CITY OF MERCED
PLANNING & PERMITTING DIVISION

TYPE OF PROPOSAL: **General Plan Amendment #20-02, Site Utilization Plan Revision #1 to Planned Development #12 and Environmental Review #20-36**

INITIAL STUDY: #20-36

DATE RECEIVED: October 9, 2020

LOCATION: 1995 W Olive Ave., Merced, CA

ASSESSOR'S PARCEL NUMBER: 058-030-037

Please forward any written comments by February 17, 2021 to:

Michael Hren, AICP, Principal Planner
City of Merced Planning & Permitting Division
678 West 18th Street, Merced, CA 95340
hrenm@cityofmerced.org

Applicant Contact Information:

Robert Vermeltfoort
8525 N Cedar Avenue, Suite 106
Fresno, CA 93720

General Plan and Zoning Designations

Current General Plan Designation: The parcel is designated in the *Merced Vision 2030* General Plan as "Commercial Office" and "Industrial" – refer to the General Plan Map at Figure 3.

Current Zoning Designation: The parcel is designated in the Zoning Ordinance as Planned Development #12.

Project Site

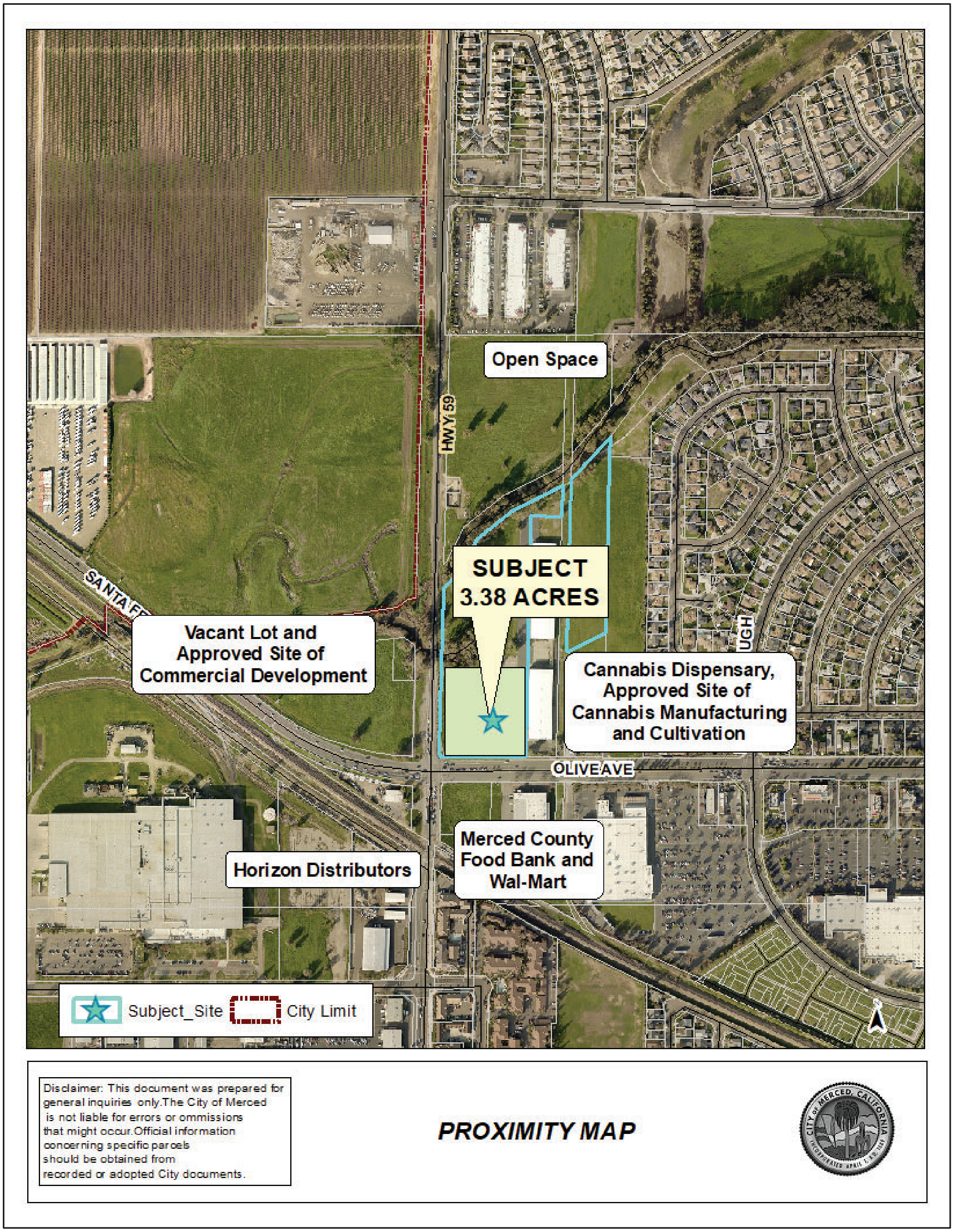
The proposed site is located at the northwest corner of Olive Avenue and State Highway 59. (Figures 1 and 2). The proposed changes would impact approximately 3.38 acres. At the time of application, the site was part of a 13.03-acre parcel (APN: 058-030-037) which was comprised of two unconnected portions, the westernmost of which is where the 3.38-acre subject site sits. Since the application, a Boundary Adjustment has been processed, separating the 3.38-acre site into its own parcel. The surrounding land uses are shown on the map at Figure 2 and listed in the table below.

Surrounding Land	Existing Use of Land	Zoning Designation	City General Plan Land Use Designation
North	Open Space	P-D #9	Open Space (OS-P); Industrial (IND)
South	Merced Cty. Food Bank, Wal-Mart, Commercial (Across Olive Ave.)	R-1-6, P-D #16	Industrial (IND); Regional Community Commercial (RC)
East	Industrial Warehouses, Cannabis Dispensary	P-D #12	Industrial (IND)
West	Vacant Lot, Approved Site of Commercial Development (Across Hwy. 59)	C-T	Thoroughfare Commercial (CT)

ATTACHMENT 5

Figure 1
Proximity Map

Figure 2
Subject Site & Surrounding Uses



Project Description

The proposed General Plan Amendment includes a General Plan Amendment and Site Utilization Plan (SUP) Revision for 3.38 acres of land on the Subject Site (refer to the map at Figure 3). As shown on the Proposed Land Use Changes Map at Figure 3, the site has two General Plan designations of Commercial Office (CO) and Manufacturing/Industrial (IND); it also has a Zoning Designation of Planned Development #12. The proposed General Plan Amendment would change the General Plan designation to Business Park (BP).

The SUP Revision includes changes to Planned Development #12 including a gas station with convenience store, a drive-through, and office and retail uses. A Site Plan is shown at Figure 4 detailing these uses and their proposed layout.

Background

This site was previously entitled through establishment of Planned Development #12 and through Conditional Use Permit (CUP) #380. At the time of the approval of CUP #380, the project site was part of a larger site that included what is now 1985 W Olive Avenue; CUP #380 was primarily for the purpose of constructing one of the warehouse buildings that currently occupies that site.

At the time of application for this General Plan Amendment and Site Utilization Plan Revision, the project site was a part of a larger parcel extending to the north and east of the subject 3.38-acre site (see Figure 1). Since then, a boundary adjustment has been recorded, modifying the borders such that this 3.38-acre site stands alone as a parcel unto itself.

Figure 3 - Proposed Land Use Changes

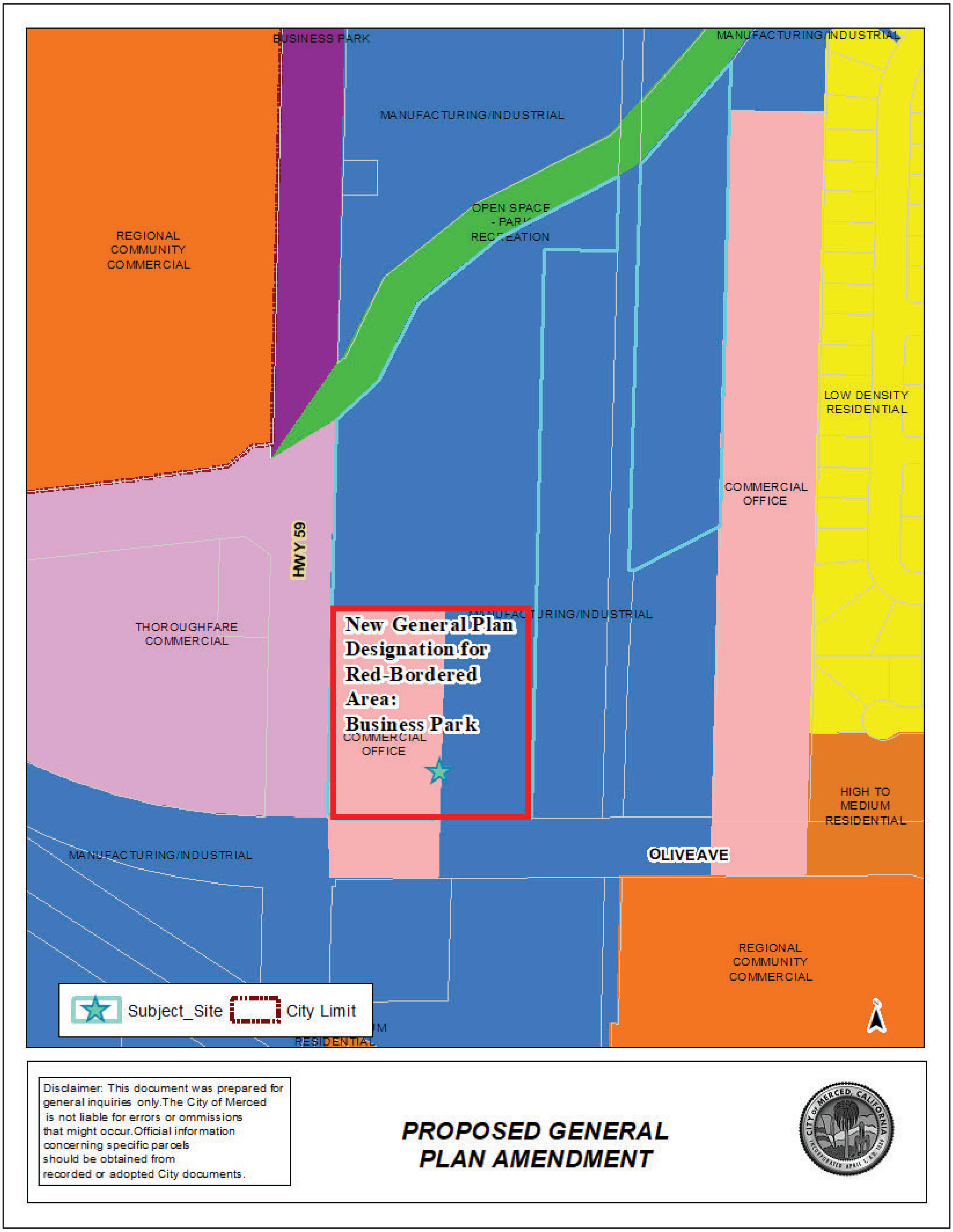


Figure 4 -Site Plan

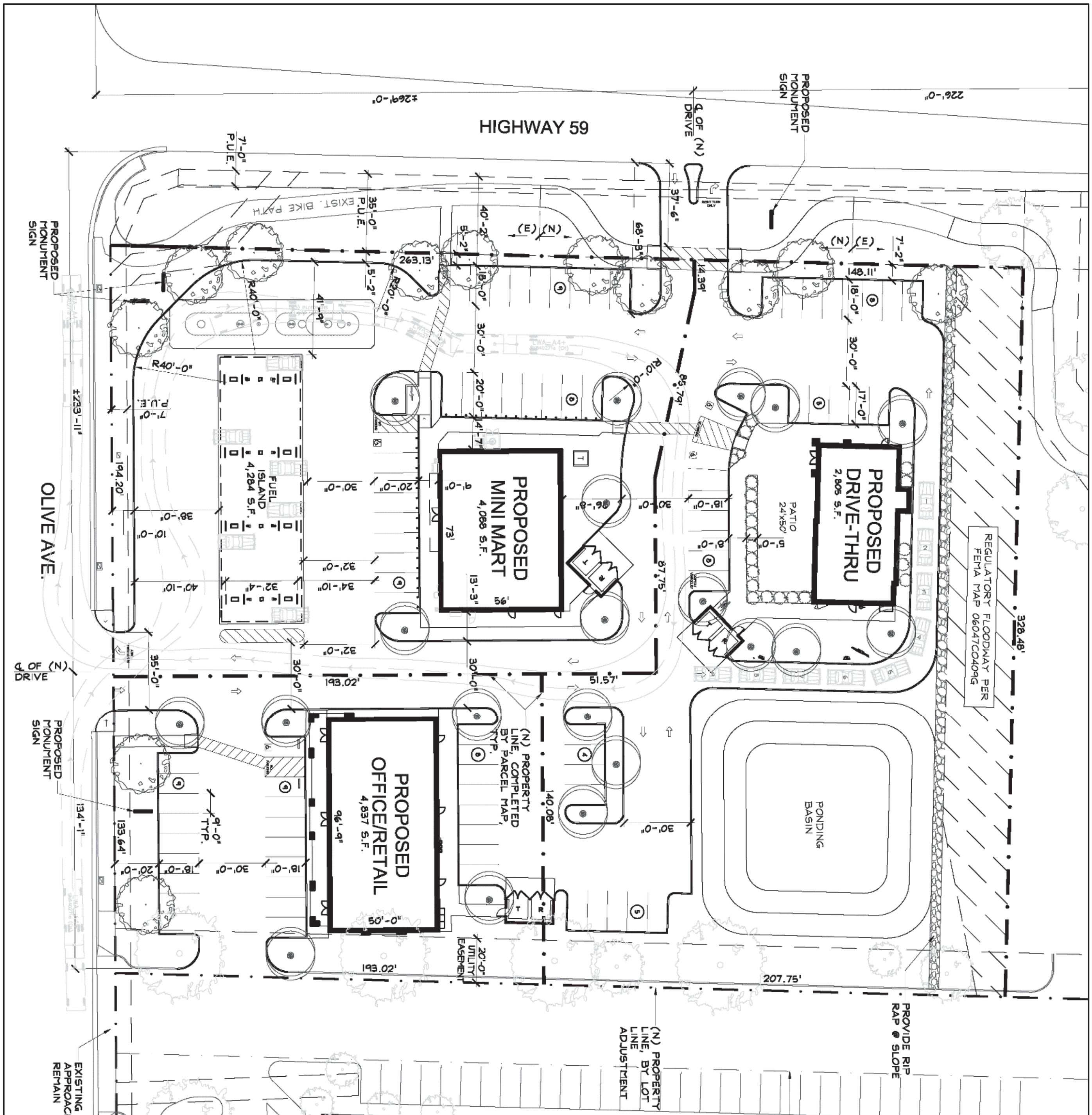
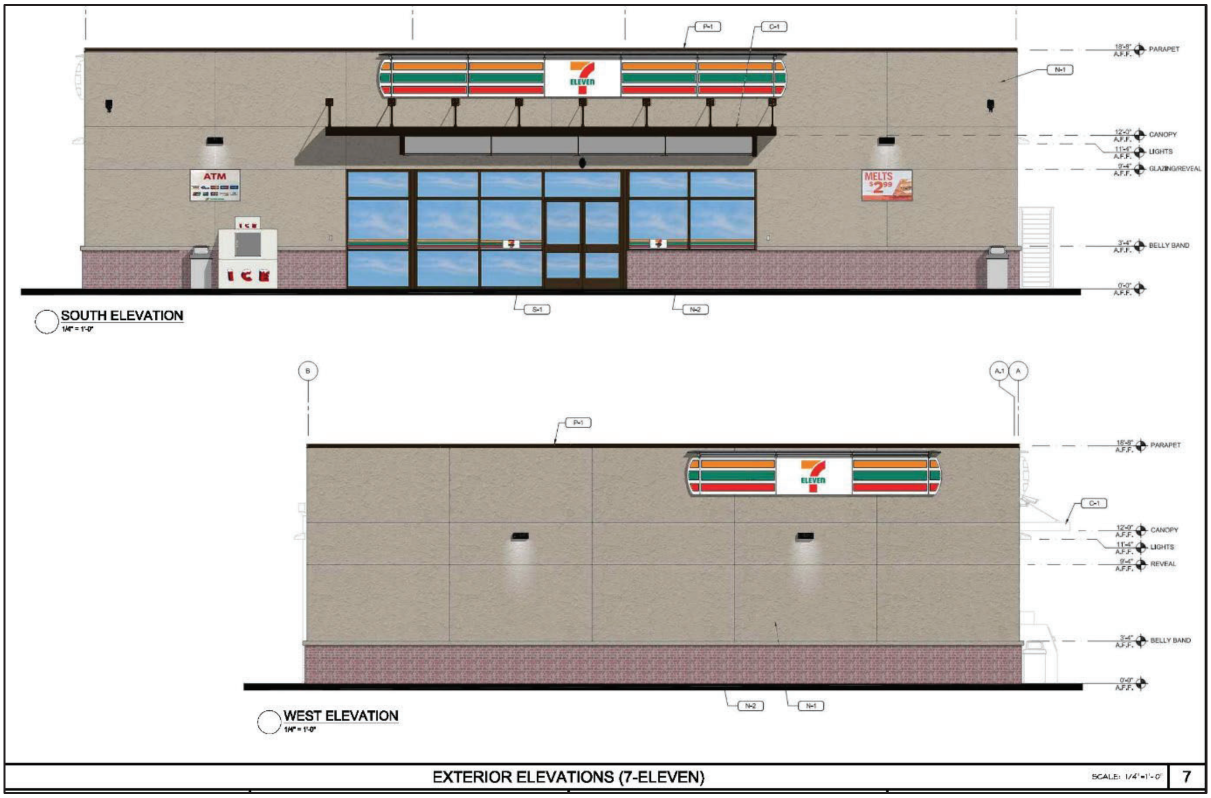


