.1			0.3	0.0		2.0				

Intersection Summary			
HCM 6th Ctrl Delay			10.4
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	301	31	280	215	0	36	0	15	115	104	129
Future Volume (veh/h)	0	301	31	280	215	0	36	0	15	115	104	129
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	327	34	304	234	0	39	0	16	125	113	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	724	323	636	1692	0	114	0	47	293	292	261
Arrive On Green	0.00	0.20	0.20	0.18	0.48	0.00	0.09	0.00	0.09	0.16	0.16	0.16
Sat Flow, veh/h	0	3647	1585	3456	3647	0	1219	0	500	1781	1777	1585
Grp Volume(v), veh/h	0	327	34	304	234	0	55	0	0	125	113	140
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1719	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	3.6	0.8	3.6	1.7	0.0	1.4	0.0	0.0	2.8	2.6	3.7
Cycle Q Clear(g_c), s	0.0	3.6	0.8	3.6	1.7	0.0	1.4	0.0	0.0	2.8	2.6	3.7
Prop In Lane	0.00		1.00	1.00		0.00	0.71		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	0	724	323	636	1692	0	161	0	0	293	292	261
V/C Ratio(X)	0.00	0.45	0.11	0.48	0.14	0.00	0.34	0.00	0.00	0.43	0.39	0.54
Avail Cap(c_a), veh/h	0	1809	807	688	2831	0	419	0	0	1301	1298	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	15.8	14.6	16.5	6.6	0.0	19.2	0.0	0.0	17.0	16.8	17.3
Incr Delay (d2), s/veh	0.0	0.9	0.3	0.2	0.0	0.0	0.5	0.0	0.0	0.4	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	0.3	1.2	0.5	0.0	0.5	0.0	0.0	1.1	0.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.7	14.9	16.7	6.7	0.0	19.6	0.0	0.0	17.3	17.2	17.9
LnGrp LOS	A	B	B	B	A	A	B	A	A	B	B	B
Approach Vol, veh/h		361			538			55			378	
Approach Delay, s/veh		16.6			12.3			19.6			17.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.3	13.2		11.4		25.5		8.2				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0				
Max Q Clear Time (g_c+I1), s	5.6	5.6		5.7		3.7		3.4				
Green Ext Time (p_c), s	0.2	3.6		1.2		1.6		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			15.2									
HCM 6th LOS			B									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	301	130	0	0	317	50	178	89	32	0	0	0
Future Volume (veh/h)	301	130	0	0	317	50	178	89	32	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	372	160	0	0	391	62	244	77	40			
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	903	1923	0	0	601	264	760	247	129			
Arrive On Green	0.26	0.54	0.00	0.00	0.17	0.17	0.21	0.21	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1561	3563	1160	602			
Grp Volume(v), veh/h	372	160	0	0	391	62	244	0	117			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1561	1781	0	1762			
Q Serve(g_s), s	3.7	0.9	0.0	0.0	4.3	1.4	2.4	0.0	2.3			
Cycle Q Clear(g_c), s	3.7	0.9	0.0	0.0	4.3	1.4	2.4	0.0	2.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.34			
Lane Grp Cap(c), veh/h	903	1923	0	0	601	264	760	0	376			
V/C Ratio(X)	0.41	0.08	0.00	0.00	0.65	0.24	0.32	0.00	0.31			
Avail Cap(c_a), veh/h	1498	1923	0	0	856	376	858	0	424			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	12.7	4.6	0.0	0.0	16.1	14.9	13.8	0.0	13.8			
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.4	0.2	0.1	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.2	0.2	0.0	0.0	1.5	0.4	0.8	0.0	0.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	4.6	0.0	0.0	16.6	15.1	13.9	0.0	13.9			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		532			453			361				
Approach Delay, s/veh		10.3			16.4			13.9				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		27.6			15.4	12.1		14.0				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		2.9			5.7	6.3		4.4				
Green Ext Time (p_c), s		0.3			0.6	0.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	51	4	315	100
Future Volume (veh/h)	0	0	51	4	315	100
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			54	4	335	106
Peak Hour Factor			0.94	0.94	0.94	0.94
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			352	26	455	1338
Arrive On Green			0.20	0.20	0.25	0.71
Sat Flow, veh/h			1734	128	1795	1885
Grp Volume(v), veh/h			0	58	335	106
Grp Sat Flow(s),veh/h/ln			0	1862	1795	1885
Q Serve(g_s), s			0.0	0.4	2.4	0.2
Cycle Q Clear(g_c), s			0.0	0.4	2.4	0.2
Prop In Lane				0.07	1.00	
Lane Grp Cap(c), veh/h			0	378	455	1338
V/C Ratio(X)			0.00	0.15	0.74	0.08
Avail Cap(c_a), veh/h			0	6076	4166	6152
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	4.5	4.7	0.6
Incr Delay (d2), s/veh			0.0	0.1	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	4.6	5.6	0.6
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			58			441
Approach Delay, s/veh			4.6			4.4
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	7.0	6.8				13.8
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	4.4	2.4				2.2
Green Ext Time (p_c), s	0.5	0.2				0.4
Intersection Summary						
HCM 6th Ctrl Delay			4.4			
HCM 6th LOS			A			
Notes						

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	478	376	20	290	0	172	0	15	0	0	0
Future Volume (veh/h)	0	478	376	20	290	0	172	0	15	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	493	388	21	299	0	177	0	15	0	0	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	5	664	556	66	973	0	422	0	247	0	292	0
Arrive On Green	0.00	0.36	0.36	0.04	0.52	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	1565	1781	1870	0	1418	0	1585	0	1870	0
Grp Volume(v), veh/h	0	493	388	21	299	0	177	0	15	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1565	1781	1870	0	1418	0	1585	0	1870	0
Q Serve(g_s), s	0.0	8.3	7.6	0.4	3.3	0.0	4.3	0.0	0.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	8.3	7.6	0.4	3.3	0.0	4.3	0.0	0.3	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	5	664	556	66	973	0	422	0	247	0	292	0
V/C Ratio(X)	0.00	0.74	0.70	0.32	0.31	0.00	0.42	0.00	0.06	0.00	0.00	0.00
Avail Cap(c_a), veh/h	497	2348	1965	746	2348	0	675	0	531	0	626	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	10.1	9.9	16.8	4.9	0.0	14.6	0.0	12.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.6	1.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	1.6	0.1	0.4	0.0	1.0	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.7	10.5	17.9	5.0	0.0	14.8	0.0	12.9	0.0	0.0	0.0
LnGrp LOS	A	B	B	B	A	A	B	A	B	A	A	A
Approach Vol, veh/h		881			320			192			0	
Approach Delay, s/veh		10.6			5.8			14.7			0.0	
Approach LOS		B			A			B				

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	18.5		11.4	0.0	24.4		11.4
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12
Max Q Clear Time (g_c+I1), s	2.4	10.3		0.0	0.0	5.3		6.3
Green Ext Time (p_c), s	0.0	2.5		0.0	0.0	1.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	7	49	54	14	17	40	160	18	92	307	0
Future Vol, veh/h	10	7	49	54	14	17	40	160	18	92	307	0
Conflicting Peds, #/hr	0	0	1	0	0	4	0	0	3	0	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	145	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	8	53	58	15	18	43	172	19	99	330	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	716	812	170	639	803	103	334	0	0	194	0	0
Stage 1	532	532	-	271	271	-	-	-	-	-	-	-
Stage 2	184	280	-	368	532	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	321	315	851	365	319	938	1237	-	-	1391	-	-
Stage 1	504	529	-	717	689	-	-	-	-	-	-	-
Stage 2	806	683	-	630	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	276	280	847	308	284	932	1232	-	-	1387	-	-
Mov Cap-2 Maneuver	276	280	-	308	284	-	-	-	-	-	-	-
Stage 1	484	489	-	690	663	-	-	-	-	-	-	-
Stage 2	742	657	-	540	489	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	18.9	1.5	1.8
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	554	350	1387	-	-
HCM Lane V/C Ratio	0.035	-	-	0.128	0.261	0.071	-	-
HCM Control Delay (s)	8	-	-	12.5	18.9	7.8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	1	0.2	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	9	31	4	8	16	29	170	17	31	341	38
Future Vol, veh/h	32	9	31	4	8	16	29	170	17	31	341	38
Conflicting Peds, #/hr	0	0	1	0	0	3	0	0	1	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	10	34	4	9	18	32	189	19	34	379	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	637	744	215	528	756	108	424	0	0	209	0	0
Stage 1	471	471	-	264	264	-	-	-	-	-	-	-
Stage 2	166	273	-	264	492	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	362	341	790	433	336	925	1132	-	-	1359	-	-
Stage 1	542	558	-	718	689	-	-	-	-	-	-	-
Stage 2	820	683	-	718	546	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	332	322	787	387	317	921	1129	-	-	1358	-	-
Mov Cap-2 Maneuver	332	322	-	387	317	-	-	-	-	-	-	-
Stage 1	525	542	-	697	669	-	-	-	-	-	-	-
Stage 2	769	663	-	656	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15	12.2	1.1	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1129	-	-	440	529	1358	-	-
HCM Lane V/C Ratio	0.029	-	-	0.182	0.059	0.025	-	-
HCM Control Delay (s)	8.3	-	-	15	12.2	7.7	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	11	8	11	4	35	10	161	26	57	268	51
Future Vol, veh/h	20	11	8	11	4	35	10	161	26	57	268	51
Conflicting Peds, #/hr	0	0	2	0	0	0	0	0	3	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	23	13	9	13	5	41	12	187	30	66	312	59

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	594	718	188	526	732	112	371	0	0	220	0	0
Stage 1	474	474	-	229	229	-	-	-	-	-	-	-
Stage 2	120	244	-	297	503	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	391	355	825	437	349	923	1191	-	-	1354	-	-
Stage 1	543	559	-	756	716	-	-	-	-	-	-	-
Stage 2	875	705	-	690	542	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	353	333	823	399	328	920	1191	-	-	1350	-	-
Mov Cap-2 Maneuver	353	333	-	399	328	-	-	-	-	-	-	-
Stage 1	538	532	-	746	707	-	-	-	-	-	-	-
Stage 2	822	696	-	632	515	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	11.2	0.4	1.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	392	643	1350	-	-
HCM Lane V/C Ratio	0.01	-	-	0.116	0.09	0.049	-	-
HCM Control Delay (s)	8.1	-	-	15.4	11.2	7.8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0.2	-	-

5: Carillion Blvd & Walnut Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.4	6.6	5.9	7.5	7.7

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	67	5	5	24	67	133	10	40	178	69
Future Vol, veh/h	49	1	67	5	5	24	67	133	10	40	178	69
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	53	1	72	5	5	26	72	143	11	43	191	74
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	9.3	8.8	9.4	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	98%	0%	50%	0%	100%	0%	0%
Vol Thru, %	0%	100%	82%	2%	0%	50%	0%	0%	100%	46%
Vol Right, %	0%	0%	18%	0%	100%	0%	100%	0%	0%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	89	54	50	67	10	24	40	119	128
LT Vol	67	0	0	49	0	5	0	40	0	0
Through Vol	0	89	44	1	0	5	0	0	119	59
RT Vol	0	0	10	0	67	0	24	0	0	69
Lane Flow Rate	72	95	58	54	72	11	26	43	128	138
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.122	0.149	0.089	0.098	0.107	0.019	0.04	0.072	0.194	0.196
Departure Headway (Hd)	6.116	5.613	5.483	6.546	5.357	6.523	5.572	5.988	5.485	5.107
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	581	632	646	551	673	552	646	593	648	694
Service Time	3.915	3.412	3.282	4.246	3.057	4.229	3.278	3.778	3.275	2.897
HCM Lane V/C Ratio	0.124	0.15	0.09	0.098	0.107	0.02	0.04	0.073	0.198	0.199
HCM Control Delay	9.8	9.4	8.8	10	8.7	9.4	8.5	9.2	9.6	9.2
HCM Lane LOS	A	A	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.5	0.3	0.3	0.4	0.1	0.1	0.2	0.7	0.7

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	11	199	31	20	230
Future Vol, veh/h	18	11	199	31	20	230
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	20	12	224	35	22	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	420	135	0	0	264	0
Stage 1	247	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	564	892	-	-	1304	-
Stage 1	774	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	552	888	-	-	1298	-
Mov Cap-2 Maneuver	552	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	843	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	552	888	1298	-
HCM Lane V/C Ratio	-	-	0.037	0.014	0.017	-
HCM Control Delay (s)	-	-	11.8	9.1	7.8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	2	7	14	1	34	8	189	17	28	208	12
Future Vol, veh/h	7	2	7	14	1	34	8	189	17	28	208	12
Conflicting Peds, #/hr	0	0	2	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	8	2	8	15	1	37	9	208	19	31	229	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	423	543	123	416	540	116	242	0	0	227	0	0
Stage 1	298	298	-	236	236	-	-	-	-	-	-	-
Stage 2	125	245	-	180	304	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	517	448	908	523	449	917	1329	-	-	1346	-	-
Stage 1	689	668	-	749	711	-	-	-	-	-	-	-
Stage 2	869	705	-	807	664	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	483	435	906	504	436	915	1329	-	-	1346	-	-
Mov Cap-2 Maneuver	483	435	-	504	436	-	-	-	-	-	-	-
Stage 1	684	653	-	744	706	-	-	-	-	-	-	-
Stage 2	825	700	-	778	649	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.3	0.3	0.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1329	-	-	597	729	1346	-	-
HCM Lane V/C Ratio	0.007	-	-	0.029	0.074	0.023	-	-
HCM Control Delay (s)	7.7	-	-	11.2	10.3	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	1.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	3	18	10	2	10	17	192	13	8	208	13
Future Vol, veh/h	12	3	18	10	2	10	17	192	13	8	208	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	13	3	19	11	2	11	18	202	14	8	219	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	380	494	117	372	494	108	233	0	0	216	0	0
Stage 1	242	242	-	245	245	-	-	-	-	-	-	-
Stage 2	138	252	-	127	249	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	555	477	916	562	477	928	1339	-	-	1358	-	-
Stage 1	743	707	-	740	705	-	-	-	-	-	-	-
Stage 2	854	700	-	866	702	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	539	468	916	540	468	928	1339	-	-	1358	-	-
Mov Cap-2 Maneuver	539	468	-	540	468	-	-	-	-	-	-	-
Stage 1	733	703	-	730	696	-	-	-	-	-	-	-
Stage 2	830	691	-	839	698	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.7	0.6	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1339	-	-	683	655	1358	-	-
HCM Lane V/C Ratio	0.013	-	-	0.051	0.035	0.006	-	-
HCM Control Delay (s)	7.7	-	-	10.6	10.7	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	177	76	0	122	45	65	171
Future Vol, veh/h	177	76	0	122	45	65	171
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1
Mvmt Flow	197	84	0	136	50	72	190
Number of Lanes	0	1	0	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	11	9.3	10.1
HCM LOS	B	A	B

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	70%	0%	28%
Vol Thru, %	30%	73%	0%
Vol Right, %	0%	27%	72%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	253	167	236
LT Vol	177	0	65
Through Vol	76	122	0
RT Vol	0	45	171
Lane Flow Rate	281	186	262
Geometry Grp	1	1	1
Degree of Util (X)	0.383	0.244	0.338
Departure Headway (Hd)	4.899	4.726	4.637
Convergence, Y/N	Yes	Yes	Yes
Cap	731	753	771
Service Time	2.963	2.794	2.694
HCM Lane V/C Ratio	0.384	0.247	0.34
HCM Control Delay	11	9.3	10.1
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.8	1	1.5

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	348	56	42	232	61	29
Future Vol, veh/h	348	56	42	232	61	29
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	382	62	46	255	67	32
Number of Lanes	1	1	0	1	1	0

Approach	EB		WB		NB	
Opposing Approach	WB		EB			
Opposing Lanes	1		2		0	
Conflicting Approach Left			NB		EB	
Conflicting Lanes Left	0		1		2	
Conflicting Approach Right	NB				WB	
Conflicting Lanes Right	1		0		1	
HCM Control Delay	12.7		11.1		9.6	
HCM LOS	B		B		A	

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	68%	0%	0%	15%
Vol Thru, %	0%	100%	0%	85%
Vol Right, %	32%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	348	56	274
LT Vol	61	0	0	42
Through Vol	0	348	0	232
RT Vol	29	0	56	0
Lane Flow Rate	99	382	62	301
Geometry Grp	2	7	7	5
Degree of Util (X)	0.152	0.537	0.074	0.404
Departure Headway (Hd)	5.543	5.054	4.35	4.828
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	643	711	820	744
Service Time	3.611	2.798	2.093	2.874
HCM Lane V/C Ratio	0.154	0.537	0.076	0.405
HCM Control Delay	9.6	13.6	7.4	11.1
HCM Lane LOS	A	B	A	B
HCM 95th-tile Q	0.5	3.2	0.2	2

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	39	46	79	79	19
Future Vol, veh/h	11	39	46	79	79	19
Conflicting Peds, #/hr	0	8	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	45	53	92	92	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	301	111	114	0	-	0
Stage 1	103	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	691	942	1475	-	-	-
Stage 1	921	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	666	935	1475	-	-	-
Mov Cap-2 Maneuver	666	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	835	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	2.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1475	-	859	-	-
HCM Lane V/C Ratio	0.036	-	0.068	-	-
HCM Control Delay (s)	7.5	-	9.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	158	2	94	71	22	7	72	70	108	125	1
Future Vol, veh/h	55	158	2	94	71	22	7	72	70	108	125	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	63	182	2	108	82	25	8	83	80	124	144	1
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	12.4	10.6	10.4	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	5%	26%	100%	0%	46%
Vol Thru, %	48%	73%	0%	76%	53%
Vol Right, %	47%	1%	0%	24%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	149	215	94	93	234
LT Vol	7	55	94	0	108
Through Vol	72	158	0	71	125
RT Vol	70	2	0	22	1
Lane Flow Rate	171	247	108	107	269
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.26	0.391	0.2	0.177	0.42
Departure Headway (Hd)	5.46	5.7	6.651	5.974	5.626
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	656	630	539	599	637
Service Time	3.515	3.751	4.403	3.727	3.676
HCM Lane V/C Ratio	0.261	0.392	0.2	0.179	0.422
HCM Control Delay	10.4	12.4	11.1	10	12.7
HCM Lane LOS	B	B	B	A	B
HCM 95th-tile Q	1	1.9	0.7	0.6	2.1

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	216	70	16	124	8	41	12	14	6	11	22
Future Vol, veh/h	50	216	70	16	124	8	41	12	14	6	11	22
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	57	245	80	18	141	9	47	14	16	7	13	25
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9	8.6	9.5	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	61%	100%	0%	0%	100%	0%	0%	15%
Vol Thru, %	18%	0%	100%	51%	0%	100%	84%	28%
Vol Right, %	21%	0%	0%	49%	0%	0%	16%	56%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	50	144	142	16	83	49	39
LT Vol	41	50	0	0	16	0	0	6
Through Vol	12	0	144	72	0	83	41	11
RT Vol	14	0	0	70	0	0	8	22
Lane Flow Rate	76	57	164	161	18	94	56	44
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.125	0.087	0.228	0.21	0.029	0.136	0.079	0.068
Departure Headway (Hd)	5.908	5.528	5.025	4.678	5.722	5.219	5.105	5.487
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	605	648	713	765	624	685	700	650
Service Time	3.663	3.267	2.764	2.417	3.469	2.966	2.852	3.245
HCM Lane V/C Ratio	0.126	0.088	0.23	0.21	0.029	0.137	0.08	0.068
HCM Control Delay	9.5	8.8	9.3	8.7	8.6	8.8	8.3	8.6
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.3	0.9	0.8	0.1	0.5	0.3	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	143	59	2	86	12	27	11	3	1	17	18
Future Vol, veh/h	26	143	59	2	86	12	27	11	3	1	17	18
Conflicting Peds, #/hr	0	0	5	0	0	10	0	0	8	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	60	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	30	164	68	2	99	14	31	13	3	1	20	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	123	0	0	237	0	0	327	390	129	277	417	67
Stage 1	-	-	-	-	-	-	263	263	-	120	120	-
Stage 2	-	-	-	-	-	-	64	127	-	157	297	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1469	-	-	1335	-	-	605	546	900	656	527	986
Stage 1	-	-	-	-	-	-	722	692	-	875	798	-
Stage 2	-	-	-	-	-	-	942	792	-	832	669	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1455	-	-	1329	-	-	563	525	889	620	507	977
Mov Cap-2 Maneuver	-	-	-	-	-	-	563	525	-	620	507	-
Stage 1	-	-	-	-	-	-	704	674	-	849	788	-
Stage 2	-	-	-	-	-	-	898	782	-	790	652	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	11.9	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1455	-	-	1329	-	-	672
HCM Lane V/C Ratio	0.083	0.021	-	-	0.002	-	-	0.062
HCM Control Delay (s)	11.9	7.5	-	-	7.7	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	51	51	46	74	80	38
Future Vol, veh/h	51	51	46	74	80	38
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	56	56	51	81	88	42
Number of Lanes	1	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	2
HCM Control Delay	8.2	8.4	7.9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	41%
Vol Right, %	0%	0%	0%	100%	0%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	46	74	51	51	53	65
LT Vol	46	0	51	0	0	0
Through Vol	0	74	0	0	53	27
RT Vol	0	0	0	51	0	38
Lane Flow Rate	51	81	56	56	59	71
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.076	0.111	0.088	0.069	0.08	0.089
Departure Headway (Hd)	5.416	4.914	5.644	4.441	4.926	4.513
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	664	731	637	808	729	796
Service Time	3.132	2.63	3.361	2.158	2.642	2.229
HCM Lane V/C Ratio	0.077	0.111	0.088	0.069	0.081	0.089
HCM Control Delay	8.6	8.2	8.9	7.5	8.1	7.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.4	0.3	0.2	0.3	0.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	11	9	124	127	10
Future Vol, veh/h	2	11	9	124	127	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	13	10	144	148	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	318	80	160	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Critical Hdwy	6.6	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	667	971	1432	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	870	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	662	971	1432	-	-	-
Mov Cap-2 Maneuver	662	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	870	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1432	-	906	-	-
HCM Lane V/C Ratio	0.007	-	0.017	-	-
HCM Control Delay (s)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	16	3	136	138	6
Future Vol, veh/h	1	16	3	136	138	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	18	3	153	155	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	314	155	162	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	159	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	683	896	1429	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	682	896	1429	-	-	-
Mov Cap-2 Maneuver	682	-	-	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	875	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1429	-	880	-	-
HCM Lane V/C Ratio	0.002	-	0.022	-	-
HCM Control Delay (s)	7.5	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	115	150	143	136	41
Future Vol, veh/h	20	115	150	143	136	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	16965	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	21	120	156	149	142	43

Major/Minor	Minor2		Major2	
Conflicting Flow All	231	231	-	0
Stage 1	231	231	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.41	6.51	-	-
Critical Hdwy Stg 1	5.41	5.51	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.509	4.009	-	-
Pot Cap-1 Maneuver	759	671	-	-
Stage 1	810	715	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	759	0	-	-
Mov Cap-2 Maneuver	759	0	-	-
Stage 1	810	0	-	-
Stage 2	-	0	-	-

Approach	EB		WB
HCM Control Delay, s			0
HCM LOS	-		

Minor Lane/Major Mvmt	EBLn1	EBLn2	WBT	WBR
Capacity (veh/h)	759	-	-	-
HCM Lane V/C Ratio	0.027	-	-	-
HCM Control Delay (s)	9.9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	61	55	16	96	11	46	107	14	18	115	23
Future Vol, veh/h	25	61	55	16	96	11	46	107	14	18	115	23
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
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	27	66	60	17	104	12	50	116	15	20	125	25
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.1	9.4	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	18%	13%	12%
Vol Thru, %	64%	43%	78%	74%
Vol Right, %	8%	39%	9%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	167	141	123	156
LT Vol	46	25	16	18
Through Vol	107	61	96	115
RT Vol	14	55	11	23
Lane Flow Rate	182	153	134	170
Geometry Grp	1	1	1	1
Degree of Util (X)	0.243	0.202	0.183	0.225
Departure Headway (Hd)	4.824	4.734	4.925	4.771
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	741	753	723	748
Service Time	2.884	2.795	2.989	2.832
HCM Lane V/C Ratio	0.246	0.203	0.185	0.227
HCM Control Delay	9.4	9	9.1	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.8	0.7	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	183	59	2	142	0	0	0	0	3	281	175
Future Volume (veh/h)	0	183	59	2	142	0	0	0	0	3	281	175
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	195	63	2	151	0				3	299	186
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	840	375	16	1402	0				498	594	360
Arrive On Green	0.00	0.24	0.24	0.00	0.39	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				1781	2127	1289
Grp Volume(v), veh/h	0	195	63	2	151	0				3	248	237
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	1777	1638
Q Serve(g_s), s	0.0	1.2	0.8	0.0	0.7	0.0				0.0	3.1	3.2
Cycle Q Clear(g_c), s	0.0	1.2	0.8	0.0	0.7	0.0				0.0	3.1	3.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.79
Lane Grp Cap(c), veh/h	0	840	375	16	1402	0				498	496	458
V/C Ratio(X)	0.00	0.23	0.17	0.12	0.11	0.00				0.01	0.50	0.52
Avail Cap(c_a), veh/h	0	3136	1399	1193	4908	0				2631	2624	2420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.0	7.9	12.9	5.0	0.0				6.8	7.9	7.9
Incr Delay (d2), s/veh	0.0	0.1	0.1	3.4	0.0	0.0				0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.2	0.0	0.1	0.0				0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.1	8.0	16.3	5.0	0.0				6.8	8.2	8.2
LnGrp LOS	A	A	A	B	A	A				A	A	A
Approach Vol, veh/h		258			153						488	
Approach Delay, s/veh		8.1			5.1						8.2	
Approach LOS		A			A						A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	4.1	10.2		11.8		14.3
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0
Max Q Clear Time (g_c+I1), s	2.0	3.2		5.2		2.7
Green Ext Time (p_c), s	0.0	0.8		1.7		0.6

Intersection Summary		
HCM 6th Ctrl Delay		7.6
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	17	0	0	8	4	136	310	1	0	0	0
Future Volume (veh/h)	169	17	0	0	8	4	136	310	1	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	174	18	0	0	8	4	140	320	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	610	1345	0	0	183	82	513	1074	3			
Arrive On Green	0.18	0.38	0.00	0.00	0.05	0.05	0.29	0.29	0.29			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	3727	12			
Grp Volume(v), veh/h	174	18	0	0	8	4	140	161	160			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1868			
Q Serve(g_s), s	1.3	0.1	0.0	0.0	0.1	0.1	1.9	2.0	2.0			
Cycle Q Clear(g_c), s	1.3	0.1	0.0	0.0	0.1	0.1	1.9	2.0	2.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.01			
Lane Grp Cap(c), veh/h	610	1345	0	0	183	82	513	539	539			
V/C Ratio(X)	0.29	0.01	0.00	0.00	0.04	0.05	0.27	0.30	0.30			
Avail Cap(c_a), veh/h	1016	3832	0	0	2439	1088	2096	2200	2198			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	10.9	5.9	0.0	0.0	13.8	13.8	8.4	8.5	8.5			
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	5.9	0.0	0.0	13.8	13.9	8.5	8.6	8.6			
LnGrp LOS	B	A	A	A	B	B	A	A	A			
Approach Vol, veh/h		192			12			461				
Approach Delay, s/veh		10.5			13.9			8.6				
Approach LOS		B			B			A				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		16.7			10.0	6.7		13.9				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		2.1			3.3	2.1		4.0				
Green Ext Time (p_c), s		0.0			0.1	0.0		1.4				
Intersection Summary												
HCM 6th Ctrl Delay			9.2									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	315	54	220	235	0	73	0	20	118	59	165
Future Volume (veh/h)	0	315	54	220	235	0	73	0	20	118	59	165
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	342	59	239	255	0	79	0	22	128	64	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	858	383	723	1984	0	294	21	40	542	403	359
Arrive On Green	0.00	0.24	0.24	0.21	0.56	0.00	0.23	0.00	0.23	0.23	0.23	0.23
Sat Flow, veh/h	0	3647	1585	3456	3647	0	536	93	175	1390	1777	1585
Grp Volume(v), veh/h	0	342	59	239	255	0	101	0	0	128	64	179
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	804	0	0	1390	1777	1585
Q Serve(g_s), s	0.0	3.0	1.1	2.2	1.3	0.0	2.0	0.0	0.0	0.0	1.1	3.7
Cycle Q Clear(g_c), s	0.0	3.0	1.1	2.2	1.3	0.0	5.7	0.0	0.0	2.5	1.1	3.7
Prop In Lane	0.00		1.00	1.00		0.00	0.78		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	0	858	383	723	1984	0	355	0	0	542	403	359
V/C Ratio(X)	0.00	0.40	0.15	0.33	0.13	0.00	0.28	0.00	0.00	0.24	0.16	0.50
Avail Cap(c_a), veh/h	0	2197	980	836	3439	0	438	0	0	1460	1576	1406
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	11.8	11.1	12.5	3.9	0.0	13.8	0.0	0.0	12.1	11.5	12.5
Incr Delay (d2), s/veh	0.0	0.6	0.4	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	0.3	0.7	0.2	0.0	0.6	0.0	0.0	0.7	0.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.5	11.5	12.6	3.9	0.0	14.0	0.0	0.0	12.2	11.6	12.9
LnGrp LOS	A	B	B	B	A	A	B	A	A	B	B	B
Approach Vol, veh/h		401			494			101			371	
Approach Delay, s/veh		12.3			8.1			14.0			12.4	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.8	13.0		12.4		24.8		12.4
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0
Max Q Clear Time (g_c+I1), s	4.2	5.0		5.7		3.3		7.7
Green Ext Time (p_c), s	0.2	4.0		1.1		1.7		0.1

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	138	0	0	247	22	208	110	51	0	0	0
Future Volume (veh/h)	315	138	0	0	247	22	208	110	51	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1885	1885	0	0	1885	1885	1885	1885	1885			
Adj Flow Rate, veh/h	321	141	0	0	252	22	249	61	52			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	903	1932	0	0	606	270	769	200	170			
Arrive On Green	0.26	0.54	0.00	0.00	0.17	0.17	0.21	0.21	0.21			
Sat Flow, veh/h	3483	3676	0	0	3676	1598	3591	934	796			
Grp Volume(v), veh/h	321	141	0	0	252	22	249	0	113			
Grp Sat Flow(s),veh/h/ln	1742	1791	0	0	1791	1598	1795	0	1730			
Q Serve(g_s), s	3.1	0.8	0.0	0.0	2.6	0.5	2.4	0.0	2.3			
Cycle Q Clear(g_c), s	3.1	0.8	0.0	0.0	2.6	0.5	2.4	0.0	2.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.46			
Lane Grp Cap(c), veh/h	903	1932	0	0	606	270	769	0	370			
V/C Ratio(X)	0.36	0.07	0.00	0.00	0.42	0.08	0.32	0.00	0.31			
Avail Cap(c_a), veh/h	1515	1932	0	0	865	386	868	0	418			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	12.5	4.6	0.0	0.0	15.4	14.5	13.7	0.0	13.7			
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.0	0.2	0.0	0.0	0.9	0.2	0.8	0.0	0.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	4.6	0.0	0.0	15.5	14.5	13.8	0.0	13.8			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		462			274			362				
Approach Delay, s/veh		10.1			15.5			13.8				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		27.4			15.3	12.1		14.0				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		2.8			5.1	4.6		4.4				
Green Ext Time (p_c), s		0.3			0.5	0.5		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		12.7
HCM 6th LOS		B

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	93	11	239	94
Future Volume (veh/h)	0	0	93	11	239	94
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1856	1856	1856	1856
Adj Flow Rate, veh/h			98	12	252	99
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			365	45	333	1275
Arrive On Green			0.23	0.23	0.19	0.69
Sat Flow, veh/h			1621	199	1767	1856
Grp Volume(v), veh/h			0	110	252	99
Grp Sat Flow(s),veh/h/ln			0	1820	1767	1856
Q Serve(g_s), s			0.0	0.6	1.7	0.2
Cycle Q Clear(g_c), s			0.0	0.6	1.7	0.2
Prop In Lane				0.11	1.00	
Lane Grp Cap(c), veh/h			0	410	333	1275
V/C Ratio(X)			0.00	0.27	0.76	0.08
Avail Cap(c_a), veh/h			0	6403	4422	6529
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	4.1	4.9	0.7
Incr Delay (d2), s/veh			0.0	0.1	1.3	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	4.2	6.3	0.7
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			110			351
Approach Delay, s/veh			4.2			4.7
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	5.9	6.9				12.8
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	3.7	2.6				2.2
Green Ext Time (p_c), s	0.3	0.4				0.3

Intersection Summary		
HCM 6th Ctrl Delay		4.6
HCM 6th LOS		A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	840	225	105	860	0	350	0	140	0	0	0
Future Volume (veh/h)	0	840	225	105	860	0	350	0	140	0	0	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	913	245	114	935	0	380	0	152	0	0	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	4	1305	582	210	2085	0	877	0	248	0	293	0
Arrive On Green	0.00	0.37	0.37	0.12	0.59	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3647	0	3563	0	1585	0	1870	0
Grp Volume(v), veh/h	0	913	245	114	935	0	380	0	152	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	0	1781	0	1585	0	1870	0
Q Serve(g_s), s	0.0	9.9	5.2	2.7	6.7	0.0	4.6	0.0	4.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.9	5.2	2.7	6.7	0.0	4.6	0.0	4.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1305	582	210	2085	0	877	0	248	0	293	0
V/C Ratio(X)	0.00	0.70	0.42	0.54	0.45	0.00	0.43	0.00	0.61	0.00	0.00	0.00
Avail Cap(c_a), veh/h	394	3537	1578	591	3537	0	1264	0	421	0	496	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	12.2	10.7	18.8	5.2	0.0	18.0	0.0	17.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.2	0.8	0.1	0.0	0.1	0.0	0.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	1.3	1.0	1.0	0.0	1.5	0.0	1.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.4	10.9	19.6	5.3	0.0	18.1	0.0	18.7	0.0	0.0	0.0
LnGrp LOS	A	B	B	B	A	A	B	A	B	A	A	A
Approach Vol, veh/h		1158			1049			532			0	
Approach Delay, s/veh		12.1			6.8			18.3			0.0	
Approach LOS		B			A			B				
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	22.4		12.9	0.0	32.3		12.9				
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8				
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12				
Max Q Clear Time (g_c+I1), s	4.7	11.9		0.0	0.0	8.7		6.6				
Green Ext Time (p_c), s	0.1	4.5		0.0	0.0	4.3		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		11.3
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	40

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	15	60	95	10	145	50	485	70	45	405	25
Future Vol, veh/h	70	15	60	95	10	145	50	485	70	45	405	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	76	16	65	103	11	158	54	527	76	49	440	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	915	1250	440	1266	1239	303	467	0	0	604	0	0
Stage 1	538	538	-	674	674	-	-	-	-	-	-	-
Stage 2	377	712	-	592	565	-	-	-	-	-	-	-
Critical Hdwy	7.315	6.515	6.215	7.315	6.515	6.915	4.115	-	-	4.115	-	-
Critical Hdwy Stg 1	6.115	5.515	-	6.515	5.515	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.515	5.515	-	6.115	5.515	-	-	-	-	-	-	-
Follow-up Hdwy	3.5095	4.0095	3.3095	3.5095	4.0095	3.3095	2.2095	-	-	2.2095	-	-
Pot Cap-1 Maneuver	242	173	619	136	176	696	1099	-	-	978	-	-
Stage 1	529	523	-	413	455	-	-	-	-	-	-	-
Stage 2	620	437	-	494	509	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	156	619	104	159	695	1099	-	-	977	-	-
Mov Cap-2 Maneuver	164	156	-	104	159	-	-	-	-	-	-	-
Stage 1	503	497	-	392	432	-	-	-	-	-	-	-
Stage 2	444	415	-	406	484	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	47.2	205.5	0.7	0.8
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	234	211	977	-	-
HCM Lane V/C Ratio	0.049	-	-	0.674	1.288	0.05	-	-
HCM Control Delay (s)	8.4	-	-	47.2	205.5	8.9	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4.3	14.6	0.2	-	-

Intersection	
Int Delay, s/veh	36.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	35	65	70	20	65	105	445	55	15	450	95
Future Vol, veh/h	95	35	65	70	20	65	105	445	55	15	450	95
Conflicting Peds, #/hr	0	0	7	0	0	1	0	0	1	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	38	71	76	22	71	114	484	60	16	489	103

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1058	1349	306	1046	1370	274	595	0	0	545	0	0
Stage 1	576	576	-	743	743	-	-	-	-	-	-	-
Stage 2	482	773	-	303	627	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	179	149	690	183	145	724	977	-	-	1020	-	-
Stage 1	470	500	-	373	420	-	-	-	-	-	-	-
Stage 2	534	407	-	681	474	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	126	129	683	114	125	723	974	-	-	1019	-	-
Mov Cap-2 Maneuver	126	129	-	114	125	-	-	-	-	-	-	-
Stage 1	414	491	-	329	370	-	-	-	-	-	-	-
Stage 2	400	359	-	551	465	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	192	105.1	1.6	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	974	-	-	174	179	1019	-	-
HCM Lane V/C Ratio	0.117	-	-	1.218	0.941	0.016	-	-
HCM Control Delay (s)	9.2	-	-	192	105.1	8.6	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	11.6	7.3	0	-	-

Intersection												
Int Delay, s/veh	9.5											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	40	20	50	60	20	75	30	490	65	55	455	90
Future Vol, veh/h	40	20	50	60	20	75	30	490	65	55	455	90
Conflicting Peds, #/hr	0	0	5	0	0	0	0	0	4	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	43	22	54	65	22	82	33	533	71	60	495	98

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1011	1341	305	1023	1355	306	596	0	0	608	0	0
Stage 1	667	667	-	639	639	-	-	-	-	-	-	-
Stage 2	344	674	-	384	716	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	195	152	694	191	150	693	983	-	-	973	-	-
Stage 1	417	457	-	433	471	-	-	-	-	-	-	-
Stage 2	647	454	-	613	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	137	689	142	135	690	980	-	-	969	-	-
Mov Cap-2 Maneuver	140	137	-	142	135	-	-	-	-	-	-	-
Stage 1	402	427	-	417	453	-	-	-	-	-	-	-
Stage 2	525	437	-	500	407	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.9	55.3	0.5	0.8
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	980	-	-	218	228	969	-	-
HCM Lane V/C Ratio	0.033	-	-	0.548	0.739	0.062	-	-
HCM Control Delay (s)	8.8	-	-	39.9	55.3	9	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.9	5.1	0.2	-	-

5: Carillion Blvd & Walnut Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.2	0.0	8.1	1.0
Total Del/Veh (s)	55.1	84.7	28.7	579.5	126.8

Intersection	
Intersection Delay, s/veh	181.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	370	25	125	15	40	110	190	570	25	80	665	295
Future Vol, veh/h	370	25	125	15	40	110	190	570	25	80	665	295
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
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	402	27	136	16	43	120	207	620	27	87	723	321
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	202.6	22.9	96.5	261.3
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	94%	0%	27%	0%	100%	0%	0%
Vol Thru, %	0%	100%	88%	6%	0%	73%	0%	0%	100%	43%
Vol Right, %	0%	0%	12%	0%	100%	0%	100%	0%	0%	57%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	380	215	395	125	55	110	80	443	517
LT Vol	190	0	0	370	0	15	0	80	0	0
Through Vol	0	380	190	25	0	40	0	0	443	222
RT Vol	0	0	25	0	125	0	110	0	0	295
Lane Flow Rate	207	413	234	429	136	60	120	87	482	562
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.637	1.217	0.683	1.456	0.417	0.212	0.397	0.27	1.431	1.605
Departure Headway (Hd)	12.986	12.46	12.374	13.838	12.645	13.983	13.114	12.598	12.069	11.646
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	281	293	294	266	287	258	276	287	304	320
Service Time	10.686	10.16	10.074	11.538	10.345	11.683	10.814	10.298	9.769	9.346
HCM Lane V/C Ratio	0.737	1.41	0.796	1.613	0.474	0.233	0.435	0.303	1.586	1.756
HCM Control Delay	36	159.9	38	259.1	24.1	20.4	24.2	19.9	242.8	314.6
HCM Lane LOS	E	F	E	F	C	C	C	C	F	F
HCM 95th-tile Q	4	16.1	4.6	21.5	2	0.8	1.8	1.1	23	29.7

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	765	10	10	795
Future Vol, veh/h	20	20	765	10	10	795
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	22	22	832	11	11	864