Figure 5 – Elevations for Drive-Thru

Figure 6A- Elevations for 7-Eleven



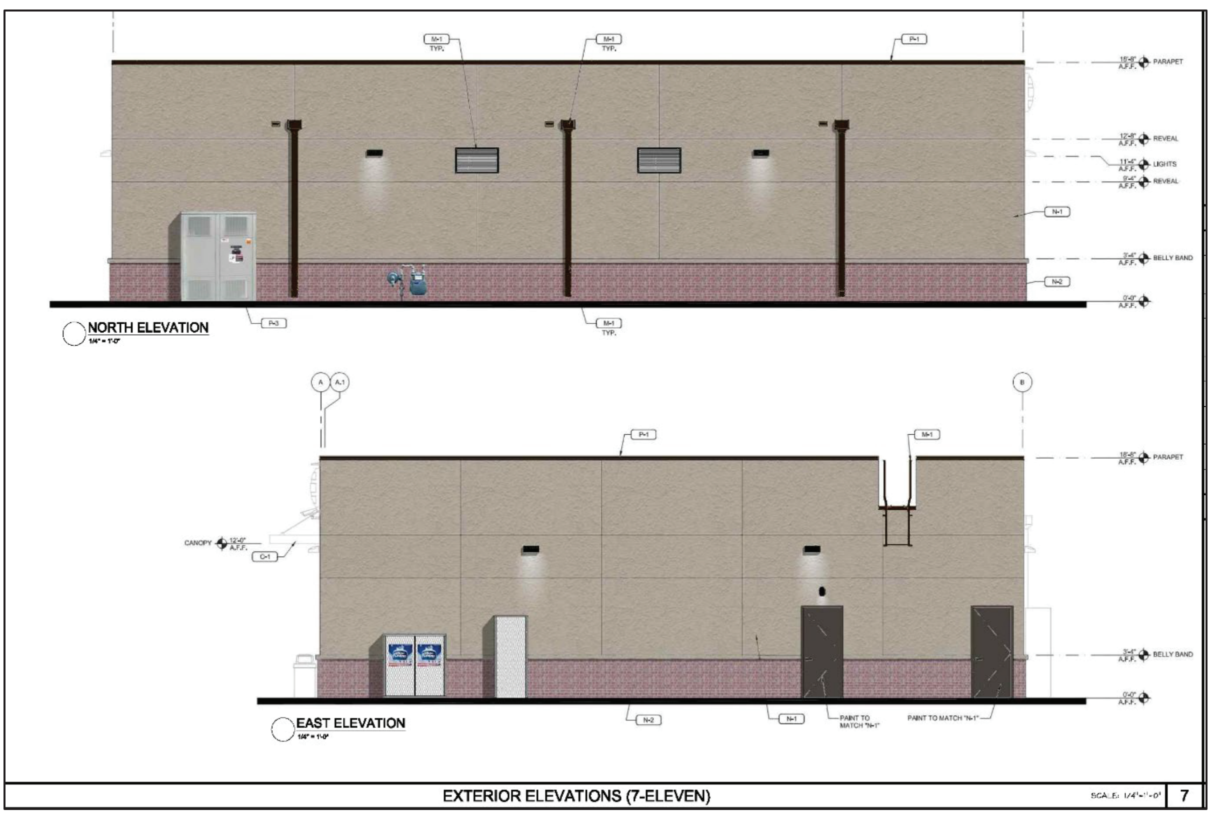
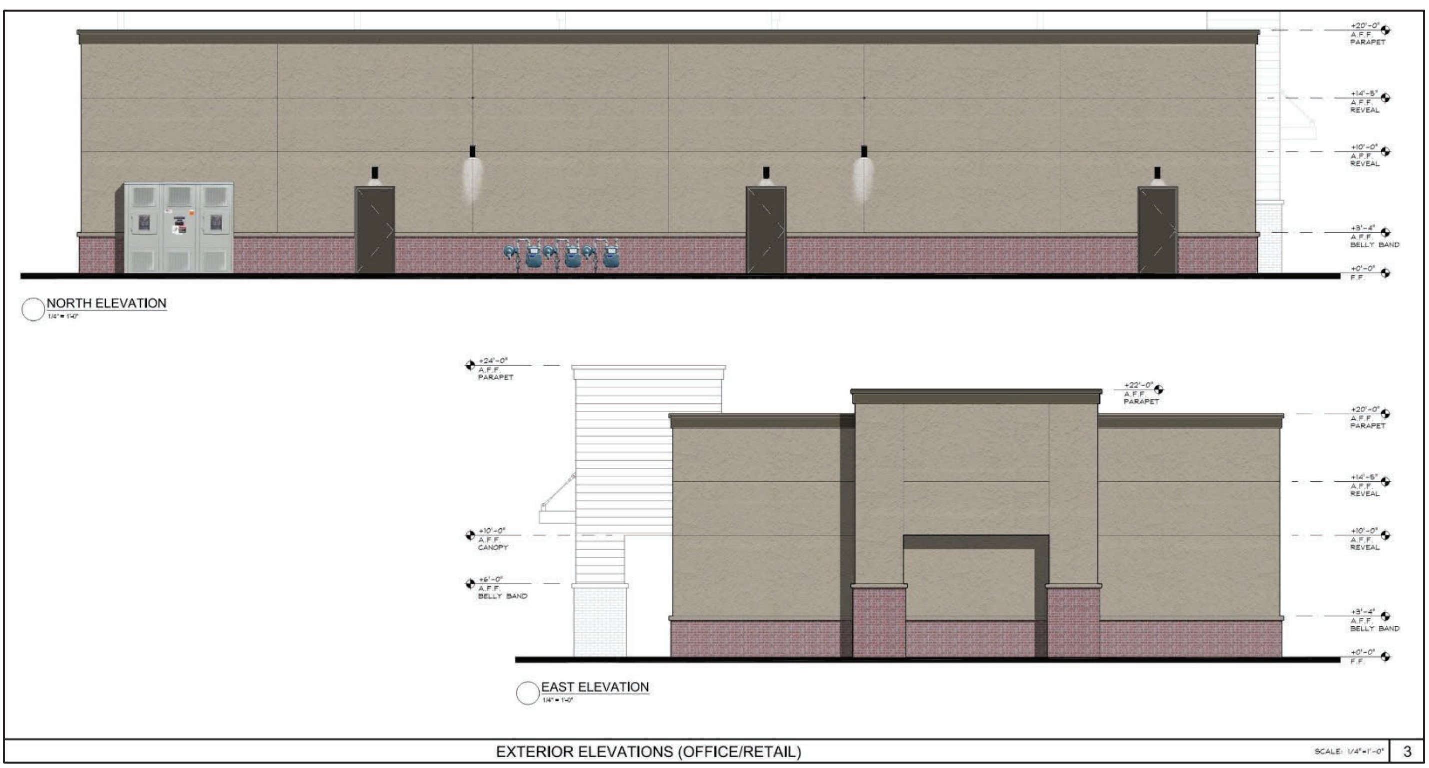


Figure 6B- Elevations for Office/Retail



A. INITIAL FINDINGS

A. The proposal is a project as defined by CEQA Guidelines Section 15378.

B. The project is not a ministerial or emergency project as defined under CEQA Guidelines (Sections 15369 and 15369).

C. The project is therefore discretionary and subject to CEQA (Section 15357).

D. The project is not Categorically Exempt.

E. The project is not Statutorily Exempt.

F. Therefore, an Environmental Checklist has been required and filed.

B. CHECKLIST FINDINGS

A. An on-site inspection was made by this reviewer on December 10, 2020.

B. The checklist was prepared on December 24, 2020.

C. The *Merced Vision 2030 General Plan* and its associated EIR (SCH# 2008071069) were certified in January 2012. The document comprehensively examined the potential environmental impacts that may occur as a result of build-out of the 28,576-acre Merced SUDP/SOI. For those significant environmental impacts (Loss of Agricultural Soils and Air Quality) for which no mitigation measures were available, the City adopted a Statement of Overriding Considerations (City Council Resolution #2011-63). This document herein incorporates by reference the *Merced Vision 2030 General Plan, the General Plan Program EIR* (SCH# 2008071069), and Resolution #2011-63.

As a subsequent development project within the SUDP/SOI, many potential environmental effects of the Project have been previously considered at the program level and addressed within the General Plan and associated EIR. (Copies of the General Plan and its EIR are available for review at the City of Merced Planning and Permitting Division, 678 West 18th Street, Merced, CA 95340, and on the City's website.) As a second-tier environmental document, Initial Study #20-36 plans to incorporate goals, policies, and implementing actions of the *Merced Vision 2030 General Plan*, along with mitigation measures from the General Plan EIR, as mitigation for potential impacts of the Project.

Project-level environmental impacts and mitigation measures (if applicable) have been identified through site-specific review by City staff. This study also utilizes existing technical information contained in prior documents and incorporates this information into this study. This site was included in Conditional Use Permit #380, and Establishment of Planned Development (P-D) #12.

Project-level environmental impacts have been identified through site-specific review by City staff. This study also utilizes existing technical information contained in prior documents and incorporates this information into this study.

C. ENVIRONMENTAL IMPACTS:

Will the proposed project result in significant impacts in any of the listed categories? Significant impacts are those which are substantial, or potentially substantial, changes that may adversely affect the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant. (Section 15372, State CEQA Guidelines. Appendix G of the Guidelines contains examples of possible significant effects.)

A narrative description of all "potentially significant," "negative declaration: potentially significant unless mitigation incorporated," and "less than significant impact" answers are provided within this Initial Study.

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” or “Less than Significant with Mitigation Incorporated,” as indicated by the checklist on the following pages.

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

DETERMINATION

On the basis of this initial evaluation:

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 project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

Prepared by: ______________________ 1/27/2021
Michael Hren, Principal Planner — Date

Approved by: ______________________ 1/22/2021
Kim Espinosa, Planning Manager
Environmental Coordinator, City of Merced — Date

Distributed for Public Review: January 28, 2021

1. Aesthetics

SETTING AND DESCRIPTION

The project site is comprised of a parcel totaling approximately 3.38 acres located at the northeast corner of Olive Avenue and Highway 59. The site is currently vacant. The site is surrounded by urban development consisting of warehouses and a cannabis dispensary to the east, a vacant lot entitled for commercial development to the west across Highway 59, open space to the north, and commercial businesses including Wal-Mart and the County Food Bank to the south across Olive Avenue.

The site is not located within a designated scenic corridor and there are no scenic vistas visible from the site. The topography of the site is level and there are no outstanding features noted.

The proposed project would include the construction of three single-story buildings and a fuel island. The buildings would be dispersed throughout the site with parking surrounding the buildings (refer to the site plan at Figure 4, and proposed and elevations at Figures 5, 6A, and 6B on pages 6 to 9).

The site would be enhanced with landscaping along the perimeter and between the buildings as well as parking lot trees.

Parking lot lighting and exterior building lighting would be added to the site.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Aesthetics. Will the project:				
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?			✓	

Impact Analysis

Would the project:

a) *Have a substantial adverse effect on a scenic vista?*

The site is not designated as a scenic vista and is not located near any designated scenic vistas. Therefore, the project would not have any adverse impacts on a scenic vista and there would be **no impact**.

b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

There are no officially designated State Scenic Highways or Routes in the project vicinity. Therefore, the project would have **no impact** on scenic resources, such as rock outcroppings, trees, or historic buildings within a scenic highway.

c) *If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

The project site is located within an urbanized area with development surrounding the site. The current general plan designation for the site is split between Commercial Office (CO) and Industrial (IND). The proposed General Plan Amendment would change the site to Business Park (BP). The site is not adjacent to any residential zones and is thus not subject to any height limitations. Even were it the case that a height limitation applied in this area, the proposed buildings would not exceed the maximum height allowed within a B-P zone when directly across from or adjacent to a residential zone (40 feet) per Table 20.10-2 of the Zoning Ordinance. The City's Zoning Ordinance does not regulate scenic quality other than building height and general aesthetics. Because the site is currently vacant and has been for many years, the development of the site would improve the aesthetic value of the site. Based upon these details, the addition of three structures would have negligible impact on the visual character of the site, and would be a **less than significant impact.**

d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

The General Plan Amendment would not create any additional source of light or glare that would affect views in the area. The construction of the development on the site would add artificial lighting to the area. The parking areas and buildings would add artificial lighting to the site and area. However, given the fact that the site is surrounded by urban development and is currently zoned, in part, for commercial development, the impacts would be less than significant. The proposed project may result in low level, off-site light and glare from streetlights, security lights, parking lot lighting and reflective material. Off-site effects depend upon the type of lighting fixtures installed and building materials used to construct the buildings. All lighting would be required to meet the California Energy Code and would be required to be shielded so it does not spillover onto adjacent properties as required by the Energy Code. The addition of lighting would be a **less than significant impact.**

2. Agriculture Resources

SETTING AND DESCRIPTION

Merced County is among the largest agriculture producing Counties in California (ranked fifth), with a gross income of more than $3.4 billion in 2017. The County's leading agriculture commodities include milk, chickens, almonds, cattle and calves, tomatoes, and sweet potatoes.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
2. Agriculture and Forestry Resources. Will the project:				
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 - agriculture?				✓
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?				✓

Impact Analysis

Would the project:

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 -agriculture?*

The project site is located within the City Limits of Merced and was annexed in 1992. The California Department of Conservation prepares Important Farmland Maps through its Farmlands Mapping and Monitoring Program (FMMP). The system of classifying areas is based on soil type and use. According to the 2018 Merced County Important Farmlands Map, the site is classified as a mixture of “Vacant or Disturbed Land” and “Urban and Built-Up Land” (Figure 7A). Therefore, the proposed General Plan Amendment and SUP Revision would not have any effect on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The proposed project would not affect protected farmland and there would be **no impact.**

b) *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

There are no Williamson Act contract lands in this area. Therefore, there is **no impact.**

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))?*

There is no forest land or timberland on the site. The project would not conflict with any zoning or plan for forest land or timberland. Therefore, **there is no impact**.

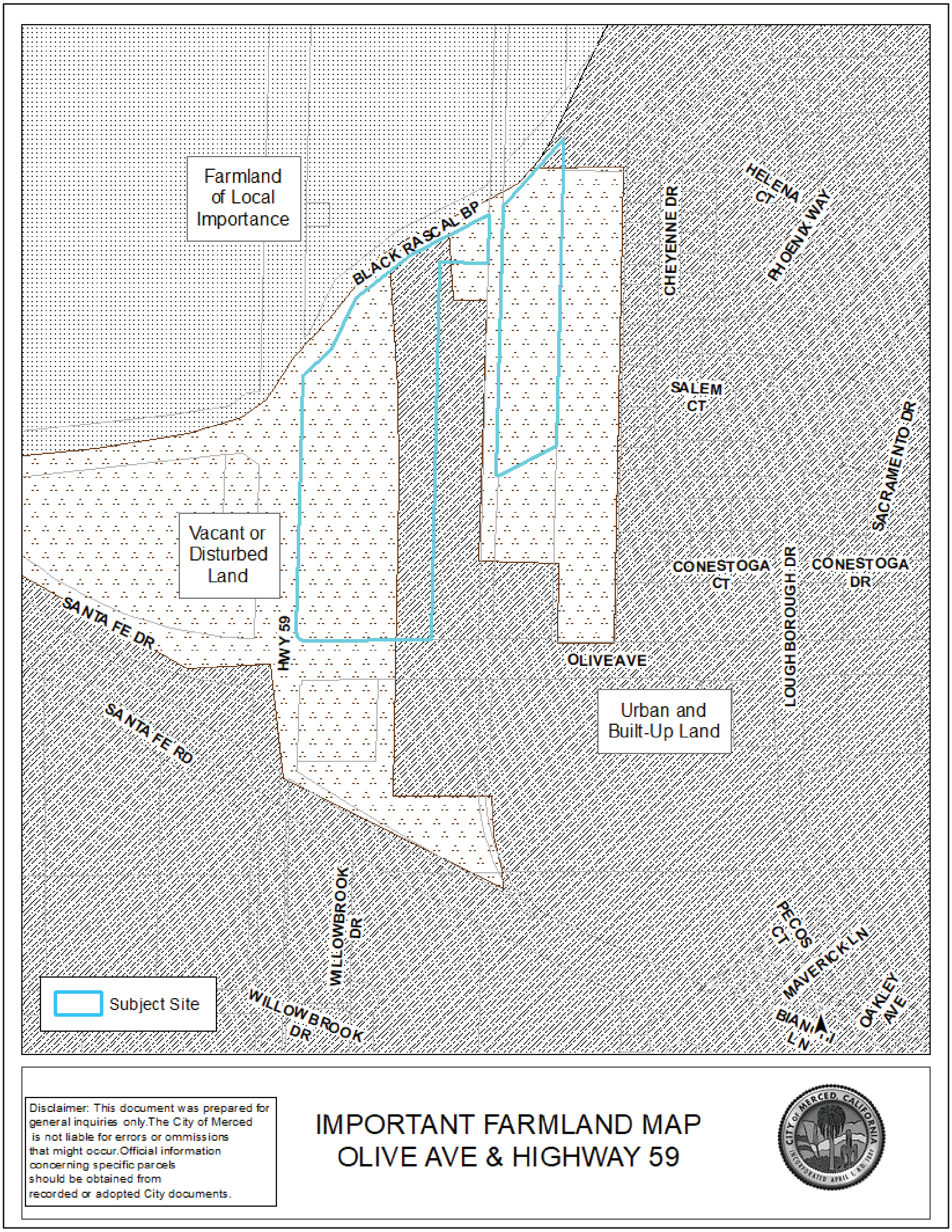
d) *Result in the loss of forest land or conversion of forest land to non-forest use?*

There is no forest land on the site. **No impact.**

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?*

The primary use of land in the surrounding area is “Urban and Built-Up Land”. To the northwest of the site are some lands listed as “Farmland of Local Importance” although the nearest site actively being farmed is over 1,500 feet away and across Highway 59. The proposed development would not cause the use of this land to change. Therefore, there is **no impact.**

Figure 7A - Important Farmland Map



3. Air Quality

SETTING AND DESCRIPTION

The San Joaquin Valley Air Pollution Control District (SJVAPCD) will review the project to assess the impact to air quality and to establish acceptable mitigation measures. Hence, the City recognizes that additional mitigation measures may be applied to subsequent phases of the development of this area. While the action of the SJVAPCD is independent of City reviews and actions, their process allows the City to review proposed mitigation measures that could affect project design and operation. Any proposed changes are subject to approval by the City.

The project is located in the San Joaquin Valley Air Basin (SJVAB), which occupies the southern half of the Central Valley and is approximately 250 miles in length and, on average, 35 miles in width. The Coast Range, which has an average elevation of 3,000 feet, serves as the western border of the SJVAB. The San Emigdio Mountains, part of the Coast Range, and the Tehachapi Mountains, part of the Sierra Nevada, are both located to the south of the SJVAB. The Sierra Nevada extends in a northwesterly direction and forms the eastern boundary of the SJVAB. The SJVAB is basically flat with a downward gradient to the northwest.

The climate of the SJVAB is strongly influenced by the presence of these mountain ranges. The mountain ranges to the west and south induce winter storms from the Pacific to release precipitation on the western slopes, producing a partial rain shadow over the valley. A rain shadow is defined as the region on the leeward side of the mountain where precipitation is noticeably less because moisture in the air is removed in the form of clouds and precipitation on the windward side. In addition, the mountain ranges block the free circulation of air to the east, resulting in the entrapment of stable air in the valley for extended periods during the cooler months.

Winter in the SJVAB is characterized as mild and fairly humid, and the summer is hot, dry, and cloudless. During the summer, a Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind.

For additional information, please refer to the Air Quality Analysis prepared by Environmental Permitting Specialists found at Appendix A.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3. Air Quality. Would the project:				
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) Create objectionable odors affecting a substantial number of people?			✓	

Impact Analysis

Would the project:

a) *Conflict with or obstruct implementation of the applicable air quality plan?*

Ozone (RACT Demonstration (2020) Plan

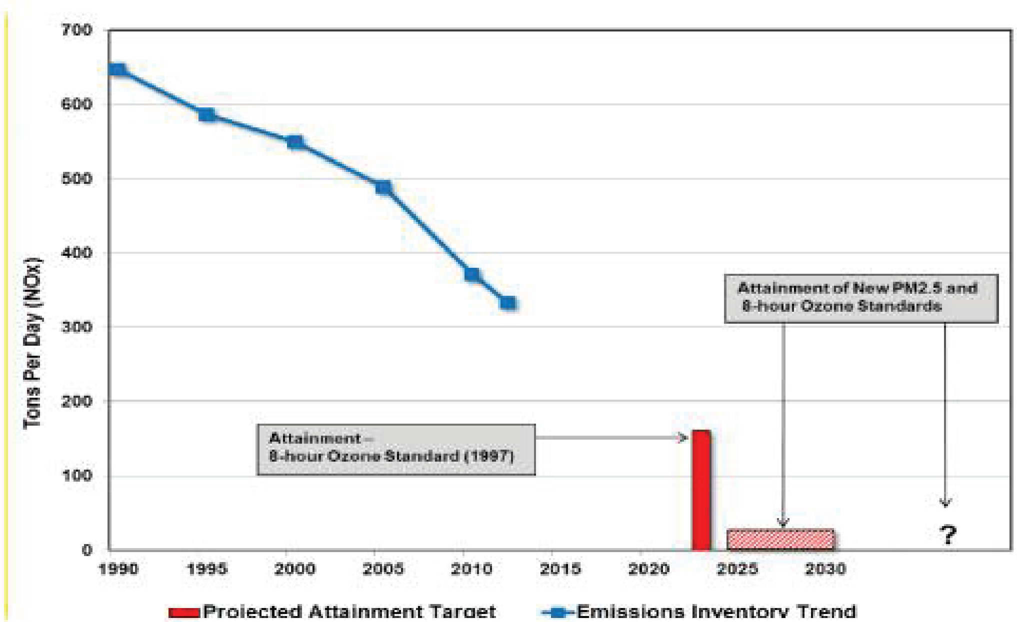
This Plan lists a variety of emission control techniques aimed at reducing emissions of VOCs from a variety of sources and processes. One of the emission control techniques specifically recommended the use of vapor recovery devices and systems. SJVAPCD adopted Rules 4621 and 4623 that require the use of vapor recovery systems. Since the proposed project would use vapor recovery in the dispensing and storage of gasoline, it would comply with this Plan.

Ozone Plan for the 2008 8-Hour Ozone Standard (2016)

This Plan is a commitment by SJVAPCD to reduce NOx and VOC emissions over the next decade in order to achieve compliance with federal NAAQS. The Plan specifically requires the reduction of NOx emissions by 60% by the year 2031.

Since mobile sources contribute to 85% of all the NOx emission, and since the District does not regulate mobile sources, the Plan relies on the state and federal government to reduction in tailpipe emissions to achieve these reductions. The District's efforts are aimed at reducing emissions from stationary sources. These include the control of VOC emissions from gasoline stations and restaurants. The proposed project complies with Rules 4621, 4623 and 4692 that are aimed at controlling VOC emissions.

Based on historic trends in NOx emissions, the District is on target to meet the 2008 8-hour standard by 2031.



PM-2.5 Plan (2018) and PM-10 Maintenance Plan (2007)

Dust emissions would be reduced through the required implementation of SJVAPCD Regulation VIII, enforcement of which is the responsibility of the SJVAPCD. Conformance with plans and specifications is monitoring by City building inspectors. Regulation VIII contains the following dust emission control measures:

- Air emissions related to the project shall be limited to 20% opacity (opaqueness, lack of transparency) or less, as defined in SJVAPCD Rule 8011. The dust control measures specified below shall be applied as required to maintain the Visible Dust Emissions standard.
- The contractor shall pre-water any excavation, land leveling, grading, etc.
- The contractor shall apply water, chemical/organic stabilizer/suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads, throughout the period of soil disturbance, as required.
- The contractor shall restrict vehicular access to the disturbance area during periods of inactivity.
- The contractor shall apply water or chemical/organic stabilizers/suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials as needed.
- When materials are transported off-site, the contractor shall stabilize and cover all materials to be transported and maintain six inches of freeboard space from the top of the container.
- The contractor shall remove carryout and trackout of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and trackout extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.

Conformance with SJVAPCD dust control standards will also be facilitated by the City by the incorporation of dust control requirements in project conditions of approval. Dust control provisions are also routinely included in site improvement plans and specifications.

Project construction would be subject to Rule 9510 as it exceeds 2,000 square feet of commercial space. Rule 9510 requires that emissions of NOx and VOC be reduced by or an emissions mitigation fee be paid.

Per the Air Quality Analysis found at Appendix A, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. PM-10 and PM-2.5 emissions would comply with District regulations related to particulate control and indirect source review (Rule 9510). No additional mitigation is required beyond project design and payment of mitigation fees. Therefore, this impact is considered **less than significant.**

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?*

Currently, Merced County is non-attainment for the 8-hour ozone standard (both state and federal) as well as for PM-10 and PM-2.5. Emissions of NOx, VOC , PM-10 and PM-2.5 are below the thresholds of significance. In addition, the project complies with air quality plans for ozone, PM-10 and PM-2.5 as discussed in the Air Quality Analysis found at Appendix A. As a result, the project would not result in a cumulatively considerable net increase of NOx, VOCs, PM-10 and PM-2.5 emissions. Therefore, this impact is considered **less than significant.**

c) *Expose sensitive receptors to substantial pollutant concentrations?*

Criteria Air Pollutants

A comparison of project's criteria emissions (both construction and operational) is summarized below:

Table 5-1
Summary of Project Level Air Quality Impacts
(tons/year)

Pollutant	Construction Phase	Operational Phase	Significance Threshold	Significant?
NOx	0.4172	5.29	10	No
VOC	0.1226	0.500	10	No
PM-10	0.0585	0.0365	15	No
PM-2.5	0.0329	0.013	15	No
CO	0.3229	1.769	100	No
SOx	0.00075	0.00712	27	No
GHG (CO2(e))	66.96	870.28	No Threshold	N/A

Section 15064.7 of CEQA expressly authorizes the adoption and use of thresholds of significance. The thresholds are an identifiable, quantitative performance level of a particular environmental effect. Non-compliance with these thresholds means the effect would be significant.

Toxic Air Contaminants

The emissions calculated in Section 4.6 were used to calculate a screening level risk score for each of the 3 types of risks. "Screening Level" refers to a rough estimate of potential risk based on conservative assumptions, such as worst-case exposure and emissions.

Unlike a detailed health risk assessment that provides a numerical probability of cancer risk, a screening level risk analysis yields a "Risk Score". The objective in preparing a screening level risk analysis is to avoid preparing a detail HRA if the screening level risk scores are below the thresholds of significance. The screening level risk calculations are based on the Air Toxics "Hot-Spots" Emissions Potency Method under the AB-2588 regulation.

The results of the analysis are summarized in Table 5-2 and show that for the construction phase the maximum cancer risk score at the nearest homes located 260 meters East of the project site is 1.78. For the operational phase, the cancer risk score is estimated to equal

2.42. The risk score is lower at other homes. Non-cancer risks are below 0.02 at all locations for both construction and operational phases. Detailed calculation is provided in Appendix C of the Air Quality Analysis found at Appendix A.

Table 5-2

Summary of Project Level Health Risks at Nearest Residence

250 meters South of the Project Site

Construction Phase	Operational (Occupancy) Phase	Significance Threshold	Significant?
1.78	2.41	10	Insignificant for Construction Phase Insignificant for Operational Phase
Not Applicable	0.00183	1.0	No
Not Applicable	0.00179	1.0	No

The cancer and non-cancer risk scores are well below the thresholds of significance. These results indicate that the project would not pose a significant public health risk.

Construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). As shown in Table 1 of the Air Quality Analysis found at Appendix A, construction emissions associated with the project would not exceed the SJVAPCD's thresholds for ROG, NO_x, CO, SO_x, $PM_{2.5}$, or PM_{10} emissions. In addition to the construction period thresholds of significance, the SJVAPCD has implemented Regulation VIII measure for dust control during construction. These control measures are intended to reduce the amount of PM_{10} emissions during the construction period. Implementation of mitigation measure AIR-1 would ensure that the proposed project complies with Regulation VIII and further reduces the short-term construction period air quality impacts.

In addition, once the proposed project is constructed, the project would not be a significant source of long-term operational emissions. All gasoline dispensing operations associated with the project would be subject to SJVAPCD Rule 4622 which would limit emissions of gasoline vapors from the transfer of gasoline into motor vehicle fuel tanks. Therefore, with implementation of Mitigation Measure AIR-2, the proposed project would not expose sensitive receptors to substantial pollutant concentrations.

Additionally, the following mitigation measures are included in the project design:

- Energy efficient building design per California's Title 24 energy efficiency standards, including use of efficient lighting
- Use of vapor recovery system for gasoline dispensing and storage

- Use of electricity generated from renewable and non-renewable sources
- Incorporation of emission controls in restaurant food preparation
- Disposal of solid waste at a landfill equipped with gas collection system and waste to energy conversion

These design measures along with compliance with mitigation measures AIR-1 and AIR-2 would reduce this impact to **less than significant with mitigation.**

Mitigation Measures:

AIR-1) Consistent with SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site:

• All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.

• All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.

• All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.

• When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.

• All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)

• Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.

AIR-2) The project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project meet the California Air Resources Board (CARB) Tier 2 with a Level 3 Diesel Particulate Filter emissions standards or equivalent.

d) *Create objectionable odors affecting a substantial number of people?*

The proposed project is not considered a source of odors. The retail convenience market would not generate any odors. All gasoline dispensing operations associated with the project would be subject to SJVAPCD Rule 4622 which would limit emissions of gasoline odors from the transfer of gasoline into motor vehicle fuel tanks. The gasoline dispensing pumps are equipped with vapor recovery nozzles to capture any gasoline vapors and fumes. There is a potential for odors from fuel delivery trucks. These trucks would release diesel exhaust that can cause odors. The trucks, however, are limited to idling for no more than 5 minutes and only occur when fuel is being delivered.

The drive through restaurant may involve cooking/charbroiling. However, under current District Prohibitory Rules 4102 (Nuisance) and 4692 (commercial charbroiling), the applicant is required to control such odors and ensure odors do not impact nearby residences or workers.

The proposed project would not create objectionable odors affecting a substantial number of people during project construction or operation, and this impact is considered **less than significant.**

4. Biological Resources

Setting and Description

The plan area is in the Central California Valley eco-region. This eco-region is characterized by flat, intensively farmed plains with long, hot dry summers and cool, wet winters (14-20 inches of precipitation per year). The Central California Valley eco-region includes the Sacramento Valley to the north and the San Joaquin Valley to the south and it ranges between the Sierra Nevada Foothills to the east to the Coastal Range foothills to the west. Nearly half of the eco-region is actively farmed, and about three fourths of that farmed land is irrigated.

The biological resources evaluation prepared as part of the *Merced Vision 2030 General Plan Program Environmental Impact Report* (EIR), does not identify the project site as containing any seasonal or non-seasonal wetland or vernal pool areas. Given the adjacent, built-up, urban land uses and major roadways, no form of unique, rare or endangered species of plant and/or animal life could be sustained on the subject site.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
4. <u>Biological Resources.</u> Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modification, 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 Game or U.S. Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			✓	
c) Conflict with any local policies or ordinance protecting biological resources, such as a tree preservation policy or ordinance?				✓
d) Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				✓
e) Conflict with any local policies or ordinance protecting biological resources, such as a tree preservation policy or ordinance?				✓
f) *Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*				✓

Impact Analysis

Would the project:

a) *Have a substantial adverse effect, either directly or through habitat modification, 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 Game or U.S. Fish and Wildlife Service?*

The proposed project would not have any direct effects on animal life by changing the diversity of species, number of species, reduce any rare or endangered species, introduce any new species, or deteriorate existing fish or wildlife habitat. Although the *Merced Vision 2030 General Plan* identifies several species of plant and animal life that exist within the City's urban boundaries, the subject site, which is surrounded by developed urban uses, is unlikely to contain any rare or endangered species of plant or animal life.

A biological resources inventory was prepared as part of the environmental review for the annexation of the area to the west, the northwest corner of Highway 59 and Olive Avenue. No special-status species were identified on that site. The project site is of similar character, but with more nearby built-up urban uses, and is not as proximal to the Black Rascal Creek.

Based on this information, with continued practice of the mitigation measures, the project will not have a substantial adverse effect, either directly or through habitat modification on any species identified as a candidate, sensitive, or special status species. This impact would be **less than significant with mitigation.**

Mitigation Measures:

BIO-1) Impacts to wildlife habitat can be reduced by using native plant materials in landscaping to the greatest extent possible. Native plant species provide the best wildlife habitat since native vegetation has co-evolved with the wildlife and affords food sources for which wildlife is best adapted. Native species cannot always be used to produce the desired form and floral characteristics, but some native species can usually be incorporated.