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1292	422	0	0	843	0
Stage 1	838	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	156	583	-	-	795	-
Stage 1	387	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	154	583	-	-	795	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.8	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	154	583	795	-
HCM Lane V/C Ratio	-	-	0.141	0.037	0.014	-
HCM Control Delay (s)	-	-	32.2	11.4	9.6	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	50	0	0	90	5	695	10	50	750	20
Future Vol, veh/h	0	0	50	0	0	90	5	695	10	50	750	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	6	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	54	0	0	98	5	755	11	54	815	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	420	-	-	389	838	0	0	772	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	585	0	0	612	799	-	-	845	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	584	-	-	609	798	-	-	840	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	12	0.1	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	798	-	-	584	609	840	-	-
HCM Lane V/C Ratio	0.007	-	-	0.093	0.161	0.065	-	-
HCM Control Delay (s)	9.5	-	-	11.8	12	9.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	60	0	0	45	10	655	5	65	705	10
Future Vol, veh/h	0	0	60	0	0	45	10	655	5	65	705	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	65	0	0	49	11	712	5	71	766	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	390	-	-	360	778	0	0	718	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	612	0	0	639	841	-	-	886	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	611	-	-	638	840	-	-	885	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	11.1	0.1	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	840	-	-	611	638	885	-	-
HCM Lane V/C Ratio	0.013	-	-	0.107	0.077	0.08	-	-
HCM Control Delay (s)	9.3	-	-	11.6	11.1	9.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	120	15	115	280	55	10	455	135	280	390	100
Future Volume (veh/h)	130	120	15	115	280	55	10	455	135	280	390	100
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	130	16	125	304	60	11	495	147	304	424	109
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	191	385	47	175	344	68	24	594	175	352	1131	288
Arrive On Green	0.11	0.24	0.24	0.10	0.23	0.23	0.01	0.22	0.22	0.20	0.40	0.40
Sat Flow, veh/h	1781	1633	201	1781	1517	299	1781	2705	799	1781	2804	714
Grp Volume(v), veh/h	141	0	146	125	0	364	11	324	318	304	267	266
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1816	1781	1777	1727	1781	1777	1742
Q Serve(g_s), s	5.5	0.0	4.8	4.9	0.0	14.0	0.4	12.6	12.7	11.9	7.6	7.8
Cycle Q Clear(g_c), s	5.5	0.0	4.8	4.9	0.0	14.0	0.4	12.6	12.7	11.9	7.6	7.8
Prop In Lane	1.00		0.11	1.00		0.16	1.00		0.46	1.00		0.41
Lane Grp Cap(c), veh/h	191	0	432	175	0	412	24	390	379	352	717	703
V/C Ratio(X)	0.74	0.00	0.34	0.71	0.00	0.88	0.45	0.83	0.84	0.86	0.37	0.38
Avail Cap(c_a), veh/h	443	0	456	443	0	452	123	442	430	443	762	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	0.0	23.0	31.6	0.0	27.1	35.4	26.9	27.0	28.1	15.2	15.2
Incr Delay (d2), s/veh	5.4	0.0	0.5	5.3	0.0	17.4	12.4	11.5	12.4	13.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.9	2.2	0.0	7.2	0.3	6.0	6.0	5.9	2.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	23.4	36.9	0.0	44.4	47.8	38.4	39.4	41.6	15.5	15.5
LnGrp LOS	D	A	C	D	A	D	D	D	D	D	B	B
Approach Vol, veh/h		287			489			653			837	
Approach Delay, s/veh		30.0			42.5			39.1			25.0	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.8	20.4	11.6	21.5	5.5	33.7	12.3	20.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0	5.0	31.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	13.9	14.7	6.9	6.8	2.4	9.8	7.5	16.0
Green Ext Time (p_c), s	0.3	1.1	0.2	0.4	0.0	2.8	0.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	605	260	295	495	15	315	60	180	20	55	40
Future Volume (veh/h)	45	605	260	295	495	15	315	60	180	20	55	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	658	283	321	538	16	342	65	196	22	60	43
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	87	943	421	254	1267	38	513	92	276	47	102	73
Arrive On Green	0.05	0.27	0.27	0.14	0.36	0.36	0.15	0.22	0.22	0.03	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3524	105	3456	410	1237	1781	1013	726
Grp Volume(v), veh/h	49	658	283	321	271	283	342	0	261	22	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1852	1728	0	1648	1781	0	1740
Q Serve(g_s), s	1.4	8.8	8.4	7.5	6.1	6.1	4.9	0.0	7.7	0.6	0.0	3.0
Cycle Q Clear(g_c), s	1.4	8.8	8.4	7.5	6.1	6.1	4.9	0.0	7.7	0.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.75	1.00		0.42
Lane Grp Cap(c), veh/h	87	943	421	254	639	666	513	0	367	47	0	175
V/C Ratio(X)	0.57	0.70	0.67	1.26	0.42	0.43	0.67	0.00	0.71	0.47	0.00	0.59
Avail Cap(c_a), veh/h	170	1218	543	254	693	723	1184	0	988	170	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	17.4	17.3	22.5	12.7	12.7	21.1	0.0	18.8	25.2	0.0	22.6
Incr Delay (d2), s/veh	5.7	1.2	2.2	145.6	0.4	0.4	1.5	0.0	2.5	7.3	0.0	3.1
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	0.7	3.3	2.7	12.9	1.9	2.0	1.8	0.0	2.7	0.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	18.6	19.4	168.1	13.2	13.1	22.7	0.0	21.4	32.5	0.0	25.7
LnGrp LOS	C	B	B	F	B	B	C	A	C	C	A	C
Approach Vol, veh/h		990			875			603			125	
Approach Delay, s/veh		19.4			70.0			22.1			26.9	
Approach LOS		B			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	16.2	12.0	18.4	12.3	9.8	7.1	23.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.6	9.7	9.5	10.8	6.9	5.0	3.4	8.1
Green Ext Time (p_c), s	0.0	1.4	0.0	3.2	0.9	0.3	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Intersection						
Int Delay, s/veh	4.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	215	245	540	605	10
Future Vol, veh/h	15	215	245	540	605	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	234	266	587	658	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1490	335	669	0	-	0
Stage 1	664	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	116	664	924	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	83	664	924	-	-	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	22.1		3.3		0	
HCM LOS	C					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	924	-	456	-	-
HCM Lane V/C Ratio	0.288	-	0.548	-	-
HCM Control Delay (s)	10.5	-	22.1	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.2	-	3.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	880	0	0	795	405	115	0	120	0	0	0
Future Volume (veh/h)	110	880	0	0	795	405	115	0	120	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	120	957	0	0	864	440	125	0	130			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	185	2166	0	0	1462	638	308	0	270			
Arrive On Green	0.10	0.61	0.00	0.00	0.41	0.41	0.17	0.00	0.17			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1560			
Grp Volume(v), veh/h	120	957	0	0	864	440	125	0	130			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1560			
Q Serve(g_s), s	2.9	6.4	0.0	0.0	8.4	10.4	2.8	0.0	3.4			
Cycle Q Clear(g_c), s	2.9	6.4	0.0	0.0	8.4	10.4	2.8	0.0	3.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	185	2166	0	0	1462	638	308	0	270			
V/C Ratio(X)	0.65	0.44	0.00	0.00	0.59	0.69	0.41	0.00	0.48			
Avail Cap(c_a), veh/h	591	4213	0	0	2700	1179	695	0	608			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.2	4.7	0.0	0.0	10.2	10.8	16.4	0.0	16.6			
Incr Delay (d2), s/veh	1.4	0.1	0.0	0.0	0.3	1.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.0	0.9	0.0	0.0	2.2	2.5	1.0	0.0	1.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	4.8	0.0	0.0	10.5	11.8	17.0	0.0	17.6			
LnGrp LOS	C	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		1077			1304			255				
Approach Delay, s/veh		6.6			10.9			17.3				
Approach LOS		A			B			B				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		12.3		32.3			8.8	23.5				
Change Period (Y+Rc), s		4.6		5.1			* 4.2	5.1				
Max Green Setting (Gmax), s		17.4		52.9			* 15	33.9				
Max Q Clear Time (g_c+I1), s		5.4		8.4			4.9	12.4				
Green Ext Time (p_c), s		0.6		7.5			0.1	6.0				
Intersection Summary												
HCM 6th Ctrl Delay			9.8									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	790	50	25	910	45	100	20	60	45	15	185
Future Volume (veh/h)	55	790	50	25	910	45	100	20	60	45	15	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	60	859	54	27	989	49	109	22	65	49	16	201
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	75	1248	78	42	1203	60	139	28	83	57	19	234
Arrive On Green	0.04	0.37	0.37	0.02	0.35	0.35	0.15	0.15	0.15	0.19	0.19	0.19
Sat Flow, veh/h	1767	3363	211	1767	3418	169	949	192	566	297	97	1220
Grp Volume(v), veh/h	60	450	463	27	510	528	196	0	0	266	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1812	1767	1763	1825	1706	0	0	1614	0	0
Q Serve(g_s), s	2.2	14.3	14.3	1.0	17.5	17.5	7.3	0.0	0.0	10.6	0.0	0.0
Cycle Q Clear(g_c), s	2.2	14.3	14.3	1.0	17.5	17.5	7.3	0.0	0.0	10.6	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.09	0.56		0.33	0.18		0.76
Lane Grp Cap(c), veh/h	75	654	672	42	621	642	249	0	0	310	0	0
V/C Ratio(X)	0.80	0.69	0.69	0.65	0.82	0.82	0.79	0.00	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	144	774	795	112	742	768	391	0	0	336	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.4	17.6	17.6	32.1	19.6	19.6	27.3	0.0	0.0	25.9	0.0	0.0
Incr Delay (d2), s/veh	6.9	2.1	2.0	6.1	6.3	6.1	2.1	0.0	0.0	17.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.2	5.4	0.5	7.1	7.3	3.0	0.0	0.0	5.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	19.7	19.6	38.2	25.9	25.7	29.4	0.0	0.0	42.9	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C	A	A	D	A	A
Approach Vol, veh/h		973			1065			196			266	
Approach Delay, s/veh		20.8			26.1			29.4			42.9	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	13.9	5.8	29.7	16.9	7.0	28.4
Change Period (Y+Rc), s	* 4.2	* 4.2	5.1	4.2	* 4.2	5.1
Max Green Setting (Gmax), s	* 15	* 4.2	29.1	13.8	* 5.4	27.9
Max Q Clear Time (g_c+I1), s	9.3	3.0	16.3	12.6	4.2	19.5
Green Ext Time (p_c), s	0.3	0.0	4.3	0.1	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	655	25	10	870	65	35	20	10	20	15	70
Future Volume (veh/h)	135	655	25	10	870	65	35	20	10	20	15	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	712	27	11	946	71	38	22	11	22	16	76
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	188	1582	60	25	1209	91	107	62	31	36	26	123
Arrive On Green	0.10	0.45	0.45	0.01	0.36	0.36	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1795	3517	133	1795	3368	253	950	550	275	321	233	1108
Grp Volume(v), veh/h	147	362	377	11	503	514	71	0	0	114	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1859	1795	1791	1830	1775	0	0	1663	0	0
Q Serve(g_s), s	4.6	8.0	8.0	0.4	14.4	14.4	2.1	0.0	0.0	3.8	0.0	0.0
Cycle Q Clear(g_c), s	4.6	8.0	8.0	0.4	14.4	14.4	2.1	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.14	0.54		0.15	0.19		0.67
Lane Grp Cap(c), veh/h	188	805	836	25	643	657	200	0	0	185	0	0
V/C Ratio(X)	0.78	0.45	0.45	0.44	0.78	0.78	0.35	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	277	945	981	156	824	842	573	0	0	520	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.1	10.9	10.9	28.2	16.5	16.5	23.6	0.0	0.0	24.4	0.0	0.0
Incr Delay (d2), s/veh	8.3	0.4	0.4	11.5	3.8	3.7	1.1	0.0	0.0	3.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.5	2.6	0.2	5.4	5.5	0.9	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	11.3	11.3	39.7	20.2	20.2	24.7	0.0	0.0	27.8	0.0	0.0
LnGrp LOS	C	B	B	D	C	C	C	A	A	C	A	A
Approach Vol, veh/h		886			1028			71			114	
Approach Delay, s/veh		15.0			20.4			24.7			27.8	
Approach LOS		B			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		11.0	5.3	30.4		10.9	10.5	25.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.6	5.0	30.4		18.0	8.9	26.5
Max Q Clear Time (g_c+I1), s		4.1	2.4	10.0		5.8	6.6	16.4
Green Ext Time (p_c), s		0.2	0.0	4.0		0.4	0.1	4.2

Intersection Summary			
HCM 6th Ctrl Delay			18.7
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	240	80	155	315	75	65	710	125	75	555	455
Future Volume (veh/h)	315	240	80	155	315	75	65	710	125	75	555	455
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1870	1870	1900	1900
Adj Flow Rate, veh/h	342	261	87	168	342	82	71	772	136	82	603	495
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	2	2	0	0
Cap, veh/h	495	515	167	216	504	119	105	1137	499	112	1153	730
Arrive On Green	0.14	0.20	0.20	0.12	0.18	0.18	0.06	0.32	0.32	0.06	0.32	0.32
Sat Flow, veh/h	3510	2626	853	1781	2851	675	1810	3610	1585	1781	3610	1574
Grp Volume(v), veh/h	342	174	174	168	211	213	71	772	136	82	603	495
Grp Sat Flow(s),veh/h/ln	1755	1777	1702	1781	1777	1749	1810	1805	1585	1781	1805	1574
Q Serve(g_s), s	5.5	5.2	5.4	5.4	6.6	6.7	2.3	11.0	3.8	2.7	8.1	14.6
Cycle Q Clear(g_c), s	5.5	5.2	5.4	5.4	6.6	6.7	2.3	11.0	3.8	2.7	8.1	14.6
Prop In Lane	1.00		0.50	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	495	348	334	216	314	309	105	1137	499	112	1153	730
V/C Ratio(X)	0.69	0.50	0.52	0.78	0.67	0.69	0.67	0.68	0.27	0.74	0.52	0.68
Avail Cap(c_a), veh/h	1040	614	588	456	542	533	169	1284	564	166	1284	787
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	24.1	21.2	21.2	25.2	22.7	22.8	27.3	17.6	15.2	27.2	16.4	12.5
Incr Delay (d2), s/veh	1.7	1.1	1.3	5.9	2.5	2.7	7.3	1.2	0.3	9.0	0.4	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	2.2	2.1	2.1	2.5	2.8	2.8	1.1	4.0	1.3	1.3	2.8	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	22.3	22.5	31.1	25.2	25.5	34.5	18.9	15.4	36.2	16.8	14.7
LnGrp LOS	C	C	C	C	C	C	C	B	B	D	B	B
Approach Vol, veh/h		690			592			979			1180	
Approach Delay, s/veh		24.1			27.0			19.5			17.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	23.1	11.7	16.1	7.9	23.4	12.8	14.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	21.0	15.1	20.4	5.5	21.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.7	13.0	7.4	7.4	4.3	16.6	7.5	8.7
Green Ext Time (p_c), s	0.0	3.2	0.3	1.6	0.0	2.2	0.9	1.7

Intersection Summary		
HCM 6th Ctrl Delay		21.0
HCM 6th LOS		C

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	980	890	20
Future Vol, veh/h	30	15	5	980	890	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	5	1065	967	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1521	495	989	0	-	0
Stage 1	978	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	109	520	695	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	108	520	695	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	546	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	695	-	283	-	-
HCM Lane V/C Ratio	0.008	-	0.173	-	-
HCM Control Delay (s)	10.2	-	20.4	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	55	20	960	900	10
Future Vol, veh/h	25	55	20	960	900	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	60	22	1043	978	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1544	978	989	0	-	0
Stage 1	978	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	115	303	697	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	111	303	697	-	-	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	351	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	697	-	280	-	-
HCM Lane V/C Ratio	0.031	-	0.311	-	-
HCM Control Delay (s)	10.3	-	23.5	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	145	130	105	220	20	25	720	50	70	715	170
Future Volume (veh/h)	235	145	130	105	220	20	25	720	50	70	715	170
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	158	141	114	239	22	27	783	54	76	777	185
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	247	220	147	304	28	53	1000	69	105	1156	516
Arrive On Green	0.17	0.27	0.27	0.08	0.18	0.18	0.03	0.30	0.30	0.06	0.33	0.33
Sat Flow, veh/h	1781	911	813	1781	1687	155	1781	3372	233	1781	3554	1585
Grp Volume(v), veh/h	255	0	299	114	0	261	27	412	425	76	777	185
Grp Sat Flow(s),veh/h/ln	1781	0	1724	1781	0	1842	1781	1777	1828	1781	1777	1585
Q Serve(g_s), s	8.5	0.0	9.4	3.9	0.0	8.4	0.9	13.1	13.1	2.6	11.7	5.5
Cycle Q Clear(g_c), s	8.5	0.0	9.4	3.9	0.0	8.4	0.9	13.1	13.1	2.6	11.7	5.5
Prop In Lane	1.00		0.47	1.00		0.08	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	308	0	467	147	0	332	53	527	542	105	1156	516
V/C Ratio(X)	0.83	0.00	0.64	0.78	0.00	0.79	0.50	0.78	0.78	0.72	0.67	0.36
Avail Cap(c_a), veh/h	418	0	670	245	0	537	144	691	711	159	1410	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	19.9	27.8	0.0	24.2	29.5	19.9	19.9	28.6	18.0	15.9
Incr Delay (d2), s/veh	9.7	0.0	1.5	8.5	0.0	4.1	7.2	4.3	4.2	9.0	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	3.7	1.8	0.0	3.4	0.5	5.2	5.3	1.3	4.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.3	0.0	21.3	36.3	0.0	28.3	36.7	24.3	24.1	37.6	18.9	16.3
LnGrp LOS	C	A	C	D	A	C	D	C	C	D	B	B
Approach Vol, veh/h		554			375			864			1038	
Approach Delay, s/veh		27.3			30.7			24.6			19.8	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	22.8	9.6	21.2	6.4	24.6	15.2	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	24.0	8.5	24.0	5.0	24.5	14.5	18.0
Max Q Clear Time (g_c+I1), s	4.6	15.1	5.9	11.4	2.9	13.7	10.5	10.4
Green Ext Time (p_c), s	0.0	3.2	0.1	1.4	0.0	4.1	0.3	0.7

Intersection Summary	
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	525	105	375	475	0	0	0	0	120	200	70
Future Volume (veh/h)	0	525	105	375	475	0	0	0	0	120	200	70
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	571	114	408	516	0				130	217	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	905	404	755	2052	0				344	503	171
Arrive On Green	0.00	0.26	0.26	0.22	0.58	0.00				0.19	0.19	0.19
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2582	878
Grp Volume(v), veh/h	0	571	114	408	516	0				130	146	147
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1697
Q Serve(g_s), s	0.0	5.5	2.2	4.0	2.7	0.0				2.4	2.8	2.9
Cycle Q Clear(g_c), s	0.0	5.5	2.2	4.0	2.7	0.0				2.4	2.8	2.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.52
Lane Grp Cap(c), veh/h	0	905	404	755	2052	0				344	343	331
V/C Ratio(X)	0.00	0.63	0.28	0.54	0.25	0.00				0.38	0.43	0.44
Avail Cap(c_a), veh/h	0	2129	950	810	3333	0				1787	1782	1716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	11.3	13.1	3.9	0.0				13.3	13.5	13.5
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.6	0.0	0.0				0.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	0.6	1.2	0.3	0.0				0.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.8	11.5	13.8	3.9	0.0				13.6	13.8	13.9
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		685			924						423	
Approach Delay, s/veh		12.6			8.3						13.7	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.4	13.8		11.9		26.2
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0
Max Q Clear Time (g_c+I1), s	6.0	7.5		4.9		4.7
Green Ext Time (p_c), s	0.5	2.3		1.1		2.2

Intersection Summary			
HCM 6th Ctrl Delay			10.9
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	450	0	0	695	50	155	250	415	0	0	0
Future Volume (veh/h)	195	450	0	0	695	50	155	250	415	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	212	489	0	0	755	54	168	272	451			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	409	1667	0	0	960	428	627	659	558			
Arrive On Green	0.12	0.47	0.00	0.00	0.27	0.27	0.35	0.35	0.35			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	212	489	0	0	755	54	168	272	451			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	3.3	4.8	0.0	0.0	11.2	1.5	3.9	6.3	14.7			
Cycle Q Clear(g_c), s	3.3	4.8	0.0	0.0	11.2	1.5	3.9	6.3	14.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	409	1667	0	0	960	428	627	659	558			
V/C Ratio(X)	0.52	0.29	0.00	0.00	0.79	0.13	0.27	0.41	0.81			
Avail Cap(c_a), veh/h	545	2054	0	0	1307	583	1123	1179	999			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	23.6	9.3	0.0	0.0	19.3	15.7	13.2	14.0	16.7			
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	1.5	0.0	0.1	0.2	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.2	1.5	0.0	0.0	4.2	0.5	1.4	2.4	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	9.4	0.0	0.0	20.8	15.8	13.3	14.2	17.8			
LnGrp LOS	C	A	A	A	C	B	B	B	B			
Approach Vol, veh/h		701			809			891				
Approach Delay, s/veh		13.8			20.5			15.9				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.9			11.4	20.5		25.2				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		6.8			5.3	13.2		16.7				
Green Ext Time (p_c), s		2.0			0.1	2.2		3.4				

Intersection Summary			
HCM 6th Ctrl Delay			16.8
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	625	35	575	665	0	40	0	145	250	195	235
Future Volume (veh/h)	0	625	35	575	665	0	40	0	145	250	195	235
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	679	38	625	723	0	43	0	158	272	212	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	887	396	716	1815	0	47	0	172	342	341	304
Arrive On Green	0.00	0.25	0.25	0.21	0.51	0.00	0.14	0.00	0.14	0.19	0.19	0.19
Sat Flow, veh/h	0	3647	1585	3456	3647	0	347	0	1276	1781	1777	1585
Grp Volume(v), veh/h	0	679	38	625	723	0	201	0	0	272	212	255
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1623	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	13.1	1.4	13.0	9.2	0.0	9.0	0.0	0.0	10.8	8.1	11.5
Cycle Q Clear(g_c), s	0.0	13.1	1.4	13.0	9.2	0.0	9.0	0.0	0.0	10.8	8.1	11.5
Prop In Lane	0.00		1.00	1.00		0.00	0.21		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	0	887	396	716	1815	0	219	0	0	342	341	304
V/C Ratio(X)	0.00	0.77	0.10	0.87	0.40	0.00	0.92	0.00	0.00	0.80	0.62	0.84
Avail Cap(c_a), veh/h	0	1009	450	794	2017	0	219	0	0	385	384	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	25.7	21.3	28.4	11.1	0.0	31.6	0.0	0.0	28.5	27.4	28.8
Incr Delay (d2), s/veh	0.0	4.1	0.2	9.1	0.1	0.0	37.9	0.0	0.0	8.6	1.5	13.7
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	0.0	5.8	0.5	6.0	3.3	0.0	5.7	0.0	0.0	5.2	3.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.9	21.6	37.5	11.3	0.0	69.5	0.0	0.0	37.2	29.0	42.5
LnGrp LOS	A	C	C	D	B	A	E	A	A	D	C	D
Approach Vol, veh/h		717			1348			201			739	
Approach Delay, s/veh		29.4			23.4			69.5			36.6	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	4	6	8
Phs Duration (G+Y+Rc), s	9.3	22.5	18.2	41.8	14.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	21.0	16.0	42.0	10.0
Max Q Clear Time (g_c+I1), s	15.0	15.1	13.5	11.2	11.0
Green Ext Time (p_c), s	0.4	3.4	0.7	5.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	615	0	0	855	140	385	275	55	0	0	0
Future Volume (veh/h)	405	615	0	0	855	140	385	275	55	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	440	668	0	0	929	152	259	522	60			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	842	2020	0	0	790	347	365	675	77			
Arrive On Green	0.24	0.57	0.00	0.00	0.22	0.22	0.20	0.20	0.20			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3295	378			
Grp Volume(v), veh/h	440	668	0	0	929	152	259	296	286			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1802			
Q Serve(g_s), s	5.0	4.5	0.0	0.0	10.0	3.8	6.1	6.7	6.8			
Cycle Q Clear(g_c), s	5.0	4.5	0.0	0.0	10.0	3.8	6.1	6.7	6.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.21			
Lane Grp Cap(c), veh/h	842	2020	0	0	790	347	365	383	369			
V/C Ratio(X)	0.52	0.33	0.00	0.00	1.18	0.44	0.71	0.77	0.78			
Avail Cap(c_a), veh/h	1383	2020	0	0	790	347	396	416	401			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.7	5.2	0.0	0.0	17.5	15.1	16.6	16.9	16.9			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	92.0	0.3	4.3	7.0	7.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.0	0.0	0.0	13.6	1.2	2.6	3.2	3.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	5.2	0.0	0.0	109.5	15.4	20.9	23.8	24.4			
LnGrp LOS	B	A	A	A	F	B	C	C	C			
Approach Vol, veh/h		1108			1081			841				
Approach Delay, s/veh		9.1			96.3			23.1				
Approach LOS		A			F			C				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.3				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.5			7.0	12.0		8.8				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		44.1
HCM 6th LOS		D

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	185	5	705	100
Future Volume (veh/h)	0	0	185	5	705	100
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			201	5	766	109
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			383	10	895	1591
Arrive On Green			0.21	0.21	0.50	0.84
Sat Flow, veh/h			1831	46	1795	1885
Grp Volume(v), veh/h			0	206	766	109
Grp Sat Flow(s),veh/h/ln			0	1877	1795	1885
Q Serve(g_s), s			0.0	2.5	9.6	0.2
Cycle Q Clear(g_c), s			0.0	2.5	9.6	0.2
Prop In Lane				0.02	1.00	
Lane Grp Cap(c), veh/h			0	393	895	1591
V/C Ratio(X)			0.00	0.52	0.86	0.07
Avail Cap(c_a), veh/h			0	3294	2240	3308
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	9.0	5.6	0.3
Incr Delay (d2), s/veh			0.0	0.4	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.7	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	9.4	6.6	0.3
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			206			875
Approach Delay, s/veh			9.4			5.8
Approach LOS			A			A

Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	16.3	9.4				25.6
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	11.6	4.5				2.2
Green Ext Time (p_c), s	1.3	0.8				0.4

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

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	430	15	55	630	10	15	270	245	5	165	340
Future Volume (veh/h)	315	430	15	55	630	10	15	270	245	5	165	340
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	342	467	16	60	685	11	16	293	266	5	179	370
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	346	1231	42	77	716	11	20	364	326	10	719	625
Arrive On Green	0.19	0.35	0.35	0.04	0.20	0.20	0.21	0.21	0.21	0.20	0.20	0.20
Sat Flow, veh/h	1781	3506	120	1781	3579	57	97	1769	1585	51	3594	1585
Grp Volume(v), veh/h	342	236	247	60	340	356	309	0	266	184	0	370
Grp Sat Flow(s),veh/h/ln	1781	1777	1849	1781	1777	1860	1866	0	1585	1868	1777	1585
Q Serve(g_s), s	17.2	9.0	9.0	3.0	17.0	17.0	14.2	0.0	14.4	7.9	0.0	16.6
Cycle Q Clear(g_c), s	17.2	9.0	9.0	3.0	17.0	17.0	14.2	0.0	14.4	7.9	0.0	16.6
Prop In Lane	1.00		0.06	1.00		0.03	0.05		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	346	624	649	77	355	372	383	0	326	374	355	625
V/C Ratio(X)	0.99	0.38	0.38	0.78	0.96	0.96	0.81	0.00	0.82	0.49	0.00	0.59
Avail Cap(c_a), veh/h	346	624	649	170	355	372	383	0	326	374	355	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.1	21.9	21.9	42.6	35.6	35.6	34.0	0.0	34.1	31.9	0.0	21.5
Incr Delay (d2), s/veh	44.8	0.4	0.4	15.2	36.4	35.5	16.4	0.0	19.8	4.6	0.0	4.1
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	11.4	3.6	3.7	1.6	10.6	11.0	7.8	0.0	7.0	3.8	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.0	22.2	22.2	57.8	72.0	71.1	50.4	0.0	53.9	36.5	0.0	25.6
LnGrp LOS	F	C	C	E	E	E	D	A	D	D	A	C
Approach Vol, veh/h		825			756			575			554	
Approach Delay, s/veh		46.6			70.4			52.1			29.2	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	23.0	8.4	36.1		22.5	22.0	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	8.6	26.9		18.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	16.4	5.0	11.0		18.6	19.2	19.0
Green Ext Time (p_c), s	0.7	0.0	2.4		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	610	25	15	20	25	630
Future Volume (veh/h)	610	25	15	20	25	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	663	27	16	22	27	685
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	714	636	35	1617	1293	1213
Arrive On Green	0.40	0.40	0.02	0.46	0.36	0.36
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	663	27	16	22	27	685
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	22.2	0.6	0.6	0.2	0.3	11.2
Cycle Q Clear(g_c), s	22.2	0.6	0.6	0.2	0.3	11.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	714	636	35	1617	1293	1213
V/C Ratio(X)	0.93	0.04	0.46	0.01	0.02	0.56
Avail Cap(c_a), veh/h	782	696	142	1617	1293	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	11.4	30.4	9.4	12.8	3.0
Incr Delay (d2), s/veh	16.4	0.0	9.3	0.0	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	0.3	0.1	0.1	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.3	11.5	39.7	9.4	12.8	5.0
LnGrp LOS	C	B	D	A	B	A
Approach Vol, veh/h	690			38	712	
Approach Delay, s/veh	33.4			22.1	5.3	
Approach LOS	C			C	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		33.0		29.6	5.7	27.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.5		27.5	5.0	19.0
Max Q Clear Time (g_c+I1), s		2.2		24.2	2.6	13.2
Green Ext Time (p_c), s		0.1		0.9	0.0	1.6
Intersection Summary						
HCM 6th Ctrl Delay			19.2			
HCM 6th LOS			B			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations										
Traffic Volume (veh/h)	0	865	0	0	745	0	0	0	0	0
Future Volume (veh/h)	0	865	0	0	745	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				
Work Zone On Approach		No			No					
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	0				
Adj Flow Rate, veh/h	0	940	0	0	810	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	0	2	0				
Cap, veh/h	713	748	634	0	1421	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00				
Sat Flow, veh/h	1781	1870	1585	0	3741	0				
Grp Volume(v), veh/h	0	940	0	0	810	0				
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	0	1777	0				
Q Serve(g_s), s	0.0	18.0	0.0	0.0	8.0	0.0				
Cycle Q Clear(g_c), s	0.0	18.0	0.0	0.0	8.0	0.0				
Prop In Lane	1.00		1.00	0.00		0.00				
Lane Grp Cap(c), veh/h	713	748	634	0	1421	0				
V/C Ratio(X)	0.00	1.26	0.00	0.00	0.57	0.00				
Avail Cap(c_a), veh/h	713	748	634	0	1421	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				
Uniform Delay (d), s/veh	0.0	13.5	0.0	0.0	10.5	0.0				
Incr Delay (d2), s/veh	0.0	126.2	0.0	0.0	1.7	0.0				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	0.0	31.4	0.0	0.0	2.5	0.0				
Unsig. Movement Delay, s/veh										
LnGrp Delay(d),s/veh	0.0	139.7	0.0	0.0	12.2	0.0				
LnGrp LOS	A	F	A	A	B	A				
Approach Vol, veh/h		940			810					
Approach Delay, s/veh		139.7			12.2					
Approach LOS		F			B					
Timer - Assigned Phs				4				8		
Phs Duration (G+Y+Rc), s				22.5				22.5		
Change Period (Y+Rc), s				4.5				4.5		
Max Green Setting (Gmax), s				18.0				18.0		
Max Q Clear Time (g_c+I1), s				20.0				10.0		
Green Ext Time (p_c), s				0.0				3.2		
Intersection Summary										
HCM 6th Ctrl Delay			80.7							
HCM 6th LOS			F							

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1870	1870				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	0.92	0.92				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						

Timer - Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_c+I1), s
Green Ext Time (p_c), s

Intersection Summary	
HCM 6th Ctrl Delay	0.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	940	475	90	640	0	200	0	80	0	0	0
Future Volume (veh/h)	0	940	475	90	640	0	200	0	80	0	0	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1022	516	98	696	0	217	0	87	0	0	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	4	1554	693	189	2268	0	732	0	193	0	228	0
Arrive On Green	0.00	0.44	0.44	0.11	0.64	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3647	0	3563	0	1585	0	1870	0
Grp Volume(v), veh/h	0	1022	516	98	696	0	217	0	87	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	0	1781	0	1585	0	1870	0
Q Serve(g_s), s	0.0	11.0	13.1	2.5	4.3	0.0	2.8	0.0	2.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.0	13.1	2.5	4.3	0.0	2.8	0.0	2.5	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1554	693	189	2268	0	732	0	193	0	228	0
V/C Ratio(X)	0.00	0.66	0.74	0.52	0.31	0.00	0.30	0.00	0.45	0.00	0.00	0.00
Avail Cap(c_a), veh/h	368	3305	1474	552	3305	0	1181	0	393	0	464	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	10.8	11.4	20.5	3.9	0.0	19.9	0.0	19.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.6	0.8	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	3.2	0.9	0.6	0.0	1.0	0.0	0.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.9	12.0	21.3	4.0	0.0	19.9	0.0	20.3	0.0	0.0	0.0
LnGrp LOS	A	B	B	C	A	A	B	A	C	A	A	A
Approach Vol, veh/h		1538			794			304			0	
Approach Delay, s/veh		11.3			6.1			20.1			0.0	
Approach LOS		B			A			C				
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	27.0		11.7	0.0	36.7		11.7				
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8				
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12				
Max Q Clear Time (g_c+I1), s	4.5	15.1		0.0	0.0	6.3		4.8				
Green Ext Time (p_c), s	0.1	5.9		0.0	0.0	3.0		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			10.7									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	78.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	20	80	95	15	20	95	360	60	105	555	80
Future Vol, veh/h	60	20	80	95	15	20	95	360	60	105	555	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	-	145	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	65	22	87	103	16	22	103	391	65	114	603	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1241	1494	603	1560	1549	229	690	0	0	457	0	0
Stage 1	831	831	-	631	631	-	-	-	-	-	-	-
Stage 2	410	663	-	929	918	-	-	-	-	-	-	-
Critical Hdwy	7.315	6.515	6.215	7.315	6.515	6.915	4.115	-	-	4.115	-	-
Critical Hdwy Stg 1	6.115	5.515	-	6.515	5.515	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.515	5.515	-	6.115	5.515	-	-	-	-	-	-	-
Follow-up Hdwy	3.5095	4.0095	3.3095	3.5095	4.0095	3.3095	2.2095	-	-	2.2095	-	-
Pot Cap-1 Maneuver	142	123	500	~ 84	114	777	908	-	-	1108	-	-
Stage 1	365	385	-	438	475	-	-	-	-	-	-	-
Stage 2	593	460	-	322	351	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	98	500	~ 49	91	776	908	-	-	1107	-	-
Mov Cap-2 Maneuver	101	98	-	~ 49	91	-	-	-	-	-	-	-
Stage 1	324	345	-	388	421	-	-	-	-	-	-	-
Stage 2	491	408	-	224	315	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	136.8	$ 746.6	1.7	1.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	908	-	-	167	61	1107	-	-
HCM Lane V/C Ratio	0.114	-	-	1.041	2.316	0.103	-	-
HCM Control Delay (s)	9.5	-	-	136.8	$ 746.6	8.6	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	8.5	13.9	0.3	-	-

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

Intersection	
Int Delay, s/veh	14

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	10	40	60	10	20	85	420	55	35	615	80
Future Vol, veh/h	75	10	40	60	10	20	85	420	55	35	615	80
Conflicting Peds, #/hr	0	0	7	0	0	1	0	0	1	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	11	43	65	11	22	92	457	60	38	668	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1210	1493	388	1095	1506	261	758	0	0	518	0	0
Stage 1	791	791	-	672	672	-	-	-	-	-	-	-
Stage 2	419	702	-	423	834	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	138	122	611	168	120	738	849	-	-	1044	-	-
Stage 1	349	399	-	412	453	-	-	-	-	-	-	-
Stage 2	582	439	-	579	381	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	104	605	127	103	737	847	-	-	1043	-	-
Mov Cap-2 Maneuver	110	104	-	127	103	-	-	-	-	-	-	-
Stage 1	310	383	-	367	403	-	-	-	-	-	-	-
Stage 2	489	391	-	500	366	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	112.8	64.6	1.5	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	847	-	-	148	151	1043	-	-
HCM Lane V/C Ratio	0.109	-	-	0.918	0.648	0.036	-	-
HCM Control Delay (s)	9.8	-	-	112.8	64.6	8.6	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	6.4	3.6	0.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	15	25	20	5	35	30	490	40	60	595	110
Future Vol, veh/h	35	15	25	20	5	35	30	490	40	60	595	110
Conflicting Peds, #/hr	0	0	5	0	0	0	0	0	4	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	145	-	-	145	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	38	16	27	22	5	38	33	533	43	65	647	120

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1175	1486	392	1092	1525	292	770	0	0	580	0	0
Stage 1	840	840	-	625	625	-	-	-	-	-	-	-
Stage 2	335	646	-	467	900	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	148	125	610	170	118	707	847	-	-	997	-	-
Stage 1	328	381	-	442	478	-	-	-	-	-	-	-
Stage 2	655	468	-	548	358	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	112	605	132	105	704	845	-	-	993	-	-
Mov Cap-2 Maneuver	124	112	-	132	105	-	-	-	-	-	-	-
Stage 1	314	355	-	423	457	-	-	-	-	-	-	-
Stage 2	588	448	-	464	334	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.9	25.4	0.5	0.7
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	845	-	-	164	241	993	-	-
HCM Lane V/C Ratio	0.039	-	-	0.497	0.271	0.066	-	-
HCM Control Delay (s)	9.4	-	-	46.9	25.4	8.9	-	-
HCM Lane LOS	A	-	-	E	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.4	1.1	0.2	-	-

5: Carillion Blvd & Walnut Ave Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	14.4	20.6	14.8	3530.8	214.9

Intersection	
Intersection Delay, s/veh	113.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	275	20	70	15	40	65	105	510	30	90	660	245
Future Vol, veh/h	275	20	70	15	40	65	105	510	30	90	660	245
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
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	299	22	76	16	43	71	114	554	33	98	717	266
Number of Lanes	0	1	1	0	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	79.8	18.5	59.9	172.7
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	93%	0%	27%	0%	100%	0%	0%
Vol Thru, %	0%	100%	85%	7%	0%	73%	0%	0%	100%	47%
Vol Right, %	0%	0%	15%	0%	100%	0%	100%	0%	0%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	340	200	295	70	55	65	90	440	465
LT Vol	105	0	0	275	0	15	0	90	0	0
Through Vol	0	340	170	20	0	40	0	0	440	220
RT Vol	0	0	30	0	70	0	65	0	0	245
Lane Flow Rate	114	370	217	321	76	60	71	98	478	505
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.334	1.029	0.599	1.021	0.218	0.204	0.225	0.279	1.298	1.333
Departure Headway (Hd)	11.317	10.795	10.685	12.208	11.019	12.881	12.015	10.592	10.069	9.683
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	320	340	339	298	328	280	301	341	363	379
Service Time	9.017	8.495	8.385	9.908	8.719	10.581	9.715	8.292	7.769	7.383
HCM Lane V/C Ratio	0.356	1.088	0.64	1.077	0.232	0.214	0.236	0.287	1.317	1.332
HCM Control Delay	19.6	91	28.1	94.7	16.8	18.9	18.2	17.3	181.7	194.2
HCM Lane LOS	C	F	D	F	C	C	C	C	F	F
HCM 95th-tile Q	1.4	12	3.7	11	0.8	0.7	0.8	1.1	21.4	23.4

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	15	630	35	20	720
Future Vol, veh/h	20	15	630	35	20	720
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	22	16	685	38	22	783

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1140	362	0	0	723	0
Stage 1	704	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	196	638	-	-	882	-
Stage 1	454	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	191	638	-	-	882	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	191	638	882	-
HCM Lane V/C Ratio	-	-	0.114	0.026	0.025	-
HCM Control Delay (s)	-	-	26.3	10.8	9.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	65	10	620	20	40	680	25
Future Vol, veh/h	0	0	30	0	0	65	10	620	20	40	680	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	6	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	33	0	0	71	11	674	22	43	739	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	384	-	-	354	767	0	0	702	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	617	0	0	645	849	-	-	898	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	616	-	-	641	848	-	-	893	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	11.3	0.1	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	848	-	-	616	641	893	-	-
HCM Lane V/C Ratio	0.013	-	-	0.053	0.11	0.049	-	-
HCM Control Delay (s)	9.3	-	-	11.2	11.3	9.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	35	20	615	15	60	635	15
Future Vol, veh/h	0	0	40	0	0	35	20	615	15	60	635	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	43	0	0	38	22	668	16	65	690	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	354	-	-	343	707	0	0	685	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	645	0	0	656	894	-	-	911	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	644	-	-	655	893	-	-	910	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	10.8	0.3	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	893	-	-	644	655	910	-	-
HCM Lane V/C Ratio	0.024	-	-	0.068	0.058	0.072	-	-
HCM Control Delay (s)	9.1	-	-	11	10.8	9.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	80	15	115	335	60	10	455	135	210	395	100
Future Volume (veh/h)	115	80	15	115	335	60	10	455	135	210	395	100
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	87	16	125	364	65	11	495	147	228	429	109
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	265	330	61	135	555	99	409	621	183	367	579	146
Arrive On Green	0.21	0.21	0.21	0.08	0.36	0.36	0.23	0.23	0.23	0.21	0.21	0.21
Sat Flow, veh/h	959	1537	283	1781	1545	276	1781	2705	799	1781	2812	708
Grp Volume(v), veh/h	125	0	103	125	0	429	11	324	318	228	270	268
Grp Sat Flow(s),veh/h/ln	959	0	1819	1781	0	1821	1781	1777	1727	1781	1777	1743
Q Serve(g_s), s	8.3	0.0	3.1	4.6	0.0	13.0	0.3	11.3	11.4	7.7	9.3	9.5
Cycle Q Clear(g_c), s	11.8	0.0	3.1	4.6	0.0	13.0	0.3	11.3	11.4	7.7	9.3	9.5
Prop In Lane	1.00		0.16	1.00		0.15	1.00		0.46	1.00		0.41
Lane Grp Cap(c), veh/h	265	0	391	135	0	654	409	408	396	367	366	359
V/C Ratio(X)	0.47	0.00	0.26	0.92	0.00	0.66	0.03	0.79	0.80	0.62	0.74	0.75
Avail Cap(c_a), veh/h	321	0	498	135	0	654	488	486	473	488	486	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	21.5	30.2	0.0	17.7	19.6	23.9	23.9	23.8	24.4	24.5
Incr Delay (d2), s/veh	1.3	0.0	0.4	54.5	0.0	2.4	0.0	7.5	8.2	1.7	4.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.2	3.8	0.0	4.7	0.1	5.3	5.3	3.0	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	0.0	21.8	84.7	0.0	20.0	19.7	31.4	32.1	25.5	28.5	29.0
LnGrp LOS	C	A	C	F	A	C	B	C	C	C	C	C
Approach Vol, veh/h		228			554			653			766	
Approach Delay, s/veh		25.2			34.6			31.6			27.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		19.6	9.5	18.6		18.0		28.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0	5.0	18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		13.4	6.6	13.8		11.5		15.0				
Green Ext Time (p_c), s		1.7	0.0	0.4		2.0		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			30.3									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	770	100	220	455	15	200	60	150	20	55	40
Future Volume (veh/h)	45	770	100	220	455	15	200	60	150	20	55	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	837	109	239	495	16	217	65	163	22	60	43
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	87	1066	476	253	1383	45	373	90	225	47	110	79
Arrive On Green	0.05	0.30	0.30	0.14	0.39	0.39	0.11	0.19	0.19	0.03	0.11	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3513	113	3456	472	1185	1781	1013	726
Grp Volume(v), veh/h	49	837	109	239	250	261	217	0	228	22	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1850	1728	0	1657	1781	0	1740
Q Serve(g_s), s	1.4	11.4	2.7	7.0	5.2	5.2	3.2	0.0	6.8	0.6	0.0	3.0
Cycle Q Clear(g_c), s	1.4	11.4	2.7	7.0	5.2	5.2	3.2	0.0	6.8	0.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.71	1.00		0.42
Lane Grp Cap(c), veh/h	87	1066	476	253	700	728	373	0	315	47	0	189
V/C Ratio(X)	0.57	0.79	0.23	0.94	0.36	0.36	0.58	0.00	0.72	0.47	0.00	0.55
Avail Cap(c_a), veh/h	169	1213	541	253	700	728	1180	0	990	169	0	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	16.9	13.9	22.4	11.3	11.3	22.4	0.0	20.0	25.3	0.0	22.3
Incr Delay (d2), s/veh	5.7	3.1	0.2	41.1	0.3	0.3	1.4	0.0	3.2	7.3	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	0.8	5.4	1.6	1.7	1.2	0.0	2.5	0.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	20.0	14.1	63.5	11.6	11.6	23.8	0.0	23.2	32.6	0.0	24.7
LnGrp LOS	C	B	B	E	B	B	C	A	C	C	A	C
Approach Vol, veh/h		995			750			445			125	
Approach Delay, s/veh		19.8			28.1			23.5			26.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	14.5	12.0	20.3	10.2	10.2	7.1	25.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.6	8.8	9.0	13.4	5.2	5.0	3.4	7.2
Green Ext Time (p_c), s	0.0	1.2	0.0	2.4	0.5	0.4	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Intersection						
Int Delay, s/veh	2.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	100	130	395	355	20
Future Vol, veh/h	15	100	130	395	355	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	109	141	429	386	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	894	204	408	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	283	806	1154	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	248	806	1154	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	623	-	-
HCM Lane V/C Ratio	0.122	-	0.201	-	-
HCM Control Delay (s)	8.6	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	880	0	0	795	335	115	0	135	0	0	0
Future Volume (veh/h)	140	880	0	0	795	335	115	0	135	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	152	957	0	0	864	364	125	0	147			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	201	2223	0	0	1440	629	285	0	249			
Arrive On Green	0.11	0.63	0.00	0.00	0.41	0.41	0.16	0.00	0.16			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1559			
Grp Volume(v), veh/h	152	957	0	0	864	364	125	0	147			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1559			
Q Serve(g_s), s	3.5	5.8	0.0	0.0	8.0	7.6	2.7	0.0	3.7			
Cycle Q Clear(g_c), s	3.5	5.8	0.0	0.0	8.0	7.6	2.7	0.0	3.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	201	2223	0	0	1440	629	285	0	249			
V/C Ratio(X)	0.76	0.43	0.00	0.00	0.60	0.58	0.44	0.00	0.59			
Avail Cap(c_a), veh/h	616	4196	0	0	2586	1129	914	0	799			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	18.0	4.0	0.0	0.0	9.8	9.7	15.9	0.0	16.3			
Incr Delay (d2), s/veh	5.7	0.1	0.0	0.0	0.4	0.8	1.1	0.0	2.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	0.6	0.0	0.0	2.0	1.7	0.9	0.0	1.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	4.2	0.0	0.0	10.2	10.5	17.0	0.0	18.6			
LnGrp LOS	C	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		1109			1228			272				
Approach Delay, s/veh		6.8			10.3			17.8				
Approach LOS		A			B			B				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		11.2		30.7			9.2	21.5				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		21.5		49.5			14.5	30.5				
Max Q Clear Time (g_c+I1), s		5.7		7.8			5.5	10.0				
Green Ext Time (p_c), s		1.0		7.4			0.2	7.0				
Intersection Summary												
HCM 6th Ctrl Delay			9.6									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	770	85	20	810	15	60	15	15	10	15	165
Future Volume (veh/h)	90	770	85	20	810	15	60	15	15	10	15	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	837	92	22	880	16	65	16	16	11	16	179
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	127	1152	127	46	1115	20	114	28	28	15	22	247
Arrive On Green	0.07	0.36	0.36	0.03	0.31	0.31	0.10	0.10	0.10	0.18	0.18	0.18
Sat Flow, veh/h	1767	3195	351	1767	3542	64	1169	288	288	85	124	1385
Grp Volume(v), veh/h	98	462	467	22	438	458	97	0	0	206	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1783	1767	1763	1844	1745	0	0	1594	0	0
Q Serve(g_s), s	2.9	12.1	12.1	0.7	12.1	12.1	2.8	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	2.9	12.1	12.1	0.7	12.1	12.1	2.8	0.0	0.0	6.5	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.03	0.67		0.16	0.05		0.87
Lane Grp Cap(c), veh/h	127	636	643	46	555	580	169	0	0	284	0	0
V/C Ratio(X)	0.77	0.73	0.73	0.48	0.79	0.79	0.57	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	169	679	687	166	676	707	607	0	0	539	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.3	14.7	14.7	25.6	16.6	16.6	23.0	0.0	0.0	20.6	0.0	0.0
Incr Delay (d2), s/veh	14.3	3.6	3.6	7.5	5.2	5.0	3.0	0.0	0.0	3.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.3	4.4	0.3	4.6	4.8	1.2	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	18.4	18.4	33.0	21.8	21.6	26.0	0.0	0.0	24.2	0.0	0.0
LnGrp LOS	D	B	B	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		1027			918			97			206	
Approach Delay, s/veh		20.3			22.0			26.0			24.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.7	5.9	23.7		14.0	8.3	21.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5	5.0	20.5		18.0	5.1	20.4				
Max Q Clear Time (g_c+I1), s		4.8	2.7	14.1		8.5	4.9	14.1				
Green Ext Time (p_c), s		0.3	0.0	2.8		0.8	0.0	2.7				