Goal Area OS-1: Open Space for the Preservation of Natural Resources	
Policies:	
OS-1.1	Identify and mitigate impacts to wildlife habitats which support rare, endangered, or threatened species.

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

The proposed project would not have any direct effects on riparian habitat or other sensitive natural community. The City General Plan identifies Bear, Black Rascal, Cottonwood, Miles, Fahrens, and Owens Creeks within the City's growth area. The subject site is located near to only the Black Rascal Creek but is shown in Figure 3.4-1 of the *Merced Vision 2030 General Plan Program EIR* as having no wetland inventory. Therefore, the project would have a **less than significant impact** on riparian habitat.

c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

The project site would not have any direct effect on wetlands as no wetlands have been identified in this area. Figure 3.4-1 of the *Merced Vision 2030 General Plan Program EIR* shows the site as having no wetland inventory. Much of the area surrounding the subject site has been modified from its original state and is developed with urban uses. There is **no impact.**

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

The project would not have any adverse effects on any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridor or impede the use of native wildlife nursery sites. There is **no impact.**

e) *Conflict with any local policies or ordinance protecting biological resources, such as a tree preservation policy or ordinance?*

The proposed project would not conflict with local policies and/or ordinances protecting biological resources. The City's General Plan does not identify this site as being a biological resource. Therefore, there is **no impact.**

f) *Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

The proposed project would not have any effects on a habitat conservation plan. There are no adopted habitat conservation plans, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan for the City of Merced or Merced County. There is **no impact.**

5. Cultural Resources

Setting and Description

The City of Merced area lies within the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur.

Merced County was first explored by Gabriel Moraga in 1806, when he named the Merced River, "El Rio de Nuestra Senra de la Merced." Moraga's explorations were designed to locate appropriate sites for an inland chain of missions. Moraga explored the region again in 1808 and 1810.

Archaeology

Archaeological sites are defined as locations containing significant levels of resources that identify human activity. Very little archaeological survey work has been conducted within the City or its surrounding areas. Creeks, drainage, and sloughs exist in the northern expansion area of the City, and Bear Creek and Cottonwood Creek pass through the developed area. Archaeological sites in the Central Valley are commonly located adjacent to waterways and represent potential for significant archaeological resources.

Paleontological sites are those that show evidence of pre-human existence. Quite frequently, they are small outcroppings visible on the earth's surface. While the surface outcroppings are important indications of paleontological resources, the geologic formations are the most important. There are no known sectors within the project area known to contain sites of paleontological significance.

Historic Resources

In 1985, in response to community concerns over the loss of some of the City's historic resources, and the perceived threats to many remaining resources, a survey of historic buildings was undertaken in the City. The survey focused on pre-1941 districts, buildings, structures, and objects of historical, architectural, and cultural significance. The survey area included a roughly four square-mile area of the central portion of the City.

The National Register of Historic Places, the California Historical Landmarks List, and the California Inventory of Historic Resources identify several sites within the City of Merced. These sites are listed on the Merced Historical Site Survey and maintained by the Merced Historical Society. There are no listed historical sites on the Project site.

There are no listed historical sites and no known sectors within the project area known to contain sites of paleontological or archeological significance. However, mitigation measures ensure proper steps are taken in the event evidence of archeological artifacts area discovered during construction.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
5. <u>Cultural Resources.</u> Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?		✓		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		✓		
c) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

Impact Analysis

Would the project:

a) *Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?*

The project would not alter or destroy any historic archaeological site, building, structure, or object, nor would it alter or affect unique ethnic cultural values or restrict religious or sacred uses.

Additionally, a cultural resources records search was conducted by the Central California Information Center (CCIC) at California State University, Stanislaus as part of the City's General Plan update. No historic resources were found at or near the project site. The impact of this project would be less than significant. The standard for these mitigation measures is reflected in Mitigation Measure CUL-1, CUL-2, and CUL-3. This project would be required to comply with those mitigation measures. Compliance with these mitigation measures would reduce this impact to **less than significant with mitigation.**

Mitigation Measures:

CUL-1) If unknown pre-contact or historic-period archaeological materials are encountered during project activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations.

Cultural resources materials may include pre-contact resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations shall be required to mitigate adverse impacts from project implementation. These additional studies may include, but are not limited to, recordation, archaeological excavation, or other forms of significance evaluations.

The applicant shall inform its contractor(s) of the sensitivity of the project site for archaeological deposits, and include the following directive in the appropriate contract documents:

"The subsurface of the construction site is sensitive for archaeological deposits. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist shall assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials. Archaeological deposits can include, but are not limited to, shellfish remains; bones, including human remains; and tools made from, obsidian, chert, and basalt; mortars and pestles; historical trash deposits containing glass, ceramics, and metal artifacts; and structural remains, including foundations and wells."

The City shall verify that the language has been included in the grading plans prior to issuance of a grading permit or other permitted project action that includes ground-disturbing activities on the project site.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

The project would not alter or destroy any prehistoric archaeological site, building, structure, or object, nor would it alter or affect unique ethnic cultural values or restrict religious or sacred uses.

A cultural resources records search was conducted by the Central California Information Center (CCIC) at California State University, Stanislaus as part of the City's General Plan update. No archeological resources were found at or near the project site. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure:

CUL-2) Implementation of Mitigation Measure CUL-1.

c) *Disturb any human remains, including those interred outside of formal cemeteries?*

Disturbance of human remains interred outside of formal cemeteries would result in a significant impact. If human remains are identified during project construction, Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code shall apply, appropriate. Therefore, implementation of Mitigation Measure CUL-3 reduce potential impacts to human remains to **less than significant with mitigation.**

Mitigation Measure:

CUL-3) If human remains are identified during construction and cannot be preserved in place, the applicant shall fund: 1) the removal and documentation of the human remains from the project corridor by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology, 2) the scientific analysis of the remains by a qualified archaeologist, should such analysis be permitted by the Native American Most Likely Descendant, and 3) the reburial of the remains, as appropriate. All excavation, analysis, and reburial of Native American human remains shall be done in consultation with the Native American Most Likely Descendant, as identified by the California Native American Heritage Commission.

6. Energy

SETTING AND DESCRIPTION

Appendix F (Energy Conservation) of the CEQA Guidelines provides that potentially significant energy implications of a project must be considered in an EIR, with particular emphasis on avoiding or reducing the inefficient, wasteful and unnecessary consumption of energy. As such, this discussion considers the proposed Project's consumption of energy resources, particularly electricity, natural gas, and transportation fuels, during both the project's construction and operational phases.

The proposed project would be built to meet the California Energy Code requirements and may include the installation of solar panels. Additionally, the project would provide bicycle parking, promoting the use of active transportation. The site's proximity to a highly travelled bicycle path, the Black Rascal Path, indicates that a larger-than-average volume of cyclist and pedestrian traffic has the potential to be active on or around the site. The site is located within ¼-mile of a transit stop. The project would incorporate recycling procedures for the disposal of recyclable materials in accordance with the City's recycling ordinance and AB 341.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
6. **Energy.** Would the project:				
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?		✓		

Impact Analysis

a) *Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

The project is not expected to result in potentially significant impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. The project would be constructed on an in-fill lot that has access to existing electrical and telecommunications services. No new transportation, electrical, or telecommunications facilities are required to support the project leading to unnecessary consumption of energy resources. Compliance with the California Green Building Standards Code, AB 341- Solid Waste Diversion, and the San Joaquin Valley Air Pollution Control District standards during construction and operation of the project will further ensure the efficient consumption of energy resources. Implementation of these regulations would reduce impacts to **less than significant with mitigation.**

Mitigation Measure:

ENE-1) The applicant shall comply with all applicable California Energy Code, AB 341, and San Joaquin Valley Air Pollution Control District rules and regulations regulating energy efficiency and waste.

b) *Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

With the implementation of the regulations described in item "a" above, the proposed project would not conflict with a state or local plan for renewable energy or energy efficiency. This impact is **less than significant with mitigation.**

ENE-2) Implementation of Mitigation Measure ENE-1.

7. Geology and Soils

SETTING AND DESCRIPTION

The City of Merced is located approximately 150 miles southeast of San Francisco along the west side of the southern portion of the Great Valley Geomorphic Province, more commonly referred to as the San Joaquin Valley. The valley is a broad lowlands bounded by the Sierra Nevada to the east and Coastal Ranges to the west. The San Joaquin Valley has been filled with a thick sequence of sedimentary deposits of Jurassic to recent age. A review of the geologic map indicates that the area around Merced is primarily underlain by the Pleistocene Modesto and Riverbank Formations with Holocene alluvial deposits in the drainages. Miocene-Pliocene Mehrten and Pliocene Laguna Formation materials are present in outcrops on the east side of the SUDP/SOI. Modesto and Riverbank Formation deposits are characterized by sand and silt alluvium derived from weathering of rocks deposited east of the SUDP/SOI. The Laguna Formation is made up of consolidated gravel sand and silt alluvium and the Mehrten Formation is generally a well consolidated andesitic mudflow breccia conglomerate.

Faults and Seismicity

A fault, or a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side, is an indication of past seismic activity. It is assumed that those that have been active recently are the most likely to be active in the future, although even inactive faults may not be "dead." "Potentially Active" faults are those that have been active during the past two million years or during the Quaternary Period. "Active" faults are those that have been active within the past 11,000 years. Earthquakes originate as movement or slippage occurring along an active fault. These movements generate shock waves that result in ground shaking.

Based on review of geologic maps and reports for the area, there are no known active or potentially active faults, or Alquist-Priolo Earthquake Fault Zones (formerly referred to as a Special Studies Zone) in the SUDP/SOI. In order to determine the distance of known active faults within 50 miles of the Site, the computer program EZ-FRISK was used in the General Plan Update.

Soils

According to the USDA Natural Resources Conservation Service website, the soil on the site includes the soils in the table and map found at Figure 7B. Soil properties can influence the development of building sites, including site selection, structural design, construction, performance after construction, and maintenance. Soil properties that affect the load-supporting capacity of an area include depth to groundwater, ponding, flooding, subsidence, shrink-swell potential, and compressibility.

The City of Merced regulates the effects of soils and geological constraints primarily through the enforcement of the California Building Code (CBC), which requires the implementation of engineering solutions for constraints to development posed by slopes, soils, and geology.

Figure 7B – Soil Survey

Figure 7B Continued– Soil Survey Legends

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merced Area, California
Survey Area Data: Version 15, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 24, 2016—Nov 6, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WnA	Wyman clay loam, deep over hardpan, 0 to 1 percent slopes	3.3	100.0%
Totals for Area of Interest		**3.3**	**100.0%**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
7. **Geology and Soils.** Would the project:				
a) Expose people or structures to 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 or based on other substantial evidence of a known fault?			✓	
ii) Strong seismic ground shaking?			✓	
iii) Seismic-related ground failure, including liquefaction?			✓	
iv) Landslides?			✓	
b) Result in substantial soil erosion or 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 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			✓	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?			✓	
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			✓	

Impact Analysis

Would the project:

a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*

   i) *Strong seismic ground shaking?*

   ii) *Strong seismic ground shaking?*

   iii) *Seismic-related ground failure, including liquefaction?*

   iv) *Landslides?*

The project site is not located within a mapped fault hazard zone, and there is no record or evidence of faulting on the project site (City of Merced General Plan Figure 11.1). Because no faults underlie the project site, no people or structures would be exposed to substantial adverse effects related to earthquake rupture, and no impact would result from the project.

Ground shaking of moderate severity may be expected to be experienced on the project site during a large seismic event. All building permits are reviewed to ensure compliance with the California Building Code (CBC). In addition, the City enforces the provisions of the Alquist Priolo Special Study Zones Act that limits development in areas identified as having special seismic hazards. All structures shall be designed and built in accordance with the standards of the California Building Code. Pursuant to CEQA §15162, the project will not create any impacts that warrant additional environmental documentation over and above the impacts addressed in the City's General Plan EIR.

The project **may** expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. According to the City's *Merced Vision 2030 General Plan EIR,* the probability of soil liquefaction occurring within the City of Merced is considered to be a low to moderate hazard; however, detailed geotechnical engineering investigation required in compliance with the California Building Code (CBC) would be required for the project.

APPLICABLE GENERAL PLAN GOALS AND POLICIES:

The City's *Merced Vision 2030 General Plan* contains policies that address seismic safety.

Goal Area S-2: Seismic Safety:	
Goal **Reasonable Safety for City Residents from the Hazards of Earthquake and Other Geologic Activity**	
Policies	
S-2.1	Restrict urban development in all areas with potential ground failure characteristics.

The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides.

Landslides generally occur on slopes of 15 percent or greater. The project site's topography is generally of slopes between 0 and 3 percent, which are considered insufficient to produce hazards other than minor sliding during seismic activity.

These impacts are considered **less than significant.**

b) *Result in substantial soil erosion or loss of topsoil?*

Construction of the proposed project could result in temporary soil erosion and the loss of topsoil due to construction activities, including clearing, grading, site preparation activities, and installation of the proposed drainage and on-site sewer and water systems. Construction activities disturbing one or more acres are required by the State Water Resources Board (SWRCB) to obtain a General Construction Activity Stormwater Permit, which would require the proposed project to implement a Storm Water Pollution Prevention Plan (SWPPP). Project compliance with SWRCB and the City of Merced regulations to avoid erosion siltation effects would reduce this impact to **less than significant with mitigation**.

Mitigation Measures:

GEO-1) The project shall comply with all requirements of the State Water Resources Board (SWRCB) and obtain a General Construction Activity Stormwater Permit.

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?*

The City of Merced is located in the Valley area of Merced County and is therefore less likely to experience landslides than other areas in the County. The probability of soil liquefaction actually taking place anywhere in the City of Merced is considered to be a low hazard. Soil types in the area are not conducive to liquefaction because they are either too coarse or too high in clay content. According to the *Merced Vision 2030 General Plan* EIR, no significant free face failures were observed within the SUDP/SOI and the potential for lurch cracking and lateral spreading is, therefore, very low within the SUDP/SOI area. This impact is **less than significant.**

d) *Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Expansive soils are those possessing clay particles that react to moisture changes by shrinking (when they dry) or swelling (when they become wet). Expansive soils can also consist of silty to sandy clay. The extent of shrinking and swelling is influenced by the environment, extent of wet or dry cycles, and by the amount of clay in the soil. This physical change in the soils can react unfavorably with building foundations, concrete walkways, swimming pools, roadways, and masonry walls.

Implementation of General Plan Policies, adherence to the Alquist-Priolo Act, and enforcement of the California Building Code (CBC) Standards would reduce this impact to **less than significant.**

e) *Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

The EIR prepared for the City's *Merced Vision 2030 General Plan* states the following:

"According to the Geologic, Geohazards and Environmental Health Hazards Evaluation Report (Geocon Consultants, Inc.), the soils in the SUDP/SOI are not generally considered to be expansive, have a generally low to moderate erosion potential, and are generally considered suitable for wastewater disposal using conventional septic systems."

However, no new septic systems are allowed in the City and any future construction on the site will be required to connect to the City's sewer system. Based on this evaluation, this impact is **less than significant.**

f) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

The proposed project would be located on a site that has been previously altered from its native state. Therefore, this impact would be **less than significant.**

8. Greenhouse Gas Emissions

SETTING AND DESCRIPTION

The issue of project-generated Greenhouse Gas (GHG) Emissions is a reflection of the larger concern of Global Climate Change. While GHG emissions can be evaluated on a project level, overall, the issue reflects a more regional or global concern. CEQA requires all projects to discuss a project's GHG contributions. However, from the standpoint of CEQA, GHG impacts on global climate change are inherently cumulative. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, it can safely be assumed that existing conditions do not measurably contribute to a noticeable incremental change in the global climate.

The project applicant provided a Greenhouse Gas study as a part of the Air Quality and Greenhouse Gas Analysis (Appendix A). Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as $CO2$, $CH4$, and $N2O$. Furthermore, $CH4$ is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

Long-term GHG emissions are typically generated from mobile sources (e.g., vehicle trips), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile-source GHG emissions would include project-generated vehicle trips to and from the project. Area-source emissions would be associated with activities such as landscaping and maintenance on the project site. Energy source emissions would be generated at off-site utility providers as a result of increased electricity demand generated by the project. Waste source emissions generated by the proposed project include energy generated by land filling and other methods of disposal related to transporting and managing project generated waste. In addition, water source emissions associated with the proposed project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

THRESHOLDS OF SIGNIFICANCE

The proposed project would result in a significant impact on the environment if it would:

- Generate GHG emissions either directly or indirectly, that may have a significant impact on the environment;
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
8. <u>Greenhouse Gas Emissions.</u> Would the project:				
a) Generate greenhouse gas emission, 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 gases?			✓	

Impact Analysis

Would the project:

a) *Generate greenhouse gas emission, either directly or indirectly, that may have a significant impact on the environment?*

Annual GHG emissions are estimated to equal 870 MT of GHG emissions for the operational phase. For the construction phase, the annual emissions would equal 66.9 MT of GHG emissions per year. These annual emission rates are well below the thresholds set by the state to require mandatory reporting and entry into the Cap and Trade program. The 25,000 MT of CO2(e) threshold is included under the AB-32. Specifically, AB-32 requires the California Air Resources Board, in part, to develop and adopt a mandatory reporting program for GHG sources considered to be significant sources of GHG emissions.

The SJVAPCD staff issued a final report addressing GHG emissions under CEQA December 17, 2008. This report forms the basis of the tiered approach noted in the District Dec 17, 2009 Policy. In the 2008 Final Report, the District noted that under AB-32 CARB is required to adopt mandatory reporting requirements for significant sources of GHG emissions (Page 14 of the Final Report).

At a federal level, the EPA's gas reporting rule also determined that the 25,000 MT threshold would capture approximately 94% of GHG emission sources associated with stationary sources in California, and therefore is used as a threshold under the federal gas reporting rule.

The California's Air Pollution Control Offices Association (CAPCOA) in their January 2008 report *"CEQA and Climate Change: Evaluating and addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act"*, also identified 25,000 MT threshold as a potential and appropriate non-zero GHG threshold for use in a CEQA document.

The City of Merced Climate Action Plan also recognizes AB-32 as one of the principal components of GHG reduction. The Mandatory Reporting requirement is one of the key drivers of ensuring GHG reduction. Therefore, while neither the SJVAPCD nor the City of Merced promulgated a threshold of significance for sources of GHG emissions, other agencies have established thresholds for sources considered significant.

There is substantial evidence to indicate that sources that emit more than 25,000 MT of GHG are a significant source and contributor of GHG impacts. Sources that emit less than 25,000 MT of GHG emissions the Lead Agency retains the discretion to the significance on the basis of all available data.

In order to be certain that the project is demonstrably in compliance with all Best Performance Standards (BPS), the project shall adhere to Mitigation Measure **GHG-1**. Accordingly, the GHG emissions for the proposed project

Mitigation Measures:

GHG-1) The project applicant shall demonstrate compliance with the applicable BPS strategies to the Planning Division prior to the issuance of a building permit. The following BPS strategies are considered to be applicable, feasible, and effective in reducing GHG emissions generated by the project:

- The project applicant shall provide a pedestrian access network that internally links all uses and connects to existing external streets and pedestrian facilities.
- The project applicant shall ensure site design and building placement minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between nonresidential uses that impede bicycle or pedestrian circulation shall be eliminated. In addition, barriers to pedestrian access of neighboring facilities and sites shall be minimized.
- The project applicant shall design roadways to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming measures. Traffic calming measures include: bike lanes, center islands, closures (cul-de-sacs), diverters, education, forced turn lanes, and roundabouts.

- The project shall provide car sharing programs, accommodations such as parking spaces for the car share vehicles at convenient locations accessible by public transportation.
- The project applicant shall plant trees to provide shade.
- The project applicant shall install energy efficient heating and cooling systems, appliances and equipment, and control systems.

b) *Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Federal Plans

The federal government does not have a separate GHG emission reduction strategy. However, it has adopted several GHG reduction strategies through the Clean Air Act, Section 202(a). In addition, the federal government, in coordination with U. S. Department of Transportation and the EPA has issued vehicle economy standards that indirectly reduce GHG emissions. In addition, the federal government has set GHG emission thresholds that affect new sources under the Prevention of Significant Deterioration (PSD) regulations and the Title V Operating Permit Program.

The proposed project is too small to be subject to these federal programs. However, the City of Merced does benefit from the overall federal strategy to limit emissions from cars, trucks and off-road equipment that will be used during the construction phase.

State Plans

The state of California has issued several regulations through Assembly Bill 32, Executive Orders S-3-05 and B-30-15, Senate Bill 32 and Senate Bill 375 (Sustainable Communities Strategy). The overall goal of these Plans and strategies are to reduce GHG emissions to below 40% of the 1990 emission levels by the year 2030. This is done through the use of the Cap and Trade Program, Clean Fuels Program, water and energy conservation and reduction/recycling of solid waste.

The proposed project is subject to and is compliant with stringent energy conservation under Title 24 as well as solid waste recycling and use of renewable energy through Merced Irrigation District Water and Power.

Local Plans

The City of Merced has adopted a Climate Action Plan (CAP) to meet or exceed the State's goals of reducing GHG emissions. The CAP specifically includes:

- Enhanced Mobility of all transportation Modes
- Energy Efficient Building Design
- Reduce Vehicle Trips
- Use of Clean Energy, Especially Renewable Energy
- Preparation of GHG Inventories

The CAP is a long-range plan that outlines specific strategies to reduce GHG emissions. CAP also establishes a baseline for GHG emissions in order to better forecast future emissions and to assess the effectiveness of the City's efforts in reducing GHG emissions and meeting the targets set by the state.

In order to minimize electricity usage, the proposed project complies with the state's Title 24 energy efficiency requirements, which includes the use of energy efficient lighting.

To encourage walking and bicycle use, the project is located within the neighborhood allowing local residents to visit the facility without the need to drive.

The proposed project provides quantitative estimate of GHG emissions for both the construction and operational phases. These estimates assist the City in maintaining an up to date emissions inventory as required in the CAP.

Based on the study at Appendix A and the discussion above, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions and impacts would be **less than significant.**

9. Hazards and Hazardous Materials

SETTING AND DESCRIPTION

Hazardous Materials

A substance may be considered hazardous due to several criteria, including toxicity, ignitability, corrosivity, or reactivity. The term "hazardous material" is defined in law as any material that, because of quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.

Wildland and Urban Fire Hazards

Both urban and wildland fire hazard potential exists in the City of Merced and surrounding areas, creating the potential for injury, loss of life, and property damage. Urban fires primarily involve the uncontrolled burning of residential, commercial, or industrial structures due to human activities. Wildland fires affect grassland, brush or woodlands, and any structures on or near these fires. Such fires can result from either human made or natural causes.

Urban fires comprise the majority of fires in the City of Merced while the potential for wildland fires could increase as large blocks of undeveloped land are annexed into the City. Most of the fires are caused by human activities involving motor vehicles, equipment, arson, and burning of debris.

Airport Safety

The City of Merced is impacted by the presence of two airports-Merced Regional Airport, which is approximately two miles to the southwest of the subject site, and Castle Airport (the former Castle Air Force Base), located approximately five miles northwest of the subject site.

The continued operation of the Merced Regional Airport involves various hazards to both flight (physical obstructions in the airspace or land use characteristics which affect flight safety) and safety on the ground (damage due to an aircraft accident). Growth is restricted around the Regional Airport in the southwest corner of the City due to the noise and safety hazards associated with the flight path.

Castle Airport also impacts the City. Portions of the northwest part of the City's SUDP/SOI and the incorporated City are within Castle's safety zones. The primary impact is due to noise (Zones C and D), though small areas have density restrictions (Zone B2). The military discontinued operations at Castle in 1995. One important criterion for determining the various zones is the noise factor. Military aircraft are designed solely for performance, whereas civilian aircraft have extensive design features to control noise.

Potential hazards to flight include physical obstructions and other land use characteristics that can affect flight safety, which include: visual hazards such as distracting lights, glare, and sources of smoke; electronic interference with aircraft instruments or radio communications; and uses which may attract flocks of birds. In order to safeguard an airport's long-term usability, preventing encroachment of objects into the surrounding airspace is imperative.

Railroad

Hazardous materials are regularly shipped on the BNSF and SP/UP Railroad lines that pass through the City. While unlikely, an incident involving the derailment of a train could result in the spillage of cargo from the train in transporting. The spillage of hazardous materials could have devastating results. The City has little to no control over the types of materials shipped via the rail lines. There is also a safety concern for pedestrians along the tracks and vehicles utilizing at-grade crossings. The design and operation of at-grade crossings allows the City some control over rail-related hazards. Ensuring proper gate operation at the crossings is the most effective strategy to avoid collision and possible derailments.

Public Protection and Disaster Planning

Hospitals, ambulance companies, and fire districts provide medical emergency services. Considerable thought and planning have gone into efforts to improve responses to day-to-day emergencies and planning for a general disaster response capability.

The City's Emergency Plan and the County Hazardous Waste Management Plan both deal with detailed emergency response procedures under various conditions for hazardous materials spills. The City also works with the State Department of Health Services to establish cleanup plans and to monitor the cleanup of known hazardous waste sites within the City.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
9. <u>Hazards and Hazardous Materials.</u> Would the project:				
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 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 site complied 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 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?				✓
	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				✓

Impact Analysis

Would the project:

a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Hazards and hazardous materials are extensively regulated at the federal, state, and local levels. The only known land use at this time that would involve the use of a large amount of a hazardous material would be the gas station. However, as previously mentioned, there are federal and state regulations that govern the use and delivery of gasoline.

Construction activities of the proposed project would involve the use, storage, transport, and disposal of oil, gasoline, diesel fuel, paints, solvents, and other hazardous materials.

After construction, the proposed gas station would store and sell gasoline and potentially propane. No other hazardous materials are anticipated to be stored or used on the site after construction. The project would be required to adhere to all applicable federal and state health and safety standards. Construction activity must also be in compliance with the California Occupational Safety and Health Administration regulations (Occupational Safety and Health Act of 1970). This impact would be **less than significant** with compliance with these requirements.

b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Construction on the project site would be reviewed for the use of hazardous materials at the building permit stage. Implementation of Fire Department and Building Code regulations for hazardous materials, as well as implementation of federal and state requirements, would reduce any risk caused by a future use on the site from hazardous materials to a **less than significant** level.

APPLICABLE GENERAL PLAN GOALS AND POLICIES:

The City of Merced *Vision 2030 General Plan* contains policies that address hazardous materials.

Goal Area S-7: Hazardous Materials	
Goal **Hazardous Materials Safety for City Residents**	
Policies	
S-2.1	Prevent injuries and environmental contamination due to the uncontrolled release of hazardous materials.
Implementing Actions:	
7.1.a	Support Merced County in carrying out and enforcing the Merced County Hazardous Waste Management Plan.
7.1.b	Continue to update and enforce local ordinances regulating the permitted use and storage of hazardous gases, liquids, and solids.
7.1.d	Provide continuing training for hazardous materials enforcement and response personnel.

c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

The nearest school to the site, John C. Fremont Elementary School, is approximately 0.91 miles away from the site. Additionally, hazardous materials other than the gasoline at the gas and service station are not expected to be at the project site after construction. **No impact** would occur.

d) *Be located on a site which is included on a list of hazardous materials site complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

According to the California Department of Toxic Substances Control EnviroStor database search, the project site is not listed as a hazardous waste site, and no significant hazard to the public or the environment would result with project implementation. Therefore, there is **no impact.**

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 for people residing or working in the project area?*

The project site is located approximately 1.91 miles from the Merced Regional Airport and approximately 5 miles from the Castle Airport. The project site is not located in an area for which an Airport Land Use Plan has been prepared and is not in a listed Compatibility Zone for the airport. Therefore, no at-risk population working at the site would be exposed to hazards due to aircraft over-flight. Therefore, implementation of the proposed project would not expose persons to airport-related hazards, and **no impact** would occur.

f) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The proposed project will not adversely affect any adopted emergency response plan or emergency evacuation plan. No additional impacts will result from the development of the project area over and above those already evaluated by the EIR prepared for the *Merced Vision 2030 General Plan.* The project would not modify any roadways or cause any other changes that would impair the implementation of an adopted emergency response plan. Therefore, there is **no impact.**

APPLICABLE GENERAL PLAN GOALS AND POLICIES:

The *Merced Vision 2030 General Plan* contains policies that address disaster preparedness.

Goal Area S-1: Disaster Preparedness	
Goal **General Disaster Preparedness**	
Policies	
S-1.1	Develop and maintain emergency preparedness procedures for the City.
Implementing Actions:	
1.1.a	Keep up-to-date through annual review the City's existing Emergency Plan and coordinate with the countywide Emergency Plan.
1.1.b	Prepare route capacity studies and determine evacuation procedures and routes for different types of disasters, including means for notifying residents of a need to evacuate because of a severe hazard as soon as possible.
7.1.d	Provide continuing training for hazardous materials enforcement and response personnel.

g) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

The project site is located within an urban area and is not located within a very high fire hazard severity zone. According to the EIR prepared for the *Merced Vision 2030 General Plan*, the risk for wildland fire in the City of Merced is minimal. According to the Cal Fire website, the Merced County Fire Hazard Severity Zone Map shows the project site is designated as a "Local Area of Responsibility" with a Hazard Classification of "Urban Unzoned."

The City of Merced Fire Department is the responsible agency for responding to fires at the subject site. The project site is located within Fire District #3, and is served by Station #53 located at 800 Loughborough Drive (approximately 0.8 miles from the project site). The proposed project would not expose people or structures to significant loss, injury or death involving wildland fires and there would be **no impact.**

10. Hydrology and Water Quality

SETTING AND DESCRIPTION

Water Supplies and Facilities

The City's water supply system consists of 23 wells and 14 pumping stations equipped with variable speed pumps that attempt to maintain 45 to 50 psi (pounds per square inch) nominal water pressure. The City is required to meet State Health pressure requirements, which call for a minimum of 20 psi at every service connection under the annual peak hour condition and maintenance of the annual average day demand plus fire flow, whichever is stricter.

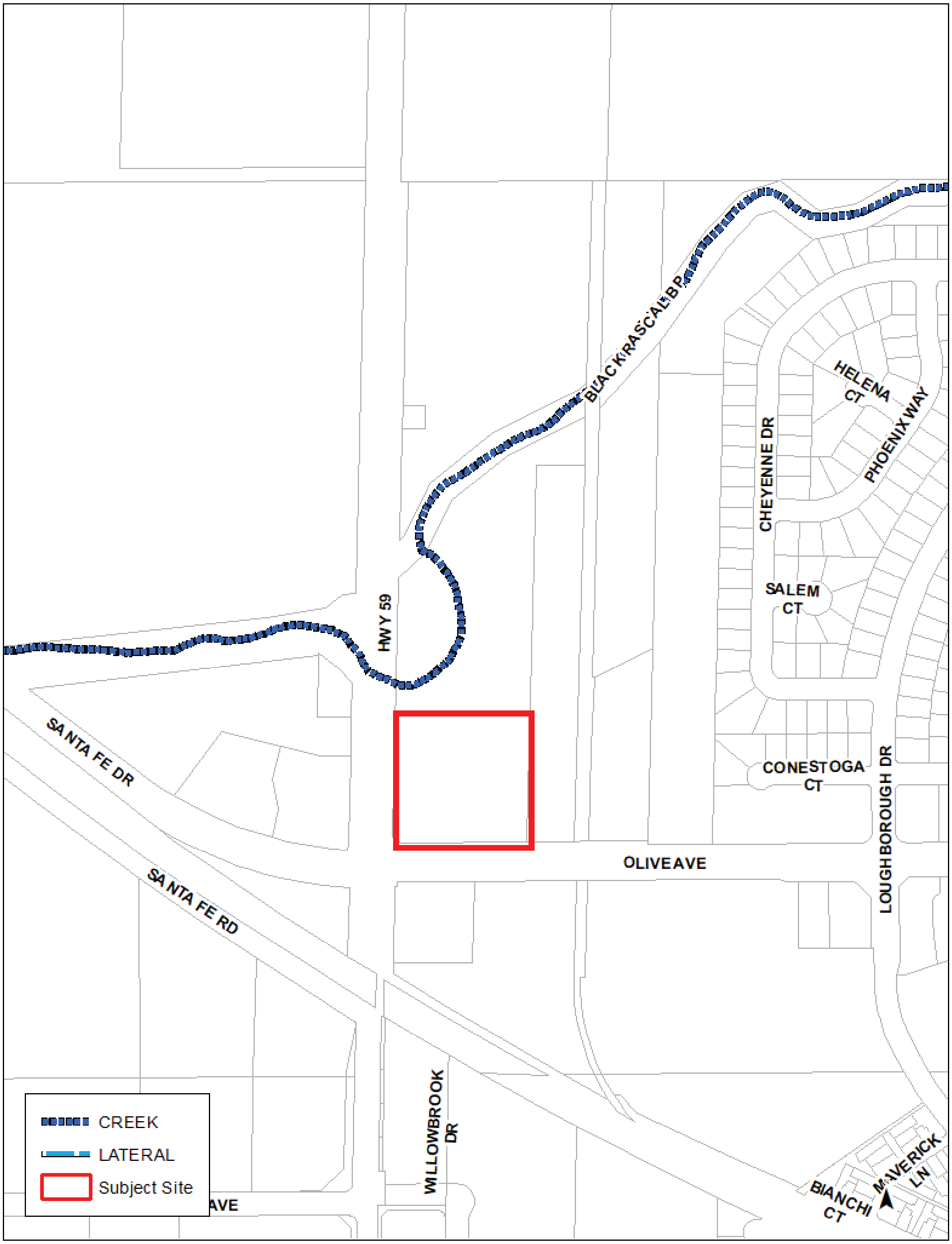
Storm Drainage/Flooding

In accordance with the adopted City of Merced Standard Designs of Common Engineering Structures, percolation/detention basins are designed to temporarily collect run-off so that it can be metered at acceptable rates into canals and streams which have limited capacity. Additionally, a drainage basin would need to be provided on-site to hold storm water generated from the site. The project would be required to comply with all Post Construction Standards for the City's MS IV Permit.