Intersection Summary			
HCM 6th Ctrl Delay			21.6
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	430	60	5	635	15	45	15	5	5	20	30
Future Volume (veh/h)	85	430	60	5	635	15	45	15	5	5	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	92	467	65	5	690	16	49	16	5	5	22	33
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	135	1111	154	12	1015	24	170	56	17	16	70	106
Arrive On Green	0.08	0.35	0.35	0.01	0.28	0.28	0.14	0.14	0.14	0.11	0.11	0.11
Sat Flow, veh/h	1795	3154	437	1795	3575	83	1256	410	128	142	625	937
Grp Volume(v), veh/h	92	264	268	5	346	360	70	0	0	60	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1799	1795	1791	1867	1794	0	0	1704	0	0
Q Serve(g_s), s	2.3	5.1	5.2	0.1	7.8	7.9	1.6	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	2.3	5.1	5.2	0.1	7.8	7.9	1.6	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.04	0.70		0.07	0.08		0.55
Lane Grp Cap(c), veh/h	135	631	634	12	508	530	243	0	0	192	0	0
V/C Ratio(X)	0.68	0.42	0.42	0.41	0.68	0.68	0.29	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	255	782	785	196	723	754	744	0	0	669	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.7	11.3	11.3	22.7	14.6	14.6	17.8	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.4	0.4	21.1	1.6	1.5	0.6	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.5	1.5	0.1	2.6	2.7	0.7	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	11.7	11.7	43.7	16.2	16.1	18.5	0.0	0.0	19.6	0.0	0.0
LnGrp LOS	C	B	B	D	B	B	B	A	A	B	A	A
Approach Vol, veh/h		624			711			70			60	
Approach Delay, s/veh		13.9			16.3			18.5			19.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		10.7	4.8	20.6		9.7	8.0	17.5
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	5.0	20.0		18.0	6.5	18.5
Max Q Clear Time (g_c+I1), s		3.6	2.1	7.2		3.5	4.3	9.9
Green Ext Time (p_c), s		0.2	0.0	2.3		0.2	0.0	2.6

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	240	55	155	315	75	50	590	125	75	515	305
Future Volume (veh/h)	155	240	55	155	315	75	50	590	125	75	515	305
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1870	1870	1900	1900
Adj Flow Rate, veh/h	168	261	60	168	342	82	54	641	136	82	560	332
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	2	2	0	0
Cap, veh/h	322	517	117	182	543	128	96	1018	447	122	1074	615
Arrive On Green	0.09	0.18	0.18	0.10	0.19	0.19	0.05	0.28	0.28	0.07	0.30	0.30
Sat Flow, veh/h	3510	2872	648	1781	2851	675	1810	3610	1585	1781	3610	1571
Grp Volume(v), veh/h	168	160	161	168	211	213	54	641	136	82	560	332
Grp Sat Flow(s),veh/h/ln	1755	1777	1743	1781	1777	1749	1810	1805	1585	1781	1805	1571
Q Serve(g_s), s	2.2	4.0	4.1	4.6	5.4	5.5	1.4	7.6	3.3	2.2	6.3	8.0
Cycle Q Clear(g_c), s	2.2	4.0	4.1	4.6	5.4	5.5	1.4	7.6	3.3	2.2	6.3	8.0
Prop In Lane	1.00		0.37	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	322	320	314	182	338	333	96	1018	447	122	1074	615
V/C Ratio(X)	0.52	0.50	0.51	0.92	0.63	0.64	0.56	0.63	0.30	0.67	0.52	0.54
Avail Cap(c_a), veh/h	1254	1106	1085	182	653	643	277	1584	696	182	1400	757
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	21.2	18.1	18.2	21.8	18.2	18.3	22.6	15.4	13.8	22.3	14.3	11.6
Incr Delay (d2), s/veh	1.3	1.2	1.3	45.5	1.9	2.0	5.1	0.6	0.4	6.2	0.4	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	0.9	1.6	1.6	4.0	2.1	2.2	0.7	2.5	1.1	1.0	2.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	19.3	19.5	67.3	20.1	20.3	27.7	16.0	14.2	28.5	14.7	12.3
LnGrp LOS	C	B	B	E	C	C	C	B	B	C	B	B
Approach Vol, veh/h		489			592			831			974	
Approach Delay, s/veh		20.5			33.6			16.5			15.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	18.3	9.5	13.3	7.1	19.1	9.0	13.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	21.5	5.0	30.5	7.5	19.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.2	9.6	6.6	6.1	3.4	10.0	4.2	7.5
Green Ext Time (p_c), s	0.0	3.5	0.0	1.9	0.0	3.1	0.4	1.8

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	10	895	805	20
Future Vol, veh/h	10	15	10	895	805	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	11	973	875	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1395	449	897	0	-	0
Stage 1	886	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	132	557	753	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	569	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	557	753	-	-	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	569	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	753	-	379	-	-
HCM Lane V/C Ratio	0.014	-	0.072	-	-
HCM Control Delay (s)	9.9	-	15.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	60	15	905	820	10
Future Vol, veh/h	5	60	15	905	820	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	65	16	984	891	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1415	891	902	0	-	0
Stage 1	891	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	139	340	751	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	136	340	751	-	-	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.7	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	751	-	333	-	-
HCM Lane V/C Ratio	0.022	-	0.212	-	-
HCM Control Delay (s)	9.9	-	18.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	150	55	85	255	25	50	705	60	70	635	170
Future Volume (veh/h)	190	150	55	85	255	25	50	705	60	70	635	170
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	163	60	92	277	27	54	766	65	76	690	185
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	163	308	113	122	358	35	91	1008	86	111	1121	500
Arrive On Green	0.09	0.24	0.24	0.07	0.21	0.21	0.05	0.30	0.30	0.06	0.32	0.32
Sat Flow, veh/h	1781	1304	480	1781	1677	163	1781	3315	281	1781	3554	1585
Grp Volume(v), veh/h	207	0	223	92	0	304	54	410	421	76	690	185
Grp Sat Flow(s),veh/h/ln	1781	0	1784	1781	0	1841	1781	1777	1819	1781	1777	1585
Q Serve(g_s), s	5.0	0.0	6.0	2.8	0.0	8.5	1.6	11.5	11.5	2.3	9.0	5.0
Cycle Q Clear(g_c), s	5.0	0.0	6.0	2.8	0.0	8.5	1.6	11.5	11.5	2.3	9.0	5.0
Prop In Lane	1.00		0.27	1.00		0.09	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	163	0	421	122	0	393	91	540	553	111	1121	500
V/C Ratio(X)	1.27	0.00	0.53	0.75	0.00	0.77	0.59	0.76	0.76	0.68	0.62	0.37
Avail Cap(c_a), veh/h	163	0	733	163	0	756	211	730	747	211	1459	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	18.3	25.0	0.0	20.3	25.4	17.3	17.3	25.1	15.9	14.5
Incr Delay (d2), s/veh	162.1	0.0	1.0	12.7	0.0	3.3	6.0	3.2	3.2	7.1	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	0.0	2.4	1.4	0.0	3.2	0.8	4.2	4.3	1.1	3.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	187.0	0.0	19.3	37.8	0.0	23.6	31.5	20.5	20.4	32.3	16.5	15.0
LnGrp LOS	F	A	B	D	A	C	C	C	C	C	B	B
Approach Vol, veh/h		430			396			885			951	
Approach Delay, s/veh		100.0			26.9			21.1			17.5	
Approach LOS		F			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	21.2	8.3	17.4	7.3	21.8	9.5	16.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	22.5	5.0	22.5	6.5	22.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	4.3	13.5	4.8	8.0	3.6	11.0	7.0	10.5
Green Ext Time (p_c), s	0.0	3.2	0.0	1.0	0.0	3.8	0.0	1.1

Intersection Summary		
HCM 6th Ctrl Delay		33.4
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	470	60	375	455	0	0	0	0	120	200	120
Future Volume (veh/h)	0	470	60	375	455	0	0	0	0	120	200	120
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	511	65	408	495	0				130	217	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	843	376	771	2015	0				353	431	248
Arrive On Green	0.00	0.24	0.24	0.22	0.57	0.00				0.20	0.20	0.20
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2156	1239
Grp Volume(v), veh/h	0	511	65	408	495	0				130	176	171
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1632
Q Serve(g_s), s	0.0	4.8	1.2	3.9	2.6	0.0				2.4	3.3	3.5
Cycle Q Clear(g_c), s	0.0	4.8	1.2	3.9	2.6	0.0				2.4	3.3	3.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.76
Lane Grp Cap(c), veh/h	0	843	376	771	2015	0				353	353	327
V/C Ratio(X)	0.00	0.61	0.17	0.53	0.25	0.00				0.37	0.50	0.52
Avail Cap(c_a), veh/h	0	2178	972	829	3410	0				1828	1823	1688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	11.2	12.7	4.0	0.0				12.9	13.2	13.3
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.6	0.0	0.0				0.2	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.3	1.2	0.4	0.0				0.7	1.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.9	11.3	13.3	4.0	0.0				13.1	13.6	13.8
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		576			903						477	
Approach Delay, s/veh		12.7			8.2						13.5	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.4	12.9		11.9		25.3						
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0						
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0						
Max Q Clear Time (g_c+I1), s	5.9	6.8		5.5		4.6						
Green Ext Time (p_c), s	0.5	2.1		1.3		2.2						

Intersection Summary		
HCM 6th Ctrl Delay		10.8
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	445	0	0	690	50	140	275	415	0	0	0
Future Volume (veh/h)	145	445	0	0	690	50	140	275	415	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	158	484	0	0	750	54	152	299	451			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	392	1654	0	0	963	429	631	662	561			
Arrive On Green	0.11	0.47	0.00	0.00	0.27	0.27	0.35	0.35	0.35			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	158	484	0	0	750	54	152	299	451			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	2.4	4.8	0.0	0.0	11.0	1.5	3.4	7.0	14.5			
Cycle Q Clear(g_c), s	2.4	4.8	0.0	0.0	11.0	1.5	3.4	7.0	14.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	392	1654	0	0	963	429	631	662	561			
V/C Ratio(X)	0.40	0.29	0.00	0.00	0.78	0.13	0.24	0.45	0.80			
Avail Cap(c_a), veh/h	550	2072	0	0	1319	588	1133	1190	1008			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	23.3	9.4	0.0	0.0	19.1	15.6	12.9	14.0	16.5			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	1.3	0.0	0.1	0.2	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			
%ile BackOfQ(50%),veh/ln	0.9	1.6	0.0	0.0	4.1	0.5	1.2	2.6	4.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	9.4	0.0	0.0	20.4	15.6	13.0	14.2	17.5			
LnGrp LOS	C	A	A	A	C	B	B	B	B			
Approach Vol, veh/h		642			804			902				
Approach Delay, s/veh		12.9			20.1			15.7				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.4			11.0	20.4		25.1				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		6.8			4.4	13.0		16.5				
Green Ext Time (p_c), s		2.2			0.1	2.3		3.5				
Intersection Summary												
HCM 6th Ctrl Delay			16.4									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	635	55	515	685	0	75	0	150	255	150	230
Future Volume (veh/h)	0	635	55	515	685	0	75	0	150	255	150	230
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	690	60	560	745	0	82	0	163	277	163	250
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	973	434	449	1639	0	87	0	174	368	368	328
Arrive On Green	0.00	0.27	0.27	0.13	0.46	0.00	0.16	0.00	0.16	0.21	0.21	0.21
Sat Flow, veh/h	0	3647	1585	3456	3647	0	551	0	1095	1781	1777	1585
Grp Volume(v), veh/h	0	690	60	560	745	0	245	0	0	277	163	250
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1646	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	12.1	2.0	9.0	9.9	0.0	10.2	0.0	0.0	10.1	5.6	10.3
Cycle Q Clear(g_c), s	0.0	12.1	2.0	9.0	9.9	0.0	10.2	0.0	0.0	10.1	5.6	10.3
Prop In Lane	0.00		1.00	1.00		0.00	0.33		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	0	973	434	449	1639	0	261	0	0	368	368	328
V/C Ratio(X)	0.00	0.71	0.14	1.25	0.45	0.00	0.94	0.00	0.00	0.75	0.44	0.76
Avail Cap(c_a), veh/h	0	1179	526	449	1846	0	261	0	0	848	846	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	22.7	19.0	30.2	12.7	0.0	28.8	0.0	0.0	25.8	24.0	25.9
Incr Delay (d2), s/veh	0.0	2.5	0.3	129.0	0.2	0.0	38.7	0.0	0.0	1.2	0.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.1	0.7	11.6	3.6	0.0	6.6	0.0	0.0	4.2	2.3	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	25.1	19.3	159.2	12.9	0.0	67.5	0.0	0.0	27.0	24.3	27.3
LnGrp LOS	A	C	B	F	B	A	E	A	A	C	C	C
Approach Vol, veh/h		750			1305			245			690	
Approach Delay, s/veh		24.7			75.7			67.5			26.5	
Approach LOS		C			E			E			C	

Timer - Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.0	23.0		18.3		36.0		15.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0
Max Q Clear Time (g_c+I1), s	11.0	14.1		12.3		11.9		12.2
Green Ext Time (p_c), s	0.0	4.8		2.0		5.5		0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	420	620	0	0	785	110	415	300	75	0	0	0
Future Volume (veh/h)	420	620	0	0	785	110	415	300	75	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	457	674	0	0	853	120	286	557	82			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	832	1995	0	0	780	343	382	684	100			
Arrive On Green	0.24	0.56	0.00	0.00	0.22	0.22	0.21	0.21	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3189	468			
Grp Volume(v), veh/h	457	674	0	0	853	120	286	326	313			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1786			
Q Serve(g_s), s	5.3	4.7	0.0	0.0	10.0	3.0	6.8	7.6	7.6			
Cycle Q Clear(g_c), s	5.3	4.7	0.0	0.0	10.0	3.0	6.8	7.6	7.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.26			
Lane Grp Cap(c), veh/h	832	1995	0	0	780	343	382	401	383			
V/C Ratio(X)	0.55	0.34	0.00	0.00	1.09	0.35	0.75	0.81	0.82			
Avail Cap(c_a), veh/h	1366	1995	0	0	780	343	391	411	392			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	15.1	5.4	0.0	0.0	17.8	15.0	16.7	17.0	17.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	60.6	0.2	6.7	10.7	11.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	1.1	0.0	0.0	10.1	0.9	3.1	4.0	3.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	5.4	0.0	0.0	78.3	15.2	23.4	27.7	28.6			
LnGrp LOS	B	A	A	A	F	B	C	C	C			
Approach Vol, veh/h		1131			973			925				
Approach Delay, s/veh		9.4			70.6			26.7				
Approach LOS		A			E			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.9				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.7			7.3	12.0		9.6				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.3									
HCM 6th LOS			C									

Notes

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

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	225	15	625	95
Future Volume (veh/h)	0	0	225	15	625	95
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			245	16	679	103
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			403	26	817	1569
Arrive On Green			0.23	0.23	0.46	0.83
Sat Flow, veh/h			1750	114	1795	1885
Grp Volume(v), veh/h			0	261	679	103
Grp Sat Flow(s),veh/h/ln			0	1865	1795	1885
Q Serve(g_s), s			0.0	3.0	7.9	0.2
Cycle Q Clear(g_c), s			0.0	3.0	7.9	0.2
Prop In Lane				0.06	1.00	
Lane Grp Cap(c), veh/h			0	429	817	1569
V/C Ratio(X)			0.00	0.61	0.83	0.07
Avail Cap(c_a), veh/h			0	3521	2411	3559
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	8.2	5.7	0.4
Incr Delay (d2), s/veh			0.0	0.5	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.7	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	8.7	6.5	0.4
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			261			782
Approach Delay, s/veh			8.7			5.7
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	14.4	9.5				23.8
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	9.9	5.0				2.2
Green Ext Time (p_c), s	1.1	1.0				0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			
Notes						

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	840	225	105	860	0	350	0	140	0	0	0
Future Volume (veh/h)	0	840	225	105	860	0	350	0	140	0	0	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	913	245	114	935	0	380	0	152	0	0	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	4	1305	582	210	2085	0	877	0	248	0	293	0
Arrive On Green	0.00	0.37	0.37	0.12	0.59	0.00	0.16	0.00	0.16	0.00	0.00	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3647	0	3563	0	1585	0	1870	0
Grp Volume(v), veh/h	0	913	245	114	935	0	380	0	152	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	0	1781	0	1585	0	1870	0
Q Serve(g_s), s	0.0	9.9	5.2	2.7	6.7	0.0	4.6	0.0	4.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.9	5.2	2.7	6.7	0.0	4.6	0.0	4.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1305	582	210	2085	0	877	0	248	0	293	0
V/C Ratio(X)	0.00	0.70	0.42	0.54	0.45	0.00	0.43	0.00	0.61	0.00	0.00	0.00
Avail Cap(c_a), veh/h	394	3537	1578	591	3537	0	1264	0	421	0	496	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	12.2	10.7	18.8	5.2	0.0	18.0	0.0	17.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.2	0.8	0.1	0.0	0.1	0.0	0.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	1.3	1.0	1.0	0.0	1.5	0.0	1.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.4	10.9	19.6	5.3	0.0	18.1	0.0	18.7	0.0	0.0	0.0
LnGrp LOS	A	B	B	B	A	A	B	A	B	A	A	A
Approach Vol, veh/h		1158			1049			532			0	
Approach Delay, s/veh		12.1			6.8			18.3			0.0	
Approach LOS		B			A			B				

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	22.4		12.9	0.0	32.3		12.9
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12
Max Q Clear Time (g_c+I1), s	4.7	11.9		0.0	0.0	8.7		6.6
Green Ext Time (p_c), s	0.1	4.5		0.0	0.0	4.3		0.5

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	15	60	95	10	145	50	485	70	45	405	25
Future Volume (veh/h)	70	15	60	95	10	145	50	485	70	45	405	25
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	76	16	65	103	11	158	54	527	76	49	440	27
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	103	22	88	131	14	201	92	901	129	87	534	453
Arrive On Green	0.12	0.12	0.12	0.21	0.21	0.21	0.05	0.29	0.29	0.05	0.28	0.28
Sat Flow, veh/h	831	175	710	635	68	975	1795	3142	452	1795	1885	1598
Grp Volume(v), veh/h	157	0	0	272	0	0	54	300	303	49	440	27
Grp Sat Flow(s),veh/h/ln	1716	0	0	1678	0	0	1795	1791	1803	1795	1885	1598
Q Serve(g_s), s	4.7	0.0	0.0	8.2	0.0	0.0	1.6	7.7	7.8	1.4	11.7	0.7
Cycle Q Clear(g_c), s	4.7	0.0	0.0	8.2	0.0	0.0	1.6	7.7	7.8	1.4	11.7	0.7
Prop In Lane	0.48		0.41	0.38		0.58	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	213	0	0	346	0	0	92	513	517	87	534	453
V/C Ratio(X)	0.74	0.00	0.00	0.79	0.00	0.00	0.58	0.58	0.59	0.57	0.82	0.06
Avail Cap(c_a), veh/h	575	0	0	563	0	0	167	697	702	171	737	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	0.0	20.2	0.0	0.0	24.9	16.4	16.4	25.0	18.0	14.0
Incr Delay (d2), s/veh	5.0	0.0	0.0	4.0	0.0	0.0	5.7	1.1	1.1	5.7	5.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	3.4	0.0	0.0	0.7	2.7	2.7	0.7	4.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	0.0	24.2	0.0	0.0	30.6	17.5	17.5	30.7	23.4	14.1
LnGrp LOS	C	A	A	C	A	A	C	B	B	C	C	B
Approach Vol, veh/h		157			272			657			516	
Approach Delay, s/veh		27.6			24.2			18.6			23.6	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	19.9		11.1	7.3	19.7		15.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.0	21.0		18.0				
Max Q Clear Time (g_c+I1), s	3.4	9.8		6.7	3.6	13.7		10.2				
Green Ext Time (p_c), s	0.0	2.5		0.6	0.0	1.5		1.0				

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	35	65	70	20	65	105	445	55	15	450	95
Future Volume (veh/h)	95	35	65	70	20	65	105	445	55	15	450	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	38	71	76	22	71	114	484	60	16	489	103
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	145	53	100	104	30	97	147	969	120	36	707	148
Arrive On Green	0.17	0.17	0.17	0.14	0.14	0.14	0.08	0.30	0.30	0.02	0.24	0.24
Sat Flow, veh/h	834	308	575	765	222	715	1781	3183	393	1781	2921	612
Grp Volume(v), veh/h	212	0	0	169	0	0	114	269	275	16	296	296
Grp Sat Flow(s),veh/h/ln	1717	0	0	1702	0	0	1781	1777	1799	1781	1777	1756
Q Serve(g_s), s	5.7	0.0	0.0	4.7	0.0	0.0	3.1	6.1	6.2	0.4	7.5	7.6
Cycle Q Clear(g_c), s	5.7	0.0	0.0	4.7	0.0	0.0	3.1	6.1	6.2	0.4	7.5	7.6
Prop In Lane	0.49		0.33	0.45		0.42	1.00		0.22	1.00		0.35
Lane Grp Cap(c), veh/h	298	0	0	231	0	0	147	541	548	36	430	425
V/C Ratio(X)	0.71	0.00	0.00	0.73	0.00	0.00	0.78	0.50	0.50	0.45	0.69	0.70
Avail Cap(c_a), veh/h	628	0	0	622	0	0	271	758	767	181	668	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	0.0	20.4	0.0	0.0	22.1	14.0	14.0	23.9	17.0	17.0
Incr Delay (d2), s/veh	3.1	0.0	0.0	4.4	0.0	0.0	8.5	0.7	0.7	8.6	2.0	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	2.3	0.0	0.0	2.0	0.0	0.0	1.4	2.0	2.0	0.2	2.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	0.0	0.0	24.8	0.0	0.0	30.6	14.7	14.8	32.5	18.9	19.1
LnGrp LOS	C	A	A	C	A	A	C	B	B	C	B	B
Approach Vol, veh/h		212			169			658			608	
Approach Delay, s/veh		22.3			24.8			17.5			19.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	19.5		13.1	8.6	16.4		11.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	21.0		18.0	7.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.4	8.2		7.7	5.1	9.6		6.7				
Green Ext Time (p_c), s	0.0	2.4		0.8	0.1	2.2		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			19.5									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	50	60	20	75	30	490	65	55	455	90
Future Volume (veh/h)	40	20	50	60	20	75	30	490	65	55	455	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	43	22	54	65	22	82	33	533	71	60	495	98
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	64	33	80	90	30	113	68	845	112	108	857	169
Arrive On Green	0.10	0.10	0.10	0.14	0.14	0.14	0.04	0.27	0.27	0.06	0.29	0.29
Sat Flow, veh/h	611	313	767	651	220	821	1795	3166	420	1795	2967	584
Grp Volume(v), veh/h	119	0	0	169	0	0	33	301	303	60	298	295
Grp Sat Flow(s),veh/h/ln	1691	0	0	1692	0	0	1795	1791	1795	1795	1791	1760
Q Serve(g_s), s	2.8	0.0	0.0	4.0	0.0	0.0	0.8	6.2	6.2	1.4	5.9	6.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	4.0	0.0	0.0	0.8	6.2	6.2	1.4	5.9	6.0
Prop In Lane	0.36		0.45	0.38		0.49	1.00		0.23	1.00		0.33
Lane Grp Cap(c), veh/h	177	0	0	234	0	0	68	478	479	108	518	509
V/C Ratio(X)	0.67	0.00	0.00	0.72	0.00	0.00	0.48	0.63	0.63	0.56	0.57	0.58
Avail Cap(c_a), veh/h	727	0	0	727	0	0	236	877	879	236	877	862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	17.3	0.0	0.0	19.7	13.5	13.5	19.1	12.7	12.7
Incr Delay (d2), s/veh	4.3	0.0	0.0	4.2	0.0	0.0	5.2	1.4	1.4	4.4	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.7	0.0	0.0	0.4	2.0	2.0	0.6	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	0.0	0.0	21.5	0.0	0.0	24.9	14.9	14.9	23.6	13.7	13.8
LnGrp LOS	C	A	A	C	A	A	C	B	B	C	B	B
Approach Vol, veh/h		119			169			637			653	
Approach Delay, s/veh		22.4			21.5			15.4			14.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	15.7		8.9	6.1	16.6		10.3
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	20.5		18.0	5.5	20.5		18.0
Max Q Clear Time (g_c+I1), s	3.4	8.2		4.8	2.8	8.0		6.0
Green Ext Time (p_c), s	0.0	2.6		0.5	0.0	2.6		0.7

Intersection Summary			
HCM 6th Ctrl Delay			16.3
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	360	385	220	705	75	195	460	395	80	440	45
Future Volume (veh/h)	50	360	385	220	705	75	195	460	395	80	440	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	54	391	418	239	766	82	212	500	429	87	478	49
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	83	897	619	284	1298	571	255	991	687	112	707	308
Arrive On Green	0.05	0.25	0.25	0.16	0.36	0.36	0.14	0.28	0.28	0.06	0.20	0.20
Sat Flow, veh/h	1795	3582	1568	1795	3582	1576	1795	3582	1571	1795	3582	1562
Grp Volume(v), veh/h	54	391	418	239	766	82	212	500	429	87	478	49
Grp Sat Flow(s),veh/h/ln	1795	1791	1568	1795	1791	1576	1795	1791	1571	1795	1791	1562
Q Serve(g_s), s	2.1	6.6	15.8	9.2	12.4	2.5	8.2	8.4	15.2	3.4	8.8	1.9
Cycle Q Clear(g_c), s	2.1	6.6	15.8	9.2	12.4	2.5	8.2	8.4	15.2	3.4	8.8	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	897	619	284	1298	571	255	991	687	112	707	308
V/C Ratio(X)	0.65	0.44	0.67	0.84	0.59	0.14	0.83	0.50	0.62	0.78	0.68	0.16
Avail Cap(c_a), veh/h	166	903	622	340	1298	571	289	1195	776	169	954	416
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	33.5	22.5	18.0	29.2	18.4	15.3	29.8	21.7	15.7	33.0	26.5	23.7
Incr Delay (d2), s/veh	8.4	0.3	2.9	15.0	0.7	0.1	16.7	0.4	1.3	12.0	1.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.5	5.3	4.8	4.5	0.8	4.4	3.2	4.7	1.7	3.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.9	22.8	20.8	44.2	19.2	15.4	46.5	22.1	17.0	44.9	27.7	24.0
LnGrp LOS	D	C	C	D	B	B	D	C	B	D	C	C
Approach Vol, veh/h		863			1087			1141			614	
Approach Delay, s/veh		23.1			24.4			24.7			29.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	24.2	15.8	22.4	14.6	18.6	7.8	30.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.7	23.8	13.5	18.0	11.5	19.0	6.6	24.9
Max Q Clear Time (g_c+I1), s	5.4	17.2	11.2	17.8	10.2	10.8	4.1	14.4
Green Ext Time (p_c), s	0.0	2.6	0.2	0.1	0.1	1.9	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	25	125	15	40	110	190	570	25	80	665	295
Future Volume (veh/h)	370	25	125	15	40	110	190	570	25	80	665	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	402	27	136	16	43	120	207	620	27	87	723	321
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	433	29	404	50	134	158	232	1339	58	112	764	339
Arrive On Green	0.26	0.26	0.26	0.10	0.10	0.10	0.13	0.38	0.38	0.06	0.32	0.32
Sat Flow, veh/h	1687	113	1577	504	1356	1598	1795	3492	152	1795	2413	1071
Grp Volume(v), veh/h	429	0	136	59	0	120	207	318	329	87	537	507
Grp Sat Flow(s),veh/h/ln	1801	0	1577	1860	0	1598	1795	1791	1854	1795	1791	1692
Q Serve(g_s), s	21.1	0.0	6.4	2.7	0.0	6.6	10.3	12.0	12.1	4.3	26.5	26.5
Cycle Q Clear(g_c), s	21.1	0.0	6.4	2.7	0.0	6.6	10.3	12.0	12.1	4.3	26.5	26.5
Prop In Lane	0.94		1.00	0.27		1.00	1.00		0.08	1.00		0.63
Lane Grp Cap(c), veh/h	462	0	404	184	0	158	232	687	711	112	567	536
V/C Ratio(X)	0.93	0.00	0.34	0.32	0.00	0.76	0.89	0.46	0.46	0.77	0.95	0.95
Avail Cap(c_a), veh/h	467	0	409	370	0	317	232	687	711	206	569	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	0.0	27.4	38.0	0.0	39.8	38.8	20.9	20.9	41.8	30.2	30.2
Incr Delay (d2), s/veh	25.0	0.0	0.5	1.0	0.0	7.3	32.2	0.5	0.5	10.8	24.9	26.0
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	12.2	0.0	2.4	1.3	0.0	2.9	6.4	4.7	4.9	2.2	14.4	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	27.9	39.0	0.0	47.0	71.0	21.4	21.4	52.6	55.1	56.2
LnGrp LOS	E	A	C	D	A	D	E	C	C	D	E	E
Approach Vol, veh/h		565			179			854			1131	
Approach Delay, s/veh		50.6			44.4			33.4			55.4	
Approach LOS		D			D			C			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	39.2		27.7	16.2	33.2		13.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	10.4	30.1		23.5	11.7	28.8		18.0				
Max Q Clear Time (g_c+I1), s	6.3	14.1		23.1	12.3	28.5		8.6				
Green Ext Time (p_c), s	0.1	3.2		0.2	0.0	0.2		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		46.8
HCM 6th LOS		D

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	20	765	10	10	795
Future Vol, veh/h	20	20	765	10	10	795
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	22	22	832	11	11	864

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1292	422	0	0	843	0
Stage 1	838	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	156	583	-	-	795	-
Stage 1	387	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	154	583	-	-	795	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.8	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	154	583	795	-
HCM Lane V/C Ratio	-	-	0.141	0.037	0.014	-
HCM Control Delay (s)	-	-	32.2	11.4	9.6	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	50	0	0	90	5	695	10	50	750	20
Future Vol, veh/h	0	0	50	0	0	90	5	695	10	50	750	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	6	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	54	0	0	98	5	755	11	54	815	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	420	-	-	389	838	0	0	772	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	585	0	0	612	799	-	-	845	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	584	-	-	609	798	-	-	840	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	12	0.1	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	798	-	-	584	609	840	-	-
HCM Lane V/C Ratio	0.007	-	-	0.093	0.161	0.065	-	-
HCM Control Delay (s)	9.5	-	-	11.8	12	9.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	60	0	0	45	10	655	5	65	705	10
Future Vol, veh/h	0	0	60	0	0	45	10	655	5	65	705	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	65	0	0	49	11	712	5	71	766	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	390	-	-	360	778	0	0	718	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	612	0	0	639	841	-	-	886	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	611	-	-	638	840	-	-	885	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	11.1	0.1	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	840	-	-	611	638	885	-	-
HCM Lane V/C Ratio	0.013	-	-	0.107	0.077	0.08	-	-
HCM Control Delay (s)	9.3	-	-	11.6	11.1	9.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	120	15	115	280	55	10	455	135	280	390	100
Future Volume (veh/h)	130	120	15	115	280	55	10	455	135	280	390	100
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	130	16	125	304	60	11	495	147	304	424	109
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	191	385	47	175	344	68	24	594	175	352	1131	288
Arrive On Green	0.11	0.24	0.24	0.10	0.23	0.23	0.01	0.22	0.22	0.20	0.40	0.40
Sat Flow, veh/h	1781	1633	201	1781	1517	299	1781	2705	799	1781	2804	714
Grp Volume(v), veh/h	141	0	146	125	0	364	11	324	318	304	267	266
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1816	1781	1777	1727	1781	1777	1742
Q Serve(g_s), s	5.5	0.0	4.8	4.9	0.0	14.0	0.4	12.6	12.7	11.9	7.6	7.8
Cycle Q Clear(g_c), s	5.5	0.0	4.8	4.9	0.0	14.0	0.4	12.6	12.7	11.9	7.6	7.8
Prop In Lane	1.00		0.11	1.00		0.16	1.00		0.46	1.00		0.41
Lane Grp Cap(c), veh/h	191	0	432	175	0	412	24	390	379	352	717	703
V/C Ratio(X)	0.74	0.00	0.34	0.71	0.00	0.88	0.45	0.83	0.84	0.86	0.37	0.38
Avail Cap(c_a), veh/h	443	0	456	443	0	452	123	442	430	443	762	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	0.0	23.0	31.6	0.0	27.1	35.4	26.9	27.0	28.1	15.2	15.2
Incr Delay (d2), s/veh	5.4	0.0	0.5	5.3	0.0	17.4	12.4	11.5	12.4	13.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.9	2.2	0.0	7.2	0.3	6.0	6.0	5.9	2.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	23.4	36.9	0.0	44.4	47.8	38.4	39.4	41.6	15.5	15.5
LnGrp LOS	D	A	C	D	A	D	D	D	D	D	B	B
Approach Vol, veh/h		287			489			653			837	
Approach Delay, s/veh		30.0			42.5			39.1			25.0	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.8	20.4	11.6	21.5	5.5	33.7	12.3	20.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0	5.0	31.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	13.9	14.7	6.9	6.8	2.4	9.8	7.5	16.0
Green Ext Time (p_c), s	0.3	1.1	0.2	0.4	0.0	2.8	0.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	605	260	295	495	15	315	60	180	20	55	40
Future Volume (veh/h)	45	605	260	295	495	15	315	60	180	20	55	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	658	283	321	538	16	342	65	196	22	60	43
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	87	943	421	254	1267	38	513	92	276	47	102	73
Arrive On Green	0.05	0.27	0.27	0.14	0.36	0.36	0.15	0.22	0.22	0.03	0.10	0.10
Sat Flow, veh/h	1781	3554	1585	1781	3524	105	3456	410	1237	1781	1013	726
Grp Volume(v), veh/h	49	658	283	321	271	283	342	0	261	22	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1852	1728	0	1648	1781	0	1740
Q Serve(g_s), s	1.4	8.8	8.4	7.5	6.1	6.1	4.9	0.0	7.7	0.6	0.0	3.0
Cycle Q Clear(g_c), s	1.4	8.8	8.4	7.5	6.1	6.1	4.9	0.0	7.7	0.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.75	1.00		0.42
Lane Grp Cap(c), veh/h	87	943	421	254	639	666	513	0	367	47	0	175
V/C Ratio(X)	0.57	0.70	0.67	1.26	0.42	0.43	0.67	0.00	0.71	0.47	0.00	0.59
Avail Cap(c_a), veh/h	170	1218	543	254	693	723	1184	0	988	170	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	17.4	17.3	22.5	12.7	12.7	21.1	0.0	18.8	25.2	0.0	22.6
Incr Delay (d2), s/veh	5.7	1.2	2.2	145.6	0.4	0.4	1.5	0.0	2.5	7.3	0.0	3.1
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	0.7	3.3	2.7	12.9	1.9	2.0	1.8	0.0	2.7	0.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	18.6	19.4	168.1	13.2	13.1	22.7	0.0	21.4	32.5	0.0	25.7
LnGrp LOS	C	B	B	F	B	B	C	A	C	C	A	C
Approach Vol, veh/h		990			875			603			125	
Approach Delay, s/veh		19.4			70.0			22.1			26.9	
Approach LOS		B			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	16.2	12.0	18.4	12.3	9.8	7.1	23.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.6	9.7	9.5	10.8	6.9	5.0	3.4	8.1
Green Ext Time (p_c), s	0.0	1.4	0.0	3.2	0.9	0.3	0.0	2.4

Intersection Summary		
HCM 6th Ctrl Delay		37.5
HCM 6th LOS		D

Intersection						
Int Delay, s/veh	4.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	215	245	540	605	10
Future Vol, veh/h	15	215	245	540	605	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	234	266	587	658	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1490	335	669	0	-	0
Stage 1	664	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	116	664	924	-	-	-
Stage 1	476	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	83	664	924	-	-	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	339	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.1	3.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	924	-	456	-	-
HCM Lane V/C Ratio	0.288	-	0.548	-	-
HCM Control Delay (s)	10.5	-	22.1	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.2	-	3.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	880	0	0	795	405	115	0	120	0	0	0
Future Volume (veh/h)	110	880	0	0	795	405	115	0	120	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	120	957	0	0	864	440	125	0	130			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	185	2166	0	0	1462	638	308	0	270			
Arrive On Green	0.10	0.61	0.00	0.00	0.41	0.41	0.17	0.00	0.17			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1560			
Grp Volume(v), veh/h	120	957	0	0	864	440	125	0	130			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1560			
Q Serve(g_s), s	2.9	6.4	0.0	0.0	8.4	10.4	2.8	0.0	3.4			
Cycle Q Clear(g_c), s	2.9	6.4	0.0	0.0	8.4	10.4	2.8	0.0	3.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	185	2166	0	0	1462	638	308	0	270			
V/C Ratio(X)	0.65	0.44	0.00	0.00	0.59	0.69	0.41	0.00	0.48			
Avail Cap(c_a), veh/h	591	4213	0	0	2700	1179	695	0	608			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	19.2	4.7	0.0	0.0	10.2	10.8	16.4	0.0	16.6			
Incr Delay (d2), s/veh	1.4	0.1	0.0	0.0	0.3	1.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.0	0.9	0.0	0.0	2.2	2.5	1.0	0.0	1.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	4.8	0.0	0.0	10.5	11.8	17.0	0.0	17.6			
LnGrp LOS	C	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		1077			1304			255				
Approach Delay, s/veh		6.6			10.9			17.3				
Approach LOS		A			B			B				

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		12.3		32.3			8.8	23.5				
Change Period (Y+Rc), s		4.6		5.1			* 4.2	5.1				
Max Green Setting (Gmax), s		17.4		52.9			* 15	33.9				
Max Q Clear Time (g_c+I1), s		5.4		8.4			4.9	12.4				
Green Ext Time (p_c), s		0.6		7.5			0.1	6.0				

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

Notes

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	790	50	25	910	45	100	20	60	45	15	185
Future Volume (veh/h)	55	790	50	25	910	45	100	20	60	45	15	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	60	859	54	27	989	49	109	22	65	49	16	201
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	75	1248	78	42	1203	60	139	28	83	57	19	234
Arrive On Green	0.04	0.37	0.37	0.02	0.35	0.35	0.15	0.15	0.15	0.19	0.19	0.19
Sat Flow, veh/h	1767	3363	211	1767	3418	169	949	192	566	297	97	1220
Grp Volume(v), veh/h	60	450	463	27	510	528	196	0	0	266	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1812	1767	1763	1825	1706	0	0	1614	0	0
Q Serve(g_s), s	2.2	14.3	14.3	1.0	17.5	17.5	7.3	0.0	0.0	10.6	0.0	0.0
Cycle Q Clear(g_c), s	2.2	14.3	14.3	1.0	17.5	17.5	7.3	0.0	0.0	10.6	0.0	0.0
Prop In Lane	1.00		0.12	1.00		0.09	0.56		0.33	0.18		0.76
Lane Grp Cap(c), veh/h	75	654	672	42	621	642	249	0	0	310	0	0
V/C Ratio(X)	0.80	0.69	0.69	0.65	0.82	0.82	0.79	0.00	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	144	774	795	112	742	768	391	0	0	336	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.4	17.6	17.6	32.1	19.6	19.6	27.3	0.0	0.0	25.9	0.0	0.0
Incr Delay (d2), s/veh	6.9	2.1	2.0	6.1	6.3	6.1	2.1	0.0	0.0	17.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.2	5.4	0.5	7.1	7.3	3.0	0.0	0.0	5.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.3	19.7	19.6	38.2	25.9	25.7	29.4	0.0	0.0	42.9	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C	A	A	D	A	A
Approach Vol, veh/h		973			1065			196			266	
Approach Delay, s/veh		20.8			26.1			29.4			42.9	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	13.9	5.8	29.7	16.9	7.0	28.4
Change Period (Y+Rc), s	* 4.2	* 4.2	5.1	4.2	* 4.2	5.1
Max Green Setting (Gmax), s	* 15	* 4.2	29.1	13.8	* 5.4	27.9
Max Q Clear Time (g_c+I1), s	9.3	3.0	16.3	12.6	4.2	19.5
Green Ext Time (p_c), s	0.3	0.0	4.3	0.1	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Notes

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	655	25	10	870	65	35	20	10	20	15	70
Future Volume (veh/h)	135	655	25	10	870	65	35	20	10	20	15	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	712	27	11	946	71	38	22	11	22	16	76
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	188	1582	60	25	1209	91	107	62	31	36	26	123
Arrive On Green	0.10	0.45	0.45	0.01	0.36	0.36	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1795	3517	133	1795	3368	253	950	550	275	321	233	1108
Grp Volume(v), veh/h	147	362	377	11	503	514	71	0	0	114	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1859	1795	1791	1830	1775	0	0	1663	0	0
Q Serve(g_s), s	4.6	8.0	8.0	0.4	14.4	14.4	2.1	0.0	0.0	3.8	0.0	0.0
Cycle Q Clear(g_c), s	4.6	8.0	8.0	0.4	14.4	14.4	2.1	0.0	0.0	3.8	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.14	0.54		0.15	0.19		0.67
Lane Grp Cap(c), veh/h	188	805	836	25	643	657	200	0	0	185	0	0
V/C Ratio(X)	0.78	0.45	0.45	0.44	0.78	0.78	0.35	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	277	945	981	156	824	842	573	0	0	520	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.1	10.9	10.9	28.2	16.5	16.5	23.6	0.0	0.0	24.4	0.0	0.0
Incr Delay (d2), s/veh	8.3	0.4	0.4	11.5	3.8	3.7	1.1	0.0	0.0	3.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.5	2.6	0.2	5.4	5.5	0.9	0.0	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	11.3	11.3	39.7	20.2	20.2	24.7	0.0	0.0	27.8	0.0	0.0
LnGrp LOS	C	B	B	D	C	C	C	A	A	C	A	A
Approach Vol, veh/h		886			1028			71			114	
Approach Delay, s/veh		15.0			20.4			24.7			27.8	
Approach LOS		B			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		11.0	5.3	30.4		10.9	10.5	25.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.6	5.0	30.4		18.0	8.9	26.5
Max Q Clear Time (g_c+I1), s		4.1	2.4	10.0		5.8	6.6	16.4
Green Ext Time (p_c), s		0.2	0.0	4.0		0.4	0.1	4.2

Intersection Summary		
HCM 6th Ctrl Delay		18.7
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	240	80	155	315	75	65	710	125	75	555	455
Future Volume (veh/h)	315	240	80	155	315	75	65	710	125	75	555	455
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1870	1870	1900	1900
Adj Flow Rate, veh/h	342	261	87	168	342	82	71	772	136	82	603	495
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	2	2	0	0
Cap, veh/h	495	515	167	216	504	119	105	1137	499	112	1153	730
Arrive On Green	0.14	0.20	0.20	0.12	0.18	0.18	0.06	0.32	0.32	0.06	0.32	0.32
Sat Flow, veh/h	3510	2626	853	1781	2851	675	1810	3610	1585	1781	3610	1574
Grp Volume(v), veh/h	342	174	174	168	211	213	71	772	136	82	603	495
Grp Sat Flow(s),veh/h/ln	1755	1777	1702	1781	1777	1749	1810	1805	1585	1781	1805	1574
Q Serve(g_s), s	5.5	5.2	5.4	5.4	6.6	6.7	2.3	11.0	3.8	2.7	8.1	14.6
Cycle Q Clear(g_c), s	5.5	5.2	5.4	5.4	6.6	6.7	2.3	11.0	3.8	2.7	8.1	14.6
Prop In Lane	1.00		0.50	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	495	348	334	216	314	309	105	1137	499	112	1153	730
V/C Ratio(X)	0.69	0.50	0.52	0.78	0.67	0.69	0.67	0.68	0.27	0.74	0.52	0.68
Avail Cap(c_a), veh/h	1040	614	588	456	542	533	169	1284	564	166	1284	787
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	24.1	21.2	21.2	25.2	22.7	22.8	27.3	17.6	15.2	27.2	16.4	12.5
Incr Delay (d2), s/veh	1.7	1.1	1.3	5.9	2.5	2.7	7.3	1.2	0.3	9.0	0.4	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	2.2	2.1	2.1	2.5	2.8	2.8	1.1	4.0	1.3	1.3	2.8	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	22.3	22.5	31.1	25.2	25.5	34.5	18.9	15.4	36.2	16.8	14.7
LnGrp LOS	C	C	C	C	C	C	C	B	B	D	B	B
Approach Vol, veh/h		690			592			979			1180	
Approach Delay, s/veh		24.1			27.0			19.5			17.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	23.1	11.7	16.1	7.9	23.4	12.8	14.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	21.0	15.1	20.4	5.5	21.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.7	13.0	7.4	7.4	4.3	16.6	7.5	8.7
Green Ext Time (p_c), s	0.0	3.2	0.3	1.6	0.0	2.2	0.9	1.7

Intersection Summary		
HCM 6th Ctrl Delay		21.0
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	980	890	20
Future Vol, veh/h	30	15	5	980	890	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	5	1065	967	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1521	495	989	0	-	0
Stage 1	978	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	109	520	695	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	108	520	695	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	546	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	695	-	283	-	-
HCM Lane V/C Ratio	0.008	-	0.173	-	-
HCM Control Delay (s)	10.2	-	20.4	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection						
Int Delay, s/veh	1.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	55	20	960	900	10
Future Vol, veh/h	25	55	20	960	900	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	60	22	1043	978	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1544	978	989	0	-	0
Stage 1	978	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	115	303	697	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	111	303	697	-	-	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	351	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	697	-	280	-	-
HCM Lane V/C Ratio	0.031	-	0.311	-	-
HCM Control Delay (s)	10.3	-	23.5	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection						
Int Delay, s/veh	22					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	160	60	330	75	195	70
Future Vol, veh/h	160	60	330	75	195	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	25	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	174	65	359	82	212	76

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1012	212	212	0	-	0
Stage 1	212	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	263	823	1347	-	-	0
Stage 1	819	-	-	-	-	0
Stage 2	439	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	193	823	1347	-	-	-
Mov Cap-2 Maneuver	193	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	69	7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1347	-	193	823	-
HCM Lane V/C Ratio	0.266	-	0.901	0.079	-
HCM Control Delay (s)	8.6	-	91.2	9.8	-
HCM Lane LOS	A	-	F	A	-
HCM 95th %tile Q(veh)	1.1	-	7	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	145	130	105	220	20	25	720	50	70	715	170
Future Volume (veh/h)	235	145	130	105	220	20	25	720	50	70	715	170
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	158	141	114	239	22	27	783	54	76	777	185
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	247	220	147	304	28	53	1000	69	105	1156	516
Arrive On Green	0.17	0.27	0.27	0.08	0.18	0.18	0.03	0.30	0.30	0.06	0.33	0.33
Sat Flow, veh/h	1781	911	813	1781	1687	155	1781	3372	233	1781	3554	1585
Grp Volume(v), veh/h	255	0	299	114	0	261	27	412	425	76	777	185
Grp Sat Flow(s),veh/h/ln	1781	0	1724	1781	0	1842	1781	1777	1828	1781	1777	1585
Q Serve(g_s), s	8.5	0.0	9.4	3.9	0.0	8.4	0.9	13.1	13.1	2.6	11.7	5.5
Cycle Q Clear(g_c), s	8.5	0.0	9.4	3.9	0.0	8.4	0.9	13.1	13.1	2.6	11.7	5.5
Prop In Lane	1.00		0.47	1.00		0.08	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	308	0	467	147	0	332	53	527	542	105	1156	516
V/C Ratio(X)	0.83	0.00	0.64	0.78	0.00	0.79	0.50	0.78	0.78	0.72	0.67	0.36
Avail Cap(c_a), veh/h	418	0	670	245	0	537	144	691	711	159	1410	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	19.9	27.8	0.0	24.2	29.5	19.9	19.9	28.6	18.0	15.9
Incr Delay (d2), s/veh	9.7	0.0	1.5	8.5	0.0	4.1	7.2	4.3	4.2	9.0	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	3.7	1.8	0.0	3.4	0.5	5.2	5.3	1.3	4.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.3	0.0	21.3	36.3	0.0	28.3	36.7	24.3	24.1	37.6	18.9	16.3
LnGrp LOS	C	A	C	D	A	C	D	C	C	D	B	B
Approach Vol, veh/h		554			375			864			1038	
Approach Delay, s/veh		27.3			30.7			24.6			19.8	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	22.8	9.6	21.2	6.4	24.6	15.2	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	24.0	8.5	24.0	5.0	24.5	14.5	18.0
Max Q Clear Time (g_c+I1), s	4.6	15.1	5.9	11.4	2.9	13.7	10.5	10.4
Green Ext Time (p_c), s	0.0	3.2	0.1	1.4	0.0	4.1	0.3	0.7

Intersection Summary			
HCM 6th Ctrl Delay			24.2
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	525	105	375	475	0	0	0	0	120	200	70
Future Volume (veh/h)	0	525	105	375	475	0	0	0	0	120	200	70
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	571	114	408	516	0				130	217	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	905	404	755	2052	0				344	503	171
Arrive On Green	0.00	0.26	0.26	0.22	0.58	0.00				0.19	0.19	0.19
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2582	878
Grp Volume(v), veh/h	0	571	114	408	516	0				130	146	147
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1697
Q Serve(g_s), s	0.0	5.5	2.2	4.0	2.7	0.0				2.4	2.8	2.9
Cycle Q Clear(g_c), s	0.0	5.5	2.2	4.0	2.7	0.0				2.4	2.8	2.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.52
Lane Grp Cap(c), veh/h	0	905	404	755	2052	0				344	343	331
V/C Ratio(X)	0.00	0.63	0.28	0.54	0.25	0.00				0.38	0.43	0.44
Avail Cap(c_a), veh/h	0	2129	950	810	3333	0				1787	1782	1716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	11.3	13.1	3.9	0.0				13.3	13.5	13.5
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.6	0.0	0.0				0.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	0.6	1.2	0.3	0.0				0.7	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.8	11.5	13.8	3.9	0.0				13.6	13.8	13.9
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		685			924						423	
Approach Delay, s/veh		12.6			8.3						13.7	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.4	13.8		11.9		26.2						
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0						
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0						
Max Q Clear Time (g_c+I1), s	6.0	7.5		4.9		4.7						
Green Ext Time (p_c), s	0.5	2.3		1.1		2.2						
Intersection Summary												
HCM 6th Ctrl Delay			10.9									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	450	0	0	695	50	155	250	415	0	0	0
Future Volume (veh/h)	195	450	0	0	695	50	155	250	415	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	212	489	0	0	755	54	168	272	451			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	409	1667	0	0	960	428	627	659	558			
Arrive On Green	0.12	0.47	0.00	0.00	0.27	0.27	0.35	0.35	0.35			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	212	489	0	0	755	54	168	272	451			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	3.3	4.8	0.0	0.0	11.2	1.5	3.9	6.3	14.7			
Cycle Q Clear(g_c), s	3.3	4.8	0.0	0.0	11.2	1.5	3.9	6.3	14.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	409	1667	0	0	960	428	627	659	558			
V/C Ratio(X)	0.52	0.29	0.00	0.00	0.79	0.13	0.27	0.41	0.81			
Avail Cap(c_a), veh/h	545	2054	0	0	1307	583	1123	1179	999			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	23.6	9.3	0.0	0.0	19.3	15.7	13.2	14.0	16.7			
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	1.5	0.0	0.1	0.2	1.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.2	1.5	0.0	0.0	4.2	0.5	1.4	2.4	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	9.4	0.0	0.0	20.8	15.8	13.3	14.2	17.8			
LnGrp LOS	C	A	A	A	C	B	B	B	B			
Approach Vol, veh/h		701			809			891				
Approach Delay, s/veh		13.8			20.5			15.9				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.9			11.4	20.5		25.2				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		6.8			5.3	13.2		16.7				
Green Ext Time (p_c), s		2.0			0.1	2.2		3.4				

Intersection Summary		
HCM 6th Ctrl Delay		16.8
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

24: Fairway Dr & C Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	625	35	575	665	0	40	0	145	250	195	235
Future Volume (veh/h)	0	625	35	575	665	0	40	0	145	250	195	235
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	679	38	625	723	0	43	0	158	272	212	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	887	396	716	1815	0	47	0	172	342	341	304
Arrive On Green	0.00	0.25	0.25	0.21	0.51	0.00	0.14	0.00	0.14	0.19	0.19	0.19
Sat Flow, veh/h	0	3647	1585	3456	3647	0	347	0	1276	1781	1777	1585
Grp Volume(v), veh/h	0	679	38	625	723	0	201	0	0	272	212	255
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1623	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	13.1	1.4	13.0	9.2	0.0	9.0	0.0	0.0	10.8	8.1	11.5
Cycle Q Clear(g_c), s	0.0	13.1	1.4	13.0	9.2	0.0	9.0	0.0	0.0	10.8	8.1	11.5
Prop In Lane	0.00		1.00	1.00		0.00	0.21		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	0	887	396	716	1815	0	219	0	0	342	341	304
V/C Ratio(X)	0.00	0.77	0.10	0.87	0.40	0.00	0.92	0.00	0.00	0.80	0.62	0.84
Avail Cap(c_a), veh/h	0	1009	450	794	2017	0	219	0	0	385	384	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	25.7	21.3	28.4	11.1	0.0	31.6	0.0	0.0	28.5	27.4	28.8
Incr Delay (d2), s/veh	0.0	4.1	0.2	9.1	0.1	0.0	37.9	0.0	0.0	8.6	1.5	13.7
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	0.0	5.8	0.5	6.0	3.3	0.0	5.7	0.0	0.0	5.2	3.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	29.9	21.6	37.5	11.3	0.0	69.5	0.0	0.0	37.2	29.0	42.5
LnGrp LOS	A	C	C	D	B	A	E	A	A	D	C	D
Approach Vol, veh/h		717			1348			201			739	
Approach Delay, s/veh		29.4			23.4			69.5			36.6	
Approach LOS		C			C			E			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	19.3	22.5		18.2		41.8		14.0				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	17.0	21.0		16.0		42.0		10.0				
Max Q Clear Time (g_c+I1), s	15.0	15.1		13.5		11.2		11.0				
Green Ext Time (p_c), s	0.4	3.4		0.7		5.7		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	615	0	0	855	140	385	275	55	0	0	0
Future Volume (veh/h)	405	615	0	0	855	140	385	275	55	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	440	668	0	0	929	152	259	522	60			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	842	2020	0	0	790	347	365	675	77			
Arrive On Green	0.24	0.57	0.00	0.00	0.22	0.22	0.20	0.20	0.20			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3295	378			
Grp Volume(v), veh/h	440	668	0	0	929	152	259	296	286			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1802			
Q Serve(g_s), s	5.0	4.5	0.0	0.0	10.0	3.8	6.1	6.7	6.8			
Cycle Q Clear(g_c), s	5.0	4.5	0.0	0.0	10.0	3.8	6.1	6.7	6.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.21			
Lane Grp Cap(c), veh/h	842	2020	0	0	790	347	365	383	369			
V/C Ratio(X)	0.52	0.33	0.00	0.00	1.18	0.44	0.71	0.77	0.78			
Avail Cap(c_a), veh/h	1383	2020	0	0	790	347	396	416	401			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.7	5.2	0.0	0.0	17.5	15.1	16.6	16.9	16.9			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	92.0	0.3	4.3	7.0	7.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.0	0.0	0.0	13.6	1.2	2.6	3.2	3.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	5.2	0.0	0.0	109.5	15.4	20.9	23.8	24.4			
LnGrp LOS	B	A	A	A	F	B	C	C	C			
Approach Vol, veh/h		1108			1081			841				
Approach Delay, s/veh		9.1			96.3			23.1				
Approach LOS		A			F			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.3				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.5			7.0	12.0		8.8				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		44.1
HCM 6th LOS		D

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	185	5	705	100
Future Volume (veh/h)	0	0	185	5	705	100
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			201	5	766	109
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			383	10	895	1591
Arrive On Green			0.21	0.21	0.50	0.84
Sat Flow, veh/h			1831	46	1795	1885
Grp Volume(v), veh/h			0	206	766	109
Grp Sat Flow(s),veh/h/ln			0	1877	1795	1885
Q Serve(g_s), s			0.0	2.5	9.6	0.2
Cycle Q Clear(g_c), s			0.0	2.5	9.6	0.2
Prop In Lane				0.02	1.00	
Lane Grp Cap(c), veh/h			0	393	895	1591
V/C Ratio(X)			0.00	0.52	0.86	0.07
Avail Cap(c_a), veh/h			0	3294	2240	3308
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	9.0	5.6	0.3
Incr Delay (d2), s/veh			0.0	0.4	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.7	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	9.4	6.6	0.3
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			206			875
Approach Delay, s/veh			9.4			5.8
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	16.3	9.4				25.6
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	11.6	4.5				2.2
Green Ext Time (p_c), s	1.3	0.8				0.4
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	430	15	55	630	10	15	270	245	5	165	340
Future Volume (veh/h)	315	430	15	55	630	10	15	270	245	5	165	340
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	342	467	16	60	685	11	16	293	266	5	179	370
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	346	1231	42	77	716	11	20	364	326	10	719	625
Arrive On Green	0.19	0.35	0.35	0.04	0.20	0.20	0.21	0.21	0.21	0.20	0.20	0.20
Sat Flow, veh/h	1781	3506	120	1781	3579	57	97	1769	1585	51	3594	1585
Grp Volume(v), veh/h	342	236	247	60	340	356	309	0	266	184	0	370
Grp Sat Flow(s),veh/h/ln	1781	1777	1849	1781	1777	1860	1866	0	1585	1868	1777	1585
Q Serve(g_s), s	17.2	9.0	9.0	3.0	17.0	17.0	14.2	0.0	14.4	7.9	0.0	16.6
Cycle Q Clear(g_c), s	17.2	9.0	9.0	3.0	17.0	17.0	14.2	0.0	14.4	7.9	0.0	16.6
Prop In Lane	1.00		0.06	1.00		0.03	0.05		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	346	624	649	77	355	372	383	0	326	374	355	625
V/C Ratio(X)	0.99	0.38	0.38	0.78	0.96	0.96	0.81	0.00	0.82	0.49	0.00	0.59
Avail Cap(c_a), veh/h	346	624	649	170	355	372	383	0	326	374	355	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.1	21.9	21.9	42.6	35.6	35.6	34.0	0.0	34.1	31.9	0.0	21.5
Incr Delay (d2), s/veh	44.8	0.4	0.4	15.2	36.4	35.5	16.4	0.0	19.8	4.6	0.0	4.1
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	11.4	3.6	3.7	1.6	10.6	11.0	7.8	0.0	7.0	3.8	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.0	22.2	22.2	57.8	72.0	71.1	50.4	0.0	53.9	36.5	0.0	25.6
LnGrp LOS	F	C	C	E	E	E	D	A	D	D	A	C
Approach Vol, veh/h		825			756			575			554	
Approach Delay, s/veh		46.6			70.4			52.1			29.2	
Approach LOS		D			E			D			C	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	8.4	36.1		22.5	22.0	22.5
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.5	8.6	26.9		18.0	17.5	18.0
Max Q Clear Time (g_c+I1), s		16.4	5.0	11.0		18.6	19.2	19.0
Green Ext Time (p_c), s		0.7	0.0	2.4		0.0	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			50.9
HCM 6th LOS			D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	610	25	15	20	25	630
Future Volume (veh/h)	610	25	15	20	25	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	663	27	16	22	27	685
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	714	636	35	1617	1293	1213
Arrive On Green	0.40	0.40	0.02	0.46	0.36	0.36
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	663	27	16	22	27	685
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	22.2	0.6	0.6	0.2	0.3	11.2
Cycle Q Clear(g_c), s	22.2	0.6	0.6	0.2	0.3	11.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	714	636	35	1617	1293	1213
V/C Ratio(X)	0.93	0.04	0.46	0.01	0.02	0.56
Avail Cap(c_a), veh/h	782	696	142	1617	1293	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	11.4	30.4	9.4	12.8	3.0
Incr Delay (d2), s/veh	16.4	0.0	9.3	0.0	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	0.0	0.3	0.1	0.1	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.3	11.5	39.7	9.4	12.8	5.0
LnGrp LOS	C	B	D	A	B	A
Approach Vol, veh/h	690			38	712	
Approach Delay, s/veh	33.4			22.1	5.3	
Approach LOS	C			C	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		33.0		29.6	5.7	27.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.5		27.5	5.0	19.0
Max Q Clear Time (g_c+I1), s		2.2		24.2	2.6	13.2
Green Ext Time (p_c), s		0.1		0.9	0.0	1.6

Intersection Summary						
HCM 6th Ctrl Delay			19.2			
HCM 6th LOS			B			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SEL	SER
Lane Configurations										
Traffic Volume (veh/h)	0	865	0	0	745	0	0	0	0	0
Future Volume (veh/h)	0	865	0	0	745	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				
Work Zone On Approach		No			No					
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	0				
Adj Flow Rate, veh/h	0	940	0	0	810	0				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Percent Heavy Veh, %	2	2	2	0	2	0				
Cap, veh/h	713	748	634	0	1421	0				
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.00				
Sat Flow, veh/h	1781	1870	1585	0	3741	0				
Grp Volume(v), veh/h	0	940	0	0	810	0				
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	0	1777	0				
Q Serve(g_s), s	0.0	18.0	0.0	0.0	8.0	0.0				
Cycle Q Clear(g_c), s	0.0	18.0	0.0	0.0	8.0	0.0				
Prop In Lane	1.00		1.00	0.00		0.00				
Lane Grp Cap(c), veh/h	713	748	634	0	1421	0				
V/C Ratio(X)	0.00	1.26	0.00	0.00	0.57	0.00				
Avail Cap(c_a), veh/h	713	748	634	0	1421	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				
Uniform Delay (d), s/veh	0.0	13.5	0.0	0.0	10.5	0.0				
Incr Delay (d2), s/veh	0.0	126.2	0.0	0.0	1.7	0.0				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(50%),veh/ln	0.0	31.4	0.0	0.0	2.5	0.0				
Unsig. Movement Delay, s/veh										
LnGrp Delay(d),s/veh	0.0	139.7	0.0	0.0	12.2	0.0				
LnGrp LOS	A	F	A	A	B	A				
Approach Vol, veh/h		940			810					
Approach Delay, s/veh		139.7			12.2					
Approach LOS		F			B					

Timer - Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				22.5				22.5
Change Period (Y+Rc), s				4.5				4.5
Max Green Setting (Gmax), s				18.0				18.0
Max Q Clear Time (g_c+I1), s				20.0				10.0
Green Ext Time (p_c), s				0.0				3.2

Intersection Summary		
HCM 6th Ctrl Delay		80.7
HCM 6th LOS		F

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1870	1870				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	0.92	0.92				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						

Timer - Assigned Phs	
Phs Duration (G+Y+Rc), s	
Change Period (Y+Rc), s	
Max Green Setting (Gmax), s	
Max Q Clear Time (g_c+I1), s	
Green Ext Time (p_c), s	

Intersection Summary	
HCM 6th Ctrl Delay	0.0
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	940	475	90	640	0	200	0	80	0	0	0
Future Volume (veh/h)	0	940	475	90	640	0	200	0	80	0	0	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1022	516	98	696	0	217	0	87	0	0	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	4	1554	693	189	2268	0	732	0	193	0	228	0
Arrive On Green	0.00	0.44	0.44	0.11	0.64	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3647	0	3563	0	1585	0	1870	0
Grp Volume(v), veh/h	0	1022	516	98	696	0	217	0	87	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	0	1781	0	1585	0	1870	0
Q Serve(g_s), s	0.0	11.0	13.1	2.5	4.3	0.0	2.8	0.0	2.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.0	13.1	2.5	4.3	0.0	2.8	0.0	2.5	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1554	693	189	2268	0	732	0	193	0	228	0
V/C Ratio(X)	0.00	0.66	0.74	0.52	0.31	0.00	0.30	0.00	0.45	0.00	0.00	0.00
Avail Cap(c_a), veh/h	368	3305	1474	552	3305	0	1181	0	393	0	464	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	10.8	11.4	20.5	3.9	0.0	19.9	0.0	19.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.6	0.8	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	3.2	0.9	0.6	0.0	1.0	0.0	0.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.9	12.0	21.3	4.0	0.0	19.9	0.0	20.3	0.0	0.0	0.0
LnGrp LOS	A	B	B	C	A	A	B	A	C	A	A	A
Approach Vol, veh/h		1538			794			304			0	
Approach Delay, s/veh		11.3			6.1			20.1			0.0	
Approach LOS		B			A			C				

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.7	27.0		11.7	0.0	36.7		11.7
Change Period (Y+Rc), s	4.6	5.8		5.8	4.6	5.8		* 5.8
Max Green Setting (Gmax), s	15.0	45.0		12.0	10.0	45.0		* 12
Max Q Clear Time (g_c+I1), s	4.5	15.1		0.0	0.0	6.3		4.8
Green Ext Time (p_c), s	0.1	5.9		0.0	0.0	3.0		0.3

Intersection Summary			
HCM 6th Ctrl Delay			10.7
HCM 6th LOS			B

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	20	80	95	15	20	95	360	60	105	555	80
Future Volume (veh/h)	60	20	80	95	15	20	95	360	60	105	555	80
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	65	22	87	103	16	22	103	391	65	114	603	87
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	86	29	115	140	22	30	132	1131	186	149	710	602
Arrive On Green	0.14	0.14	0.14	0.11	0.11	0.11	0.07	0.37	0.37	0.08	0.38	0.38
Sat Flow, veh/h	635	215	850	1294	201	276	1795	3077	507	1795	1885	1598
Grp Volume(v), veh/h	174	0	0	141	0	0	103	226	230	114	603	87
Grp Sat Flow(s),veh/h/ln	1700	0	0	1771	0	0	1795	1791	1793	1795	1885	1598
Q Serve(g_s), s	5.8	0.0	0.0	4.5	0.0	0.0	3.3	5.4	5.5	3.7	17.3	2.1
Cycle Q Clear(g_c), s	5.8	0.0	0.0	4.5	0.0	0.0	3.3	5.4	5.5	3.7	17.3	2.1
Prop In Lane	0.37		0.50	0.73		0.16	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	230	0	0	192	0	0	132	658	659	149	710	602
V/C Ratio(X)	0.75	0.00	0.00	0.74	0.00	0.00	0.78	0.34	0.35	0.77	0.85	0.14
Avail Cap(c_a), veh/h	520	0	0	541	0	0	180	724	725	372	964	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	0.0	0.0	25.4	0.0	0.0	26.8	13.5	13.5	26.4	16.8	12.1
Incr Delay (d2), s/veh	5.0	0.0	0.0	5.4	0.0	0.0	13.8	0.3	0.3	7.9	5.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	2.1	0.0	0.0	1.8	1.8	1.8	1.7	6.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	30.9	0.0	0.0	40.6	13.8	13.8	34.3	22.3	12.2
LnGrp LOS	C	A	A	C	A	A	D	B	B	C	C	B
Approach Vol, veh/h		174			141			559			804	
Approach Delay, s/veh		29.5			30.9			18.7			22.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	26.1		12.5	8.8	26.7		10.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	12.2	23.8		18.0	5.9	30.1		18.0
Max Q Clear Time (g_c+I1), s	5.7	7.5		7.8	5.3	19.3		6.5
Green Ext Time (p_c), s	0.1	2.2		0.7	0.0	2.9		0.5

Intersection Summary		
HCM 6th Ctrl Delay		22.9
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	10	40	60	10	20	85	420	55	35	615	80
Future Volume (veh/h)	75	10	40	60	10	20	85	420	55	35	615	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	11	43	65	11	22	92	457	60	38	668	87
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	125	17	65	94	16	32	137	1094	143	75	985	128
Arrive On Green	0.12	0.12	0.12	0.08	0.08	0.08	0.08	0.35	0.35	0.04	0.31	0.31
Sat Flow, veh/h	1031	138	541	1155	195	391	1781	3159	413	1781	3160	411
Grp Volume(v), veh/h	136	0	0	98	0	0	92	256	261	38	375	380
Grp Sat Flow(s),veh/h/ln	1710	0	0	1741	0	0	1781	1777	1795	1781	1777	1794
Q Serve(g_s), s	3.3	0.0	0.0	2.4	0.0	0.0	2.2	4.8	4.9	0.9	8.1	8.1
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.4	0.0	0.0	2.2	4.8	4.9	0.9	8.1	8.1
Prop In Lane	0.60		0.32	0.66		0.22	1.00		0.23	1.00		0.23
Lane Grp Cap(c), veh/h	207	0	0	142	0	0	137	615	622	75	554	559
V/C Ratio(X)	0.66	0.00	0.00	0.69	0.00	0.00	0.67	0.42	0.42	0.51	0.68	0.68
Avail Cap(c_a), veh/h	700	0	0	712	0	0	223	844	853	207	828	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.7	0.0	0.0	19.8	11.0	11.0	20.6	13.2	13.2
Incr Delay (d2), s/veh	3.5	0.0	0.0	5.9	0.0	0.0	5.6	0.4	0.5	5.2	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	1.1	0.0	0.0	1.0	1.6	1.6	0.4	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	0.0	0.0	25.6	0.0	0.0	25.4	11.4	11.4	25.8	14.7	14.7
LnGrp LOS	C	A	A	C	A	A	C	B	B	C	B	B
Approach Vol, veh/h		136			98			609			793	
Approach Delay, s/veh		22.0			25.6			13.5			15.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	19.7		9.8	7.9	18.2		8.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	2.9	6.9		5.3	4.2	10.1		4.4				
Green Ext Time (p_c), s	0.0	2.7		0.5	0.0	3.5		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			15.8									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	25	20	5	35	30	490	40	60	595	110
Future Volume (veh/h)	35	15	25	20	5	35	30	490	40	60	595	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	38	16	27	22	5	38	33	533	43	65	647	120
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	70	30	50	37	8	64	70	998	80	118	976	181
Arrive On Green	0.09	0.09	0.09	0.07	0.07	0.07	0.04	0.30	0.30	0.07	0.32	0.32
Sat Flow, veh/h	808	340	574	564	128	974	1795	3349	269	1795	3002	556
Grp Volume(v), veh/h	81	0	0	65	0	0	33	284	292	65	386	381
Grp Sat Flow(s),veh/h/ln	1723	0	0	1666	0	0	1795	1791	1828	1795	1791	1767
Q Serve(g_s), s	1.7	0.0	0.0	1.4	0.0	0.0	0.7	4.9	5.0	1.3	6.9	6.9
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.4	0.0	0.0	0.7	4.9	5.0	1.3	6.9	6.9
Prop In Lane	0.47		0.33	0.34		0.58	1.00		0.15	1.00		0.31
Lane Grp Cap(c), veh/h	150	0	0	110	0	0	70	534	545	118	582	574
V/C Ratio(X)	0.54	0.00	0.00	0.59	0.00	0.00	0.47	0.53	0.54	0.55	0.66	0.66
Avail Cap(c_a), veh/h	833	0	0	806	0	0	241	866	884	241	866	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	0.0	16.9	0.0	0.0	17.5	10.9	10.9	16.9	10.8	10.8
Incr Delay (d2), s/veh	3.0	0.0	0.0	5.0	0.0	0.0	4.9	0.8	0.8	4.0	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.6	0.0	0.0	0.3	1.7	1.7	0.5	1.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	0.0	21.9	0.0	0.0	22.4	11.7	11.7	20.8	12.1	12.1
LnGrp LOS	B	A	A	C	A	A	C	B	B	C	B	B
Approach Vol, veh/h		81			65			609			832	
Approach Delay, s/veh		19.3			21.9			12.3			12.8	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	15.6		7.7	5.9	16.6		6.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.0	18.0		18.0	5.0	18.0		18.0
Max Q Clear Time (g_c+I1), s	3.3	7.0		3.7	2.7	8.9		3.4
Green Ext Time (p_c), s	0.0	2.8		0.3	0.0	3.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	215	390	120	550	65	155	400	295	90	490	60
Future Volume (veh/h)	95	215	390	120	550	65	155	400	295	90	490	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	103	234	424	130	598	71	168	435	321	98	533	65
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	134	1000	629	169	1068	470	215	959	571	128	785	343
Arrive On Green	0.07	0.28	0.28	0.09	0.30	0.30	0.12	0.27	0.27	0.07	0.22	0.22
Sat Flow, veh/h	1795	3582	1569	1795	3582	1576	1795	3582	1571	1795	3582	1564
Grp Volume(v), veh/h	103	234	424	130	598	71	168	435	321	98	533	65
Grp Sat Flow(s),veh/h/ln	1795	1791	1569	1795	1791	1576	1795	1791	1571	1795	1791	1564
Q Serve(g_s), s	3.5	3.1	13.9	4.4	8.8	2.1	5.7	6.3	10.2	3.3	8.5	2.1
Cycle Q Clear(g_c), s	3.5	3.1	13.9	4.4	8.8	2.1	5.7	6.3	10.2	3.3	8.5	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	1000	629	169	1068	470	215	959	571	128	785	343
V/C Ratio(X)	0.77	0.23	0.67	0.77	0.56	0.15	0.78	0.45	0.56	0.77	0.68	0.19
Avail Cap(c_a), veh/h	331	1233	731	359	1290	568	417	1577	842	302	1348	588
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	28.4	17.4	15.5	27.6	18.5	16.1	26.7	19.1	16.0	28.5	22.4	19.9
Incr Delay (d2), s/veh	8.8	0.1	2.0	7.2	0.5	0.1	6.1	0.3	0.9	9.3	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.1	4.3	2.0	3.2	0.7	2.5	2.3	3.2	1.6	3.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.1	17.5	17.5	34.9	18.9	16.3	32.8	19.4	16.9	37.8	23.4	20.1
LnGrp LOS	D	B	B	C	B	B	C	B	B	D	C	C
Approach Vol, veh/h		761			799			924			696	
Approach Delay, s/veh		20.1			21.3			21.0			25.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	21.2	10.4	21.9	12.0	18.2	9.2	23.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	27.5	12.5	21.5	14.5	23.5	11.5	22.5
Max Q Clear Time (g_c+I1), s	5.3	12.2	6.4	15.9	7.7	10.5	5.5	10.8
Green Ext Time (p_c), s	0.1	3.3	0.1	1.5	0.2	2.8	0.1	3.0

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	20	70	15	40	65	105	510	30	90	660	245
Future Volume (veh/h)	275	20	70	15	40	65	105	510	30	90	660	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	299	22	76	16	43	71	114	554	33	98	717	266
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	363	27	341	36	98	115	146	1187	71	155	897	333
Arrive On Green	0.22	0.22	0.22	0.07	0.07	0.07	0.08	0.35	0.35	0.09	0.35	0.35
Sat Flow, veh/h	1678	123	1577	504	1356	1598	1795	3430	204	1795	2557	949
Grp Volume(v), veh/h	321	0	76	59	0	71	114	289	298	98	502	481
Grp Sat Flow(s),veh/h/ln	1801	0	1577	1860	0	1598	1795	1791	1843	1795	1791	1714
Q Serve(g_s), s	11.0	0.0	2.6	2.0	0.0	2.8	4.0	8.1	8.1	3.4	16.3	16.3
Cycle Q Clear(g_c), s	11.0	0.0	2.6	2.0	0.0	2.8	4.0	8.1	8.1	3.4	16.3	16.3
Prop In Lane	0.93		1.00	0.27		1.00	1.00		0.11	1.00		0.55
Lane Grp Cap(c), veh/h	390	0	341	134	0	115	146	620	638	155	628	601
V/C Ratio(X)	0.82	0.00	0.22	0.44	0.00	0.62	0.78	0.47	0.47	0.63	0.80	0.80
Avail Cap(c_a), veh/h	503	0	440	519	0	446	198	620	638	501	802	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	0.0	20.8	28.7	0.0	29.1	29.1	16.4	16.5	28.5	18.9	18.9
Incr Delay (d2), s/veh	8.4	0.0	0.3	2.2	0.0	5.2	12.9	0.5	0.5	4.2	4.5	4.7
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	5.4	0.0	0.9	0.9	0.0	1.2	2.1	2.9	3.0	1.5	6.4	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	0.0	21.1	30.9	0.0	34.3	42.0	17.0	17.0	32.7	23.4	23.6
LnGrp LOS	C	A	C	C	A	C	D	B	B	C	C	C
Approach Vol, veh/h		397			130			701			1081	
Approach Delay, s/veh		30.3			32.8			21.1			24.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	26.8		18.5	9.8	27.1		9.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	18.0	18.0		18.0	7.1	28.9		18.0				
Max Q Clear Time (g_c+I1), s	15.4	10.1		13.0	6.0	18.3		4.8				
Green Ext Time (p_c), s	0.2	2.0		1.0	0.0	4.3		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			24.8									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	15	630	35	20	720
Future Vol, veh/h	20	15	630	35	20	720
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	22	16	685	38	22	783

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1140	362	0	0	723	0
Stage 1	704	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.82	6.92	-	-	4.12	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	-	-	2.21	-
Pot Cap-1 Maneuver	196	638	-	-	882	-
Stage 1	454	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	191	638	-	-	882	-
Mov Cap-2 Maneuver	191	-	-	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	191	638	882	-
HCM Lane V/C Ratio	-	-	0.114	0.026	0.025	-
HCM Control Delay (s)	-	-	26.3	10.8	9.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	65	10	620	20	40	680	25
Future Vol, veh/h	0	0	30	0	0	65	10	620	20	40	680	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	6	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	115	-	-	140	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	33	0	0	71	11	674	22	43	739	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	384	-	-	354	767	0	0	702	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	617	0	0	645	849	-	-	898	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	616	-	-	641	848	-	-	893	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	11.3	0.1	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	848	-	-	616	641	893	-	-
HCM Lane V/C Ratio	0.013	-	-	0.053	0.11	0.049	-	-
HCM Control Delay (s)	9.3	-	-	11.2	11.3	9.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	35	20	615	15	60	635	15
Future Vol, veh/h	0	0	40	0	0	35	20	615	15	60	635	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	140	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	0	43	0	0	38	22	668	16	65	690	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	354	-	-	343	707	0	0	685	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.92	-	-	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.31	-	-	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	0	0	645	0	0	656	894	-	-	911	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	644	-	-	655	893	-	-	910	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	10.8	0.3	0.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	893	-	-	644	655	910	-	-
HCM Lane V/C Ratio	0.024	-	-	0.068	0.058	0.072	-	-
HCM Control Delay (s)	9.1	-	-	11	10.8	9.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	80	15	115	335	60	10	455	135	210	395	100
Future Volume (veh/h)	115	80	15	115	335	60	10	455	135	210	395	100
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	87	16	125	364	65	11	495	147	228	429	109
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	265	330	61	135	555	99	409	621	183	367	579	146
Arrive On Green	0.21	0.21	0.21	0.08	0.36	0.36	0.23	0.23	0.23	0.21	0.21	0.21
Sat Flow, veh/h	959	1537	283	1781	1545	276	1781	2705	799	1781	2812	708
Grp Volume(v), veh/h	125	0	103	125	0	429	11	324	318	228	270	268
Grp Sat Flow(s),veh/h/ln	959	0	1819	1781	0	1821	1781	1777	1727	1781	1777	1743
Q Serve(g_s), s	8.3	0.0	3.1	4.6	0.0	13.0	0.3	11.3	11.4	7.7	9.3	9.5
Cycle Q Clear(g_c), s	11.8	0.0	3.1	4.6	0.0	13.0	0.3	11.3	11.4	7.7	9.3	9.5
Prop In Lane	1.00		0.16	1.00		0.15	1.00		0.46	1.00		0.41
Lane Grp Cap(c), veh/h	265	0	391	135	0	654	409	408	396	367	366	359
V/C Ratio(X)	0.47	0.00	0.26	0.92	0.00	0.66	0.03	0.79	0.80	0.62	0.74	0.75
Avail Cap(c_a), veh/h	321	0	498	135	0	654	488	486	473	488	486	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	21.5	30.2	0.0	17.7	19.6	23.9	23.9	23.8	24.4	24.5
Incr Delay (d2), s/veh	1.3	0.0	0.4	54.5	0.0	2.4	0.0	7.5	8.2	1.7	4.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.2	3.8	0.0	4.7	0.1	5.3	5.3	3.0	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	0.0	21.8	84.7	0.0	20.0	19.7	31.4	32.1	25.5	28.5	29.0
LnGrp LOS	C	A	C	F	A	C	B	C	C	C	C	C
Approach Vol, veh/h		228			554			653			766	
Approach Delay, s/veh		25.2			34.6			31.6			27.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		19.6	9.5	18.6		18.0		28.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0	5.0	18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		13.4	6.6	13.8		11.5		15.0				
Green Ext Time (p_c), s		1.7	0.0	0.4		2.0		0.7				

Intersection Summary			
HCM 6th Ctrl Delay			30.3
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	770	100	220	455	15	200	60	150	20	55	40
Future Volume (veh/h)	45	770	100	220	455	15	200	60	150	20	55	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	837	109	239	495	16	217	65	163	22	60	43
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	87	1066	476	253	1383	45	373	90	225	47	110	79
Arrive On Green	0.05	0.30	0.30	0.14	0.39	0.39	0.11	0.19	0.19	0.03	0.11	0.11
Sat Flow, veh/h	1781	3554	1585	1781	3513	113	3456	472	1185	1781	1013	726
Grp Volume(v), veh/h	49	837	109	239	250	261	217	0	228	22	0	103
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1850	1728	0	1657	1781	0	1740
Q Serve(g_s), s	1.4	11.4	2.7	7.0	5.2	5.2	3.2	0.0	6.8	0.6	0.0	3.0
Cycle Q Clear(g_c), s	1.4	11.4	2.7	7.0	5.2	5.2	3.2	0.0	6.8	0.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.71	1.00		0.42
Lane Grp Cap(c), veh/h	87	1066	476	253	700	728	373	0	315	47	0	189
V/C Ratio(X)	0.57	0.79	0.23	0.94	0.36	0.36	0.58	0.00	0.72	0.47	0.00	0.55
Avail Cap(c_a), veh/h	169	1213	541	253	700	728	1180	0	990	169	0	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	16.9	13.9	22.4	11.3	11.3	22.4	0.0	20.0	25.3	0.0	22.3
Incr Delay (d2), s/veh	5.7	3.1	0.2	41.1	0.3	0.3	1.4	0.0	3.2	7.3	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	0.8	5.4	1.6	1.7	1.2	0.0	2.5	0.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	20.0	14.1	63.5	11.6	11.6	23.8	0.0	23.2	32.6	0.0	24.7
LnGrp LOS	C	B	B	E	B	B	C	A	C	C	A	C
Approach Vol, veh/h		995			750			445			125	
Approach Delay, s/veh		19.8			28.1			23.5			26.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	14.5	12.0	20.3	10.2	10.2	7.1	25.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.6	8.8	9.0	13.4	5.2	5.0	3.4	7.2
Green Ext Time (p_c), s	0.0	1.2	0.0	2.4	0.5	0.4	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	100	130	395	355	20
Future Vol, veh/h	15	100	130	395	355	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	109	141	429	386	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	894	204	408	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	283	806	1154	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	248	806	1154	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	623	-	-
HCM Lane V/C Ratio	0.122	-	0.201	-	-
HCM Control Delay (s)	8.6	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	880	0	0	795	335	115	0	135	0	0	0
Future Volume (veh/h)	140	880	0	0	795	335	115	0	135	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	152	957	0	0	864	364	125	0	147			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	201	2223	0	0	1440	629	285	0	249			
Arrive On Green	0.11	0.63	0.00	0.00	0.41	0.41	0.16	0.00	0.16			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1559			
Grp Volume(v), veh/h	152	957	0	0	864	364	125	0	147			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1559			
Q Serve(g_s), s	3.5	5.8	0.0	0.0	8.0	7.6	2.7	0.0	3.7			
Cycle Q Clear(g_c), s	3.5	5.8	0.0	0.0	8.0	7.6	2.7	0.0	3.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	201	2223	0	0	1440	629	285	0	249			
V/C Ratio(X)	0.76	0.43	0.00	0.00	0.60	0.58	0.44	0.00	0.59			
Avail Cap(c_a), veh/h	616	4196	0	0	2586	1129	914	0	799			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	18.0	4.0	0.0	0.0	9.8	9.7	15.9	0.0	16.3			
Incr Delay (d2), s/veh	5.7	0.1	0.0	0.0	0.4	0.8	1.1	0.0	2.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	0.6	0.0	0.0	2.0	1.7	0.9	0.0	1.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	4.2	0.0	0.0	10.2	10.5	17.0	0.0	18.6			
LnGrp LOS	C	A	A	A	B	B	B	A	B			
Approach Vol, veh/h		1109			1228			272				
Approach Delay, s/veh		6.8			10.3			17.8				
Approach LOS		A			B			B				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		11.2		30.7			9.2	21.5				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		21.5		49.5			14.5	30.5				
Max Q Clear Time (g_c+I1), s		5.7		7.8			5.5	10.0				
Green Ext Time (p_c), s		1.0		7.4			0.2	7.0				
Intersection Summary												
HCM 6th Ctrl Delay			9.6									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	770	85	20	810	15	60	15	15	10	15	165
Future Volume (veh/h)	90	770	85	20	810	15	60	15	15	10	15	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	837	92	22	880	16	65	16	16	11	16	179
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	127	1152	127	46	1115	20	114	28	28	15	22	247
Arrive On Green	0.07	0.36	0.36	0.03	0.31	0.31	0.10	0.10	0.10	0.18	0.18	0.18
Sat Flow, veh/h	1767	3195	351	1767	3542	64	1169	288	288	85	124	1385
Grp Volume(v), veh/h	98	462	467	22	438	458	97	0	0	206	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1783	1767	1763	1844	1745	0	0	1594	0	0
Q Serve(g_s), s	2.9	12.1	12.1	0.7	12.1	12.1	2.8	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear(g_c), s	2.9	12.1	12.1	0.7	12.1	12.1	2.8	0.0	0.0	6.5	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.03	0.67		0.16	0.05		0.87
Lane Grp Cap(c), veh/h	127	636	643	46	555	580	169	0	0	284	0	0
V/C Ratio(X)	0.77	0.73	0.73	0.48	0.79	0.79	0.57	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	169	679	687	166	676	707	607	0	0	539	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.3	14.7	14.7	25.6	16.6	16.6	23.0	0.0	0.0	20.6	0.0	0.0
Incr Delay (d2), s/veh	14.3	3.6	3.6	7.5	5.2	5.0	3.0	0.0	0.0	3.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.3	4.4	0.3	4.6	4.8	1.2	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	18.4	18.4	33.0	21.8	21.6	26.0	0.0	0.0	24.2	0.0	0.0
LnGrp LOS	D	B	B	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		1027			918			97			206	
Approach Delay, s/veh		20.3			22.0			26.0			24.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.7	5.9	23.7		14.0	8.3	21.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.5	5.0	20.5		18.0	5.1	20.4				
Max Q Clear Time (g_c+I1), s		4.8	2.7	14.1		8.5	4.9	14.1				
Green Ext Time (p_c), s		0.3	0.0	2.8		0.8	0.0	2.7				