Proximity to Existing Waterways

The project site is located at the northeast corner of Highway 59 and Olive Avenue. Black Rascal Creek is located approximately 100 feet north of the site. This creek is used for irrigation purposes by the Merced Irrigation District. The creek would not be modified by the project nor would storm drainage enter the creek. All storm drainage would be collected into the City's stormwater system. Refer to the map at Figure 8.

Figure 8 - Waterways



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
10. Hydrology and Water Quality. Would the project:				
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 a 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?			✓	

Impact Analysis

Would the project:

a) *Violate any water quality standards or waste discharge requirements?*

The project site is currently vacant. Construction of the proposed project and associated parking would result in the majority of the site being covered with impervious surfaces.

The State Water Resources Control Board and nine Regional Water Quality Control Boards regulate the water quality of surface water and groundwater bodies throughout California. The proposed project is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB).

During development of the project there would be the potential for surface water to carry sediment from on-site erosion and other pollutants into the stormwater system and local waterways, specifically Black Rascal Creek.

Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. During construction activities, excavated soil would be exposed with an increased potential to expose soils to wind and water erosion, which could result in temporary minimal increases in sediment load into the Black Rascal Creek, located approximately 100 feet to the north.

Construction of the project would also require the use of gasoline- and diesel-powered heavy equipment such as bulldozers, backhoes, water pumps, and air compressors. Chemicals such as gasoline, diesel fuel, lubricating oil, hydraulic oil, lubricating grease, automatic transmission fluid, paints, solvents glues, and other substances would be utilized during construction. An accidental release of any of these substances could degrade the water quality of the surface water runoff and add additional sources of pollution into the drainage system.

Any potential short-term water quality effects from project related construction activities can be minimized and reduced to a level of **less than significant with mitigation** by implementing the following mitigation measures.

Mitigation Measure:

HYDRO-1) To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.

HYDRO-2 If any storm drainage from the site is to drain into MID facilities, the developer shall first enter into a “Storm Drainage Agreement” with MID and pay all applicable fees.

The proposed development would result in the development of new commercial buildings and infrastructure on the parcel. The proposed project would increase the amount of impervious surface area on the project site and would create the potential for discharge of urban pollutants into Black Rascal Creek and downstream waterways. Such pollutants would include sediment and turbidity, nutrients, organic compounds, oxygen demanding substances, trash and debris, bacteria and viruses, oil and grease, pesticides, and metals.

As discussed above, the City will require the project applicant to prepare a Storm Water Pollution Prevention Plan for review and approval that identifies BMPs necessary to control stormwater pollution from operational activities and facilities and provide for appropriate maintenance over time. The plan would include design concepts that are intended to accomplish a “first flush” objective that would remove contaminants from the first 2 inches of stormwater before it enters area waterways. To ensure that stormwater quality measures are implemented Mitigation Measures HYDRO-3A is proposed which would require the project applicant to prepare and submit a Storm Water Mitigation Plan to the City of Merced for review and approval. The implementation of the mitigation measure would ensure that potential, long-term, operational water quality impacts are reduced to a level of **less than significant**.

The nearest water body to the proposed project is the Black Rascal Creek, located approximately 100 feet north. Operation of the proposed project could result in surface water pollution associated with chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and waste that may be spilled or leaked and have the potential to be transported via runoff during periods of heavy precipitation into this water body. Implementation of Mitigation Measure HYDRO-3B, described below, would ensure that stormwater runoff from the proposed project would be appropriately managed to prevent pollutants from being discharged into these water bodies, reducing any potential impacts to **less than significant with mitigation.**

<u>Mitigation Measure:</u>

HYDRO-3A) Prior to the issuance of building permits, the project applicant shall submit a final Storm Water Mitigation Plan (SWMP) to the City of Merced for review and approval. The plan shall be developed using the California Stormwater Quality Association’s “New Development and Redevelopment Handbook.” The SWMP shall identify pollution prevention measures and BMPs necessary to control stormwater pollution from operational activities and facilities, and provide for appropriate maintenance over time. The SWMP shall include design concepts that are intended to accomplish a “first flush” objective that would remove contaminants from the first 2 inches of stormwater before it enters area waterways. The project applicant shall also prepare and submit an Operations and Maintenance Agreement to the City identifying procedures to ensure that stormwater quality control measures work properly during operations.

HYDRO-3B) Prior to the issuance of grading permits, the project applicant shall file a Notice of Intent with and obtain a facility identification number from the State Water Resources Control Board. The project applicant shall also submit a Stormwater Pollution Prevention Plan (SWPPP) to the City of Merced that identifies specific actions and Best Management Practices (BMPs) to prevent stormwater pollution during construction activities. The SWPPP shall identify a practical sequence for BMP implementation, site restoration, contingency measures, responsible parties, and agency contacts. The SWPPP shall include, but not be limited to, the following elements:

- Comply with the requirements of the State of California's most current Construction Stormwater Permit.
- Temporary erosion control measures shall be implemented on all disturbed areas.
- Disturbed surfaces shall be treated with erosion control measures during the October 15 to April 15 rainy season.
- Sediment shall be retained on-site by a system of sediment basins, traps, or other BMPs.
- The construction contractor shall prepare Standard Operating Procedures for the handling of hazardous materials on the construction site to eliminate discharge of materials to storm drains.
- BMP performance and effectiveness shall be determined either by visual means where applicable (e.g., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination (such as inadvertent petroleum release) is required by the Central Valley Regional Water Quality Control Board to determine adequacy of the measure.
- In the event of significant construction delays or delays in final landscape installation, native grasses or other appropriate vegetative cover shall be established on the construction site as soon as possible after disturbance, as an interim erosion control measure throughout the wet season.
- Specifically, the SWPPP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project

complies with post-construction stormwater management requirements of the RWQCB.

Goal Area P-5: Storm Drainage and Flood Control	
Goal: An Adequate Storm Drainage Collection and Disposal System in Merced	
Policies	
P-5.1	Provide effective storm drainage facilities for future development.
P-5.2	Integrate drainage facilities with bike paths, sidewalks, recreation facilities, agricultural activities, groundwater recharge, and landscaping.
Implementing Actions:	
5.1.a	Continue to implement the City's Storm Water Master Plan and the Storm Water Management Plan and its control measures.
5.1.c	Continue to require all development to comply with the Storm Water Master Plan and any subsequent updates.

b) *Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

The City receives all of its water supply from groundwater and is primarily dependent on groundwater sources that draw from the San Joaquin aquifer. Based on the City's Urban Water Management Plan (UWMP), water consumption in 2015 was estimated to be 15.9 million gallons of water per day (mgd) or approximately 17,855 acre-feet per year. The UWMP also estimates the projected acre-feet of water use for years 2020, 2025, 2030, and 2035, which are projected to increase each year. By 2035, the City's projected water use is expected to be 31,960 acre-feet of potable and raw water and 5,869 acre-feet of recycled water.

The proposed project would generate a need for approximately 1,800 gallons per day. Based on the 2015 water well production of 15.9 mgd, the proposed project would use approximately 0.011% of the total daily water demand for the City.

Although development of the site would restrict onsite recharge where new impervious surface areas are created, all alterations to groundwater flow would be captured and routed to the ponding basin proposed on the site or pervious surfaces with no substantial net loss in recharge potential anticipated. This reduces this impact to a **less than significant** level.

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 a 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?*

Implementation of the project would result in grading and landform alterations on the site that would expose native soils that could be subject to the effects associated with wind and water erosion unless adequate measures are taken to limit the transport of soils in surface water from the site to downstream locations. As discussed above, the project applicant would be required to implement a SWPPP that would identify specific measures to address erosion and siltation resulting from grading and construction as well as the potential long-term water quality impacts.

Construction of the project would include connecting on-site drainage facilities to the City's storm drain system. The City has approximately 112 miles of underground storm drain lines, underground storage pipes, and 141 acres of detention ponds. Storm drain lines exist in Olive Avenue and Highway 59 that the on-site storm drainage system would connect to. The project site would consist of approximately 101,280 square feet of impervious surfaces. All storm water run-off would be required to be captured on-site and metered into the City's storm drainage per City Standards. Additionally, at the time of construction, the developer would be required to provide calculations to demonstrate that the proposed on-site retention and the City's storm water system would be able to accommodate the additional run-off from the site.

According to FEMA, a portion of the project site is in the Regulatory Floodway; the remainder of the site is located within Zone AE. Section 2.2 of the FEMA Guidance for Flood Risk Analysis and Mapping states: "Once a community has adopted a floodway, it must prohibit development in the floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed using standard engineering practice that the development will not result in any increase in flood levels during the base flood. FEMA defines "any" as meaning a zero increase (greater than 0.00 feet). This analysis is usually called a "no-rise" or "zero-rise" analysis and results in a "no-rise" or "zero-rise" certification by a qualified register professional engineer."

As previously mentioned any run-off from the site would be required to be captured on-site and metered into the City's storm drain system. Therefore runoff from the site would not increase the rate or amount of surface water flooding or impede or redirect flood flows.

Implementation of Mitigation Measure HYDRO-1 above and Mitigation Measure HYDRO-4, and HYDRO-5 below would reduce any impacts from site drainage to **less than significant with mitigation**.

Mitigation Measure:

HYDRO-4 Prior to issuance of a building permit or as required by the City Engineer, the developer shall demonstrate to the City that storm drainage facilities are adequate to meet the Project demands and that improvements are consistent with the City Standards and the City's Storm Drain Master Plan.

HYDRO-5 Building and changing grades within the Regulatory Floodway is prohibited. The City shall not approve any plan or proposal that indicates building footprints or changes of grades in the Regulatory Floodway. Prior to construction, the applicant shall cause to be performed a survey of the regulatory floodway that is deemed appropriate by the City Engineer or their designee. The project shall also be designed to meet all requirements of Flood Zone "AE."

d) *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

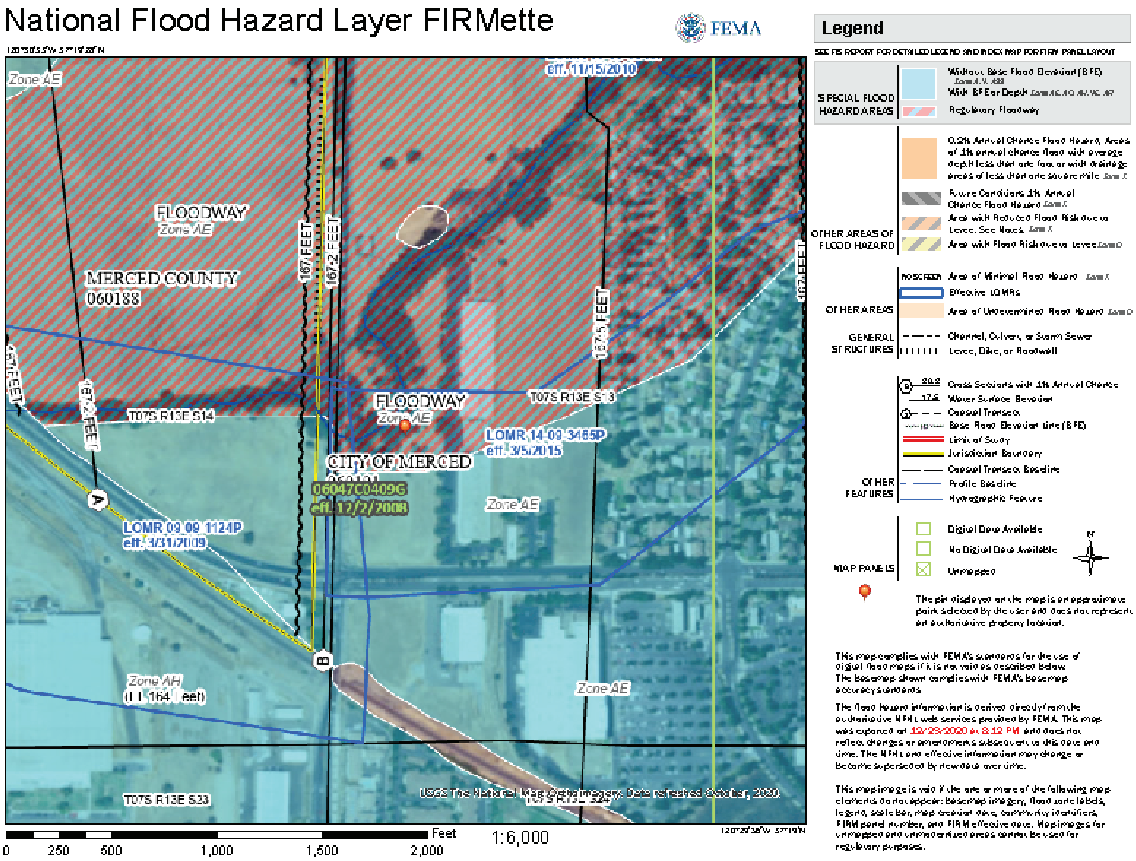
As shown on the map located at Figure 9, a portion of the project site is shown as in the Floodway Zone, with the remainder of the project site located within Flood Zone "AE." The Federal Emergency Management Agency (FEMA), defines Zone AE as an area inundated by the Base Flood with Base Flood Elevations determined. Areas within the AE Flood Zone are areas that have a 1% probability of flooding every year (also known as the "100-year floodplain"), and where predicted flood water elevations above mean sea level have been established. Properties in Zone AE are considered to be at high risk of flooding under the National Flood Insurance Program (NFIP). In order to build within this flood zone, certification must be provided that the finished floor of all structures is above the base flood elevation (BFE) established for the area (167.2).

The site is not in a tsunami or seiche zone and would not present a risk for release of pollutants due to inundation. Implementation of measure HYDRO-5 above in order to prevent the change of grade or addition of structures within the regulatory floodway makes this impact **less than significant with mitigation.**

e) *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

The proposed project would not obstruct or conflict with the implementation of a water quality control plan or sustainable groundwater management plan. The project would be required to comply with all City of Merced standards and Master Plan requirements for groundwater and water quality control. This impact is **less than significant.**

Figure 9 - FEMA Flood Map



11. <u>Land Use and Planning</u>

SETTING AND DESCRIPTION

The project site is located within the City Limits of Merced and within its Specific Urban Development Plan and Sphere of Influence (SUDP/SOI). The site has two General Plan designations of Commercial Office (CO) and Manufacturing/Industrial (IND) and a Zoning designation of Planned Development (#12). The proposed General Plan Amendment would change the General Plan designation to Business Park (BP). The current and proposed General Plan and Zoning Designations are shown on the map at Figure 3.

<u>Surrounding Uses</u>

Refer to Figure 2 and the table below for the surrounding land uses.

Surrounding Land	Existing Use of Land	Zoning Designation	City General Plan Land Use Designation
North	Open Space	P-D #9	Open Space (OS-P); Industrial (IND)
South	Merced Cty. Food Bank, Wal-Mart, Commercial (Across Yosemite Ave.)	R-1-6, P-D #16	Industrial (IND); Regional Community Commercial (RC)
East	Industrial Warehouses, Cannabis Dispensary	P-D #12	Industrial (IND)
West	Vacant Lot, Approved Site of Commercial Development (Across Hwy. 59)	C-T	Thoroughfare Commercial (CT)

Current Use/Background

The project site is currently vacant. At the time of application for this General Plan Amendment and Site Utilization Plan Revision, the project site was a part of a larger parcel extending to the north and east of the subject 3.38-acre site (see Figure 1). Since then, a boundary adjustment has been recorded, modifying the borders such that this 3.38-acre site stands alone as a parcel unto itself.

This site was annexed in 1992, and at the same time was involved as a part of the larger parcel in a boundary adjustment, Conditional Use Permit #380, a lot split, and the establishment of Planned Development #12. Planned Development #12 replaced the existing zoning of R-1 in the area.

Project Characteristics

The proposal includes a General Plan Amendment and Site Utilization Plan (SUP) Revision for 3.38 acres of land on the Subject Site (refer to the map at Figure 3). As shown on the Proposed Land Use Changes Map at Figure 3, the site has two General Plan designations of Commercial Office (CO) and Manufacturing/Industrial (IND); it also has a Zoning Designation of Planned Development #12. The requested changes would change the land use classification for the site to Business Park (BP).

The Site Utilization Plan (SUP) Revision proposes to allow for a 4,088 square foot gas station, including a mini-mart, with a 4,248 square foot fuel island, a 2,805 square foot drive-thru restaurant, and a 4,387 square foot office/retail building, shown on the Site Plan at Figure 4.