Intersection Summary			
HCM 6th Ctrl Delay			21.6
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	430	60	5	635	15	45	15	5	5	20	30
Future Volume (veh/h)	85	430	60	5	635	15	45	15	5	5	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	92	467	65	5	690	16	49	16	5	5	22	33
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	135	1111	154	12	1015	24	170	56	17	16	70	106
Arrive On Green	0.08	0.35	0.35	0.01	0.28	0.28	0.14	0.14	0.14	0.11	0.11	0.11
Sat Flow, veh/h	1795	3154	437	1795	3575	83	1256	410	128	142	625	937
Grp Volume(v), veh/h	92	264	268	5	346	360	70	0	0	60	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1799	1795	1791	1867	1794	0	0	1704	0	0
Q Serve(g_s), s	2.3	5.1	5.2	0.1	7.8	7.9	1.6	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	2.3	5.1	5.2	0.1	7.8	7.9	1.6	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.04	0.70		0.07	0.08		0.55
Lane Grp Cap(c), veh/h	135	631	634	12	508	530	243	0	0	192	0	0
V/C Ratio(X)	0.68	0.42	0.42	0.41	0.68	0.68	0.29	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	255	782	785	196	723	754	744	0	0	669	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.7	11.3	11.3	22.7	14.6	14.6	17.8	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.4	0.4	21.1	1.6	1.5	0.6	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.5	1.5	0.1	2.6	2.7	0.7	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	11.7	11.7	43.7	16.2	16.1	18.5	0.0	0.0	19.6	0.0	0.0
LnGrp LOS	C	B	B	D	B	B	B	A	A	B	A	A
Approach Vol, veh/h		624			711			70			60	
Approach Delay, s/veh		13.9			16.3			18.5			19.6	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		10.7	4.8	20.6		9.7	8.0	17.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.0	20.0		18.0	6.5	18.5				
Max Q Clear Time (g_c+I1), s		3.6	2.1	7.2		3.5	4.3	9.9				
Green Ext Time (p_c), s		0.2	0.0	2.3		0.2	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			15.5									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	240	55	155	315	75	50	590	125	75	515	305
Future Volume (veh/h)	155	240	55	155	315	75	50	590	125	75	515	305
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1870	1870	1900	1900
Adj Flow Rate, veh/h	168	261	60	168	342	82	54	641	136	82	560	332
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	2	2	0	0
Cap, veh/h	322	517	117	182	543	128	96	1018	447	122	1074	615
Arrive On Green	0.09	0.18	0.18	0.10	0.19	0.19	0.05	0.28	0.28	0.07	0.30	0.30
Sat Flow, veh/h	3510	2872	648	1781	2851	675	1810	3610	1585	1781	3610	1571
Grp Volume(v), veh/h	168	160	161	168	211	213	54	641	136	82	560	332
Grp Sat Flow(s),veh/h/ln	1755	1777	1743	1781	1777	1749	1810	1805	1585	1781	1805	1571
Q Serve(g_s), s	2.2	4.0	4.1	4.6	5.4	5.5	1.4	7.6	3.3	2.2	6.3	8.0
Cycle Q Clear(g_c), s	2.2	4.0	4.1	4.6	5.4	5.5	1.4	7.6	3.3	2.2	6.3	8.0
Prop In Lane	1.00		0.37	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	322	320	314	182	338	333	96	1018	447	122	1074	615
V/C Ratio(X)	0.52	0.50	0.51	0.92	0.63	0.64	0.56	0.63	0.30	0.67	0.52	0.54
Avail Cap(c_a), veh/h	1254	1106	1085	182	653	643	277	1584	696	182	1400	757
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	21.2	18.1	18.2	21.8	18.2	18.3	22.6	15.4	13.8	22.3	14.3	11.6
Incr Delay (d2), s/veh	1.3	1.2	1.3	45.5	1.9	2.0	5.1	0.6	0.4	6.2	0.4	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	0.9	1.6	1.6	4.0	2.1	2.2	0.7	2.5	1.1	1.0	2.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	19.3	19.5	67.3	20.1	20.3	27.7	16.0	14.2	28.5	14.7	12.3
LnGrp LOS	C	B	B	E	C	C	C	B	B	C	B	B
Approach Vol, veh/h		489			592			831			974	
Approach Delay, s/veh		20.5			33.6			16.5			15.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	18.3	9.5	13.3	7.1	19.1	9.0	13.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	21.5	5.0	30.5	7.5	19.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.2	9.6	6.6	6.1	3.4	10.0	4.2	7.5
Green Ext Time (p_c), s	0.0	3.5	0.0	1.9	0.0	3.1	0.4	1.8

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	10	895	805	20
Future Vol, veh/h	10	15	10	895	805	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	11	973	875	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1395	449	897	0	-	0
Stage 1	886	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	132	557	753	-	-	-
Stage 1	363	-	-	-	-	-
Stage 2	569	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	557	753	-	-	-
Mov Cap-2 Maneuver	256	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	569	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	753	-	379	-	-
HCM Lane V/C Ratio	0.014	-	0.072	-	-
HCM Control Delay (s)	9.9	-	15.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	60	15	905	820	10
Future Vol, veh/h	5	60	15	905	820	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	65	16	984	891	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1415	891	902	0	-	0
Stage 1	891	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	139	340	751	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	136	340	751	-	-	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.7	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	751	-	333	-	-
HCM Lane V/C Ratio	0.022	-	0.212	-	-
HCM Control Delay (s)	9.9	-	18.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

Intersection						
Int Delay, s/veh	32.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	210	85	315	45	175	45
Future Vol, veh/h	210	85	315	45	175	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	25	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	228	92	342	49	190	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	923	190	190	0	-	0
Stage 1	190	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.14	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.236	-	-	-
Pot Cap-1 Maneuver	297	847	1372	-	-	0
Stage 1	838	-	-	-	-	0
Stage 2	472	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 223	847	1372	-	-	-
Mov Cap-2 Maneuver	~ 223	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	472	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	83.1	7.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	1372	-	223	847	-
HCM Lane V/C Ratio	0.25	-	1.024	0.109	-
HCM Control Delay (s)	8.5	-	112.8	9.8	-
HCM Lane LOS	A	-	F	A	-
HCM 95th %tile Q(veh)	1	-	9.6	0.4	-

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	150	55	85	255	25	50	705	60	70	635	170
Future Volume (veh/h)	190	150	55	85	255	25	50	705	60	70	635	170
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	163	60	92	277	27	54	766	65	76	690	185
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	163	308	113	122	358	35	91	1008	86	111	1121	500
Arrive On Green	0.09	0.24	0.24	0.07	0.21	0.21	0.05	0.30	0.30	0.06	0.32	0.32
Sat Flow, veh/h	1781	1304	480	1781	1677	163	1781	3315	281	1781	3554	1585
Grp Volume(v), veh/h	207	0	223	92	0	304	54	410	421	76	690	185
Grp Sat Flow(s),veh/h/ln	1781	0	1784	1781	0	1841	1781	1777	1819	1781	1777	1585
Q Serve(g_s), s	5.0	0.0	6.0	2.8	0.0	8.5	1.6	11.5	11.5	2.3	9.0	5.0
Cycle Q Clear(g_c), s	5.0	0.0	6.0	2.8	0.0	8.5	1.6	11.5	11.5	2.3	9.0	5.0
Prop In Lane	1.00		0.27	1.00		0.09	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	163	0	421	122	0	393	91	540	553	111	1121	500
V/C Ratio(X)	1.27	0.00	0.53	0.75	0.00	0.77	0.59	0.76	0.76	0.68	0.62	0.37
Avail Cap(c_a), veh/h	163	0	733	163	0	756	211	730	747	211	1459	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	18.3	25.0	0.0	20.3	25.4	17.3	17.3	25.1	15.9	14.5
Incr Delay (d2), s/veh	162.1	0.0	1.0	12.7	0.0	3.3	6.0	3.2	3.2	7.1	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	0.0	2.4	1.4	0.0	3.2	0.8	4.2	4.3	1.1	3.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	187.0	0.0	19.3	37.8	0.0	23.6	31.5	20.5	20.4	32.3	16.5	15.0
LnGrp LOS	F	A	B	D	A	C	C	C	C	C	B	B
Approach Vol, veh/h		430			396			885			951	
Approach Delay, s/veh		100.0			26.9			21.1			17.5	
Approach LOS		F			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	21.2	8.3	17.4	7.3	21.8	9.5	16.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	22.5	5.0	22.5	6.5	22.5	5.0	22.5				
Max Q Clear Time (g_c+I1), s	4.3	13.5	4.8	8.0	3.6	11.0	7.0	10.5				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.0	0.0	3.8	0.0	1.1				

Intersection Summary		
HCM 6th Ctrl Delay		33.4
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	470	60	375	455	0	0	0	0	120	200	120
Future Volume (veh/h)	0	470	60	375	455	0	0	0	0	120	200	120
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	511	65	408	495	0				130	217	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	843	376	771	2015	0				353	431	248
Arrive On Green	0.00	0.24	0.24	0.22	0.57	0.00				0.20	0.20	0.20
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2156	1239
Grp Volume(v), veh/h	0	511	65	408	495	0				130	176	171
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1632
Q Serve(g_s), s	0.0	4.8	1.2	3.9	2.6	0.0				2.4	3.3	3.5
Cycle Q Clear(g_c), s	0.0	4.8	1.2	3.9	2.6	0.0				2.4	3.3	3.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.76
Lane Grp Cap(c), veh/h	0	843	376	771	2015	0				353	353	327
V/C Ratio(X)	0.00	0.61	0.17	0.53	0.25	0.00				0.37	0.50	0.52
Avail Cap(c_a), veh/h	0	2178	972	829	3410	0				1828	1823	1688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	11.2	12.7	4.0	0.0				12.9	13.2	13.3
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.6	0.0	0.0				0.2	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.3	1.2	0.4	0.0				0.7	1.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.9	11.3	13.3	4.0	0.0				13.1	13.6	13.8
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		576			903						477	
Approach Delay, s/veh		12.7			8.2						13.5	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.4	12.9		11.9		25.3
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0
Max Q Clear Time (g_c+I1), s	5.9	6.8		5.5		4.6
Green Ext Time (p_c), s	0.5	2.1		1.3		2.2

Intersection Summary			
HCM 6th Ctrl Delay			10.8
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	445	0	0	690	50	140	275	415	0	0	0
Future Volume (veh/h)	145	445	0	0	690	50	140	275	415	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	158	484	0	0	750	54	152	299	451			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	392	1654	0	0	963	429	631	662	561			
Arrive On Green	0.11	0.47	0.00	0.00	0.27	0.27	0.35	0.35	0.35			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	158	484	0	0	750	54	152	299	451			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	2.4	4.8	0.0	0.0	11.0	1.5	3.4	7.0	14.5			
Cycle Q Clear(g_c), s	2.4	4.8	0.0	0.0	11.0	1.5	3.4	7.0	14.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	392	1654	0	0	963	429	631	662	561			
V/C Ratio(X)	0.40	0.29	0.00	0.00	0.78	0.13	0.24	0.45	0.80			
Avail Cap(c_a), veh/h	550	2072	0	0	1319	588	1133	1190	1008			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	23.3	9.4	0.0	0.0	19.1	15.6	12.9	14.0	16.5			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	1.3	0.0	0.1	0.2	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			
%ile BackOfQ(50%),veh/ln	0.9	1.6	0.0	0.0	4.1	0.5	1.2	2.6	4.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	9.4	0.0	0.0	20.4	15.6	13.0	14.2	17.5			
LnGrp LOS	C	A	A	A	C	B	B	B	B			
Approach Vol, veh/h		642			804			902				
Approach Delay, s/veh		12.9			20.1			15.7				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		31.4			11.0	20.4		25.1				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		6.8			4.4	13.0		16.5				
Green Ext Time (p_c), s		2.2			0.1	2.3		3.5				
Intersection Summary												
HCM 6th Ctrl Delay			16.4									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	635	55	515	685	0	75	0	150	255	150	230
Future Volume (veh/h)	0	635	55	515	685	0	75	0	150	255	150	230
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	690	60	560	745	0	82	0	163	277	163	250
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	973	434	449	1639	0	87	0	174	368	368	328
Arrive On Green	0.00	0.27	0.27	0.13	0.46	0.00	0.16	0.00	0.16	0.21	0.21	0.21
Sat Flow, veh/h	0	3647	1585	3456	3647	0	551	0	1095	1781	1777	1585
Grp Volume(v), veh/h	0	690	60	560	745	0	245	0	0	277	163	250
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1646	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	12.1	2.0	9.0	9.9	0.0	10.2	0.0	0.0	10.1	5.6	10.3
Cycle Q Clear(g_c), s	0.0	12.1	2.0	9.0	9.9	0.0	10.2	0.0	0.0	10.1	5.6	10.3
Prop In Lane	0.00		1.00	1.00		0.00	0.33		0.67	1.00		1.00
Lane Grp Cap(c), veh/h	0	973	434	449	1639	0	261	0	0	368	368	328
V/C Ratio(X)	0.00	0.71	0.14	1.25	0.45	0.00	0.94	0.00	0.00	0.75	0.44	0.76
Avail Cap(c_a), veh/h	0	1179	526	449	1846	0	261	0	0	848	846	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	22.7	19.0	30.2	12.7	0.0	28.8	0.0	0.0	25.8	24.0	25.9
Incr Delay (d2), s/veh	0.0	2.5	0.3	129.0	0.2	0.0	38.7	0.0	0.0	1.2	0.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.1	0.7	11.6	3.6	0.0	6.6	0.0	0.0	4.2	2.3	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	25.1	19.3	159.2	12.9	0.0	67.5	0.0	0.0	27.0	24.3	27.3
LnGrp LOS	A	C	B	F	B	A	E	A	A	C	C	C
Approach Vol, veh/h		750			1305			245			690	
Approach Delay, s/veh		24.7			75.7			67.5			26.5	
Approach LOS		C			E			E			C	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.0	23.0		18.3		36.0		15.0				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0				
Max Q Clear Time (g_c+I1), s	11.0	14.1		12.3		11.9		12.2				
Green Ext Time (p_c), s	0.0	4.8		2.0		5.5		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		50.9
HCM 6th LOS		D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	420	620	0	0	785	110	415	300	75	0	0	0
Future Volume (veh/h)	420	620	0	0	785	110	415	300	75	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	457	674	0	0	853	120	286	557	82			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	832	1995	0	0	780	343	382	684	100			
Arrive On Green	0.24	0.56	0.00	0.00	0.22	0.22	0.21	0.21	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3189	468			
Grp Volume(v), veh/h	457	674	0	0	853	120	286	326	313			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1786			
Q Serve(g_s), s	5.3	4.7	0.0	0.0	10.0	3.0	6.8	7.6	7.6			
Cycle Q Clear(g_c), s	5.3	4.7	0.0	0.0	10.0	3.0	6.8	7.6	7.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.26			
Lane Grp Cap(c), veh/h	832	1995	0	0	780	343	382	401	383			
V/C Ratio(X)	0.55	0.34	0.00	0.00	1.09	0.35	0.75	0.81	0.82			
Avail Cap(c_a), veh/h	1366	1995	0	0	780	343	391	411	392			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	15.1	5.4	0.0	0.0	17.8	15.0	16.7	17.0	17.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	60.6	0.2	6.7	10.7	11.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	1.1	0.0	0.0	10.1	0.9	3.1	4.0	3.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	5.4	0.0	0.0	78.3	15.2	23.4	27.7	28.6			
LnGrp LOS	B	A	A	A	F	B	C	C	C			
Approach Vol, veh/h		1131			973			925				
Approach Delay, s/veh		9.4			70.6			26.7				
Approach LOS		A			E			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.9				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.7			7.3	12.0		9.6				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.2				

Intersection Summary			
HCM 6th Ctrl Delay			34.3
HCM 6th LOS			C

Notes

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

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	225	15	625	95
Future Volume (veh/h)	0	0	225	15	625	95
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			245	16	679	103
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			403	26	817	1569
Arrive On Green			0.23	0.23	0.46	0.83
Sat Flow, veh/h			1750	114	1795	1885
Grp Volume(v), veh/h			0	261	679	103
Grp Sat Flow(s),veh/h/ln			0	1865	1795	1885
Q Serve(g_s), s			0.0	3.0	7.9	0.2
Cycle Q Clear(g_c), s			0.0	3.0	7.9	0.2
Prop In Lane				0.06	1.00	
Lane Grp Cap(c), veh/h			0	429	817	1569
V/C Ratio(X)			0.00	0.61	0.83	0.07
Avail Cap(c_a), veh/h			0	3521	2411	3559
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	8.2	5.7	0.4
Incr Delay (d2), s/veh			0.0	0.5	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.7	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	8.7	6.5	0.4
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			261			782
Approach Delay, s/veh			8.7			5.7
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	14.4	9.5				23.8
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	9.9	5.0				2.2
Green Ext Time (p_c), s	1.1	1.0				0.3
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	551	273	300	493	16	319	67	237	20	56	40
Future Volume (veh/h)	38	551	273	300	493	16	319	67	237	20	56	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	599	297	326	536	17	347	73	258	22	61	43
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	75	914	408	241	1232	39	508	93	328	46	138	98
Arrive On Green	0.04	0.26	0.26	0.14	0.35	0.35	0.15	0.26	0.26	0.03	0.14	0.14
Sat Flow, veh/h	1781	3554	1585	1781	3516	111	3456	362	1278	1781	1021	720
Grp Volume(v), veh/h	41	599	297	326	271	282	347	0	331	22	0	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1850	1728	0	1640	1781	0	1741
Q Serve(g_s), s	1.3	8.3	9.5	7.5	6.5	6.5	5.3	0.0	10.4	0.7	0.0	3.0
Cycle Q Clear(g_c), s	1.3	8.3	9.5	7.5	6.5	6.5	5.3	0.0	10.4	0.7	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.78	1.00		0.41
Lane Grp Cap(c), veh/h	75	914	408	241	623	648	508	0	421	46	0	236
V/C Ratio(X)	0.55	0.66	0.73	1.35	0.43	0.44	0.68	0.00	0.79	0.48	0.00	0.44
Avail Cap(c_a), veh/h	161	1154	515	241	657	684	1122	0	932	161	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.0	18.4	18.8	24.0	13.8	13.8	22.4	0.0	19.2	26.6	0.0	22.0
Incr Delay (d2), s/veh	6.0	0.9	3.9	183.4	0.5	0.5	1.6	0.0	3.3	7.4	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.2	3.3	15.0	2.1	2.2	2.0	0.0	3.6	0.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	19.3	22.7	207.3	14.3	14.3	24.0	0.0	22.5	34.1	0.0	23.3
LnGrp LOS	C	B	C	F	B	B	C	A	C	C	A	C
Approach Vol, veh/h		937			879			678			126	
Approach Delay, s/veh		20.9			85.9			23.3			25.2	
Approach LOS		C			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	18.7	12.0	18.8	12.7	12.0	6.8	23.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.7	12.4	9.5	11.5	7.3	5.0	3.3	8.5
Green Ext Time (p_c), s	0.0	1.8	0.0	2.8	0.9	0.4	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	43.5
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	225	255	608	623	10
Future Vol, veh/h	15	225	255	608	623	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	245	277	661	677	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1568	344	688	0	-	0
Stage 1	683	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	103	655	909	-	-	-
Stage 1	466	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	655	909	-	-	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	366	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	3.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	909	-	435	-	-
HCM Lane V/C Ratio	0.305	-	0.6	-	-
HCM Control Delay (s)	10.7	-	24.9	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.3	-	3.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	793	0	0	908	435	120	0	296	0	0	0
Future Volume (veh/h)	117	793	0	0	908	435	120	0	296	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	127	862	0	0	987	473	130	0	322			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	165	2091	0	0	1479	646	451	0	396			
Arrive On Green	0.09	0.59	0.00	0.00	0.42	0.42	0.25	0.00	0.25			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1561			
Grp Volume(v), veh/h	127	862	0	0	987	473	130	0	322			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1561			
Q Serve(g_s), s	4.0	7.5	0.0	0.0	12.8	14.5	3.3	0.0	11.0			
Cycle Q Clear(g_c), s	4.0	7.5	0.0	0.0	12.8	14.5	3.3	0.0	11.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	165	2091	0	0	1479	646	451	0	396			
V/C Ratio(X)	0.77	0.41	0.00	0.00	0.67	0.73	0.29	0.00	0.81			
Avail Cap(c_a), veh/h	386	2996	0	0	1945	849	724	0	635			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	25.2	6.4	0.0	0.0	13.4	13.9	17.1	0.0	20.0			
Incr Delay (d2), s/veh	7.3	0.1	0.0	0.0	0.6	2.3	0.3	0.0	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			
%ile BackOfQ(50%),veh/ln	1.8	1.7	0.0	0.0	4.0	4.2	1.2	0.0	3.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	6.5	0.0	0.0	14.0	16.2	17.4	0.0	24.3			
LnGrp LOS	C	A	A	A	B	B	B	A	C			
Approach Vol, veh/h		989			1460			452				
Approach Delay, s/veh		9.8			14.7			22.3				
Approach LOS		A			B			C				

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		18.9		37.9			9.8	28.2				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		23.1		47.9			12.3	31.1				
Max Q Clear Time (g_c+I1), s		13.0		9.5			6.0	16.5				
Green Ext Time (p_c), s		1.3		6.4			0.1	7.1				

Intersection Summary			
HCM 6th Ctrl Delay			14.2
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	746	52	26	959	55	101	28	61	58	19	204
Future Volume (veh/h)	189	746	52	26	959	55	101	28	61	58	19	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	205	811	57	28	1042	60	110	30	66	63	21	222
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	206	1298	91	51	1021	59	137	37	82	70	23	248
Arrive On Green	0.12	0.39	0.39	0.03	0.30	0.30	0.15	0.15	0.15	0.21	0.21	0.21
Sat Flow, veh/h	1767	3336	234	1767	3388	195	914	249	548	334	111	1176
Grp Volume(v), veh/h	205	429	439	28	542	560	206	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1807	1767	1763	1820	1711	0	0	1621	0	0
Q Serve(g_s), s	9.4	16.0	16.0	1.3	24.5	24.5	9.5	0.0	0.0	14.9	0.0	0.0
Cycle Q Clear(g_c), s	9.4	16.0	16.0	1.3	24.5	24.5	9.5	0.0	0.0	14.9	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.11	0.53		0.32	0.21		0.73
Lane Grp Cap(c), veh/h	206	686	703	51	531	548	256	0	0	342	0	0
V/C Ratio(X)	0.99	0.62	0.62	0.55	1.02	1.02	0.80	0.00	0.00	0.89	0.00	0.00
Avail Cap(c_a), veh/h	206	686	703	111	531	548	421	0	0	359	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.9	20.0	20.0	39.0	28.4	28.4	33.4	0.0	0.0	31.2	0.0	0.0
Incr Delay (d2), s/veh	60.6	1.8	1.7	8.9	44.4	43.9	5.9	0.0	0.0	23.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	6.1	6.3	0.6	15.8	16.3	4.2	0.0	0.0	7.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.5	21.8	21.8	47.9	72.8	72.3	39.3	0.0	0.0	54.3	0.0	0.0
LnGrp LOS	F	C	C	D	F	F	D	A	A	D	A	A
Approach Vol, veh/h		1073			1130			206			306	
Approach Delay, s/veh		36.1			71.9			39.3			54.3	
Approach LOS		D			E			D			D	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.7	6.8	36.2		21.7	14.0	29.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0	5.1	28.9		18.0	9.5	24.5
Max Q Clear Time (g_c+I1), s		11.5	3.3	18.0		16.9	11.4	26.5
Green Ext Time (p_c), s		0.7	0.0	3.7		0.2	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			53.3
HCM 6th LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	660	18	10	811	86	28	29	10	33	21	74
Future Volume (veh/h)	133	660	18	10	811	86	28	29	10	33	21	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	145	717	20	11	882	93	30	32	11	36	23	80
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	168	1418	40	25	1039	110	88	94	32	56	36	125
Arrive On Green	0.09	0.40	0.40	0.01	0.32	0.32	0.12	0.12	0.12	0.13	0.13	0.13
Sat Flow, veh/h	1795	3558	99	1795	3257	343	735	784	269	436	279	969
Grp Volume(v), veh/h	145	361	376	11	485	490	73	0	0	139	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1866	1795	1791	1810	1788	0	0	1684	0	0
Q Serve(g_s), s	4.2	8.1	8.1	0.3	13.5	13.5	2.0	0.0	0.0	4.2	0.0	0.0
Cycle Q Clear(g_c), s	4.2	8.1	8.1	0.3	13.5	13.5	2.0	0.0	0.0	4.2	0.0	0.0
Prop In Lane	1.00		0.05	1.00		0.19	0.41		0.15	0.26		0.58
Lane Grp Cap(c), veh/h	168	714	744	25	571	577	214	0	0	218	0	0
V/C Ratio(X)	0.86	0.51	0.51	0.43	0.85	0.85	0.34	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	168	714	744	168	605	611	604	0	0	569	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.8	12.1	12.1	26.1	16.9	16.9	21.5	0.0	0.0	22.0	0.0	0.0
Incr Delay (d2), s/veh	33.6	0.6	0.6	11.3	10.6	10.5	0.9	0.0	0.0	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.5	2.6	0.2	6.0	6.1	0.8	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.4	12.6	12.6	37.4	27.5	27.4	22.4	0.0	0.0	25.1	0.0	0.0
LnGrp LOS	E	B	B	D	C	C	C	A	A	C	A	A
Approach Vol, veh/h		882			986			73			139	
Approach Delay, s/veh		20.0			27.6			22.4			25.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		10.9	5.3	25.7		11.4	9.5	21.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	18.0		18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		4.0	2.3	10.1		6.2	6.2	15.5				
Green Ext Time (p_c), s		0.2	0.0	2.5		0.5	0.0	1.4				

Intersection Summary			
HCM 6th Ctrl Delay			24.0
HCM 6th LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	236	98	156	312	76	87	729	129	76	591	446
Future Volume (veh/h)	375	236	98	156	312	76	87	729	129	76	591	446
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	408	257	107	170	339	83	95	792	140	83	642	485
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	0	2	0	0
Cap, veh/h	560	619	250	146	493	119	123	952	168	110	1098	735
Arrive On Green	0.16	0.25	0.25	0.08	0.17	0.17	0.07	0.31	0.31	0.06	0.30	0.30
Sat Flow, veh/h	3510	2459	993	1781	2838	686	1810	3066	542	1781	3610	1572
Grp Volume(v), veh/h	408	184	180	170	211	211	95	466	466	83	642	485
Grp Sat Flow(s),veh/h/ln	1755	1777	1675	1781	1777	1747	1810	1805	1802	1781	1805	1572
Q Serve(g_s), s	6.8	5.3	5.5	5.0	6.8	7.0	3.2	14.7	14.7	2.8	9.2	14.6
Cycle Q Clear(g_c), s	6.8	5.3	5.5	5.0	6.8	7.0	3.2	14.7	14.7	2.8	9.2	14.6
Prop In Lane	1.00		0.59	1.00		0.39	1.00		0.30	1.00		1.00
Lane Grp Cap(c), veh/h	560	447	421	146	309	304	123	560	560	110	1098	735
V/C Ratio(X)	0.73	0.41	0.43	1.17	0.68	0.70	0.77	0.83	0.83	0.75	0.58	0.66
Avail Cap(c_a), veh/h	1005	886	836	146	523	514	222	635	634	146	1122	745
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	24.4	19.1	19.2	28.1	23.7	23.7	28.0	19.6	19.6	28.2	18.0	12.7
Incr Delay (d2), s/veh	1.8	0.6	0.7	126.5	2.6	2.9	9.7	8.4	8.4	14.4	0.8	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	2.8	2.1	2.1	7.1	2.9	2.9	1.6	6.4	6.4	1.5	3.3	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	19.7	19.9	154.6	26.3	26.6	37.8	28.0	28.0	42.6	18.8	14.8
LnGrp LOS	C	B	B	F	C	C	D	C	C	D	B	B
Approach Vol, veh/h		772			592			1027			1210	
Approach Delay, s/veh		23.2			63.3			28.9			18.8	
Approach LOS		C			E			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	23.5	9.5	19.9	8.7	23.1	14.3	15.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	21.5	5.0	30.5	7.5	19.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.8	16.7	7.0	7.5	5.2	16.6	8.8	9.0
Green Ext Time (p_c), s	0.0	2.3	0.0	2.2	0.0	1.4	1.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	1048	968	4
Future Vol, veh/h	30	15	5	1048	968	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	5	1139	1052	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1634	528	1056	0	-	0
Stage 1	1054	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	92	495	655	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	495	655	-	-	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	22.1		0.1		0
HCM LOS	C				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	655	-	259	-	-
HCM Lane V/C Ratio	0.008	-	0.189	-	-
HCM Control Delay (s)	10.5	-	22.1	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	52	15	1010	978	10
Future Vol, veh/h	44	52	15	1010	978	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	57	16	1098	1063	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1644	1063	1074	0	-	0
Stage 1	1063	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	100	270	647	-	-	-
Stage 1	331	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	98	270	647	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	523	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.8	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	647	-	247	-	-
HCM Lane V/C Ratio	0.025	-	0.422	-	-
HCM Control Delay (s)	10.7	-	29.8	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	140	127	106	220	19	24	764	41	75	761	196
Future Volume (veh/h)	238	140	127	106	220	19	24	764	41	75	761	196
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	259	152	138	115	239	21	26	830	45	82	827	213
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	159	197	179	147	358	31	53	1070	58	115	1233	550
Arrive On Green	0.09	0.22	0.22	0.08	0.21	0.21	0.03	0.31	0.31	0.06	0.35	0.35
Sat Flow, veh/h	1781	903	820	1781	1694	149	1781	3428	186	1781	3554	1585
Grp Volume(v), veh/h	259	0	290	115	0	260	26	430	445	82	827	213
Grp Sat Flow(s),veh/h/ln	1781	0	1723	1781	0	1843	1781	1777	1837	1781	1777	1585
Q Serve(g_s), s	5.0	0.0	8.8	3.5	0.0	7.2	0.8	12.3	12.3	2.5	11.1	5.7
Cycle Q Clear(g_c), s	5.0	0.0	8.8	3.5	0.0	7.2	0.8	12.3	12.3	2.5	11.1	5.7
Prop In Lane	1.00		0.48	1.00		0.08	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	159	0	377	147	0	390	53	555	573	115	1233	550
V/C Ratio(X)	1.62	0.00	0.77	0.78	0.00	0.67	0.49	0.78	0.78	0.71	0.67	0.39
Avail Cap(c_a), veh/h	159	0	694	159	0	742	207	716	740	207	1431	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	20.5	25.1	0.0	20.2	26.7	17.4	17.4	25.6	15.5	13.8
Incr Delay (d2), s/veh	307.8	0.0	3.3	20.5	0.0	2.0	6.9	4.0	3.9	8.0	1.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	0.0	3.6	2.1	0.0	2.7	0.4	4.7	4.8	1.2	3.7	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	333.2	0.0	23.9	45.7	0.0	22.2	33.6	21.5	21.3	33.6	16.5	14.2
LnGrp LOS	F	A	C	D	A	C	C	C	C	C	B	B
Approach Vol, veh/h		549			375			901			1122	
Approach Delay, s/veh		169.8			29.4			21.8			17.3	
Approach LOS		F			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	21.9	9.1	16.7	6.2	23.9	9.5	16.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	22.5	5.0	22.5	6.5	22.5	5.0	22.5				
Max Q Clear Time (g_c+I1), s	4.5	14.3	5.5	10.8	2.8	13.1	7.0	9.2				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.3	0.0	4.1	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			48.6									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	529	110	327	487	0	0	0	0	148	258	58
Future Volume (veh/h)	0	529	110	327	487	0	0	0	0	148	258	58
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	575	120	355	529	0				161	280	63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	919	410	745	2053	0				345	560	124
Arrive On Green	0.00	0.26	0.26	0.22	0.58	0.00				0.20	0.20	0.20
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2869	635
Grp Volume(v), veh/h	0	575	120	355	529	0				161	170	173
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1741
Q Serve(g_s), s	0.0	5.5	2.3	3.5	2.8	0.0				3.1	3.3	3.4
Cycle Q Clear(g_c), s	0.0	5.5	2.3	3.5	2.8	0.0				3.1	3.3	3.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.36
Lane Grp Cap(c), veh/h	0	919	410	745	2053	0				345	344	340
V/C Ratio(X)	0.00	0.63	0.29	0.48	0.26	0.00				0.47	0.49	0.51
Avail Cap(c_a), veh/h	0	2121	946	807	3320	0				1780	1775	1753
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	11.3	13.1	3.9	0.0				13.6	13.7	13.7
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.5	0.0	0.0				0.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.6	1.1	0.4	0.0				0.9	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.8	11.5	13.5	3.9	0.0				14.0	14.1	14.2
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		695			884						504	
Approach Delay, s/veh		12.5			7.8						14.1	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.3	14.0		12.0		26.3
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0
Max Q Clear Time (g_c+I1), s	5.5	7.5		5.4		4.8
Green Ext Time (p_c), s	0.4	2.5		1.3		2.4

Intersection Summary	
HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	436	0	0	653	54	161	311	360	0	0	0
Future Volume (veh/h)	241	436	0	0	653	54	161	311	360	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	262	474	0	0	710	59	175	338	391			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	448	1715	0	0	945	422	578	607	515			
Arrive On Green	0.13	0.48	0.00	0.00	0.27	0.27	0.32	0.32	0.32			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	262	474	0	0	710	59	175	338	391			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	3.8	4.2	0.0	0.0	9.7	1.5	3.9	7.9	11.7			
Cycle Q Clear(g_c), s	3.8	4.2	0.0	0.0	9.7	1.5	3.9	7.9	11.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	448	1715	0	0	945	422	578	607	515			
V/C Ratio(X)	0.59	0.28	0.00	0.00	0.75	0.14	0.30	0.56	0.76			
Avail Cap(c_a), veh/h	588	2218	0	0	1411	629	1213	1273	1079			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	21.7	8.2	0.0	0.0	17.8	14.8	13.4	14.7	16.0			
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.5	0.1	0.1	0.3	0.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	1.3	0.0	0.0	3.5	0.5	1.4	3.0	3.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	8.2	0.0	0.0	18.3	14.9	13.5	15.0	16.9			
LnGrp LOS	C	A	A	A	B	B	B	B	B			
Approach Vol, veh/h		736			769			904				
Approach Delay, s/veh		13.2			18.0			15.5				
Approach LOS		B			B			B				

Timer - Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		30.6			11.5	19.2		22.3
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0
Max Q Clear Time (g_c+I1), s		6.2			5.8	11.7		13.7
Green Ext Time (p_c), s		2.2			0.2	2.4		3.5

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	615	72	530	625	0	40	0	126	284	194	217
Future Volume (veh/h)	0	615	72	530	625	0	40	0	126	284	194	217
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	668	78	576	679	0	43	0	137	309	211	236
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	969	432	458	1650	0	52	0	166	400	399	356
Arrive On Green	0.00	0.27	0.27	0.13	0.46	0.00	0.13	0.00	0.13	0.22	0.22	0.22
Sat Flow, veh/h	0	3647	1585	3456	3647	0	389	0	1239	1781	1777	1585
Grp Volume(v), veh/h	0	668	78	576	679	0	180	0	0	309	211	236
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1628	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	11.4	2.6	9.0	8.6	0.0	7.3	0.0	0.0	11.0	7.1	9.2
Cycle Q Clear(g_c), s	0.0	11.4	2.6	9.0	8.6	0.0	7.3	0.0	0.0	11.0	7.1	9.2
Prop In Lane	0.00		1.00	1.00		0.00	0.24		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	0	969	432	458	1650	0	218	0	0	400	399	356
V/C Ratio(X)	0.00	0.69	0.18	1.26	0.41	0.00	0.83	0.00	0.00	0.77	0.53	0.66
Avail Cap(c_a), veh/h	0	1205	537	458	1886	0	264	0	0	866	864	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	22.1	18.9	29.4	12.0	0.0	28.6	0.0	0.0	24.7	23.1	24.0
Incr Delay (d2), s/veh	0.0	2.1	0.4	132.2	0.2	0.0	13.8	0.0	0.0	1.2	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.7	0.9	12.0	3.1	0.0	3.5	0.0	0.0	4.5	2.8	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.2	19.3	161.6	12.2	0.0	42.4	0.0	0.0	25.9	23.5	24.7
LnGrp LOS	A	C	B	F	B	A	D	A	A	C	C	C
Approach Vol, veh/h		746			1255			180			756	
Approach Delay, s/veh		23.7			80.8			42.4			24.9	
Approach LOS		C			F			D			C	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.0	22.5		19.2		35.5		13.1				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0				
Max Q Clear Time (g_c+I1), s	11.0	13.4		13.0		10.6		9.3				
Green Ext Time (p_c), s	0.0	5.1		2.2		5.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		49.5
HCM 6th LOS		D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	613	0	0	768	161	387	259	56	0	0	0
Future Volume (veh/h)	412	613	0	0	768	161	387	259	56	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	448	666	0	0	835	175	255	515	61			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	843	2023	0	0	791	348	363	669	79			
Arrive On Green	0.24	0.57	0.00	0.00	0.22	0.22	0.20	0.20	0.20			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3283	388			
Grp Volume(v), veh/h	448	666	0	0	835	175	255	293	283			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1801			
Q Serve(g_s), s	5.1	4.5	0.0	0.0	10.0	4.4	6.0	6.6	6.7			
Cycle Q Clear(g_c), s	5.1	4.5	0.0	0.0	10.0	4.4	6.0	6.6	6.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.22			
Lane Grp Cap(c), veh/h	843	2023	0	0	791	348	363	381	367			
V/C Ratio(X)	0.53	0.33	0.00	0.00	1.06	0.50	0.70	0.77	0.77			
Avail Cap(c_a), veh/h	1385	2023	0	0	791	348	397	416	401			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	14.7	5.1	0.0	0.0	17.5	15.3	16.6	16.9	16.9			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	47.5	0.4	3.9	6.6	7.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.7	1.0	0.0	0.0	8.7	1.4	2.5	3.2	3.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	5.2	0.0	0.0	65.0	15.7	20.5	23.5	24.1			
LnGrp LOS	B	A	A	A	F	B	C	C	C			
Approach Vol, veh/h		1114			1010			831				
Approach Delay, s/veh		9.1			56.5			22.8				
Approach LOS		A			E			C				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.2				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.5			7.1	12.0		8.7				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			29.1
HCM 6th LOS			C

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	166	5	700	96
Future Volume (veh/h)	0	0	166	5	700	96
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			180	5	761	104
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			377	10	892	1587
Arrive On Green			0.21	0.21	0.50	0.84
Sat Flow, veh/h			1825	51	1795	1885
Grp Volume(v), veh/h			0	185	761	104
Grp Sat Flow(s),veh/h/ln			0	1876	1795	1885
Q Serve(g_s), s			0.0	2.2	9.4	0.2
Cycle Q Clear(g_c), s			0.0	2.2	9.4	0.2
Prop In Lane				0.03	1.00	
Lane Grp Cap(c), veh/h			0	387	892	1587
V/C Ratio(X)			0.00	0.48	0.85	0.07
Avail Cap(c_a), veh/h			0	3343	2275	3359
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	8.8	5.6	0.3
Incr Delay (d2), s/veh			0.0	0.3	0.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.6	0.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	9.2	6.5	0.3
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			185			865
Approach Delay, s/veh			9.2			5.7
Approach LOS			A			A

Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	16.0	9.2				25.3
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	11.4	4.2				2.2
Green Ext Time (p_c), s	1.3	0.7				0.3

Intersection Summary	
HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	756	113	225	453	16	204	67	207	20	56	40
Future Volume (veh/h)	38	756	113	225	453	16	204	67	207	20	56	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	822	123	245	492	17	222	73	225	22	61	43
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	75	1022	456	237	1327	46	368	94	290	46	156	110
Arrive On Green	0.04	0.29	0.29	0.13	0.38	0.38	0.11	0.23	0.23	0.03	0.15	0.15
Sat Flow, veh/h	1781	3554	1585	1781	3505	121	3456	403	1243	1781	1021	720
Grp Volume(v), veh/h	41	822	123	245	249	260	222	0	298	22	0	104
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1849	1728	0	1647	1781	0	1741
Q Serve(g_s), s	1.3	12.1	3.4	7.5	5.7	5.7	3.5	0.0	9.5	0.7	0.0	3.0
Cycle Q Clear(g_c), s	1.3	12.1	3.4	7.5	5.7	5.7	3.5	0.0	9.5	0.7	0.0	3.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.76	1.00		0.41
Lane Grp Cap(c), veh/h	75	1022	456	237	673	700	368	0	385	46	0	266
V/C Ratio(X)	0.55	0.80	0.27	1.03	0.37	0.37	0.60	0.00	0.77	0.48	0.00	0.39
Avail Cap(c_a), veh/h	158	1136	507	237	673	700	1105	0	921	158	0	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.4	18.6	15.5	24.4	12.6	12.6	24.0	0.0	20.2	27.0	0.0	21.5
Incr Delay (d2), s/veh	6.1	3.9	0.3	67.1	0.3	0.3	1.6	0.0	3.4	7.5	0.0	0.9
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	0.6	5.0	1.0	7.2	1.8	1.9	1.3	0.0	3.4	0.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	22.5	15.8	91.5	13.0	13.0	25.6	0.0	23.6	34.5	0.0	22.4
LnGrp LOS	C	C	B	F	B	B	C	A	C	C	A	C
Approach Vol, veh/h		986			754			520			126	
Approach Delay, s/veh		22.1			38.5			24.4			24.5	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	17.6	12.0	20.7	10.5	13.1	6.9	25.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	31.5	7.5	18.0	18.0	18.5	5.0	20.5
Max Q Clear Time (g_c+I1), s	2.7	11.5	9.5	14.1	5.5	5.0	3.3	7.7
Green Ext Time (p_c), s	0.0	1.6	0.0	2.1	0.5	0.4	0.0	2.2

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

Intersection						
Int Delay, s/veh	2.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	110	140	463	373	20
Future Vol, veh/h	15	110	140	463	373	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	16	120	152	503	405	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	972	214	427	0	-	0
Stage 1	416	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	252	794	1136	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	218	794	1136	-	-	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1136	-	603	-	-
HCM Lane V/C Ratio	0.134	-	0.225	-	-
HCM Control Delay (s)	8.7	-	12.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	793	0	0	908	365	120	0	311	0	0	0
Future Volume (veh/h)	147	793	0	0	908	365	120	0	311	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	160	862	0	0	987	397	130	0	338			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	186	1938	0	0	1234	539	476	0	417			
Arrive On Green	0.10	0.55	0.00	0.00	0.35	0.35	0.27	0.00	0.27			
Sat Flow, veh/h	1781	3647	0	0	3647	1552	1781	0	1562			
Grp Volume(v), veh/h	160	862	0	0	987	397	130	0	338			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1552	1781	0	1562			
Q Serve(g_s), s	4.2	7.0	0.0	0.0	12.0	10.8	2.8	0.0	9.7			
Cycle Q Clear(g_c), s	4.2	7.0	0.0	0.0	12.0	10.8	2.8	0.0	9.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	186	1938	0	0	1234	539	476	0	417			
V/C Ratio(X)	0.86	0.44	0.00	0.00	0.80	0.74	0.27	0.00	0.81			
Avail Cap(c_a), veh/h	186	2039	0	0	1334	583	669	0	586			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.1	6.5	0.0	0.0	14.1	13.7	13.9	0.0	16.4			
Incr Delay (d2), s/veh	31.3	0.2	0.0	0.0	3.3	4.5	0.3	0.0	5.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.1	1.4	0.0	0.0	4.1	3.4	0.9	0.0	3.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	6.7	0.0	0.0	17.5	18.2	14.2	0.0	22.3			
LnGrp LOS	D	A	A	A	B	B	B	A	C			
Approach Vol, veh/h		1022			1384			468				
Approach Delay, s/veh		13.9			17.7			20.0				
Approach LOS		B			B			C				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		17.3		30.6			9.5	21.1				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		18.0		27.5			5.0	18.0				
Max Q Clear Time (g_c+I1), s		11.7		9.0			6.2	14.0				
Green Ext Time (p_c), s		1.1		5.3			0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			16.7									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	726	87	21	819	25	61	23	16	23	19	184
Future Volume (veh/h)	224	726	87	21	819	25	61	23	16	23	19	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	243	789	95	23	890	27	66	25	17	25	21	200
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	287	1367	165	46	1035	31	100	38	26	31	26	245
Arrive On Green	0.16	0.43	0.43	0.03	0.30	0.30	0.09	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	1767	3160	380	1767	3493	106	1071	406	276	163	137	1305
Grp Volume(v), veh/h	243	440	444	23	449	468	108	0	0	246	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1778	1767	1763	1836	1752	0	0	1605	0	0
Q Serve(g_s), s	9.3	13.1	13.1	0.9	16.7	16.7	4.1	0.0	0.0	10.2	0.0	0.0
Cycle Q Clear(g_c), s	9.3	13.1	13.1	0.9	16.7	16.7	4.1	0.0	0.0	10.2	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.06	0.61		0.16	0.10		0.81
Lane Grp Cap(c), veh/h	287	763	769	46	522	544	164	0	0	302	0	0
V/C Ratio(X)	0.85	0.58	0.58	0.50	0.86	0.86	0.66	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	319	763	769	130	572	596	480	0	0	417	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.2	14.9	14.9	33.3	23.0	23.0	30.3	0.0	0.0	27.0	0.0	0.0
Incr Delay (d2), s/veh	17.5	1.1	1.1	8.4	11.8	11.4	4.4	0.0	0.0	8.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	4.5	4.6	0.5	7.7	8.0	1.9	0.0	0.0	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	15.9	15.9	41.7	34.8	34.4	34.7	0.0	0.0	35.5	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C	A	A	D	A	A
Approach Vol, veh/h		1127			940			108			246	
Approach Delay, s/veh		22.4			34.8			34.7			35.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		11.0	6.3	34.5		17.5	15.7	25.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		19.0	5.1	29.9		18.0	12.5	22.5				
Max Q Clear Time (g_c+I1), s		6.1	2.9	15.1		12.2	11.3	18.7				
Green Ext Time (p_c), s		0.4	0.0	4.5		0.7	0.1	1.9				

Intersection Summary		
HCM 6th Ctrl Delay		29.1
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	435	53	5	576	36	38	24	5	23	31	34
Future Volume (veh/h)	83	435	53	5	576	36	38	24	5	23	31	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	90	473	58	5	626	39	41	26	5	25	34	37
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	116	889	108	12	749	47	246	156	30	108	147	160
Arrive On Green	0.06	0.28	0.28	0.01	0.22	0.22	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1795	3206	391	1795	3415	212	1030	653	126	453	616	671
Grp Volume(v), veh/h	90	263	268	5	328	337	72	0	0	96	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1806	1795	1791	1837	1808	0	0	1740	0	0
Q Serve(g_s), s	3.7	9.4	9.5	0.2	13.2	13.2	2.4	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	3.7	9.4	9.5	0.2	13.2	13.2	2.4	0.0	0.0	3.4	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.12	0.57		0.07	0.26		0.39
Lane Grp Cap(c), veh/h	116	496	501	12	393	403	432	0	0	415	0	0
V/C Ratio(X)	0.78	0.53	0.53	0.42	0.83	0.84	0.17	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	119	496	501	119	428	439	432	0	0	415	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.7	23.1	23.1	37.3	28.1	28.1	22.8	0.0	0.0	23.1	0.0	0.0
Incr Delay (d2), s/veh	26.7	1.1	1.1	22.1	12.5	12.5	0.8	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.7	3.8	0.2	6.5	6.7	1.1	0.0	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.4	24.2	24.2	59.4	40.7	40.6	23.6	0.0	0.0	24.4	0.0	0.0
LnGrp LOS	E	C	C	E	D	D	C	A	A	C	A	A
Approach Vol, veh/h		621			670			72			96	
Approach Delay, s/veh		29.6			40.8			23.6			24.4	
Approach LOS		C			D			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		22.5	5.0	25.4		22.5	9.4	21.0				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	18.0		18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		4.4	2.2	11.5		5.4	5.7	15.2				
Green Ext Time (p_c), s		0.2	0.0	1.6		0.3	0.0	1.0				

Intersection Summary		
HCM 6th Ctrl Delay		34.1
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	236	73	156	312	76	72	609	129	76	551	296
Future Volume (veh/h)	215	236	73	156	312	76	72	609	129	76	551	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1870	1870	1870	1870	1900	1900	1900	1870	1900	1900
Adj Flow Rate, veh/h	234	257	79	170	339	83	78	662	140	83	599	322
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2	0	0	0	2	0	0
Cap, veh/h	383	533	160	167	521	126	116	898	190	118	1100	479
Arrive On Green	0.11	0.20	0.20	0.09	0.18	0.18	0.06	0.30	0.30	0.07	0.30	0.30
Sat Flow, veh/h	3510	2684	805	1781	2838	686	1810	2966	626	1781	3610	1572
Grp Volume(v), veh/h	234	168	168	170	211	211	78	403	399	83	599	322
Grp Sat Flow(s),veh/h/ln	1755	1777	1712	1781	1777	1747	1810	1805	1787	1781	1805	1572
Q Serve(g_s), s	3.4	4.5	4.6	5.0	5.8	6.0	2.2	10.6	10.7	2.4	7.4	9.5
Cycle Q Clear(g_c), s	3.4	4.5	4.6	5.0	5.8	6.0	2.2	10.6	10.7	2.4	7.4	9.5
Prop In Lane	1.00		0.47	1.00		0.39	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	383	353	340	167	326	320	116	546	541	118	1100	479
V/C Ratio(X)	0.61	0.48	0.49	1.02	0.65	0.66	0.67	0.74	0.74	0.70	0.54	0.67
Avail Cap(c_a), veh/h	1155	1019	982	167	601	591	255	730	723	167	1290	562
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	22.6	18.9	18.9	24.1	20.1	20.2	24.3	16.6	16.7	24.3	15.4	16.2
Incr Delay (d2), s/veh	1.6	1.0	1.1	73.5	2.1	2.3	6.5	2.7	2.7	7.3	0.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.8	1.8	5.4	2.4	2.4	1.0	3.9	3.9	1.1	2.5	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	19.9	20.1	97.6	22.3	22.5	30.8	19.3	19.4	31.6	15.8	18.7
LnGrp LOS	C	B	C	F	C	C	C	B	B	C	B	B
Approach Vol, veh/h		570			592			880			1004	
Approach Delay, s/veh		21.7			44.0			20.4			18.0	
Approach LOS		C			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	20.6	9.5	15.1	7.9	20.7	10.3	14.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	21.5	5.0	30.5	7.5	19.0	17.5	18.0
Max Q Clear Time (g_c+I1), s	4.4	12.7	7.0	6.6	4.2	11.5	5.4	8.0
Green Ext Time (p_c), s	0.0	3.0	0.0	2.0	0.0	2.9	0.6	1.8

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

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	10	963	883	4
Future Vol, veh/h	10	15	10	963	883	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	11	1047	960	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1508	482	964	0	-	0
Stage 1	962	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	111	530	710	-	-	-
Stage 1	331	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	530	710	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	326	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	710	-	350	-	-
HCM Lane V/C Ratio	0.015	-	0.078	-	-
HCM Control Delay (s)	10.1	-	16.2	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	57	10	955	898	10
Future Vol, veh/h	24	57	10	955	898	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	90	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	62	11	1038	976	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1517	976	987	0	-	0
Stage 1	976	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	120	304	698	-	-	-
Stage 1	364	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	118	304	698	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	358	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	698	-	285	-	-
HCM Lane V/C Ratio	0.016	-	0.309	-	-
HCM Control Delay (s)	10.2	-	23.2	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	145	52	86	255	24	49	749	51	75	681	196
Future Volume (veh/h)	193	145	52	86	255	24	49	749	51	75	681	196
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	210	158	57	93	277	26	53	814	55	82	740	213
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	160	306	110	122	357	33	89	1051	71	115	1157	516
Arrive On Green	0.09	0.23	0.23	0.07	0.21	0.21	0.05	0.31	0.31	0.06	0.33	0.33
Sat Flow, veh/h	1781	1312	473	1781	1684	158	1781	3378	228	1781	3554	1585
Grp Volume(v), veh/h	210	0	215	93	0	303	53	428	441	82	740	213
Grp Sat Flow(s),veh/h/ln	1781	0	1785	1781	0	1842	1781	1777	1829	1781	1777	1585
Q Serve(g_s), s	5.0	0.0	5.9	2.9	0.0	8.7	1.6	12.2	12.2	2.5	9.9	5.8
Cycle Q Clear(g_c), s	5.0	0.0	5.9	2.9	0.0	8.7	1.6	12.2	12.2	2.5	9.9	5.8
Prop In Lane	1.00		0.27	1.00		0.09	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	160	0	416	122	0	390	89	553	569	115	1157	516
V/C Ratio(X)	1.32	0.00	0.52	0.76	0.00	0.78	0.59	0.77	0.77	0.71	0.64	0.41
Avail Cap(c_a), veh/h	160	0	720	160	0	743	208	717	738	208	1433	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	18.6	25.5	0.0	20.7	25.9	17.4	17.4	25.6	16.0	14.7
Incr Delay (d2), s/veh	179.2	0.0	1.0	14.5	0.0	3.3	6.1	4.0	3.9	8.0	0.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.0	2.3	1.5	0.0	3.3	0.8	4.6	4.7	1.2	3.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	204.6	0.0	19.6	40.0	0.0	24.1	32.1	21.4	21.3	33.6	16.7	15.2
LnGrp LOS	F	A	B	D	A	C	C	C	C	C	B	B
Approach Vol, veh/h		425			396			922			1035	
Approach Delay, s/veh		111.0			27.8			22.0			17.7	
Approach LOS		F			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	21.9	8.3	17.5	7.3	22.7	9.5	16.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	22.5	5.0	22.5	6.5	22.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	4.5	14.2	4.9	7.9	3.6	11.9	7.0	10.7
Green Ext Time (p_c), s	0.0	3.2	0.0	1.0	0.0	3.9	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	34.8
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	474	65	326	467	0	0	0	0	148	258	108
Future Volume (veh/h)	0	474	65	326	467	0	0	0	0	148	258	108
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	515	71	354	508	0				161	280	117
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	849	379	763	2012	0				355	491	200
Arrive On Green	0.00	0.24	0.24	0.22	0.57	0.00				0.20	0.20	0.20
Sat Flow, veh/h	0	3618	1572	3428	3618	0				1767	2443	996
Grp Volume(v), veh/h	0	515	71	354	508	0				161	200	197
Grp Sat Flow(s),veh/h/ln	0	1763	1572	1714	1763	0				1767	1763	1676
Q Serve(g_s), s	0.0	4.8	1.3	3.3	2.7	0.0				3.0	3.8	4.0
Cycle Q Clear(g_c), s	0.0	4.8	1.3	3.3	2.7	0.0				3.0	3.8	4.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.59
Lane Grp Cap(c), veh/h	0	849	379	763	2012	0				355	354	337
V/C Ratio(X)	0.00	0.61	0.19	0.46	0.25	0.00				0.45	0.57	0.58
Avail Cap(c_a), veh/h	0	2179	972	829	3410	0				1828	1823	1734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	11.2	12.5	4.0	0.0				13.1	13.4	13.5
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.4	0.0	0.0				0.3	0.5	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
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.4	1.0	0.4	0.0				0.9	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.8	11.3	13.0	4.0	0.0				13.4	13.9	14.1
LnGrp LOS	A	B	B	B	A	A				B	B	B
Approach Vol, veh/h		586			862						558	
Approach Delay, s/veh		12.6			7.7						13.8	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.3	13.0		12.0		25.2
Change Period (Y+Rc), s	4.0	4.0		4.5		4.0
Max Green Setting (Gmax), s	9.0	23.0		38.5		36.0
Max Q Clear Time (g_c+I1), s	5.3	6.8		6.0		4.7
Green Ext Time (p_c), s	0.5	2.1		1.5		2.3

Intersection Summary			
HCM 6th Ctrl Delay			10.9
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	431	0	0	647	55	146	336	360	0	0	0
Future Volume (veh/h)	191	431	0	0	647	55	146	336	360	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	208	468	0	0	703	60	159	365	391			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	438	1702	0	0	940	419	582	611	518			
Arrive On Green	0.13	0.48	0.00	0.00	0.26	0.26	0.33	0.33	0.33			
Sat Flow, veh/h	3456	3647	0	0	3647	1585	1781	1870	1585			
Grp Volume(v), veh/h	208	468	0	0	703	60	159	365	391			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1585	1781	1870	1585			
Q Serve(g_s), s	2.9	4.2	0.0	0.0	9.5	1.5	3.5	8.6	11.6			
Cycle Q Clear(g_c), s	2.9	4.2	0.0	0.0	9.5	1.5	3.5	8.6	11.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	438	1702	0	0	940	419	582	611	518			
V/C Ratio(X)	0.47	0.27	0.00	0.00	0.75	0.14	0.27	0.60	0.75			
Avail Cap(c_a), veh/h	592	2232	0	0	1421	634	1221	1282	1086			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	21.3	8.2	0.0	0.0	17.7	14.8	13.1	14.8	15.8			
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.5	0.1	0.1	0.3	0.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.1	1.3	0.0	0.0	3.4	0.5	1.2	3.2	3.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	8.2	0.0	0.0	18.2	14.8	13.2	15.1	16.7			
LnGrp LOS	C	A	A	A	B	B	B	B	B			
Approach Vol, veh/h		676			763			915				
Approach Delay, s/veh		12.4			17.9			15.4				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.3			11.3	19.0		22.3				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		33.0			9.0	21.0		36.0				
Max Q Clear Time (g_c+I1), s		6.2			4.9	11.5		13.6				
Green Ext Time (p_c), s		2.2			0.1	2.4		3.6				

Intersection Summary			
HCM 6th Ctrl Delay			15.4
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	620	92	470	645	0	75	0	131	289	148	212
Future Volume (veh/h)	0	620	92	470	645	0	75	0	131	289	148	212
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	674	100	511	701	0	82	0	142	314	161	230
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	955	426	439	1608	0	94	0	163	396	395	353
Arrive On Green	0.00	0.27	0.27	0.13	0.45	0.00	0.16	0.00	0.16	0.22	0.22	0.22
Sat Flow, veh/h	0	3647	1585	3456	3647	0	605	0	1047	1781	1777	1585
Grp Volume(v), veh/h	0	674	100	511	701	0	224	0	0	314	161	230
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0	1652	0	0	1781	1777	1585
Q Serve(g_s), s	0.0	12.1	3.5	9.0	9.5	0.0	9.4	0.0	0.0	11.8	5.5	9.3
Cycle Q Clear(g_c), s	0.0	12.1	3.5	9.0	9.5	0.0	9.4	0.0	0.0	11.8	5.5	9.3
Prop In Lane	0.00		1.00	1.00		0.00	0.37		0.63	1.00		1.00
Lane Grp Cap(c), veh/h	0	955	426	439	1608	0	257	0	0	396	395	353
V/C Ratio(X)	0.00	0.71	0.23	1.16	0.44	0.00	0.87	0.00	0.00	0.79	0.41	0.65
Avail Cap(c_a), veh/h	0	1155	515	439	1808	0	257	0	0	831	829	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	23.3	20.2	30.9	13.2	0.0	29.2	0.0	0.0	26.0	23.5	25.0
Incr Delay (d2), s/veh	0.0	2.4	0.6	95.6	0.2	0.0	25.4	0.0	0.0	1.4	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.1	1.3	9.4	3.5	0.0	5.3	0.0	0.0	4.9	2.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	25.8	20.8	126.5	13.4	0.0	54.6	0.0	0.0	27.3	23.8	25.8
LnGrp LOS	A	C	C	F	B	A	D	A	A	C	C	C
Approach Vol, veh/h		774			1212			224			705	
Approach Delay, s/veh		25.1			61.1			54.6			26.0	
Approach LOS		C			E			D			C	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.0	23.0		19.7		36.0		15.0				
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s	9.0	23.0		33.0		36.0		11.0				
Max Q Clear Time (g_c+I1), s	11.0	14.1		13.8		11.5		11.4				
Green Ext Time (p_c), s	0.0	4.9		2.0		5.2		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		42.6
HCM 6th LOS		D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	613	0	0	698	131	417	284	76	0	0	0
Future Volume (veh/h)	427	613	0	0	698	131	417	284	76	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	464	666	0	0	759	142	282	549	83			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	833	1998	0	0	781	344	380	678	102			
Arrive On Green	0.24	0.56	0.00	0.00	0.22	0.22	0.21	0.21	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	1781	3176	479			
Grp Volume(v), veh/h	464	666	0	0	759	142	282	323	309			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	1870	1784			
Q Serve(g_s), s	5.4	4.6	0.0	0.0	9.6	3.5	6.7	7.5	7.5			
Cycle Q Clear(g_c), s	5.4	4.6	0.0	0.0	9.6	3.5	6.7	7.5	7.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.27			
Lane Grp Cap(c), veh/h	833	1998	0	0	781	344	380	399	381			
V/C Ratio(X)	0.56	0.33	0.00	0.00	0.97	0.41	0.74	0.81	0.81			
Avail Cap(c_a), veh/h	1368	1998	0	0	781	344	392	411	392			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	15.1	5.4	0.0	0.0	17.6	15.2	16.7	17.0	17.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	25.1	0.3	6.2	10.2	11.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	1.1	0.0	0.0	6.1	1.1	3.0	3.9	3.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	5.4	0.0	0.0	42.7	15.5	23.0	27.2	28.1			
LnGrp LOS	B	A	A	A	D	B	C	C	C			
Approach Vol, veh/h		1130			901			914				
Approach Delay, s/veh		9.5			38.4			26.2				
Approach LOS		A			D			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		30.7			15.6	15.1		14.8				
Change Period (Y+Rc), s		5.1			4.6	5.1		5.1				
Max Green Setting (Gmax), s		10.0			18.0	10.0		10.0				
Max Q Clear Time (g_c+I1), s		6.6			7.4	11.6		9.5				
Green Ext Time (p_c), s		1.1			0.7	0.0		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			23.5									
HCM 6th LOS			C									

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	206	15	620	90
Future Volume (veh/h)	0	0	206	15	620	90
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach			No			No
Adj Sat Flow, veh/h/ln			1885	1885	1885	1885
Adj Flow Rate, veh/h			224	16	674	98
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			1	1	1	1
Cap, veh/h			395	28	814	1564
Arrive On Green			0.23	0.23	0.45	0.83
Sat Flow, veh/h			1739	124	1795	1885
Grp Volume(v), veh/h			0	240	674	98
Grp Sat Flow(s),veh/h/ln			0	1863	1795	1885
Q Serve(g_s), s			0.0	2.7	7.7	0.2
Cycle Q Clear(g_c), s			0.0	2.7	7.7	0.2
Prop In Lane				0.07	1.00	
Lane Grp Cap(c), veh/h			0	423	814	1564
V/C Ratio(X)			0.00	0.57	0.83	0.06
Avail Cap(c_a), veh/h			0	3568	2446	3611
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			0.0	8.1	5.6	0.4
Incr Delay (d2), s/veh			0.0	0.4	0.8	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.6	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			0.0	8.5	6.5	0.4
LnGrp LOS			A	A	A	A
Approach Vol, veh/h			240			772
Approach Delay, s/veh			8.5			5.7
Approach LOS			A			A
Timer - Assigned Phs	1	2				6
Phs Duration (G+Y+Rc), s	14.2	9.3				23.5
Change Period (Y+Rc), s	3.5	4.0				* 4
Max Green Setting (Gmax), s	32.0	45.0				* 45
Max Q Clear Time (g_c+I1), s	9.7	4.7				2.2
Green Ext Time (p_c), s	1.1	0.9				0.3

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Notes

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

Arterial Level of Service: NB Carillion Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
A Street	II	45	23.6	24.5	48.1	0.22	16.2	E
Simmerhorn Rd	II	45	28.2	43.0	71.2	0.28	14.4	E
Ambrogio Way	II	45	77.6	24.5	102.1	0.97	34.2	B
Walnut Ave	II	45	26.6	23.0	49.6	0.26	18.6	D
Elk Hills Dr	II	45	31.5	17.2	48.7	0.32	23.5	C
Lake Canyon Ave	II	45	25.2	16.0	41.2	0.24	21.1	D
Lake Park Ave	II	45	26.1	20.3	46.4	0.25	19.5	D
Twin Cities Rd	II	45	9.9	32.9	42.8	0.09	7.7	F
Total	II		248.7	201.4	450.1	2.63	21.0	D

Arterial Level of Service: SB Carillion Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Lake Park Ave	II	45	9.9	29.2	39.1	0.09	8.4	F
Lake Canyon Ave	II	45	26.1	23.7	49.8	0.25	18.1	D
Elk Hills Dr	II	45	25.2	15.2	40.4	0.24	21.6	D
Walnut Ave	II	45	31.5	30.7	62.2	0.32	18.4	D
Vintage Oak Ave	II	45	26.6	41.9	68.5	0.26	13.5	E
Simmerhorn Rd	II	45	77.6	15.4	93.0	0.97	37.6	A
A Street	II	45	28.2	31.6	59.8	0.28	17.1	D
Total	II		225.1	187.7	412.8	2.41	21.0	D

Arterial Level of Service: NB Carillion Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Ambrogio Way	II	45	77.6	24.0	101.6	0.97	34.4	B
Walnut Ave	II	45	26.6	24.0	50.6	0.26	18.2	D
Elk Hills Dr	II	25	48.6	12.8	61.4	0.32	18.6	D
Lake Canyon Ave	II	30	30.7	13.7	44.4	0.24	19.6	D
Lake Park Ave	II	45	26.1	20.4	46.5	0.25	19.4	D
Twin Cities Rd	II	45	10.2	30.8	41.0	0.09	8.2	F
Total	II		219.8	125.7	345.5	2.13	22.2	C

Arterial Level of Service: SB Carillion Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Lake Park Ave	II	45	10.2	35.1	45.3	0.09	7.4	F
Lake Canyon Ave	II	30	31.8	18.3	50.1	0.25	18.0	D
Elk Hills Dr	II	45	25.2	11.8	37.0	0.24	23.5	C
Walnut Ave	II	45	31.4	31.2	62.6	0.32	18.3	D
Vintage Oak Ave	II	45	26.6	26.8	53.4	0.26	17.3	D
Simmerhorn Rd	II	41	86.2	27.8	114.0	0.97	30.7	B
Total	II		211.4	151.0	362.4	2.13	21.2	D

Appendix D
Sidra Outputs

MOVEMENT SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Existing AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: E. Stockton Blvd											
3	L2	187	3.0	0.693	17.7	LOS B	5.2	133.8	0.80	1.04	29.1
8	T1	288	3.0	0.693	12.0	LOS B	5.2	133.8	0.80	1.04	22.0
18	R2	138	3.0	0.374	13.2	LOS B	1.6	41.2	0.70	0.88	17.0
Approach		614	3.0	0.693	14.0	LOS B	5.2	133.8	0.78	1.00	24.2
East: Twin Cities Rd (104)											
1	L2	1	3.0	0.564	16.6	LOS B	5.6	143.2	0.93	0.97	19.4
6	T1	459	3.0	0.564	10.5	LOS B	5.6	143.2	0.93	0.97	31.4
16	R2	413	3.0	0.623	14.1	LOS B	6.3	161.3	0.95	1.09	19.4
Approach		873	3.0	0.623	12.2	LOS B	6.3	161.3	0.94	1.03	26.8
North: E. Stockton Blvd											
7	L2	22	3.0	0.074	13.0	LOS B	0.4	10.9	0.68	0.72	22.7
4	T1	2	3.0	0.074	6.8	LOS A	0.4	10.9	0.68	0.72	24.0
14	R2	31	3.0	0.074	7.1	LOS A	0.4	10.9	0.68	0.72	31.5
Approach		55	3.0	0.074	9.4	LOS A	0.4	10.9	0.68	0.72	28.8
West: Twin Cities Rd (104)											
5	L2	246	3.0	0.270	9.8	LOS A	2.0	50.3	0.16	0.56	31.4
2	T1	524	3.0	0.270	4.1	LOS A	2.0	51.4	0.16	0.43	33.3
12	R2	58	3.0	0.270	4.2	LOS A	2.0	51.4	0.15	0.38	33.4
Approach		828	3.0	0.270	5.8	LOS A	2.0	51.4	0.16	0.46	32.7
All Vehicles		2369	3.0	0.693	10.4	LOS B	6.3	161.3	0.62	0.82	28.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Existing PM]

New Site
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: E. Stockton Blvd													
Lane 1	195	2.0	596	0.327	100	13.2	LOS B	1.4	36.2	Full	300	0.0	0.0
Lane 2[d]	225	2.0	632	0.356	100	8.9	LOS A	1.6	41.4	Short	100	0.0	NA
Approach	420	2.0		0.356		10.9	LOS B	1.6	41.4				
East: Twin Cities Rd (104)													
Lane 1[d]	427	2.0	1177	0.363	100	5.2	LOS A	2.5	63.0	Full	300	0.0	0.0
Lane 2	228	2.0	933	0.245	100	5.9	LOS A	1.4	36.6	Short	295	0.0	NA
Approach	656	2.0		0.363		5.5	LOS A	2.5	63.0				
North: E. Stockton Blvd													
Lane 1[d]	40	2.0	845	0.047	100	7.8	LOS A	0.2	6.3	Full	500	0.0	0.0
Approach	40	2.0		0.047		7.8	LOS A	0.2	6.3				
West: Twin Cities Rd (104)													
Lane 1	543	2.0	1467	0.370	100	5.7	LOS A	2.8	71.8	Full	250	0.0	0.0
Lane 2[d]	630	2.0	1703	0.370	100	4.1	LOS A	2.9	72.4	Full	150	0.0	0.0
Approach	1174	2.0		0.370		4.8	LOS A	2.9	72.4				
Intersection	2289	2.0		0.370		6.2	LOS A	2.9	72.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Yr 2040 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: E. Stockton Blvd													
Lane 1[d]	516	3.0	811	0.636	100	12.6	LOS B	4.5	115.0	Full	300	0.0	0.0
Lane 2	332	3.0	617	0.537	100	10.8	LOS B	3.1	78.8	Short	100	0.0	NA
Approach	847	3.0		0.636		11.9	LOS B	4.5	115.0				
East: Twin Cities Rd (104)													
Lane 1	484	3.0	637	0.760	100	20.2	LOS C	10.1	257.8	Full	300	0.0	0.7
Lane 2[d]	779	3.0	844	0.923	100	31.4	LOS C	23.1	592.3	Full	300	0.0	31.6
Approach	1263	3.0		0.923		27.1	LOS C	23.1	592.3				
North: E. Stockton Blvd													
Lane 1[d]	63	3.0	740	0.085	100	9.8	LOS A	0.5	13.5	Full	500	0.0	0.0
Approach	63	3.0		0.085		9.8	LOS A	0.5	13.5				
West: Twin Cities Rd (104)													
Lane 1	541	3.0	1401	0.386	100	6.9	LOS A	3.0	76.7	Full	250	0.0	0.0
Lane 2[d]	632	3.0	1638	0.386	100	4.2	LOS A	3.0	77.8	Full	150	0.0	0.0
Approach	1174	3.0		0.386		5.5	LOS A	3.0	77.8				
Intersection	3347	3.0		0.923		15.3	LOS B	23.1	592.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [20 - Simmerhorn/SR 99 NB - Yr 2040 AM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Simmerhorn Rd													
Lane 1[d]	440	3.0	1127	0.391	100	7.2	LOS A	2.8	70.6	Full	1600	0.0	0.0
Approach	440	3.0		0.391		7.2	LOS A	2.8	70.6				
North: Simmerhorn Rd													
Lane 1[d]	288	3.0	958	0.301	100	6.9	LOS A	1.9	49.0	Full	1600	0.0	0.0
Approach	288	3.0		0.301		6.9	LOS A	1.9	49.0				
West: SR 99 NB Ramps													
Lane 1[d]	239	3.0	1082	0.221	100	5.4	LOS A	1.4	34.8	Full	1600	0.0	0.0
Approach	239	3.0		0.221		5.4	LOS A	1.4	34.8				
Intersection	967	3.0		0.391		6.7	LOS A	2.8	70.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Yr 2040 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: E. Stockton Blvd													
Lane 1	205	3.0	955	0.215	100	7.9	LOS A	1.0	25.3	Full	300	0.0	0.0
Lane 2[d]	211	3.0	1049	0.201	100	5.3	LOS A	0.9	23.7	Short	100	0.0	NA
Approach	416	3.0		0.215		6.6	LOS A	1.0	25.3				
East: Twin Cities Rd (104)													
Lane 1	126	3.0	967	0.131	100	5.7	LOS A	0.7	18.2	Full	300	0.0	0.0
Lane 2[d]	379	3.0	1351	0.280	100	4.7	LOS A	1.8	47.2	Full	300	0.0	0.0
Approach	505	3.0		0.280		5.0	LOS A	1.8	47.2				
North: E. Stockton Blvd													
Lane 1[d]	174	3.0	1193	0.146	100	5.4	LOS A	0.7	18.1	Full	500	0.0	0.0
Approach	174	3.0		0.146		5.4	LOS A	0.7	18.1				
West: Twin Cities Rd (104)													
Lane 1	227	3.0	1221	0.186	100	5.5	LOS A	1.1	27.8	Full	250	0.0	0.0
Lane 2[d]	263	3.0	1415	0.186	100	4.7	LOS A	1.1	28.4	Full	150	0.0	0.0
Approach	489	3.0		0.186		5.1	LOS A	1.1	28.4				
Intersection	1584	3.0		0.280		5.5	LOS A	1.8	47.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [20 - Simmerhorn/SR 99 NB - Yr 2040 PM]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Simmerhorn Rd													
Lane 1[d]	391	3.0	1074	0.364	100	7.1	LOS A	2.5	63.2	Full	1600	0.0	0.0
Approach	391	3.0		0.364		7.1	LOS A	2.5	63.2				
North: Simmerhorn Rd													
Lane 1[d]	239	3.0	968	0.247	100	6.2	LOS A	1.5	39.0	Full	1600	0.0	0.0
Approach	239	3.0		0.247		6.2	LOS A	1.5	39.0				
West: SR 99 NB Ramps													
Lane 1[d]	321	3.0	1105	0.290	100	6.0	LOS A	1.9	48.3	Full	1600	0.0	0.0
Approach	321	3.0		0.290		6.0	LOS A	1.9	48.3				
Intersection	951	3.0		0.364		6.5	LOS A	2.5	63.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, April 15, 2019 4:35:07 PM
Project: K:\PRJ\2423\T2423\SIDRA\20 - Simmerhorn Rd at SR 99 NB Ramps - Yr 2040.sip8

LANE SUMMARY

Site: 101 [1 AM - Carillion Blvd/Twin Cities Rd]

Network: N101 [Yr 2040 AM Peak Hour]

Site Category: -
Roundabout

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total	HV	Total	HV						Veh	Dist				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1[d]	454	2.0	454	2.0	585	0.777	100	28.3	LOS C	4.6	117.9	Full	400	0.0	0.0
Approach	454	2.0	454	2.0		0.777		28.3	LOS C	4.6	117.9				
East: WB - Twin Cities Blvd															
Lane 1	483	2.0	483	2.0	1027	0.470	100	8.9	LOS A	1.5	39.1	Full	975	0.0	0.0
Lane 2[d]	566	2.0	566	2.0	1202	0.470	100	8.0	LOS A	1.6	41.2	Full	975	0.0	0.0
Approach	1049	2.0	1049	2.0		0.470		8.4	LOS A	1.6	41.2				
North: SB - Carillion Blvd															
Lane 1[d]	3	2.0	3	2.0	478	0.007	100	7.7	LOS A	0.0	0.3	Full	70	0.0	0.0
Approach	3	2.0	3	2.0		0.007		7.7	LOS A	0.0	0.3				
West: EB - Twin Cities Rd															
Lane 1[d]	859	2.0	859	2.0	1439	0.597	100	9.1	LOS A	2.5	63.5	Full	280	0.0	0.0
Lane 2	132	2.0	132	2.0	963	0.137	100	5.0	LOS A	0.3	7.9	Full	280	0.0	0.0
Approach	990	2.0	990	2.0		0.597		8.6	LOS A	2.5	63.5				
Intersection	2497	2.0	2497	2.0		0.777		12.1	LOS B	4.6	117.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 102 [2 AM - Carillion Blvd/Lake Park Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	518	2.0	518	2.0	1178	0.440	100	7.6	LOS A	3.3	82.9	Full	1250	0.0	0.0
Approach	518	2.0	518	2.0		0.440		7.6	LOS A	3.3	82.9				
East: WB - Lake Park Ave															
Lane 1[d]	233	2.0	233	2.0	827	0.281	100	7.5	LOS A	1.8	45.3	Full	580	0.0	0.0
Approach	233	2.0	233	2.0		0.281		7.5	LOS A	1.8	45.3				
North: SB - Carillion Blvd															
Lane 1[d]	361	2.0	361	2.0	1194	0.302	100	5.8	LOS A	2.0	49.7	Full	400	0.0	0.0
Approach	361	2.0	361	2.0		0.302		5.8	LOS A	2.0	49.7				
West: EB - Lake Park Ave															
Lane 1[d]	158	2.0	158	2.0	958	0.165	100	5.3	LOS A	0.9	23.5	Full	340	0.0	0.0
Approach	158	2.0	158	2.0		0.165		5.3	LOS A	0.9	23.5				
Intersection	1270	2.0	1270	2.0		0.440		6.8	LOS A	3.3	82.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 103 [3 AM - Carillion Blvd/Lake Canyon Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	442	2.0	442	2.0	1156	0.383	100	7.0	LOS A	1.1	27.6	Full	1180	0.0	0.0
Approach	442	2.0	442	2.0		0.383		7.0	LOS A	1.1	27.6				
East: WB - Lake Canyon Ave															
Lane 1[d]	170	2.0	170	2.0	885	0.192	100	6.0	LOS A	0.5	11.5	Full	330	0.0	0.0
Approach	170	2.0	170	2.0		0.192		6.0	LOS A	0.5	11.5				
North: SB - Carillion Blvd															
Lane 1[d]	366	2.0	366	2.0	1160	0.316	100	6.1	LOS A	0.8	21.0	Full	1250	0.0	0.0
Approach	366	2.0	366	2.0		0.316		6.1	LOS A	0.8	21.0				
West: EB - Lake Canyon Ave															
Lane 1[d]	189	2.0	189	2.0	998	0.190	100	5.4	LOS A	0.4	11.0	Full	330	0.0	0.0
Approach	189	2.0	189	2.0		0.190		5.4	LOS A	0.4	11.0				
Intersection	1167	2.0	1167	2.0		0.383		6.3	LOS A	1.1	27.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, February 11, 2019 1:31:06 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 104 [4 AM - Carillion Blvd/Elk Hills Dr]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	327	2.0	327	2.0	1070	0.306	100	6.4	LOS A	0.8	19.7	Full	1580	0.0	0.0
Approach	327	2.0	327	2.0		0.306		6.4	LOS A	0.8	19.7				
East: WB - Elk Hills Dr															
Lane 1[d]	220	2.0	220	2.0	972	0.226	100	5.9	LOS A	0.5	13.6	Full	130	0.0	0.0
Approach	220	2.0	220	2.0		0.226		5.9	LOS A	0.5	13.6				
North: SB - Carillion Blvd															
Lane 1[d]	435	2.0	435	2.0	1167	0.373	100	6.8	LOS A	1.1	26.9	Full	1180	0.0	0.0
Approach	435	2.0	435	2.0		0.373		6.8	LOS A	1.1	26.9				
West: EB - Elk Hills Dr															
Lane 1[d]	215	2.0	215	2.0	964	0.223	100	5.9	LOS A	0.5	13.5	Full	120	0.0	0.0
Approach	215	2.0	215	2.0		0.223		5.9	LOS A	0.5	13.5				
Intersection	1197	2.0	1197	2.0		0.373		6.4	LOS A	1.1	26.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, February 11, 2019 1:31:06 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 105 [5 AM - Carillion Blvd/Walnut Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	428	2.0	428	2.0	912	0.470	100	9.7	LOS A	1.3	32.5	Full	1240	0.0	0.0
Lane 2	367	2.0	367	2.0	831	0.442	100	9.9	LOS A	1.1	28.2	Short	200	0.0	NA
Approach	796	2.0	796	2.0		0.470		9.8	LOS A	1.3	32.5				
East: WB - Walnut Ave															
Lane 1	462	2.0	462	2.0	897	0.515	100	10.8	LOS B	1.9	47.1	Full	340	0.0	0.0
Lane 2[d]	554	2.0	554	2.0	1075	0.515	100	9.4	LOS A	1.8	46.5	Full	340	0.0	0.0
Approach	1016	2.0	1016	2.0		0.515		10.1	LOS B	1.9	47.1				
North: SB - Carillion Blvd															
Lane 1[d]	310	2.0	310	2.0	653	0.474	100	12.8	LOS B	1.2	31.5	Full	1580	0.0	0.0
Lane 2	34	2.0	34	2.0	366	0.092	100	11.4	LOS B	0.1	3.7	Short	200	0.0	NA
Approach	343	2.0	343	2.0		0.474		12.6	LOS B	1.2	31.5				
West: EB - Walnut Ave															
Lane 1	339	2.0	339	2.0	885	0.383	100	8.5	LOS A	1.1	26.7	Full	1740	0.0	0.0
Lane 2[d]	408	2.0	408	2.0	1067	0.383	100	7.4	LOS A	1.1	28.5	Full	1740	0.0	0.0
Approach	747	2.0	747	2.0		0.383		7.9	LOS A	1.1	28.5				
Intersection	2902	2.0	2902	2.0		0.515		9.7	LOS A	1.9	47.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 106 [6 AM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	522	2.0	522	2.0	830	0.629	100	14.5	LOS B	3.1	78.5	Full	1240	0.0	0.0
Approach	522	2.0	522	2.0		0.629		14.5	LOS B	3.1	78.5				
East: WB - Ambrogio Way															
Lane 1[d]	233	2.0	233	2.0	585	0.397	100	12.2	LOS B	1.2	30.2	Full	130	0.0	0.0
Approach	233	2.0	233	2.0		0.397		12.2	LOS B	1.2	30.2				
North: SB - Carillion Blvd															
Lane 1[d]	665	2.0	665	2.0	1022	0.651	100	13.1	LOS B	3.5	87.9	Full	1240	0.0	0.0
Approach	665	2.0	665	2.0		0.651		13.1	LOS B	3.5	87.9				
West: EB - Vintage Oak Ave															
Lane 1[d]	538	2.0	538	2.0	898	0.599	100	12.8	LOS B	2.8	70.4	Full	540	0.0	0.0
Approach	538	2.0	538	2.0		0.599		12.8	LOS B	2.8	70.4				
Intersection	1958	2.0	1958	2.0		0.651		13.3	LOS B	3.5	87.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 107v [7 AM - Carillion Blvd/Di Maggion Way - Conversion]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1	478	2.0	478	2.0	1929	0.248	100	0.0	LOS A	0.0	0.0	Full	860	0.0	0.0
Approach	478	2.0	478	2.0		0.248		0.0	NA	0.0	0.0				
East: WB - Di Maggion Way															
Lane 1	22	2.0	22	2.0	218	0.100	100	23.4	LOS C	0.1	3.6	Full	120	0.0	0.0
Lane 2	22	2.0	22	2.0	496	0.044	100	12.6	LOS B	0.1	1.7	Full	120	0.0	0.0
Approach	43	2.0	43	2.0		0.100		18.0	LOS C	0.1	3.6				
North: SB - Carillion Blvd															
Lane 1	11	2.0	11	2.0	966	0.011	100	3.8	LOS A	0.0	0.4	Short	100	0.0	NA
Lane 2	379	2.0	379	2.0	1919	0.198	100	0.0	LOS A	0.0	0.0	Full	1240	0.0	0.0
Approach	390	2.0	390	2.0		0.198		0.1	NA	0.0	0.4				
Intersection	912	2.0	912	2.0		0.248		0.9	NA	0.1	3.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE SUMMARY

Site: 108 [8 AM - Carillion Blvd/Chelsham Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	411	2.0	411	2.0	1242	0.331	100	6.0	LOS A	0.9	21.8	Full	785	0.0	0.0
Approach	411	2.0	411	2.0		0.331		6.0	LOS A	0.9	21.8				
East: WB - Chelsham Ave															
Lane 1[d]	80	2.0	80	2.0	944	0.085	100	4.6	LOS A	0.2	4.7	Full	260	0.0	0.0
Approach	80	2.0	80	2.0		0.085		4.6	LOS A	0.2	4.7				
North: SB - Carillion Blvd															
Lane 1[d]	405	2.0	405	2.0	1330	0.305	100	5.4	LOS A	0.8	21.1	Full	860	0.0	0.0
Approach	405	2.0	405	2.0		0.305		5.4	LOS A	0.8	21.1				
West: EB - Chelsham Ave															
Lane 1[d]	54	2.0	54	2.0	980	0.055	100	4.2	LOS A	0.1	2.8	Full	110	0.0	0.0
Approach	54	2.0	54	2.0		0.055		4.2	LOS A	0.1	2.8				
Intersection	951	2.0	951	2.0		0.331		5.5	LOS A	0.9	21.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 109 [9 AM - Carillion Blvd/Vauxhall Ave]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	372	2.0	372	2.0	1227	0.303	100	5.7	LOS A	0.8	19.1	Full	1900	0.0	0.0
Approach	372	2.0	372	2.0		0.303		5.7	LOS A	0.8	19.1				
East: WB - Vauxhall Ave															
Lane 1[d]	42	2.0	42	2.0	979	0.043	100	4.1	LOS A	0.1	2.3	Full	110	0.0	0.0
Approach	42	2.0	42	2.0		0.043		4.1	LOS A	0.1	2.3				
North: SB - Carillion Blvd															
Lane 1[d]	348	2.0	348	2.0	1325	0.262	100	5.0	LOS A	0.7	16.6	Full	785	0.0	0.0
Approach	348	2.0	348	2.0		0.262		5.0	LOS A	0.7	16.6				
West: EB - Vauxhall Ave															
Lane 1[d]	65	2.0	65	2.0	1015	0.064	100	4.1	LOS A	0.1	3.3	Full	110	0.0	0.0
Approach	65	2.0	65	2.0		0.064		4.1	LOS A	0.1	3.3				
Intersection	827	2.0	827	2.0		0.303		5.2	LOS A	0.8	19.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 110 [10 AM - Carillion Blvd/Simmerhorn Rd]