The Zoning Ordinance describes uses that are allowed within a specific zone "by right" and those allowed with a discretionary review. Drive-through sales, professional offices, and gas and service stations are allowed within a B-P zone, or in this case a P-D zone with BP General Plan designation, with approval of a Site Plan Review Permit. Prior to issuance of building permits for these future uses, developer or its successors shall be required to obtain such a Site Plan Review Permit.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
11. Land Use and Planning. Would the project:				
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?				✓

Impact Analysis

Would the project:

a) *Physically divide an established community?*

The project site is surrounded by urban uses. The proposed project would develop an existing vacant lot and would become a part of the adjacent, surrounding community. The project would not physically divide the community, therefore, there is **no impact.**

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?*

The proposed project is an in-fill project on a vacant lot, which is not in conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there is **no impact.**

12. Mineral Resources

SETTING AND DESCRIPTION

The City of Merced does not contain any mineral resources that require managed production, according to the State Mining and Geology Board. Based on observed site conditions and review of geological maps for the area, economic deposits of precious or base metals are not expected to underlie the Merced SUDP/SOI. According to the California Geological Survey, Aggregate Availability in California - Map Sheet 52, Updated 2006, minor aggregate production occurs west and north of the City of Merced, but economic deposits of aggregate minerals are not mined within the immediate vicinity of the SUDP/SOI. Commercial deposits of oil and gas are not known to occur within the SUDP/SOI or vicinity.

According to the Merced County General Plan Background Report (June 21, 2007), very few traditional hard rock mines exist in the County. The County's mineral resources are almost all sand and gravel mining operations. Approximately 38 square miles of Merced County, in 10 aggregate resource areas (ARA), have been classified by the California Division of Mines and Geology for aggregate. The 10 identified resource areas contain an estimated 1.18 billion tons of concrete resources with approximately 574 million tons in western Merced County and approximately 605 million tons in eastern Merced County. Based on available production data and population projections, the Division of Mines and Geology estimated that 144 million tons of aggregate would be needed to satisfy the projected demand for construction aggregate in the County through the year 2049. The available supply of aggregate in Merced County substantially exceeds the current and projected demand.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
12. <u>Mineral Resources.</u> Would the project:				
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?				✓

Impact Analysis

Would the project:

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?*

Based on observed site conditions and review of geological maps for the area, economic deposits of precious or base metals are not known to occur in the Merced SUDP/SOI. Therefore implementation of the proposed project would have **no impact** on the availability of mineral resources or impact current or future mining operations.

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?*

No Mineral Resource Zones or mineral resource recovery sites exist within the City of Merced or in the area designated for future expansion of the City (the SUDP/SOI). Therefore implementation of the proposed project would have **no impact** on the availability of mineral resources or impact current of future mining operations.

13. <u>Noise</u>

SETTING AND DESCRIPTION

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements that better represent human sensitivity to sound at night.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a 6 dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern. According to the *Merced Vision 2030 General Plan,* outdoor noise exposure not exceeding 65 db is considered to be a "normally acceptable" noise level for office buildings, business commercial, and professional uses.

Potential noise impacts of the proposed project can be categorized as those resulting from construction and those from operational activities. Construction noise would have a short-term effect; operational noise would continue throughout the lifetime of the project.

The existing noise in the area is predominantly traffic related. Otherwise, commercial uses surround the site.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
13. <u>Noise.</u> Would the project result in:				
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?			✓	

Impact Analysis

Would the project result in:

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?*

Construction Noise

Construction of the project would temporarily increase noise levels in the area during the construction period. The project is proposed to be phased. Therefore, the noise from construction may be steady for several weeks and then cease all together, with this cycle repeating over the course of several months or years. Construction activities, including site clearing, building construction, and paving would be considered an intermittent noise impact throughout the construction period. These activities could result in various effects on sensitive receptors, depending on the presence of intervening barriers or other insulating materials. Although construction activities would likely occur only during daytime hours, construction noise could still be considered disruptive to local residents. The City of Merced does not have a noise ordinance, but past practice has been to allow construction activities during daylight hours (between 7:00 a.m. and 7:00 p.m.). Implementation of the mitigation measures below would reduce potential impacts from construction noise to **less than significant with mitigation.**

Operational Noise

Noise from the development would be primarily traffic related. Additionally, there would be added noise from outdoor activities such as loading and unloading of materials and products for the retail uses and possible outdoor activities of the tenants, as well as more frequent refuse collection to serve the site. Parking for the site is located on the interior of the property.

According to Table 10.2 of the *Merced Vision General Plan,* the current noise level generated by traffic along SR 59 within 100 feet of the roadway is 69.3 dB. However, the increase in traffic may increase the noise level generated from SR 59. According to Table 10.2 at time of the General Plan buildout, it is expected that in order to achieve a rating of 60dB, a sensitive use would have to be 297 feet from the roadway. However, commercial uses as proposed on the site are not "sensitive" uses. While it is not expected that this project would increase traffic to the level expected by the General Plan buildout, there will be an increase over the existing traffic in the area, but it is not expected to significantly increase the noise impacts. Therefore, operational noise is expected to be **less than significant.**

Mitigation Measure:

NOI-1) To reduce potential construction noise impacts, the following multi-part mitigation measure shall be implemented for the project:

- The construction contractor shall ensure that all internal combustion engine-driven equipment is equipped with mufflers that are in good condition and appropriate for the equipment.
- The construction contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors when sensitive receptors adjoin or are near a construction disturbance area. In addition, the project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

- The construction contractor shall prohibit unnecessary idling of internal combustion engines (i.e., idling in excess of 5 minutes is prohibited).
- The construction contractor shall locate, to the maximum extent practical, on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- The construction contractor shall limit all noise producing construction activities, including deliveries and warming up of equipment, to the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday. No such work shall be permitted on Sundays or federal holidays without prior approval from the City.

b) *Generation of excessive groundborne vibration or groundborne noise levels?*

No permanent noise sources would be located within the project site that would expose persons to excessive groundborne vibration or noise levels. Construction activities associated with implementation of the proposed project are not expected to result in excessive groundborne vibration or groundborne noise levels. Therefore, implementation of the proposed project would not permanently expose persons within or around the project sites to excessive groundborne vibration or noise and the project impacts would be **less than significant.**

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?*

The nearest airports to the project site include Merced Regional Airport, located approximately 1.91 miles southwest of the project site, and Castle Airport, located approximately 5 miles northwest of the project site. No portion of the project site lies within the 55 dBA CNEL noise contours of these airports. Given the project site's distance from the nearest airports, project implementation would not expose people working in the project area to excessive noise levels and impacts would be **less than significant**.

14. Population and Housing

SETTING AND DESCRIPTION

The implementation of the proposed project would result in the construction of a a gas station with convenience store, a drive-through, and office and retail uses. The project site is surrounded by urban uses.

Expected Population and Employment Growth

According to the State Department of Finance, the City of Merced's population for 2019 is estimated to be 87,110. Population projections estimate that the Merced SUDP area will have a population of 159,900 by the Year 2030. The 2019 population projections prepared by the State also indicate a vacancy rate of 6.31% and an average household size of 3.24 persons per household.

According to the *Merced Vision 2030 General Plan*, the City of Merced is expected to experience significant employment growth by the Year 2030.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
14. Population and Housing. Would the project:				
a) Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓

Impact Analysis

Would the project:

a) *Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The project would not create new homes, and the businesses created are of an infill nature. No roads are being extended as a result of this project, though modifications to the major roadways to accommodate the project are necessary. This impact would be **less than significant.**

b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

Implementation of the proposed project would not displace any existing housing. The subject site is currently vacant. There is **no impact.**

15. Public Services

SETTING AND DESCRIPTION

Fire Protection

The City of Merced Fire Department provides fire protection, rescue, and emergency medical services from five fire stations throughout the urban area. The City's Central Fire Station is located in the downtown area at 16th and "G" Streets. The City also has four other stations throughout the City. The project site is located within Fire District #3 and is served by Station #53 located at 800 Loughborough Drive (approximately 0.8 miles from the project site).

Police Protection

The City of Merced Police Department provides police protection for the entire City. The Police Department employs a mixture of sworn officers, non-sworn officer positions (clerical, etc.), and unpaid volunteers (VIP's). The service standard used for planning future police facilities is approximately 1.37 sworn officers per 1,000 population, per the Public Facilities Financing Plan.

Schools

The public school system in Merced is served by three districts: 1) Merced City School District (elementary and middle schools); 2) Merced Union High School District (MUHSD); and, 3) Weaver Union School District (serving a small area in the southeastern part of the City with elementary schools). The districts include various elementary schools, middle (junior high) schools, and high schools. The Project site falls within the Merced City School District and Merced Union High School District (MUHSD).

As the City grows, new schools will need to be built to serve our growing population. According to the Development Fee Justification Studies from 2017 for MUHSD and MCSD, Merced City Schools students are generated by new multi-family development at the following rate:

Student Generation Rates

Commercial/Industrial Category	**Elementary (K-8) (Students per 1,000 sq.ft.)**	**High School (9-12) (Students per 1,000 sq.ft.)**
Warehouse	0.041	0.023
Lodging	0.064	0.037
Industrial Park	0.097	0.055
Community Shopping Center	0.101	0.057
Corporate Office	0.155	0.088
Neighborhood Shopping Center	0.162	0.092
Bank	0.164	0.093
Scientific Research & Development	0.176	0.100
Business Park	0.216	0.123
Medical Office	0.248	0.141
Commercial Office	0.273	0.155
Housing Category	**Elementary (K-8) (Students per unit)**	**High School (9-12) (Students per unit)**

Single Family	0.441	0.213
Multi-Family	0.195	.074

Based on the generation rates from the table above and the square footages of the proposed mixed-use project, this development would be expected to generate 6 total new students, 4 of them Elementary School (K-8) students, and 2 of them High School students. See the table below for individual values

Commercial/Industrial/Housing Category	**Project Site Square Footage**	**Elementary Students Generated**	**High School Students Generated**
Warehouse	0	0	0
Lodging	0	0	0
Industrial Park	0	0	0
Community Shopping Center	0	0	0
Corporate Office	0	0	0
Neighborhood Shopping Center	0	0	0
Bank	0	0	0
Scientific Research & Development	0	0	0
Business Park	16,014	4	2
Medical Office	0	0	0
Commercial Office	0	0	0
Single Family Housing	0	0	0
Multi-Family Housing	0	0	0
TOTAL		***4***	***2***

Parks

Carol Gabriault Neighborhood Park, approximately 0.16 miles to the southeast of the subject site, would be the closest park to the proposed development. The Black Rascal Bikeway runs along the north of the site toward Fahrens Park, which is 0.37 miles to the northeast. Applegate Park is approximately 1 mile to the southeast.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
15. <u>Public Services.</u> Would the project:				
a) 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 following public services:				
i. Fire Protection?			✓	
ii. Police Protection?			✓	
iii. Schools?			✓	
iv. Parks?			✓	
v. Other Public Facilities?			✓	

Impact Analysis

Would the project:

a) *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 following public services:*

i. *Fire Protection* - The City of Merced Fire Department would provide fire protection services to the site. The project site is located within Fire District #3 and is served by Station #53 located at 800 Loughborough Drive (approximately 0.8 miles from the project site). The response from this station would meet the desired response time of 4 to 6 minutes, citywide. The proposed change in land use designation would not affect the City's ability to provide fire protection. Buildings on the project site of 5,000 square feet or more and any buildings with fryers or cooking equipment would be required to be constructed with a fire sprinkler system and to meet all buildings are required to meet the requirements of the California Fire Code and the Merced Municipal Code.

At the time a building permit is issued, the developer would be required to pay the fees required by the Public Facilities Financing Plan (PFFP). A portion of this fee goes to cover the City's costs for fire protection such as fire stations, etc.

Compliance with all Fire, Building, and Municipal Code requirements as well as payment of the Impact Fees required by the Public Facilities Financing Program, and annexation into the City's CFD for services makes any potential impacts **less than significant**.

ii. *Police Protection* - Development of the project would require additional police services in the area. The proposed project is located on a site that is currently vacant. Any change to the status of the site would require additional services. However, the impacts from the proposed project would not substantially increase the impacts. Payment of the required Public Facilities Impact Fees and annexation into the City's Community Facilities District (CFD) for services would reduce any potential impacts to a **less than significant** level.

iii. *Schools* - Based on the table provided in the "Settings and Description" section above, the proposed mixed-use project would generate 4 Elementary School (K-8) students and 2 High School students. The project would be required to pay all fees required by the Leroy F. Greene School Facilities Act of 1988. The payment of this statutory fee under California Government Code §65995 is deemed "full and complete mitigation" of school impacts. Thus, these impacts are **less than significant**.

iv. *Parks* - The development of the project would not trigger the need to construct a new park in the area. Payment of the fees required under the Public Facilities Financing Program (PFFP) as described above would be required at time of building permit issuance. The payment of fees would reduce this potential impact to **less than significant**.

v. *Other Public Facilities* - The development of the project could impact the maintenance of public facilities and could generate impacts to other governmental services. Payment of the fees required under the Public Facilities Financing Program (PFFP) as described above would mitigate these impacts to a **less than significant** level.

16. Recreation

SETTING AND DESCRIPTION

The City of Merced has a well-developed network of parks and recreation facilities. Carol Gabriault Neighborhood Park, approximately 0.16 miles to the southeast of the subject site, would be the closest park to the proposed development. The Black Rascal Bikeway runs along the north of the site toward Fahrens Park (a Regional Park), 0.37 miles to the northeast. Applegate Park is approximately 1 mile to the southeast. In general, commercial uses do not generate much demand for parks.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
16. Recreation. Would the project:				
a) Increase the use of 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?			✓	

Impact Analysis

Would the project:

a) *Increase the use of neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

The construction of the proposed project could encourage some additional active transportation users along the Black Rascal/Fahrens Creek Bikeway. As described above, there are several parks within a short distance of the site, the site would also have easy access to the City's bicycle trail system with an access point to trail system to the north of the site. Additionally, the developer would be required to pay the fees described under the Parks section above which would help fund future recreation needs. This impact would be **less than significant.**

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?*

As previously described, the project would be required to pay all impact fees required at the time of building permit issuance which would makes any impacts **less than significant**.

17. Transportation/Traffic

SETTING AND DESCRIPTION

The SR 59 / Olive Avenue Commercial Center project is a proposed convenience commercial development that will occupy 3 acres on the northeast corner of the intersection of State Route 59 (SR 59) and Olive Avenue. The proposed development plan includes a gasoline station with convenience store, a fast-food restaurant and other office / retail uses.

Access

The project proposes right-turn only access to SR 59 north of Olive Avenue, as well as a new right-turn only driveway on Olive Avenue.

Trip Generation

Based on approved trip generation rates that account for the specific land uses included in the project, after discount for these "pass-by" trips the project could be expected to result in 1,811 net new trips (in and out) on a daily basis, with 139 new trips in the a.m. peak hour and 155 new trips in the p.m. peak hour.

Improvements

The project is assumed to complete frontage improvements on SR 59 and Olive Avenue that are consistent with the City's Arterial Street standard. Work required along SR 59 would be conducted under an encroachment permit acquired through Caltrans.

Existing Traffic Conditions

The City of Merced General Plan establishes Level of Service (LOS) D as the minimum acceptable standard for intersections and roadways.

Based on direction from City staff, because COVID-19 makes collection of new traffic count data impractical, traffic counts conducted in 2017 were expanded to Year 2020 by 1% annually to established existing conditions. Two safety intersection improvement projects recently completed by the City and Caltrans are assumed in the evaluation of existing conditions at the SR 59 / Olive Avenue intersection and at the SR 59 / W. 16th Street intersection.

All study intersections operate at LOS D or better during the study hours. However, the two-lane portion of SR 59 between W. 16th Street and Olive Avenue carries daily traffic volumes that are indicative of LOS F conditions.

The existing system of pedestrian and bicycle facilities in this area include limited sidewalks and Class I bike paths, but pedestrians and bicycles use paved shoulders elsewhere. Sidewalks do not exist along the project's Olive Avenue frontage, but a class 1 trail exists along SR 59. Recent Caltrans improvements have included high visibility crosswalks at the SR 59 / Olive Avenue intersection.

Vehicle Miles Traveled Impacts

Under SB 743, evaluation of transportation impacts under CEQA requires that agencies move from Level of Service based analysis to consideration of a project's effect on regional Vehicle Miles Traveled (VMT). The CEQA Guidelines and the California Governor's Office of Planning and Research (OPR) document, Technical Advisory on Evaluating Transportation Impacts in CEQA (California Governor's Office of Planning and Research 2018) provide general guidance as to thresholds of significance for determining when a project would have significant transportation impacts based on the new metric of VMT, rather than operating Level of Service (LOS) until local agencies adopt their own standards. Because Merced County and the City of Merced have not yet adopted methods for estimating regional VMT or significance criteria for evaluating impacts based on VMT, the OPR technical advisory has been followed.

Screening

The OPR Technical Advisory speaks to two screening criteria that would be applicable to the proposed project.