Network: N101 [Yr 2040 AM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	353	2.0	353	2.0	839	0.421	100	9.5	LOS A	1.2	30.2	Full	1100	0.0	0.0
Approach	353	2.0	353	2.0		0.421		9.5	LOS A	1.2	30.2				
East: WB - Simmerhorn Rd															
Lane 1[d]	509	2.0	509	2.0	1012	0.503	100	9.6	LOS A	1.5	39.2	Full	1200	0.0	0.0
Approach	509	2.0	509	2.0		0.503		9.6	LOS A	1.5	39.2				
North: SB - Carillion Blvd															
Lane 1[d]	340	2.0	340	2.0	856	0.397	100	9.0	LOS A	1.1	28.7	Full	1900	0.0	0.0
Approach	340	2.0	340	2.0		0.397		9.0	LOS A	1.1	28.7				
West: EB - Simmerhorn Rd															
Lane 1[d]	392	2.0	392	2.0	899	0.436	100	9.3	LOS A	1.2	31.6	Full	265	0.0	0.0
Approach	392	2.0	392	2.0		0.436		9.3	LOS A	1.2	31.6				
Intersection	1595	2.0	1595	2.0		0.503		9.4	LOS A	1.5	39.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Yr 2040 AM - Road Diet]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: E. Stockton Blvd													
Lane 1[d]	518	3.0	821	0.631	100	12.4	LOS B	4.4	113.5	Full	300	0.0	0.0
Lane 2	379	3.0	642	0.591	100	11.2	LOS B	3.7	93.6	Short	100	0.0	NA
Approach	897	3.0		0.631		11.9	LOS B	4.4	113.5				
East: Twin Cities Rd (104)													
Lane 1	553	3.0	644	0.859	100	27.4	LOS C	14.8	377.7	Full	300	0.0	12.3
Lane 2[d]	767	3.0	842	0.911	100	29.9	LOS C	21.9	559.9	Full	300	0.0	28.5
Approach	1320	3.0		0.911		28.9	LOS C	21.9	559.9				
North: E. Stockton Blvd													
Lane 1[d]	65	3.0	674	0.097	100	10.4	LOS B	0.6	15.9	Full	500	0.0	0.0
Approach	65	3.0		0.097		10.4	LOS B	0.6	15.9				
West: Twin Cities Rd (104)													
Lane 1	525	3.0	1398	0.376	100	7.0	LOS A	2.9	74.3	Full	250	0.0	0.0
Lane 2[d]	614	3.0	1633	0.376	100	4.2	LOS A	2.9	75.5	Full	150	0.0	0.0
Approach	1139	3.0		0.376		5.5	LOS A	2.9	75.5				
Intersection	3421	3.0		0.911		16.3	LOS B	21.9	559.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [20 - Simmerhorn/SR 99 NB - Yr 2040 AM - Road Diet]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Simmerhorn Rd													
Lane 1[d]	487	3.0	1110	0.439	100	8.0	LOS A	3.4	86.2	Full	1600	0.0	0.0
Approach	487	3.0		0.439		8.0	LOS A	3.4	86.2				
North: Simmerhorn Rd													
Lane 1[d]	475	3.0	914	0.520	100	10.7	LOS B	4.6	116.7	Full	1600	0.0	0.0
Approach	475	3.0		0.520		10.7	LOS B	4.6	116.7				
West: SR 99 NB Ramps													
Lane 1[d]	246	3.0	896	0.274	100	6.9	LOS A	1.8	45.9	Full	1600	0.0	0.0
Approach	246	3.0		0.274		6.9	LOS A	1.8	45.9				
Intersection	1208	3.0		0.520		8.8	LOS A	4.6	116.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [1 PM - Carillion Blvd/Twin Cities Rd]

Network: N101 [Yr 2040 PM Peak Hour]

Site Category: -
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	226	2.0	226	2.0	513	0.440	100	14.7	LOS B	1.4	36.4	Full	400	0.0	0.0
Approach	226	2.0	226	2.0		0.440		14.7	LOS B	1.4	36.4				
East: WB - Twin Cities Blvd															
Lane 1	372	2.0	372	2.0	1226	0.303	100	5.7	LOS A	0.9	22.7	Full	975	0.0	0.0
Lane 2[d]	421	2.0	421	2.0	1388	0.303	100	5.2	LOS A	0.9	23.4	Full	975	0.0	0.0
Approach	793	2.0	793	2.0		0.303		5.5	LOS A	0.9	23.4				
North: SB - Carillion Blvd															
Lane 1[d]	3	2.0	3	2.0	650	0.005	100	5.6	LOS A	0.0	0.2	Full	70	0.0	0.0
Approach	3	2.0	3	2.0		0.005		5.6	LOS A	0.0	0.2				
West: EB - Twin Cities Rd															
Lane 1[d]	967	2.0	967	2.0	1470	0.658	100	10.3	LOS B	2.9	74.5	Full	280	0.0	0.0
Lane 2	403	2.0	403	2.0	1146	0.352	100	6.6	LOS A	1.0	24.7	Full	280	0.0	0.0
Approach	1371	2.0	1371	2.0		0.658		9.2	LOS A	2.9	74.5				
Intersection	2393	2.0	2393	2.0		0.658		8.5	LOS A	2.9	74.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 102 [2 PM - Carillion Blvd/Lake Park Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	400	2.0	400	2.0	1117	0.358	100	6.8	LOS A	1.0	24.1	Full	1250	0.0	0.0
Approach	400	2.0	400	2.0		0.358		6.8	LOS A	1.0	24.1				
East: WB - Lake Park Ave															
Lane 1[d]	102	2.0	102	2.0	911	0.112	100	5.0	LOS A	0.3	6.4	Full	580	0.0	0.0
Approach	102	2.0	102	2.0		0.112		5.0	LOS A	0.3	6.4				
North: SB - Carillion Blvd															
Lane 1[d]	676	2.0	676	2.0	1142	0.592	100	10.6	LOS B	2.1	52.4	Full	400	0.0	0.0
Approach	676	2.0	676	2.0		0.592		10.6	LOS B	2.1	52.4				
West: EB - Lake Park Ave															
Lane 1[d]	174	2.0	174	2.0	733	0.237	100	7.7	LOS A	0.6	15.7	Full	340	0.0	0.0
Approach	174	2.0	174	2.0		0.237		7.7	LOS A	0.6	15.7				
Intersection	1352	2.0	1352	2.0		0.592		8.7	LOS A	2.1	52.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, April 15, 2019 4:12:15 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 103 [3 PM - Carillion Blvd/Lake Canyon Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total	HV	Total	HV						Veh	Dist				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1[d]	393	2.0	393	2.0	1186	0.332	100	6.2	LOS A	0.9	22.9	Full	1180	0.0	0.0
Approach	393	2.0	393	2.0		0.332		6.2	LOS A	0.9	22.9				
East: WB - Lake Canyon Ave															
Lane 1[d]	98	2.0	98	2.0	942	0.104	100	4.8	LOS A	0.2	5.8	Full	330	0.0	0.0
Approach	98	2.0	98	2.0		0.104		4.8	LOS A	0.2	5.8				
North: SB - Carillion Blvd															
Lane 1[d]	595	2.0	595	2.0	1207	0.493	100	8.3	LOS A	1.6	41.0	Full	1250	0.0	0.0
Approach	595	2.0	595	2.0		0.493		8.3	LOS A	1.6	41.0				
West: EB - Lake Canyon Ave															
Lane 1[d]	113	2.0	113	2.0	814	0.139	100	5.9	LOS A	0.3	8.3	Full	330	0.0	0.0
Approach	113	2.0	113	2.0		0.139		5.9	LOS A	0.3	8.3				
Intersection	1199	2.0	1199	2.0		0.493		7.1	LOS A	1.6	41.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, February 11, 2019 1:31:18 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 104 [4 PM - Carillion Blvd/Elk Hills Dr]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1[d]	300	2.0	300	2.0	1074	0.279	100	6.1	LOS A	0.7	17.7	Full	1580	0.0	0.0
Approach	300	2.0	300	2.0		0.279		6.1	LOS A	0.7	17.7				
East: WB - Elk Hills Dr															
Lane 1[d]	116	2.0	116	2.0	976	0.119	100	4.8	LOS A	0.3	6.7	Full	130	0.0	0.0
Approach	116	2.0	116	2.0		0.119		4.8	LOS A	0.3	6.7				
North: SB - Carillion Blvd															
Lane 1[d]	614	2.0	614	2.0	1238	0.496	100	8.2	LOS A	1.7	42.7	Full	1180	0.0	0.0
Approach	614	2.0	614	2.0		0.496		8.2	LOS A	1.7	42.7				
West: EB - Elk Hills Dr															
Lane 1[d]	177	2.0	177	2.0	875	0.202	100	6.2	LOS A	0.5	12.3	Full	120	0.0	0.0
Approach	177	2.0	177	2.0		0.202		6.2	LOS A	0.5	12.3				
Intersection	1208	2.0	1208	2.0		0.496		7.1	LOS A	1.7	42.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 105 [5 PM - Carillion Blvd/Walnut Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	320	2.0	320	2.0	974	0.328	100	7.1	LOS A	0.7	17.5	Full	1240	0.0	0.0
Lane 2	259	2.0	259	2.0	887	0.292	100	7.2	LOS A	0.6	14.8	Short	200	0.0	NA
Approach	578	2.0	578	2.0		0.328		7.2	LOS A	0.7	17.5				
East: WB - Walnut Ave															
Lane 1	334	2.0	334	2.0	976	0.342	100	7.3	LOS A	0.9	23.1	Full	340	0.0	0.0
Lane 2[d]	395	2.0	395	2.0	1154	0.342	100	6.5	LOS A	1.0	24.2	Full	340	0.0	0.0
Approach	728	2.0	728	2.0		0.342		6.9	LOS A	1.0	24.2				
North: SB - Carillion Blvd															
Lane 1[d]	375	2.0	375	2.0	818	0.459	100	10.4	LOS B	1.2	29.9	Full	1580	0.0	0.0
Lane 2	50	2.0	50	2.0	454	0.110	100	9.5	LOS A	0.2	4.3	Short	200	0.0	NA
Approach	425	2.0	425	2.0		0.459		10.3	LOS B	1.2	29.9				
West: EB - Walnut Ave															
Lane 1	293	2.0	293	2.0	919	0.319	100	7.4	LOS A	0.9	21.9	Full	1740	0.0	0.0
Lane 2[d]	350	2.0	350	2.0	1097	0.319	100	6.4	LOS A	0.9	23.1	Full	1740	0.0	0.0
Approach	643	2.0	643	2.0		0.319		6.9	LOS A	0.9	23.1				
Intersection	2375	2.0	2375	2.0		0.459		7.5	LOS A	1.2	29.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 106 [6 PM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1[d]	370	2.0	370	2.0	930	0.397	100	8.4	LOS A	1.1	28.0	Full	1240	0.0	0.0
Approach	370	2.0	370	2.0		0.397		8.4	LOS A	1.1	28.0				
East: WB - Ambrogio Way															
Lane 1[d]	184	2.0	184	2.0	799	0.230	100	7.0	LOS A	0.6	14.5	Full	130	0.0	0.0
Approach	184	2.0	184	2.0		0.230		7.0	LOS A	0.6	14.5				
North: SB - Carillion Blvd															
Lane 1[d]	616	2.0	616	2.0	1118	0.551	100	9.9	LOS A	1.8	46.7	Full	1240	0.0	0.0
Approach	616	2.0	616	2.0		0.551		9.9	LOS A	1.8	46.7				
West: EB - Vintage Oak Ave															
Lane 1[d]	370	2.0	370	2.0	913	0.405	100	8.6	LOS A	1.1	28.9	Full	540	0.0	0.0
Approach	370	2.0	370	2.0		0.405		8.6	LOS A	1.1	28.9				
Intersection	1539	2.0	1539	2.0		0.551		8.9	LOS A	1.8	46.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Organisation: GHD SERVICES PTY LTD | Processed: Monday, February 11, 2019 1:31:18 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 107v [7 PM - Carillion Blvd/Di Maggion Way - Conversion]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total	HV	Total	HV						Veh	Dist				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1	359	2.0	359	2.0	1901	0.189	100	0.0	LOS A	0.0	0.0	Full	860	0.0	0.0
Approach	359	2.0	359	2.0		0.189		0.0	NA	0.0	0.0				
East: WB - Di Maggion Way															
Lane 1	22	2.0	22	2.0	344	0.063	100	16.2	LOS C	0.1	2.3	Full	120	0.0	0.0
Lane 2	16	2.0	16	2.0	656	0.025	100	10.6	LOS B	0.0	1.0	Full	120	0.0	0.0
Approach	38	2.0	38	2.0		0.063		13.8	LOS B	0.1	2.3				
North: SB - Carillion Blvd															
Lane 1	320	2.0	320	2.0	1840	0.174	100	1.8	LOS A	0.1	2.2	Full	1240	0.0	0.0
Approach	320	2.0	320	2.0		0.174		1.8	NA	0.1	2.2				
Intersection	716	2.0	716	2.0		0.189		1.6	NA	0.1	2.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: GHD SERVICES PTY LTD | Processed: Monday, February 11, 2019 1:31:18 PM
Project: K:\PRJ\2423\T2423\SIDRA\Carillion Year 2040 Conditions.sip8

LANE SUMMARY

Site: 108 [8 PM - Carillion Blvd/Chelsham Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB - Carillion Blvd															
Lane 1 [d]	346	2.0	346	2.0	1276	0.271	100	5.2	LOS A	0.7	16.6	Full	785	0.0	0.0
Approach	346	2.0	346	2.0		0.271		5.2	LOS A	0.7	16.6				
East: WB - Chelsham Ave															
Lane 1 [d]	51	2.0	51	2.0	1021	0.050	100	3.9	LOS A	0.1	2.6	Full	260	0.0	0.0
Approach	51	2.0	51	2.0		0.050		3.9	LOS A	0.1	2.6				
North: SB - Carillion Blvd															
Lane 1 [d]	324	2.0	324	2.0	1320	0.245	100	4.8	LOS A	0.6	15.3	Full	860	0.0	0.0
Approach	324	2.0	324	2.0		0.245		4.8	LOS A	0.6	15.3				
West: EB - Chelsham Ave															
Lane 1 [d]	33	2.0	33	2.0	1050	0.031	100	3.7	LOS A	0.1	1.5	Full	110	0.0	0.0
Approach	33	2.0	33	2.0		0.031		3.7	LOS A	0.1	1.5				
Intersection	753	2.0	753	2.0		0.271		4.9	LOS A	0.7	16.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 109 [9 PM - Carillion Blvd/Vauxhall Ave]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue Veh	Aver. Back of Queue Dist	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1[d]	350	2.0	350	2.0	1252	0.280	100	5.4	LOS A	0.7	17.1	Full	1900	0.0	0.0
Approach	350	2.0	350	2.0		0.280		5.4	LOS A	0.7	17.1				
East: WB - Vauxhall Ave															
Lane 1[d]	32	2.0	32	2.0	1016	0.031	100	3.8	LOS A	0.1	1.6	Full	110	0.0	0.0
Approach	32	2.0	32	2.0		0.031		3.8	LOS A	0.1	1.6				
North: SB - Carillion Blvd															
Lane 1[d]	272	2.0	272	2.0	1305	0.208	100	4.5	LOS A	0.5	12.2	Full	785	0.0	0.0
Approach	272	2.0	272	2.0		0.208		4.5	LOS A	0.5	12.2				
West: EB - Vauxhall Ave															
Lane 1[d]	43	2.0	43	2.0	1074	0.040	100	3.7	LOS A	0.1	2.0	Full	110	0.0	0.0
Approach	43	2.0	43	2.0		0.040		3.7	LOS A	0.1	2.0				
Intersection	697	2.0	697	2.0		0.280		4.9	LOS A	0.7	17.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 110 [10 PM - Carillion Blvd/Simmerhorn Rd]

Network: N101 [Yr 2040 PM Peak Hour]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	Aver. Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total	HV	Total	HV						Veh	Dist				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: NB - Carillion Blvd															
Lane 1[d]	353	2.0	353	2.0	948	0.372	100	7.9	LOS A	1.0	25.7	Full	1100	0.0	0.0
Approach	353	2.0	353	2.0		0.372		7.9	LOS A	1.0	25.7				
East: WB - Simmerhorn Rd															
Lane 1[d]	574	2.0	574	2.0	1030	0.557	100	10.6	LOS B	1.9	49.3	Full	1200	0.0	0.0
Approach	574	2.0	574	2.0		0.557		10.6	LOS B	1.9	49.3				
North: SB - Carillion Blvd															
Lane 1[d]	270	2.0	270	2.0	804	0.335	100	8.4	LOS A	0.9	23.5	Full	1900	0.0	0.0
Approach	270	2.0	270	2.0		0.335		8.4	LOS A	0.9	23.5				
West: EB - Simmerhorn Rd															
Lane 1[d]	333	2.0	333	2.0	960	0.346	100	7.5	LOS A	0.9	23.3	Full	265	0.0	0.0
Approach	333	2.0	333	2.0		0.346		7.5	LOS A	0.9	23.3				
Intersection	1529	2.0	1529	2.0		0.557		8.9	LOS A	1.9	49.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [11 - Twin Cities Rd & Stockton Blvd Yr 2040 PM - Road Diet]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: E. Stockton Blvd													
Lane 1	207	3.0	947	0.219	100	7.9	LOS A	1.0	26.0	Full	300	0.0	0.0
Lane 2[d]	258	3.0	1073	0.240	100	5.2	LOS A	1.2	29.6	Short	100	0.0	NA
Approach	465	3.0		0.240		6.4	LOS A	1.2	29.6				
East: Twin Cities Rd (104)													
Lane 1	195	3.0	1071	0.182	100	5.2	LOS A	1.0	26.9	Full	300	0.0	0.0
Lane 2[d]	367	3.0	1353	0.272	100	4.7	LOS A	1.8	45.5	Full	300	0.0	0.0
Approach	562	3.0		0.272		4.9	LOS A	1.8	45.5				
North: E. Stockton Blvd													
Lane 1[d]	176	3.0	1136	0.155	100	5.7	LOS A	0.8	19.9	Full	500	0.0	0.0
Approach	176	3.0		0.155		5.7	LOS A	0.8	19.9				
West: Twin Cities Rd (104)													
Lane 1	211	3.0	1222	0.173	100	5.6	LOS A	1.0	26.0	Full	250	0.0	0.0
Lane 2[d]	244	3.0	1411	0.173	100	4.7	LOS A	1.0	26.6	Full	150	0.0	0.0
Approach	455	3.0		0.173		5.1	LOS A	1.0	26.6				
Intersection	1658	3.0		0.272		5.5	LOS A	1.8	45.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

LANE SUMMARY

Site: 101 [20 - Simmerhorn/SR 99 NB - Yr 2040 PM - Road Diet]

New Site
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Simmerhorn Rd													
Lane 1[d]	438	3.0	1054	0.416	100	7.9	LOS A	3.1	78.2	Full	1600	0.0	0.0
Approach	438	3.0		0.416		7.9	LOS A	3.1	78.2				
North: Simmerhorn Rd													
Lane 1[d]	426	3.0	923	0.462	100	9.5	LOS A	3.4	86.2	Full	1600	0.0	0.0
Approach	426	3.0		0.462		9.5	LOS A	3.4	86.2				
West: SR 99 NB Ramps													
Lane 1[d]	327	3.0	919	0.356	100	7.9	LOS A	2.5	62.7	Full	1600	0.0	0.0
Approach	327	3.0		0.356		7.9	LOS A	2.5	62.7				
Intersection	1191	3.0		0.462		8.5	LOS A	3.4	86.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

ROUTE TRAVEL PERFORMANCE

Route: R101x [Carillion Blvd NB - 2040 AM]

Network: N101 [Yr 2040 AM Peak Hour]

New Route
Network Category: (None)

Route Travel Performance

Performance Measure	Vehicles	Per Unit Distance	Persons
Travel Speed (Average)	23.7 mph		23.7 mph
Travel Distance (Average)	12918.2 ft		12918.2 ft
Travel Time (Average)	370.9 sec	151.6 sec/mi	370.9 sec
Route Delay (Average)	94.7 sec	38.7 sec/mi	94.7 sec
Route Stop Rate	4.93	2.02 per mi	4.93
Desired Speed	40.0 mph		
Route Level of Service (LOS)	LOS C		
Travel Time Index	5.49		
Speed Efficiency	0.59		
Congestion Coefficient	1.68		

Route Travel Movement Performance

Mov ID	Turn	Trav Dist ft	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 110 Site Name: 10 AM - Carillion Blvd/Simmerhorn Rd											
South Approach											
8	T1	1203.9	34.0	24.1	9.5	0.76	0.67	0.76	196	196	0.421
Site ID: 109 Site Name: 9 AM - Carillion Blvd/Vauxhall Ave											
South Approach											
8	T1	2031.7	44.3	31.3	5.7	0.32	0.17	0.32	336	336	0.303
Site ID: 108 Site Name: 8 AM - Carillion Blvd/Chelsham Ave											
South Approach											
8	T1	918.5	25.5	24.6	6.0	0.31	0.16	0.31	395	395	0.331
Site ID: 107v Site Name: 7 AM - Carillion Blvd/Di Maggion Way - Conversion											
South Approach											
8	T1	911.0	15.7	39.6	0.0	0.00	0.00	0.00	467	467	0.248
Site ID: 106 Site Name: 6 AM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave											
South Approach											
8	T1	1402.1	44.3	21.6	14.5	0.89	0.97	1.26	316	316	0.629
Site ID: 105 Site Name: 5 AM - Carillion Blvd/Walnut Ave											
South Approach											
8	T1	1402.8	39.8	24.0	9.7	0.67	0.69	0.81	252	252	0.470
Site ID: 104 Site Name: 4 AM - Carillion Blvd/Elk Hills Dr											
South Approach											
8	T1	1704.6	39.5	29.4	6.4	0.51	0.36	0.51	252	252	0.306
Site ID: 103 Site Name: 3 AM - Carillion Blvd/Lake Canyon Ave											
South Approach											

8	T1	1315.4	33.9	26.5	7.0	0.46	0.29	0.46	333	333	0.383
Site ID: 102 Site Name: 2 AM - Carillion Blvd/Lake Park Ave											
South Approach											
8	T1	1388.8	35.7	26.5	7.6	0.46	0.28	0.46	429	429	0.440
Site ID: 101 Site Name: 1 AM - Carillion Blvd/Twin Cities Rd											
South Approach											
8	T1	639.4	58.2	7.5	28.3	1.00	1.35	1.93	1	1	0.777

ROUTE TRAVEL PERFORMANCE

Route: R101 [Carillion Blvd SB - 2040 AM]

Network: N101 [Yr 2040 AM Peak Hour]

New Route
Network Category: (None)

Route Travel Performance

Performance Measure	Vehicles	Per Unit Distance	Persons
Travel Speed (Average)	26.4 mph		26.4 mph
Travel Distance (Average)	12896.2 ft		12896.2 ft
Travel Time (Average)	333.4 sec	136.5 sec/mi	333.4 sec
Route Delay (Average)	71.7 sec	29.3 sec/mi	71.7 sec
Route Stop Rate	3.63	1.48 per mi	3.63
Desired Speed	40.0 mph		
Route Level of Service (LOS)	LOS C		
Travel Time Index	6.22		
Speed Efficiency	0.66		
Congestion Coefficient	1.52		

Route Travel Movement Performance

Mov ID	Turn	Trav Dist ft	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: 1 AM - Carillion Blvd/Twin Cities Rd											
North Approach											
4	T1	208.7	14.6	9.7	7.7	0.70	0.55	0.70	1	1	0.007
Site ID: 102 Site Name: 2 AM - Carillion Blvd/Lake Park Ave											
North Approach											
4	T1	541.6	19.7	18.7	5.8	0.38	0.21	0.38	283	283	0.302
Site ID: 103 Site Name: 3 AM - Carillion Blvd/Lake Canyon Ave											
North Approach											
4	T1	1367.4	33.5	27.8	6.1	0.42	0.26	0.42	247	247	0.316
Site ID: 104 Site Name: 4 AM - Carillion Blvd/Elk Hills Dr											
North Approach											
4	T1	1310.1	34.0	26.3	6.8	0.44	0.27	0.44	245	245	0.373
Site ID: 105 Site Name: 5 AM - Carillion Blvd/Walnut Ave											
North Approach											
4	T1	1719.0	47.5	24.7	12.8	0.80	0.90	1.09	254	254	0.474
Site ID: 106 Site Name: 6 AM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave											
North Approach											
4	T1	1354.0	40.8	22.7	13.1	0.78	0.73	1.01	309	309	0.651
Site ID: 107v Site Name: 7 AM - Carillion Blvd/Di Maggion Way - Conversion											
North Approach											
4	T1	1291.0	22.0	40.0	0.0	0.00	0.00	0.00	379	379	0.198
Site ID: 108 Site Name: 8 AM - Carillion Blvd/Chelsham Ave											
North Approach											

4	T1	1002.3	27.1	25.3	5.4	0.13	0.03	0.13	333	333	0.305
Site ID: 109 Site Name: 9 AM - Carillion Blvd/Vauxhall Ave											
North Approach											
4	T1	935.0	25.9	24.6	5.0	0.13	0.04	0.13	270	270	0.262
Site ID: 110 Site Name: 10 AM - Carillion Blvd/Simmerhorn Rd											
North Approach											
4	T1	3167.0	68.3	31.6	9.0	0.74	0.64	0.74	173	173	0.397

ROUTE TRAVEL PERFORMANCE

Route: R101x [Carillion Blvd NB - 2040 PM]

Network: N101 [Yr 2040 PM Peak Hour]

New Route
Network Category: (None)

Route Travel Performance

Performance Measure	Vehicles	Per Unit Distance	Persons
Travel Speed (Average)	25.6 mph		25.6 mph
Travel Distance (Average)	12911.7 ft		12911.7 ft
Travel Time (Average)	344.4 sec	140.8 sec/mi	344.4 sec
Route Delay (Average)	67.8 sec	27.7 sec/mi	67.8 sec
Route Stop Rate	3.73	1.53 per mi	3.73
Desired Speed	40.0 mph		
Route Level of Service (LOS)	LOS C		
Travel Time Index	5.99		
Speed Efficiency	0.64		
Congestion Coefficient	1.56		

Route Travel Movement Performance

Mov ID	Turn	Trav Dist ft	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 110 Site Name: 10 PM - Carillion Blvd/Simmerhorn Rd											
South Approach											
8	T1	1203.9	32.4	25.3	7.9	0.65	0.53	0.65	196	196	0.372
Site ID: 109 Site Name: 9 PM - Carillion Blvd/Vauxhall Ave											
South Approach											
8	T1	2032.0	44.2	31.4	5.4	0.28	0.13	0.28	292	292	0.280
Site ID: 108 Site Name: 8 PM - Carillion Blvd/Chelsham Ave											
South Approach											
8	T1	917.3	24.8	25.2	5.2	0.24	0.10	0.24	313	313	0.271
Site ID: 107v Site Name: 7 PM - Carillion Blvd/Di Maggion Way - Conversion											
South Approach											
8	T1	911.1	16.2	38.4	0.0	0.00	0.00	0.00	321	321	0.189
Site ID: 106 Site Name: 6 PM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave											
South Approach											
8	T1	1389.0	37.3	25.4	8.4	0.68	0.56	0.68	251	251	0.397
Site ID: 105 Site Name: 5 PM - Carillion Blvd/Walnut Ave											
South Approach											
8	T1	1403.1	37.3	25.7	7.1	0.57	0.49	0.57	187	187	0.328
Site ID: 104 Site Name: 4 PM - Carillion Blvd/Elk Hills Dr											
South Approach											
8	T1	1711.0	39.3	29.7	6.1	0.50	0.35	0.50	252	252	0.279
Site ID: 103 Site Name: 3 PM - Carillion Blvd/Lake Canyon Ave											
South Approach											

8	T1	1310.3	32.8	27.2	6.2	0.40	0.23	0.40	305	305	0.332
Site ID: 102 Site Name: 2 PM - Carillion Blvd/Lake Park Ave											
South Approach											
8	T1	1403.5	36.0	26.5	6.8	0.48	0.32	0.48	272	272	0.358
Site ID: 101 Site Name: 1 PM - Carillion Blvd/Twin Cities Rd											
South Approach											
8	T1	630.5	44.1	9.7	14.7	0.95	1.01	1.11	1	1	0.440

ROUTE TRAVEL PERFORMANCE

Route: R101 [Carillion Blvd SB - 2040 PM]

Network: N101 [Yr 2040 PM Peak Hour]

New Route
Network Category: (None)

Route Travel Performance

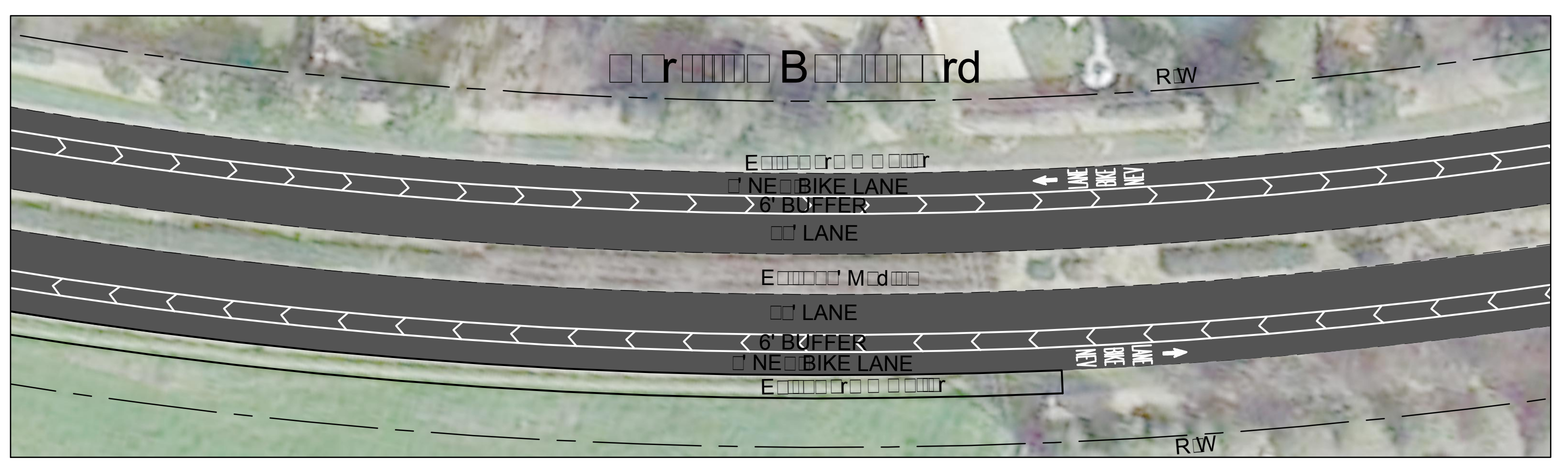
Performance Measure	Vehicles	Per Unit Distance	Persons
Travel Speed (Average)	26.3 mph		26.3 mph
Travel Distance (Average)	12893.8 ft		12893.8 ft
Travel Time (Average)	334.0 sec	136.8 sec/mi	334.0 sec
Route Delay (Average)	72.4 sec	29.7 sec/mi	72.4 sec
Route Stop Rate	3.25	1.33 per mi	3.25
Desired Speed	40.0 mph		
Route Level of Service (LOS)	LOS C		
Travel Time Index	6.20		
Speed Efficiency	0.66		
Congestion Coefficient	1.52		

Route Travel Movement Performance

Mov ID	Turn	Trav Dist ft	Trav Time sec	Aver. Speed mph	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: 1 PM - Carillion Blvd/Twin Cities Rd											
North Approach											
4	T1	208.7	12.6	11.3	5.6	0.58	0.41	0.58	1	1	0.005
Site ID: 102 Site Name: 2 PM - Carillion Blvd/Lake Park Ave											
North Approach											
4	T1	540.1	24.6	15.0	10.6	0.60	0.40	0.60	473	473	0.592
Site ID: 103 Site Name: 3 PM - Carillion Blvd/Lake Canyon Ave											
North Approach											
4	T1	1379.6	36.0	26.1	8.3	0.45	0.25	0.45	470	470	0.493
Site ID: 104 Site Name: 4 PM - Carillion Blvd/Elk Hills Dr											
North Approach											
4	T1	1309.3	35.1	25.4	8.2	0.40	0.21	0.40	397	397	0.496
Site ID: 105 Site Name: 5 PM - Carillion Blvd/Walnut Ave											
North Approach											
4	T1	1718.9	45.1	26.0	10.4	0.71	0.79	0.93	309	309	0.459
Site ID: 106 Site Name: 6 PM - Carillion Blvd/Ambrogio Way/Vintage Oak Ave											
North Approach											
4	T1	1361.2	37.8	24.6	9.9	0.60	0.42	0.60	303	303	0.551
Site ID: 107v Site Name: 7 PM - Carillion Blvd/Di Maggion Way - Conversion											
North Approach											
4	T1	1291.1	24.2	36.3	1.6	0.08	0.00	0.08	298	298	0.174
Site ID: 108 Site Name: 8 PM - Carillion Blvd/Chelsham Ave											
North Approach											

4	T1	999.8	26.4	25.8	4.8	0.15	0.04	0.15	257	257	0.245
Site ID: 109 Site Name: 9 PM - Carillion Blvd/Vauxhall Ave											
North Approach											
4	T1	935.9	25.6	24.9	4.5	0.17	0.06	0.17	193	193	0.208
Site ID: 110 Site Name: 10 PM - Carillion Blvd/Simmerhorn Rd											
North Approach											
4	T1	3149.2	66.4	32.3	8.4	0.75	0.65	0.75	178	178	0.335

Appendix E
Conceptual Layouts of Alternative 1: Road Diet with Roundabouts



□□□I□AL □RO□□ □E□□ION
BE□WEEN IN□ER□E□□ION□

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY

Carilli□n Bl□d Im□r□□ement□
T□ in Citie□ t□ La□e Cany□n A□e

Project No. 11151293
Report No.
Date 01.18.19

FIGURE E.1

Source:

Filename: K:\PRJ\2423\2423EX00□.dwg Plot Date: 24 April 2019 - □:□2 PM

150' 0 150'

1 inch = 150 ft.

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY

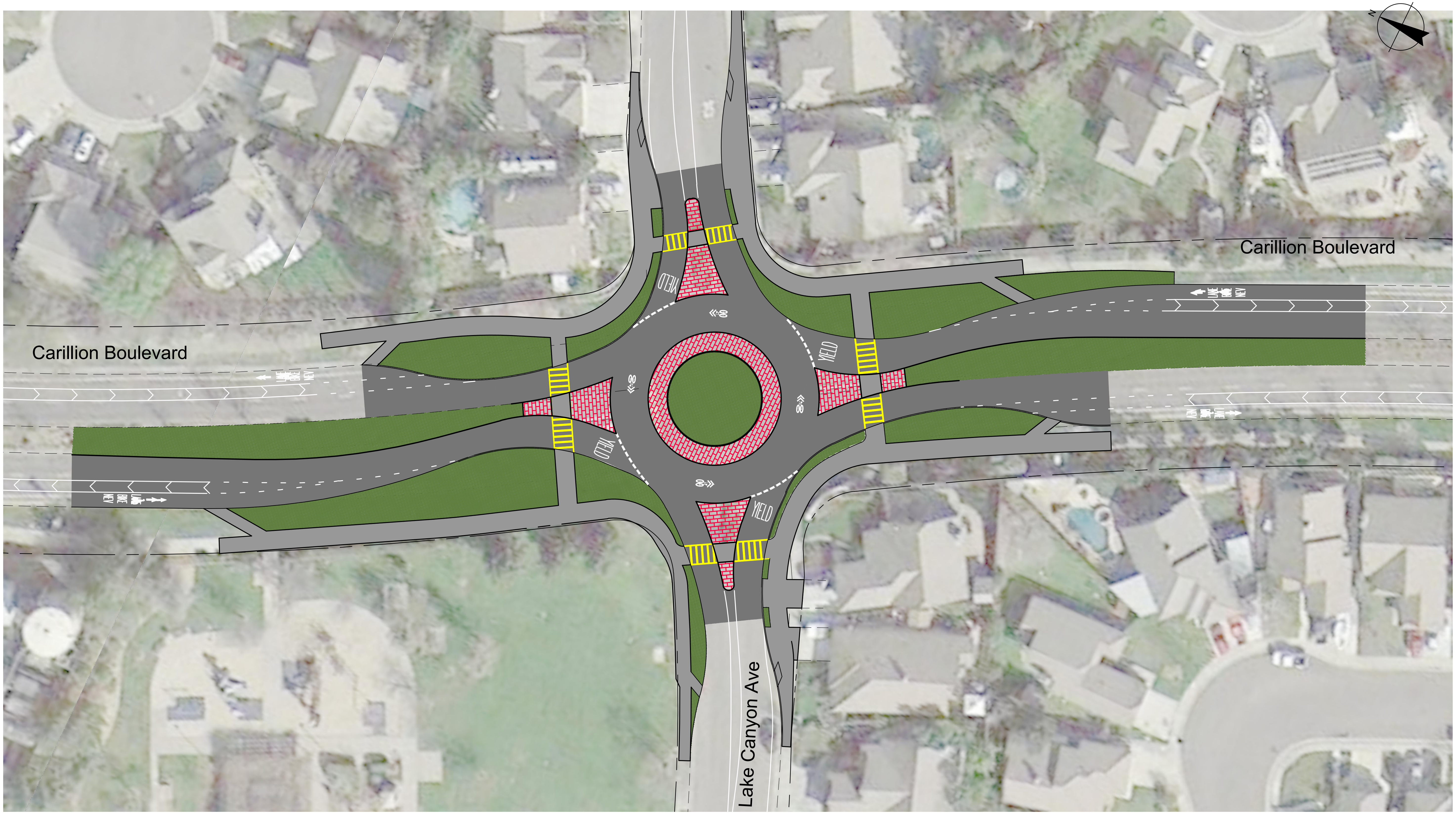
Carillion Blvd Improvements:

Project No. 11151293
Report No. -
Date 10.29.18

FIGURE E.2

Source:

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 2:30 PM



CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY
EXAMPLE ROUNDABOUT DETAIL

50' 0 50'
1 inch = 50 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET
CORRIDOR STUDY

Carillion Blvd Improvements:

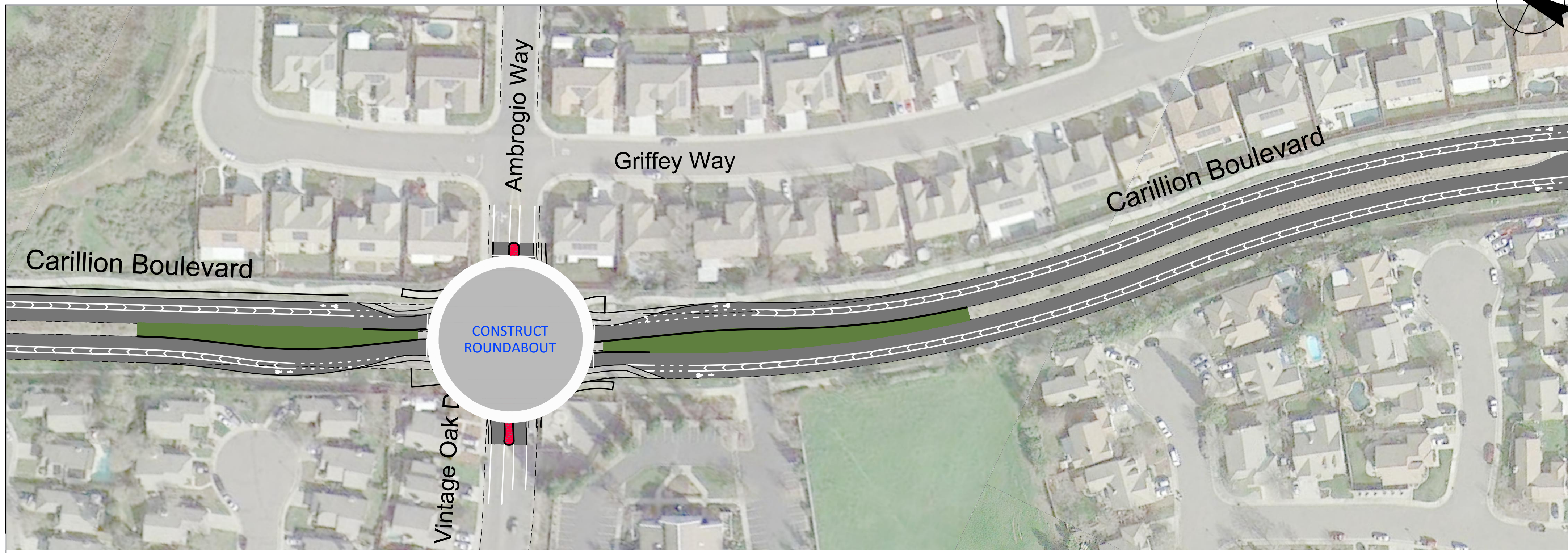
Project No. 11151293
Report No. -
Date 03.07.19

FIGURE E.3

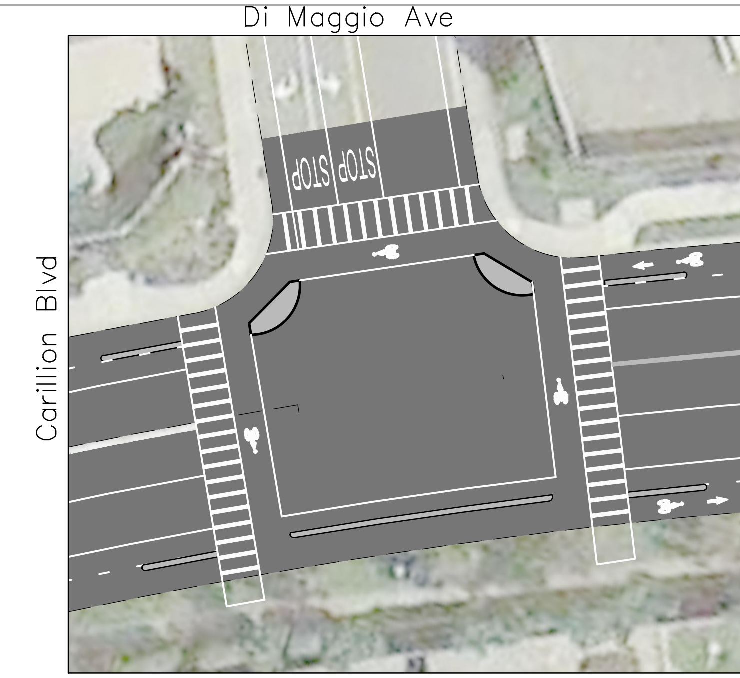
Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 4:08 PM

Source:

SEE FIG E.2

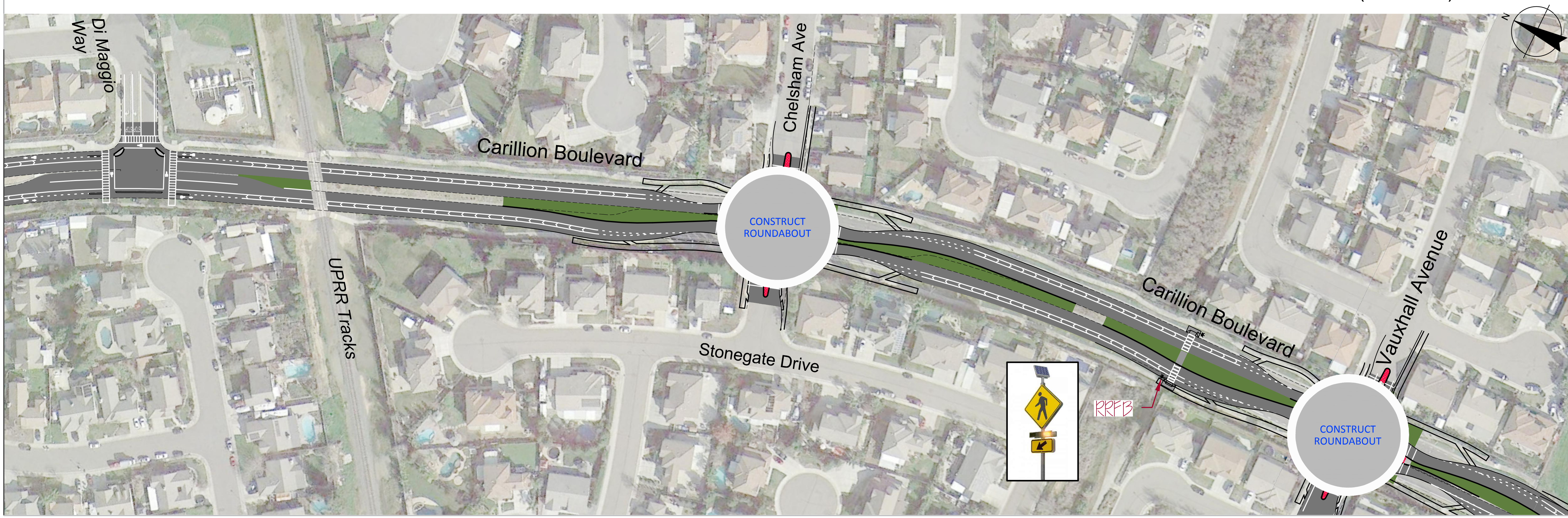


SEE BELOW



PROTECTED INTERSECTION DETAIL (TYPICAL)

SEE ABOVE



SEE FIG E.5

0 0 300'

1 inch = 150 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

Carillion Blvd Improvements:

Project No. 11151293
Report No. -
Date 10.29.18

FIGURE E.4

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 2:34 PM

Source:

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

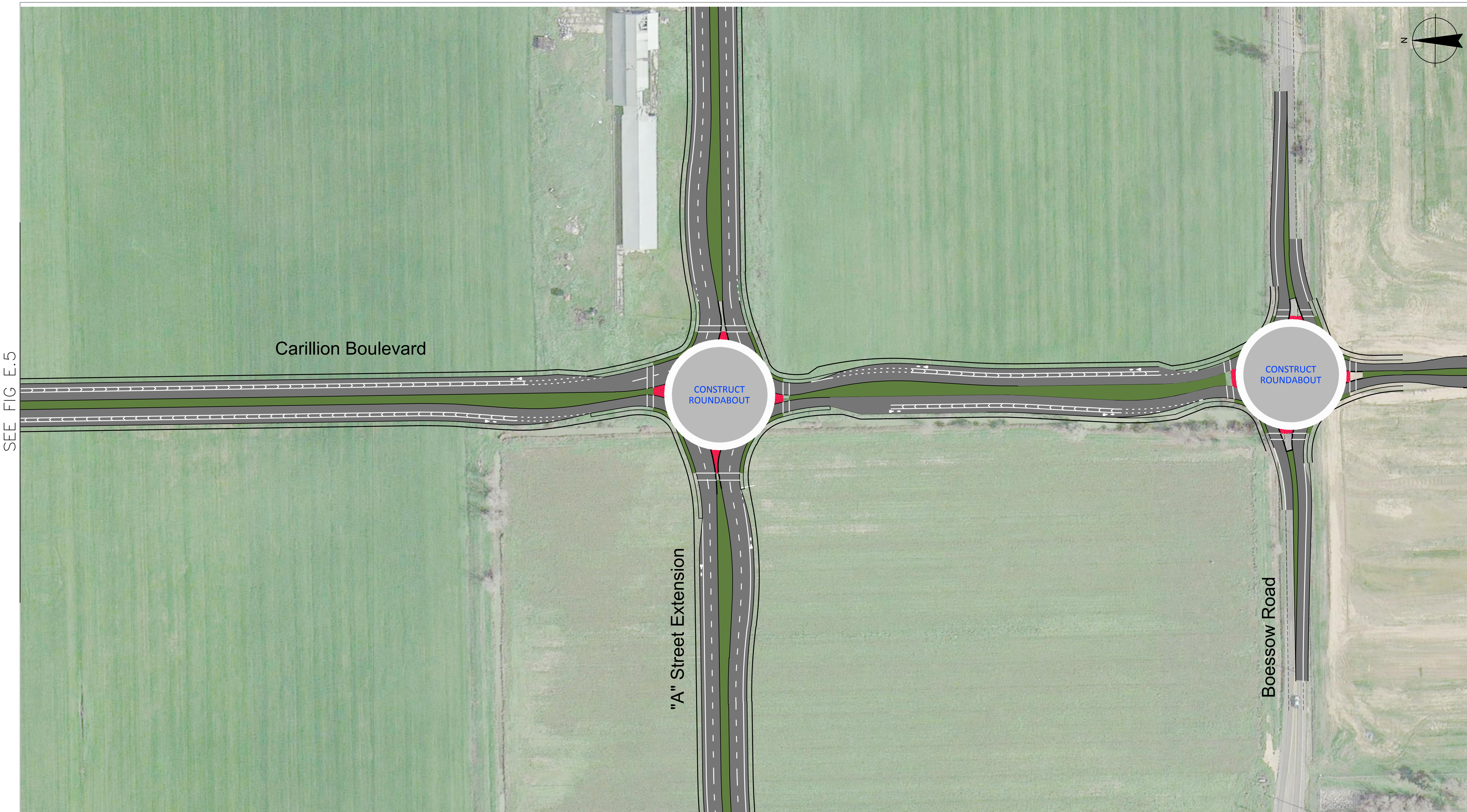
Carillion Blvd Improvements:

Project No. 11151293
Report No. -
Date 10.29.18

FIGURE E.5

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 3:03 PM

Source:



0 0 300'
1 inch = 150 ft.

GHD

Raney Planning & Management
CARILLION BOULEVARD COMPLETE STREET CORRIDOR STUDY

Carillion Blvd Improvements:

Project No. 11151293
Report No. -
Date 10.29.18

FIGURE E.6

Filename: K:\PRJ\2423\2423EX008.dwg Plot Date: 30 August 2019 - 4:03 PM

Source:

Appendix F
Cost Estimates

Carillion Blvd Complete Street Corridor Study

Prepared for:

Prepared By: GHD

ROUNDABOUTS ALTERNATIVE

4/19/2019

Prj No.	PROJECT DESCRIPTION	Construction Costs	Right of Way	Support Costs	Total Project Costs
	Retrofit/Improve Existing Facilities				
1	Carillion Blvd/Twin Cities Rd (SR 104) - Roundabout	$2,150,000	$70,000	$555,000	$2,775,000
2	Carillion Blvd/Lake Park Ave - Roundabout	$1,330,000		$333,000	$1,663,000
3	Carillion Blvd/Lake Canyon Ave - Roundabout	$1,330,000		$333,000	$1,663,000
4	Carillion Blvd/Elk Hills Dr - Roundabout	$1,330,000		$333,000	$1,663,000
5	Carillion Blvd/Walnut Ave - Roundabout	$2,970,000	$102,000	$768,000	$3,840,000
6	Carillion Blvd/Vintage Oaks Dr - Roundabout	$1,330,000		$333,000	$1,663,000
7	Carillion Blvd/Di Maggio Way - Protected Intersection	$180,000		$45,000	$225,000
8	Carillion Blvd/Chelsham Ave - Roundabout	$1,330,000		$333,000	$1,663,000
9	Carrilion Blvd - RRFB Xing	$110,000		$28,000	$138,000
10	Carillion Blvd/Vauxhall Ave - Roundabout	$1,330,000		$333,000	$1,663,000
11	Carillion Blvd - Signing/Striping btwn Roundabouts	$100,000		$25,000	$125,000
	TOTAL	**$13,490,000**	**$172,000**	**$3,419,000**	**$17,081,000**
	New Growth Area Facilities (Roadway Extensions, etc)				
12	Carillion Blvd/Simmerhorn Rd - Roundabout	$1,960,000	$387,500	$587,000	$2,934,500
13	Carillion Blvd/A Street Extension - Roundabout	$2,920,000	$1,000,000	$980,000	$4,900,000
14	Carillion Blvd/Boessow Rd - Roundabout	$2,020,000	$420,000	$610,000	$3,050,000
15	Carillion Blvd Extension - S. of Vauxhall Ave to Simmerhorn Rd	$1,500,000	$300,000	$450,000	$2,250,000
16	Carillion Blvd Extension - Simmerhorn Rd to A Street Extension	$930,000	$412,500	$336,000	$1,678,500
17	Carillion Blvd Extension - A Street Extension to Boessow Rd	$0	$0	$0	$0
18	A Street Extension - Crystal Wy to Carillion Blvd Extension	$1,080,000	$510,000	$398,000	$1,988,000
19	Carillion Blvd Extension - Signing/Striping btwn Roundabouts	$60,000	$0	$15,000	$75,000
	TOTAL	**$10,470,000**	**$3,030,000**	**$3,376,000**	**$16,876,000**
	TOTAL PROJECT COSTS (Rounded)	**$23,960,000**	**$3,202,000**	**$6,795,000**	**$33,957,000**

Notes:

1) Construction Costs include a 20% contingency for these preliminary concepts (Typically a 30%-50% contingency is used by Caltrans when cost estimating in the PRE-PSR phase per Caltrans Cost Estimating Guidelines).

2) Support Costs estimated at 25% - includes PS&E, R/W Acquisition and Construction Support

3) Existing R/W based on County GIS data.

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs

Typical 1-Lane Roundabout at Residential Streets

11151293
19-Apr-2019
CMP# 2423

ROUNDABOUT

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$60,000.00	$60,000.00
2	Clearing and Grubbing	LS	1	$20,000.00	$20,000.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	1	$25,000.00	$25,000.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	11,000	$8.00	$88,000.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	600	$22.00	$13,200.00
10	Minor Concrete (Curb and Gutter)	LF	600	$35.00	$21,000.00
11	Minor Concrete (Sidewalk)	SQFT	14,300	$8.00	$114,400.00
12	Storm Drain System	LS	1	$80,000.00	$80,000.00
13	Signing and Striping	LS	1	$25,000.00	$25,000.00
14	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
15	Signal and Lighting	LS	0	$250,000.00	$0.00
16	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
17	Lighting (Roundabout)	LS	1	$72,000.00	$72,000.00
18	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	20,100	$22.00	$442,200.00
19	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$60,000.00	$60,000.00
20	Median Landscape	SF	7,500	$5.00	$37,500.00
21	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 1,108,300.00
	Contingency			20%	$ 221,660.00
	Total Construction Costs (Capital)				$ 1,329,960.00
	Total Construction Budget (Rounded)				**$ 1,330,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 1,330,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 332,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 1,662,500.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs

Carillion Blvd/Twin Cities Rd (SR 104)

11151293
19-Apr-2019
CMP# 2423

ROUNDABOUT

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$120,000.00	$120,000.00
2	Clearing and Grubbing	LS	1	$25,000.00	$25,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$30,000.00	$30,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	25,000	$8.00	$200,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,500	$22.00	$33,000.00
	Minor Concrete (Curb and Gutter)	LF	1,200	$35.00	$42,000.00
	Minor Concrete (Sidewalk)	SQFT	15,600	$8.00	$124,800.00
	Storm Drain System	LS	1	$120,000.00	$120,000.00
	Signing and Striping	LS	1	$25,000.00	$25,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	1	$120,000.00	$120,000.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	32,000	$22.00	$704,000.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$80,000.00	$80,000.00
	Median Landscape	SF	13,000	$5.00	$65,000.00
	Utilities (Public Only)	LS	1	$100,000.00	$100,000.00
	Subtotal (Construction Costs)				$ 1,788,800.00
	Contingency			20%	$ 357,760.00
	Total Construction Costs (Capital)				$ 2,146,560.00
	Total Construction Budget (Rounded)				**$ 2,150,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		7000	$ 10.00	$ 70,000.00
	Total Right of Way (Capital)				**$ 70,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 2,220,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 555,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 2,775,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs
Carillian Rd/ Walnut Ave

11151293
19-Apr-2019
CMP# 2423

ROUNDABOUT

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$120,000.00	$120,000.00
2	Clearing and Grubbing	LS	1	$30,000.00	$30,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$35,000.00	$35,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	50,700	$8.00	$405,600.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,800	$22.00	$39,600.00
	Minor Concrete (Curb and Gutter)	LF	1,900	$35.00	$66,500.00
	Minor Concrete (Sidewalk)	SQFT	31,200	$8.00	$249,600.00
	Storm Drain System	LS	1	$150,000.00	$150,000.00
	Signing and Striping	LS	1	$25,000.00	$25,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	1	$120,000.00	$120,000.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	42,500	$22.00	$935,000.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$60,000.00	$60,000.00
	Median Landscape	SF	26,600	$5.00	$133,000.00
	Utilities (Public Only)	LS	1	$100,000.00	$100,000.00
	Subtotal (Construction Costs)				$ 2,469,300.00
	Contingency			20%	$ 493,860.00
	Total Construction Costs (Capital)				$ 2,963,160.00
	Total Construction Budget (Rounded)				**$ 2,970,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		14000	$ 5.00	$ 70,000.00
	Developed		3200	$ 10.00	$ 32,000.00
	Total Right of Way (Capital)				**$ 102,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 3,072,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 768,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 3,840,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs
Di Maggio Protected Intersection

11151293
19-Apr-2019
CMP# 2423

PROTECTED INTERSECTION

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$5,000.00	$5,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$2,500.00	$2,500.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	400	$22.00	$8,800.00
	Minor Concrete (Curb and Gutter)	LF	1,900	$35.00	$66,500.00
	Minor Concrete (Sidewalk)	SQFT	125	$8.00	$1,000.00
	Minor Concrete (ADA Ramp)	EA	6	$5,000.00	$30,000.00
	Storm Drain System	LS	0	$50,000.00	$0.00
	Signing and Striping	LS	1	$10,000.00	$10,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$5,000.00	$5,000.00
	Median Landscape	SF	0	$5.00	$0.00
	Median Paving	SF	400	$8.00	$3,200.00
	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 142,000.00
	Contingency			20%	$ 28,400.00
	Total Construction Costs (Capital)				$ 170,400.00
	Total Construction Budget (Rounded)				**$ 180,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 180,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 45,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 225,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs
Di Maggio Protected Intersection

11151293
19-Apr-2019

PROTECTED INTERSECTION

CMP# 2423

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$5,000.00	$5,000.00
2	Clearing and Grubbing	LS	1	$5,000.00	$5,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$2,500.00	$2,500.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	50	$22.00	$1,100.00
	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
	Minor Concrete (Sidewalk)	SQFT	200	$8.00	$1,600.00
	Minor Concrete (ADA Ramp)	EA	2	$5,000.00	$10,000.00
	Storm Drain System	LS	0	$50,000.00	$0.00
	Signing and Striping	LS	1	$7,500.00	$7,500.00
	Modify Signal and Lighting	LS	0	$250,000.00	$0.00
	Signal and Lighting	LS	0	$25,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	2	$25,000.00	$50,000.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$5,000.00	$5,000.00
	Median Landscape	SF	200	$5.00	$1,000.00
	Median Paving	SF	0	$8.00	$0.00
	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 88,700.00
	Contingency			20%	$ 17,740.00
	Total Construction Costs (Capital)				$ 106,440.00
	Total Construction Budget (Rounded)				**$ 110,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 110,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 27,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 137,500.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for:

Prepared By:

Preliminary Opinion of Costs

Carillian Blvd/Simmerhorn Rd

11151293

19-Apr-2019

CMP# 2423

ROUNDABOUT

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$80,000.00	$80,000.00
2	Clearing and Grubbing	LS	1	$30,000.00	$30,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$35,000.00	$35,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	40,000	$8.00	$320,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	2,100	$22.00	$46,200.00
	Minor Concrete (Curb and Gutter)	LF	1,000	$35.00	$35,000.00
	Minor Concrete (Sidewalk)	SQFT	12,000	$8.00	$96,000.00
	Storm Drain System	LS	1	$80,000.00	$80,000.00
	Signing and Striping	LS	1	$25,000.00	$25,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	1	$120,000.00	$120,000.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	24,000	$22.00	$528,000.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$60,000.00	$60,000.00
	Median Landscape	SF	15,000	$5.00	$75,000.00
	Utilities (Public Only)	LS	1	$100,000.00	$100,000.00
	Subtotal (Construction Costs)				$ 1,630,200.00
	Contingency			20%	$ 326,040.00
	Total Construction Costs (Capital)				$ 1,956,240.00
	Total Construction Budget (Rounded)				**$ 1,960,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		55500	$ 5.00	$ 277,500.00
	Developed		11000	$ 10.00	$ 110,000.00
	Total Right of Way (Capital)				**$ 387,500.00**
TOTAL PROJECT CAPITAL COSTS					**$ 2,347,500.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 586,900.00
TOTAL PROJECT COSTS (Rounded)					**$ 2,934,400.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for:

Prepared By:

Preliminary Opinion of Costs

Carillion Blvd/A Street Extension

11151293

19-Apr-2019

CMP# 2423

ROUNDABOUT

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$100,000.00	$100,000.00
2	Clearing and Grubbing	LS	1	$25,000.00	$25,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$30,000.00	$30,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	50,700	$8.00	$405,600.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,800	$22.00	$39,600.00
	Minor Concrete (Curb and Gutter)	LF	1,900	$35.00	$66,500.00
	Minor Concrete (Sidewalk)	SQFT	31,200	$8.00	$249,600.00
	Storm Drain System	LS	1	$120,000.00	$120,000.00
	Signing and Striping	LS	1	$25,000.00	$25,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	1	$120,000.00	$120,000.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	42,500	$22.00	$935,000.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$80,000.00	$80,000.00
	Median Landscape	SF	26,600	$5.00	$133,000.00
	Utilities (Public Only)	LS	1	$100,000.00	$100,000.00
	Subtotal (Construction Costs)				$ 2,429,300.00
	Contingency			20%	$ 485,860.00
	Total Construction Costs (Capital)				$ 2,915,160.00
	Total Construction Budget (Rounded)				**$ 2,920,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		200000	$ 5.00	$ 1,000,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 1,000,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 3,920,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 980,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 4,900,000.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: | Prepared By:

Preliminary Opinion of Costs
Carillian Blvd/Boessow Rd

11151293
19-Apr-2019
CMP# 2423

ROUNDABOUT

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$80,000.00	$80,000.00
2	Clearing and Grubbing	LS	1	$30,000.00	$30,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$35,000.00	$35,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	33,000	$8.00	$264,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	2,400	$22.00	$52,800.00
	Minor Concrete (Curb and Gutter)	LF	1,000	$35.00	$35,000.00
	Minor Concrete (Sidewalk)	SQFT	6,000	$8.00	$48,000.00
	Storm Drain System	LS	1	$80,000.00	$80,000.00
	Signing and Striping	LS	1	$25,000.00	$25,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	1	$120,000.00	$120,000.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	32,500	$22.00	$715,000.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$40,000.00	$40,000.00
	Median Landscape	SF	11,500	$5.00	$57,500.00
	Utilities (Public Only)	LS	1	$100,000.00	$100,000.00
	Subtotal (Construction Costs)				$ 1,682,300.00
	Contingency			20%	$ 336,460.00
	Total Construction Costs (Capital)				$ 2,018,760.00
	Total Construction Budget (Rounded)				**$ 2,020,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		52000	$ 5.00	$ 260,000.00
	Developed		16000	$ 10.00	$ 160,000.00
	Total Right of Way (Capital)				**$ 420,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 2,440,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 610,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 3,050,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs

Existing Carillion Blvd - Improvements outside Roundabouts

11151293
19-Apr-2019
CMP# 2423

Signing & Striping

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$25,000.00	$25,000.00
2	Clearing and Grubbing	LS	0	$5,000.00	$0.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	0	$5,000.00	$0.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	0	$22.00	$0.00
	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
	Minor Concrete (ADA Ramp)	EA	0	$5,000.00	$0.00
	Storm Drain System	LS	0	$50,000.00	$0.00
	Signing and Striping	LF	4,200	$12.00	$50,400.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$40,000.00	$0.00
	Median Landscape	SF	0	$5.00	$0.00
	Median Paving	SF	0	$8.00	$0.00
	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 75,400.00
	Contingency			20%	$ 15,080.00
	Total Construction Costs (Capital)				$ 90,480.00
	Total Construction Budget (Rounded)				**$ 100,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 100,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 25,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 125,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs
Carillian Rd Extension - Vauxhall to Simmerhorn

11151293
19-Apr-2019
CMP# 2423

LENGTH: 1200

Roadway Extension

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$50,000.00	$50,000.00
2	Clearing and Grubbing	LS	1	$40,000.00	$40,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$50,000.00	$50,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	1,200	$400.00	$480,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	2,400	$22.00	$52,800.00
	Minor Concrete (Curb and Gutter)	LF	2,400	$35.00	$84,000.00
	Minor Concrete (Sidewalk)	SQFT	24,000	$8.00	$192,000.00
	Storm Drain System	LS	1	$145,200.00	$145,200.00
	Signing and Striping	LF	1,200	$12.00	$14,400.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	16,800	$5.00	$84,000.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 1,242,400.00
	Contingency			20%	$ 248,480.00
	Total Construction Costs (Capital)				$ 1,490,880.00
	Total Construction Budget (Rounded)				**$ 1,500,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		60000	$ 5.00	$ 300,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 300,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 1,800,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 450,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 2,250,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs

Carillian Rd Extension - Simmerhorn to A Street

11151293

19-Apr-2019

CMP# 2423

	Roadway Extension		LENGTH 750		
Item No.	***Item Description***	***Units***	***Quantity***	***Unit Cost***	***Total***
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$20,000.00	$20,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$25,000.00	$25,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	750	$400.00	$300,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,500	$22.00	$33,000.00
	Minor Concrete (Curb and Gutter)	LF	1,500	$35.00	$52,500.00
	Minor Concrete (Sidewalk)	SQFT	15,000	$8.00	$120,000.00
	Storm Drain System	LS	1	$102,000.00	$102,000.00
	Signing and Striping	LF	750	$12.00	$9,000.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	10,500	$5.00	$52,500.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 774,000.00
	Contingency			20%	$ 154,800.00
	Total Construction Costs (Capital)				$ 928,800.00
	Total Construction Budget (Rounded)				**$ 930,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		82500	$ 5.00	$ 412,500.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 412,500.00**
TOTAL PROJECT CAPITAL COSTS					**$ 1,342,500.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 335,625.00
TOTAL PROJECT COSTS (Rounded)					**$ 1,678,125.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: | Prepared By:

Preliminary Opinion of Costs

A Street Extension - Crystal Wy to Carillion Blvd

11151293
19-Apr-2019
CMP# 2423

			LENGTH		
	Roadway Extension		850		
Item No.	***Item Description***	***Units***	***Quantity***	***Unit Cost***	***Total***
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$25,000.00	$25,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$30,000.00	$30,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	850	$430.00	$365,500.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,700	$22.00	$37,400.00
	Minor Concrete (Curb and Gutter)	LF	1,700	$35.00	$59,500.00
	Minor Concrete (Sidewalk)	SQFT	17,000	$8.00	$136,000.00
	Storm Drain System	LS	1	$111,600.00	$111,600.00
	Signing and Striping	LF	850	$12.00	$10,200.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	11,900	$5.00	$59,500.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 894,700.00
	Contingency			20%	$ 178,940.00
	Total Construction Costs (Capital)				$ 1,073,640.00
	Total Construction Budget (Rounded)				**$ 1,080,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		102000	$ 5.00	$ 510,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 510,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 1,590,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 397,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 1,987,500.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs

Carillion Blvd/A St - Improvements outside Roundabouts

11151293
19-Apr-2019
CMP# 2423

Signing & Striping

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$20,000.00	$20,000.00
2	Clearing and Grubbing	LS	0	$5,000.00	$0.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	0	$5,000.00	$0.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	0	$22.00	$0.00
	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
	Minor Concrete (ADA Ramp)	EA	0	$5,000.00	$0.00
	Storm Drain System	LS	0	$50,000.00	$0.00
	Signing and Striping	LF	1,850	$12.00	$22,200.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$40,000.00	$0.00
	Median Landscape	SF	0	$5.00	$0.00
	Median Paving	SF	0	$8.00	$0.00
	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 42,200.00
	Contingency			20%	$ 8,440.00
	Total Construction Costs (Capital)				$ 50,640.00
	Total Construction Budget (Rounded)				**$ 60,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 60,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 15,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 75,000.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By: GHD

TRAFFIC SIGNALS ALTERNATIVE

4/19/2019

Prj No.	PROJECT DESCRIPTION	Construction Costs	Right of Way	Support Costs	Total Project Costs
	Retrofit/Improve Existing Facilities				
1	Carillion Blvd/Twin Cities Rd (SR 104) - Modify Traffic Signal	$520,000		$130,000	$650,000
2	Carillion Blvd/Lake Park Ave - Traffic Signal	$390,000		$98,000	$488,000
3	Carillion Blvd/Lake Canyon Ave - Traffic Signal	$390,000		$98,000	$488,000
4	Carillion Blvd/Elk Hills Dr - Traffic Signal	$390,000		$98,000	$488,000
5	Carillion Blvd/Walnut Ave - Traffic Signal	$670,000		$168,000	$838,000
6	Carillion Blvd/Vintage Oaks Dr - Traffic Signal	$390,000		$98,000	$488,000
7	Carillion Blvd/Di Maggio Way - Protected Intersection	$180,000		$45,000	$225,000
8	Carillion Blvd/Chelsham Ave - Traffic Signal	$390,000		$98,000	$488,000
9	Carrilion Blvd - RRFB Xing	$110,000		$28,000	$138,000
10	Carillion Blvd/Vauxhall Ave - Traffic Signal	$390,000		$98,000	$488,000
11	Carillion Blvd - Signing/Striping	$170,000		$43,000	$213,000
	TOTAL	**$3,990,000**	**$0**	**$1,002,000**	**$4,992,000**
	New Growth Area Facilities (Roadway Extensions, etc)				
12	Carillion Blvd/Simmerhorn Rd - Traffic Signal	$670,000		$168,000	$838,000
13	Carillion Blvd/A Street Extension - Traffic Signal	$520,000		$168,000	$688,000
14	Carillion Blvd/Boessow Rd - Traffic Signal	$670,000		$168,000	$838,000
15	Carillion Blvd Extension - S. of Vauxhall Ave to Simmerhorn Rd	$2,030,000	$425,000	$614,000	$3,069,000
16	Carillion Blvd Extension - Simmerhorn Rd to A Street Extension	$2,040,000	$990,000	$758,000	$3,788,000
17	Carillion Blvd Extension - A Street Extension to Boessow Rd	$1,140,000	$523,000	$416,000	$2,079,000
18	A Street Extension - Crystal Wy to Carillion Blvd Extension	$1,570,000	$780,000	$588,000	$2,938,000
19	Carillion Blvd Extension - Signing/Striping	$0		$0	$0
	TOTAL	**$8,640,000**	**$2,718,000**	**$2,880,000**	**$14,238,000**
	TOTAL PROJECT COSTS (Rounded)	**$12,630,000**	**$2,720,000**	**$3,890,000**	**$19,230,000**

Notes:

1) Construction Costs include a 20% contingency for these preliminary concepts (Typically a 30%-50% contingency is used by Caltrans when cost estimating in the PRE-PSR phase per Caltrans Cost Estimating Guidelines).

2) Support Costs estimated at 25% - includes PS&E and Construction Support

3) Existing R/W based on County GIS data.

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs

Typical MODIFY TRAFFIC SIGNAL at Majot Intersection

11151293
19-Apr-2019
CMP# 2423

MODIFY TRAFFIC SIGNAL

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	0	$10,000.00	$0.00
2	Clearing and Grubbing	LS	0	$5,000.00	$0.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	0	$25,000.00	$0.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
5	Roadway Intersection Widening (ac/ab/exc)	LEGS	3	$75,000.00	$225,000.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	0	$22.00	$0.00
10	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
11	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
12	Minor Concrete (ADA Ramp)	EA	8	$5,000.00	$40,000.00
13	Storm Drain System	LS	0	$80,000.00	$0.00
14	Signing and Striping	LS	1	$5,000.00	$5,000.00
15	Modify Signal and Lighting (Accessible Ped Signals)	EA	8	$6,000.00	$48,000.00
16	Modify Signal and Lighting	EA	1	$100,000.00	$100,000.00
16	Signal and Lighting	LS	0	$250,000.00	$0.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
18	Lighting (Roundabout)	LS	0	$72,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$5,000.00	$0.00
21	Median Landscape	SF	0	$5.00	$0.00
22	Utilities (Public Only)	LS	1	$10,000.00	$10,000.00
	Subtotal (Construction Costs)				$ 428,000.00
	Contingency			20%	$ 85,600.00
	Total Construction Costs (Capital)				$ 513,600.00
	Total Construction Budget (Rounded)				**$ 520,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 520,000.00**
	Support Costs (PS&E, CE, R/W)		25%		$ 130,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 650,000.00**

Assumptions

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs

Typical TRAFFIC SIGNAL Installation at Residential Streets

11151293
19-Apr-2019
CMP# 2423

TRAFFIC SIGNAL

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$5,000.00	$5,000.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	0	$25,000.00	$0.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	0	$22.00	$0.00
10	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
11	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
12	Minor Concrete (ADA Ramp)	EA	8	$5,000.00	$40,000.00
13	Storm Drain System	LS	0	$80,000.00	$0.00
14	Signing and Striping	LS	1	$5,000.00	$5,000.00
15	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
16	Signal and Lighting	LS	1	$250,000.00	$250,000.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
18	Lighting (Roundabout)	LS	0	$72,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$5,000.00	$5,000.00
21	Median Landscape	SF	0	$5.00	$0.00
22	Utilities (Public Only)	LS	1	$10,000.00	$10,000.00
	Subtotal (Construction Costs)				$ 325,000.00
	Contingency			20%	$ 65,000.00
	Total Construction Costs (Capital)				$ 390,000.00
	Total Construction Budget (Rounded)				**$ 390,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 390,000.00**
	Support Costs (PS&E, CE, R/W)		25%		$ 97,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 487,500.00**

Assumptions

Carillion Blvd Complete Street Corridor Study

Prepared for:

Prepared By:

Preliminary Opinion of Costs

Typical TRAFFIC SIGNAL Installation MAJOR ROADS

11151293
19-Apr-2019
CMP# 2423

TRAFFIC SIGNAL at MAJOR ROADS

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$20,000.00	$20,000.00
2	Clearing and Grubbing	LS	1	$10,000.00	$10,000.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	0	$25,000.00	$0.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
5	Roadway Intersection Widening (ac/ab/exc)	LEGS	2	$75,000.00	$150,000.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	0	$22.00	$0.00
10	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
11	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
12	Minor Concrete (ADA Ramp)	EA	8	$5,000.00	$40,000.00
13	Storm Drain System	LS	0	$80,000.00	$0.00
14	Signing and Striping	LS	1	$10,000.00	$10,000.00
15	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
16	Signal and Lighting	LS	1	$300,000.00	$300,000.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
18	Lighting (Roundabout)	LS	0	$72,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$10,000.00	$10,000.00
21	Median Landscape	SF	0	$5.00	$0.00
22	Utilities (Public Only)	LS	1	$15,000.00	$15,000.00
	Subtotal (Construction Costs)				$ 555,000.00
	Contingency			20%	$ 111,000.00
	Total Construction Costs (Capital)				$ 666,000.00
	Total Construction Budget (Rounded)				**$ 670,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 670,000.00**
	Support Costs (PS&E, CE, R/W)		25%		$ 167,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 837,500.00**

Assumptions

Carillion Blvd Complete Street Corridor Study

Prepared for:

Prepared By:

Preliminary Opinion of Costs

Di Maggio Protected Intersection

11151293

19-Apr-2019

CMP# 2423

PROTECTED INTERSECTION

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$5,000.00	$5,000.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	1	$2,500.00	$2,500.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	400	$22.00	$8,800.00
10	Minor Concrete (Curb and Gutter)	LF	1,900	$35.00	$66,500.00
11	Minor Concrete (Sidewalk)	SQFT	125	$8.00	$1,000.00
12	Minor Concrete (ADA Ramp)	EA	6	$5,000.00	$30,000.00
13	Storm Drain System	LS	0	$50,000.00	$0.00
14	Signing and Striping	LS	1	$10,000.00	$10,000.00
15	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
16	Signal and Lighting	LS	0	$250,000.00	$0.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
18	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$5,000.00	$5,000.00
21	Median Landscape	SF	0	$5.00	$0.00
22	Median Paving	SF	400	$8.00	$3,200.00
23	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 142,000.00
	Contingency			20%	$ 28,400.00
	Total Construction Costs (Capital)				$ 170,400.00
	Total Construction Budget (Rounded)				**$ 180,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 180,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 45,000.00
TOTAL PROJECT COSTS (Rounded)					**$ 225,000.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs
300ft N. of Vauxhall Ave

11151293
19-Apr-2019

Mid-Block Crossing with RRFP

CMP# 2423

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$5,000.00	$5,000.00
2	Clearing and Grubbing	LS	1	$5,000.00	$5,000.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	1	$2,500.00	$2,500.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	50	$22.00	$1,100.00
10	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
11	Minor Concrete (Sidewalk)	SQFT	200	$8.00	$1,600.00
12	Minor Concrete (ADA Ramp)	EA	2	$5,000.00	$10,000.00
13	Storm Drain System	LS	0	$50,000.00	$0.00
14	Signing and Striping	LS	1	$7,500.00	$7,500.00
15	Modify Signal and Lighting	LS	0	$250,000.00	$0.00
16	Signal and Lighting	LS	0	$25,000.00	$0.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	2	$25,000.00	$50,000.00
18	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	1	$5,000.00	$5,000.00
21	Median Landscape	SF	200	$5.00	$1,000.00
22	Median Paving	SF	0	$8.00	$0.00
23	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 88,700.00
	Contingency			20%	$ 17,740.00
	Total Construction Costs (Capital)				$ 106,440.00
	Total Construction Budget (Rounded)				**$ 110,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 110,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 27,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 137,500.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs
Existing Carillion Blvd - Improvements outside Signals

11151293
19-Apr-2019

Signing & Striping

CMP# 2423

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$25,000.00	$25,000.00
2	Clearing and Grubbing	LS	0	$5,000.00	$0.00
3	Embankment	CY	0	$30.00	$0.00
4	Erosion Control	LS	0	$5,000.00	$0.00
5	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
6	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
7	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
8	Retaining Wall	SQFT	0	$120.00	$0.00
9	Minor Concrete (Curb)	LF	0	$22.00	$0.00
10	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
11	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
12	Minor Concrete (ADA Ramp)	EA	0	$5,000.00	$0.00
13	Storm Drain System	LS	0	$50,000.00	$0.00
14	Signing and Striping	LF	9,500	$12.00	$114,000.00
15	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
16	Signal and Lighting	LS	0	$250,000.00	$0.00
17	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
18	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
19	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
20	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$40,000.00	$0.00
21	Median Landscape	SF	0	$5.00	$0.00
22	Median Paving	SF	0	$8.00	$0.00
23	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ 139,000.00
	Contingency			20%	$ 27,800.00
	Total Construction Costs (Capital)				$ 166,800.00
	Total Construction Budget (Rounded)				**$ 170,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ 170,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 42,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 212,500.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs
Carillian Rd Extension - Vauxhall to Simmerhorn

11151293

LENGTH: 1700

19-Apr-2019

Roadway Extension

CMP# 2423

Item No.	Item Description	Units	Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$50,000.00	$50,000.00
2	Clearing and Grubbing	LS	1	$40,000.00	$40,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$50,000.00	$50,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	1,700	$400.00	$680,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	3,400	$22.00	$74,800.00
	Minor Concrete (Curb and Gutter)	LF	3,400	$35.00	$119,000.00
	Minor Concrete (Sidewalk)	SQFT	34,000	$8.00	$272,000.00
	Storm Drain System	LS	1	$215,000.00	$215,000.00
	Signing and Striping	LF	1,700	$12.00	$20,400.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	23,800	$5.00	$119,000.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 1,690,200.00
	Contingency			20%	$ 338,040.00
	Total Construction Costs (Capital)				$ 2,028,240.00
	Total Construction Budget (Rounded)				**$ 2,030,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		85000	$ 5.00	$ 425,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 425,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 2,455,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 613,750.00
TOTAL PROJECT COSTS (Rounded)					**$ 3,068,750.00**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: | Prepared By:

GHD

Preliminary Opinion of Costs

Carillian Rd Extension - Simmerhorn to A Street

11151293

LENGTH 1800

19-Apr-2019

CMP# 2423

Roadway Extension

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$20,000.00	$20,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$25,000.00	$25,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	1,800	$400.00	$720,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	3,600	$22.00	$79,200.00
	Minor Concrete (Curb and Gutter)	LF	3,600	$35.00	$126,000.00
	Minor Concrete (Sidewalk)	SQFT	36,000	$8.00	$288,000.00
	Storm Drain System	LS	1	$230,000.00	$230,000.00
	Signing and Striping	LF	1,800	$12.00	$21,600.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	25,200	$5.00	$126,000.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 1,695,800.00
	Contingency			20%	$ 339,160.00
	Total Construction Costs (Capital)				$ 2,034,960.00
	Total Construction Budget (Rounded)				**$ 2,040,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		198000	$ 5.00	$ 990,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 990,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 3,030,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 757,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 3,787,500.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

GHD

Preliminary Opinion of Costs

Carillian Rd Extension - A Street to Boessow

11151293

19-Apr-2019

CMP# 2423

Item No.	Roadway Extension Item Description	Units	LENGTH 950 Quantity	Unit Cost	Total
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$20,000.00	$20,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$25,000.00	$25,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	950	$400.00	$380,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	1,900	$22.00	$41,800.00
	Minor Concrete (Curb and Gutter)	LF	1,900	$35.00	$66,500.00
	Minor Concrete (Sidewalk)	SQFT	19,000	$8.00	$152,000.00
	Storm Drain System	LS	1	$125,000.00	$125,000.00
	Signing and Striping	LF	950	$12.00	$11,400.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	13,300	$5.00	$66,500.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 948,200.00
	Contingency			20%	$ 189,640.00
	Total Construction Costs (Capital)				$ 1,137,840.00
	Total Construction Budget (Rounded)				**$ 1,140,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		104500	$ 5.00	$ 522,500.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 522,500.00**
TOTAL PROJECT CAPITAL COSTS					**$ 1,662,500.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 415,625.00
TOTAL PROJECT COSTS (Rounded)					**$ 2,078,125.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs

A Street Extension - Crystal Wy to Carillion Blvd

11151293

LENGTH

19-Apr-2019

Roadway Extension 1300

CMP# 2423

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	1	$10,000.00	$10,000.00
2	Clearing and Grubbing	LS	1	$25,000.00	$25,000.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	1	$30,000.00	$30,000.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Extension (ac/ab/exc)	LF	1,300	$430.00	$559,000.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	2,600	$22.00	$57,200.00
	Minor Concrete (Curb and Gutter)	LF	2,600	$35.00	$91,000.00
	Minor Concrete (Sidewalk)	SQFT	26,000	$8.00	$208,000.00
	Storm Drain System	LS	1	$170,000.00	$170,000.00
	Signing and Striping	LF	1,300	$12.00	$15,600.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$60,000.00	$0.00
	Median Landscape	SF	18,200	$5.00	$91,000.00
	Utilities (Public Only)	LS	1	$50,000.00	$50,000.00
	Subtotal (Construction Costs)				$ 1,306,800.00
	Contingency			20%	$ 261,360.00
	Total Construction Costs (Capital)				$ 1,568,160.00
	Total Construction Budget (Rounded)				**$ 1,570,000.00**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		156000	$ 5.00	$ 780,000.00
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ 780,000.00**
TOTAL PROJECT CAPITAL COSTS					**$ 2,350,000.00**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ 587,500.00
TOTAL PROJECT COSTS (Rounded)					**$ 2,937,500.00**

Assumptions

1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

Carillion Blvd Complete Street Corridor Study

Prepared for: Prepared By:

Preliminary Opinion of Costs

Carillion Blvd/A St - Improvements outside Traffic Signals

11151293
19-Apr-2019
CMP# 2423

Signing & Striping

Item No.	*Item Description*	*Units*	*Quantity*	*Unit Cost*	*Total*
1	Traffic Control System	LS	0	$20,000.00	$0.00
2	Clearing and Grubbing	LS	0	$5,000.00	$0.00
	Embankment	CY	0	$30.00	$0.00
	Erosion Control	LS	0	$5,000.00	$0.00
	Roadway Excavation (cut bank)	CY	0	$20.00	$0.00
	Roadway Widening (ac/ab/exc)	SF	0	$10.00	$0.00
	Roadway Approaches (ac/ab/exc)	SF	0	$8.00	$0.00
	Retaining Wall	SQFT	0	$120.00	$0.00
	Minor Concrete (Curb)	LF	0	$22.00	$0.00
	Minor Concrete (Curb and Gutter)	LF	0	$35.00	$0.00
	Minor Concrete (Sidewalk)	SQFT	0	$8.00	$0.00
	Minor Concrete (ADA Ramp)	EA	0	$5,000.00	$0.00
	Storm Drain System	LS	0	$50,000.00	$0.00
	Signing and Striping	LF	0	$12.00	$0.00
	Modify Signal and Lighting	LS	0	$50,000.00	$0.00
	Signal and Lighting	LS	0	$250,000.00	$0.00
	Rectangular Rapid Flashing Beacon (RRFB)	EA	0	$25,000.00	$0.00
	Lighting (Roundabout)	LS	0	$120,000.00	$0.00
	Roundabout (Exc/AC/AB/Curb/Conc Paving)	SQFT	0	$22.00	$0.00
	Planting and Irrigation (Sidewalk Planter Area)	LS	0	$40,000.00	$0.00
	Median Landscape	SF	0	$5.00	$0.00
	Median Paving	SF	0	$8.00	$0.00
	Utilities (Public Only)	LS	0	$50,000.00	$0.00
	Subtotal (Construction Costs)				$ -
	Contingency			20%	$ -
	Total Construction Costs (Capital)				$ -
	Total Construction Budget (Rounded)				**$ -**
	Right of Way (Capital)				
	Right of Way	SF			
	Undeveloped		0	$ 5.00	$ -
	Developed		0	$ 10.00	$ -
	Total Right of Way (Capital)				**$ -**
TOTAL PROJECT CAPITAL COSTS					**$ -**
	Support Costs (PA-ED, PS&E, CE, R/W)		25%		$ -
TOTAL PROJECT COSTS (Rounded)					**$ -**

Assumptions
1. Structural section = 4"AC over 12"AB
2. Shoulder structural section same as traveled way structural section

about

GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Martin Inouye
Martin.Inouye@ghd.com
916.782.8688

Todd Tregenza
Todd.Tregenza@ghd.com
916.782.8688

www.ghd.com