• Locally Serving Retail Projects. The OPR advisory recognize that by offering additional shopping/service opportunities, retail projects have the effect of reducing regional VMT and suggest that retail uses of 50,000 square feet or less can be assumed to have a less than significant effect on regional VMT.

• Small Projects. The OPR advisory suggests that the VMT contribution of small projects need not be considered significant. OPR suggests that agencies can find projects generating fewer than 110 vehicles trips a day to be less than significant.

Assessment

The proposed project is generally comprised of convenience retail uses that will serve motorists already traveling on SR 59 and on Olive Avenue or who live or work in the immediate area. The project also includes up to 6,000 sf of office space. Based on OPR guidance, the project's VMT impacts can be judged as follows.

As the retail elements of the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 59 or on Olive Avenue, and the project's total building floor area is far below the 50,000 sf threshold identified by OPR, the impacts of the project's retail uses on regional VMT is not significant.

The office space included in the project is projected to generate 74 daily trips. As this trip generation estimate falls below the 110 daily trip threshold identified by OPR, the office portion of the proposed project qualifies as a "small project" that can be assumed to have a less than significant impact on regional VMT.

Existing Plus SR 59 / Olive Avenue Commercial Center Conditions

The impacts of SR 59 / Olive Avenue Commercial Center were identified by superimposing project trips onto the current background traffic volume levels. The directional distribution of project trips was identified using the Merced County Association of Governments (MCAG) regional traffic model, and that analysis tool indicated that the majority of project trips will arrive and depart via SR 59 and Olive Avenue to the east under short term future conditions.

Project Traffic Effects

If no improvements to the area circulation system are made, all off-site study intersections would continue to operate with LOS D or better conditions, and the project would be consistent with the Merced General Plan. The project will add traffic to the two-lane segments of SR 59 south of Olive Avenue that today exceed the minimum LOS standard, but the amount of traffic added by the project is not significant based on the incremental change permitted under City of Merced policy. The project will add traffic to the westbound left turn lane on Olive Avenue approaching the SR 59 intersection, and traffic signal timing in conjunction with Caltrans District 10 is recommended to minimize the project's on peak period queues.

Effects on Alternative Transportation Modes

The project may result in pedestrians walking to and from the site. Sidewalk should be installed along Olive Avenue with project frontage improvements.

Existing Plus Approved Project Plus SR 59 / Olive Avenue Commercial Center Conditions

The approved SR 59 / Olive Avenue Retail Center project will occupy 8 acres on the northwest corner of the intersection of SR 59 and Olive Avenue - Santa Fe Drive. The approved development plans include roughly 42,800 sf of retail commercial uses, including a gasoline station with convenience store, fast food restaurants, coffee kiosk and other retail uses. The development will have a right turn-only access on SR 59 north of Olive Avenue as well as two driveways on Santa Fe Drive. On the two driveways, the more westerly Santa Fe Drive access will provide full access and will be signalized.

EPAP Plus Project

If the proposed SR 59 / Olive Avenue Commercial Center project is built out in addition to the approved project and anticipated improvements are made along the project's frontage then all study intersections will operate with Level of Service that satisfy the City's LOS D minimum. The addition of traffic from the proposed project does not appreciably change queuing conditions on northbound and southbound SR 59, but the same traffic signal timing recommendation made for Existing Plus Project Conditions is applicable.

Driveway Throat Depths

The adequacy of the driveway throats was determined based on the length of exiting queue at the driveway. The LOS analysis indicates that the 95th percentile queue in the SR 59 driveway would be one vehicle or less, while the 95th percentile queue in the Olive Avenue driveway could be 75 feet (i.e., three vehicles). The queues at the SR 59 driveway are less than the available throat depth, and no changes are recommended. However, the Olive Avenue driveway has a limited throat depth, and the anticipated Year 2035 queue would block entry into the southern portion of the canopy area. To address this issue, it would be necessary to place a median in the driveway that would extend for 75 feet.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
17. <u>Transportation/Traffic.</u> Would the project:				
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 § 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?			✓	

Impact Analysis

Would the project:

a) *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

Transportation and traffic impacts were analyzed by KD Anderson & Associates, Inc. in a Traffic Impact Analysis (Appendix B). The conclusions regarding the proposed project would allow the impacts of the project to be **less than significant with mitigation** by implementing the following mitigation measures. The project shall contribute its equitable fair share as listed in Table A1 of the Traffic Impact Analysis (Appendix B).

<u>Mitigation Measures</u>

TRA-01 The Project shall coordinate with Caltrans in order to optimize traffic signal timing after the project is occupied.

TRA-02 The Project shall provide fair share contributions to intersection improvements including:

- Reconstruct westbound Olive Avenue to provide dual left turn lanes onto Southbound SR 59.
- Reconfigure the westbound right turn lane to create a 3rd through and right turn lane, and extend that through lane across SR 59 along the project's frontage.
- Reconstruct the existing northbound right turn lane as a "free" right turn with median island separating eastbound and right turning traffic.
- Reconstruct the Eastbound Santa Fe Drive approach to provide dual left turn lane.

TRA-03 The Project shall install a 75-foot median in the Olive Avenue driveway.

TRA-04 The Project shall add a westbound right turn lane on Olive Avenue.

TRA-05 The Project shall add a northbound right turn lane on SR-59 in coordination with Caltrans.

b) *Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?*

The CEQA Guidelines and the California Governor's Office of Planning and Research (OPR) document, Technical Advisory on Evaluating Transportation Impacts in CEQA (California Governor's Office of Planning and Research 2018) encourage all public agencies to develop and publish thresholds of significance to assist with determining when a project would have significant transportation impacts based on the new metric of VMT, rather than operating Level of Service (LOS). The CEQA Guidelines generally state that projects that decrease VMT can be assumed to have a less than significant transportation impact. The CEQA Guidelines do not provide any specific criteria on how to determine what level of project VMT would be considered a significant impact. Merced County and the City of Merced have not yet adopted methods for estimating regional VMT or significance criteria for evaluating impacts based on VMT.

<u>Screening</u>

Under OPR direction, the following categories of land development projects are judged to have a less than significant impact on regional VMT.

- Location Based Screening
  - Near High Quality Transit facilities
  - In VMT efficiency areas where evidence exists that development yields VMT metrics that satisfy the OPR recommended significance criteria of a 15% reduction (i.e., 85% of average).
- Other Factors
  - Small projects
  - Local-serving retail

- Local-serving public uses
- Affordable housing

The Technical Advisory speaks to two screening criteria that would be applicable to the proposed project.

a. Locally Serving Retail Projects. The OPR advisory recognize that by offering additional shopping/service opportunities, retail projects have the effect of reducing regional VMT and suggest that retail uses of 50,000 square feet or less can be assumed to have a less than significant effect on regional VMT. As the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 99 or on Olive Avenue, the project's impact based on VMT is not significant.

b. Small Projects. The OPR advisory suggests that the VMT contribution of small projects need not be considered significant. OPR suggests that agencies can find projects generating fewer than 110 vehicles trips a day to be less than significant.

VMT Impacts Assessment

The proposed project is generally comprised of convenience retail uses that will serve motorists already traveling on SR 59 and on Olive Avenue or who live or work in the immediate area. The project also includes up to 6,000 sf of office space. Based on OPR guidance, the project's VMT impacts can be judged as follows.

As the retail elements of the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 59 or on Olive Avenue, and the project's total building floor area is far below the 50,000 sf threshold identified by OPR, the impacts of the project's retail uses on regional VMT is not significant.

The office space included in the project is projected to generate 74 daily trips. As this trip generation estimate falls below the 110 daily trip threshold identified by OPR, the office portion of the proposed project qualifies as a "small project" that can be assumed to have a less than significant impact on regional VMT.

Based on the foregoing analysis, the potential impacts are **less than significant.**

c) *Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Implementation of the proposed project would not alter any existing roads or create new roads in such a way to substantially increase hazards due to a geometric design feature. The proposed project would alter a number of intersections as required by Mitigation Measures TRA-01 through TRA-05. Construction of the proposed project would be **less than significant impact with mitigation.**

d) *Result in inadequate emergency access?*

The proposed project includes multiple points of access the site, one off of Olive Avenue and one off of SR 59. Providing two points of access into the site satisfies the Fire Departments requirements for emergency access. Any impacts would be **less than significant.**

18. Tribal Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
18. Tribal Cultural Resources Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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:				
i. 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), or				✓
ii. 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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				✓

Impact Analysis

Would the project:

a) *Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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:*

   i. *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)?*

   ii. *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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

As stated in the Cultural Resources Section of this Initial Study, improvements associated with the project include site excavation, grading, paving, and construction of buildings. The areas of the project subject to demolition and construction facilities are likely to have been subject to ground disturbance in the past. No tribal resources are known to have occurred or have been identified at the project site or in the vicinity of the project site. However, as noted in the Cultural Resources Section, implementation of Mitigation Measures CUL-1 and CUL-3 would protect previously unrecorded or unknown cultural resources, including Native American artifacts and human remains, should these be encountered during project construction.

In addition, Assembly Bill (AB) 52 provides for consultation between lead agencies and Native American tribal organizations during the CEQA process. Since AB 52 was enacted in July 2015, the City has not been contacted by any California Native American tribes requesting that they be notified when projects are proposed in Merced. No tribes have requested consultation pursuant to Public Resources Code section 21080.3.1. Therefore, it is assumed that no Tribal Cultural Resources would be adversely affected by the project. As a result, **no impact** would occur.

19. Utilities and Service Systems

SETTING AND DESCRIPTION

Water

The City's water system is composed of 23 groundwater production wells located throughout the City and approximately 350 miles of main lines. Well pump operators ensure reliability and adequate system pressure at all times to satisfy customer demand. Diesel powered generators help maintain uninterrupted operations during power outage. The City of Merced water system delivers more than 24 million gallons of drinking water per day to approximately 20,733 residential, commercial, and industrial customer locations. The City is required to meet State Health pressure requirements, which call for a minimum of 20 psi at every service connection under the annual peak hour condition and maintenance of the annual average day demand plus fire flow, whichever is stricter. The City of Merced Water Division is operated by the Public Works Department.

The City of Merced's wells have an average depth of 414 feet and range in depth from 161 feet to 800 feet. The depth of these wells would suggest that the City of Merced is primarily drawing water from a deep aquifer associated with the Mehrten geologic formation. Increasing urban demand and associated population growth, along with an increased shift by agricultural users from surface water to groundwater and prolonged drought, have resulted in declining groundwater levels due to overdraft. This condition was recognized by the City of Merced and the Merced Irrigation District (MID) in 1993, at which time the two entities began a two-year planning process to assure a safe and reliable water supply for Eastern Merced County through the year 2030. Integrated Regional Water Planning continues today through various efforts.

Wastewater

Wastewater (sanitary sewer) collection and treatment in the Merced urban area is provided by the City of Merced. The wastewater collection system handles wastewater generated by residential, commercial, and industrial uses in the City.

The City Wastewater Treatment Plant (WWTP), located in the southwest part of the City about two miles south of the airport, has been periodically expanded and upgraded to meet the needs of the City's growing population and new industry. The City's wastewater treatment facility has a capacity of 11.5 million gallons per day (mgd), with an average flow of 8.5 mgd. The City has recently completed an expansion project to increase capacity to 12 mgd and upgrade to tertiary treatment with the addition of filtration and ultraviolet disinfection. Future improvements would add another 8 mgd in capacity (in increments of 4 mgd), for a total of 20 mgd. This design capacity can support a population of approximately 174,000. The collection system will also need to be expanded as development occurs.

Treated effluent is disposed of in several ways depending on the time of year. Most of the treated effluent (75% average) is discharged to Hartley Slough throughout the year. The remaining treated effluent is delivered to a land application area and the on-site City-owned wetland area south of the treatment plant.

Storm Drainage

The Draft *City of Merced Storm Drainage Master Plan* addresses the collection and disposal of surface water runoff in the City's SUDP. The study addresses both the collection and disposal of storm water. Systems of storm drain pipes and catch basins are laid out, sized, and costed in the plan to serve present and projected urban land uses.

It is the responsibility of the developer to ensure that utilities, including storm water and drainage facilities, are installed in compliance with City regulations and other applicable regulations. Necessary arrangements with the utility companies or other agencies will be made for such installation, according to the specifications of the governing agency and the City (Ord. 1342 § 2 (part), 1980: prior code § 25.21(f)). The City requires the construction of storm water percolation/detention basins with new development. Percolation basins are designed to collect storm water and filter it before it is absorbed into the soil and reaches groundwater tables. Detention basins are designed to temporarily collect runoff so it can be metered at acceptable rates into canals and streams which have limited capacity. The disposal system is mainly composed of MID facilities, including water distribution canals and laterals, drains, and natural channels that traverse the area.

The City of Merced has been involved in developing a Storm Water Management Plan (SWMP) to fulfill requirements of storm water discharges from Small Municipal Separate Storm Sewer System (MS4) operators in accordance with Section 402(p) of the Federal Clean Water Act (CWA). The SWMP was developed to also comply with General Permit Number CAS000004, Water Quality Order No. 2003-0005-DWQ.

Solid Waste

The City of Merced is served by the Highway 59 Landfill and the Highway 59 Compost Facility, located at 6040 North Highway 59, one and one-half miles north of Old Lake Road. The County of Merced is the contracting agency for landfill operations and maintenance, while the facilities are owned by the Regional Waste Authority. The City of Merced provides services for all refuse pick-up within the City limits and franchise hauling companies collect in the unincorporated areas. In addition to these two landfill sites, there is one private disposal facility, the Flintkote County Disposal Site, at SR 59 and the Merced River. This site is restricted to concrete and earth material.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
19. <u>Utilities and Service Systems.</u> Would the project:				
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 waste water 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?			✓	

Impact Analysis

Would the project:

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?*

The proposed project would be served, largely through lines in Highway 59 and Olive Avenue, by the City's existing water, wastewater treatment, and storm water drainage systems. Electrical power, natural gas, and telecommunications facilities are all located near the site. It is not anticipated that any new facilities would be required. This impact would be **less than significant.**

b) *Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

The City's water supply system consists of 23 wells and 14 pumping stations. The project is expected to use approximately 1,800 gallons of water per day. There is a 16-inch water line in Highway 59 and another 16-inch line in Olive Avenue to serve the project site. The City's water supply would be sufficient to serve the proposed project. This impact would be **less than significant.**

c) *Result in a determination by the waste water 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?*

The City's wastewater collection system handles wastewater generated by residential, commercial, and industrial uses in the City. The City Wastewater Treatment Plant (WWTP), located in the southwest part of the City about 2 miles south of the airport, has been periodically expanded and upgraded to meet the needs of the City's growing population and new industry.

The WWTP recently finished two major upgrades (Phase IV and Phase V) to improve the quality of the treated water, referred to as plant effluent, and to improve the quality of biosolids and methods of treatment. The Merced Wastewater Treatment Plant is now one of the most advanced facilities in the state. It is capable of treating up to 12 million gallons of influent a day. The proposed project is estimated to generate approximately 11,730 gallons of wastewater per day (based on 108 gallons/day/1,000 square feet of floor area for office and commercial uses). The additional wastewater generated by the project would be approximately 0.09% of the overall capacity of the WWTP.

There is sufficient capacity at the WWTP, and the existing lines in Highway 59 and Olive Avenue have enough capacity during peak hours to accommodate the additional wastewater and transmit it to the WWTP for processing. This impact is **less than significant.**

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?*

Solid wastes within the County of Merced are disposed of at two landfill sites owned and operated by the Merced County Regional Waste Management Authority. The west side of the County is served by the Billy Wright Road landfill, and the east side (including the City of Merced) by the Highway 59 landfill, 1.5 miles north of Old Lake Road. The County of Merced is the contracting agency for landfill operation and maintenance. It is estimated that the remaining capacity of the Highway 59 site will last until the year 2030. The City of Merced provides services for all refuse pick-up within the City limits, including green waste and recycling. Street sweeping services are also offered.

The proposed project would be required to provide general garbage containers. Additionally, in order to reduce the number of containers on site for general waste, the developer may install trash compactors. The City's Refuse Department would be able to serve the project and sufficient capacity is available at the landfill to serve the project. This impact would be **less than significant.**

e) *Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

The California Integrated Waste Management Act of 1989 (AB 939) changed the focus of solid waste management from landfill to diversion strategies such as source reduction, recycling, and composting. The purpose of the diversion strategies is to reduce dependence on landfills for solid waste disposal. AB 939 established mandatory diversion goals of 25 percent by 1995 and 50 percent by 2000. The proposed project would be required to comply with all federal, State, and local regulations related to solid waste. Furthermore, the proposed project would be required to comply with all standards related to solid waste diversion, reduction, and recycling during project construction and operation of the project. Therefore, the proposed project is anticipated to result in **less-than-significant** impacts related to potential conflicts with federal, State, and local statutes and regulations related to solid waste.

20. Wildfire

SETTING AND DESCRIPTION

Both urban and wildland fire hazard potential exists in the City of Merced and surrounding areas, creating the potential for injury, loss of life, and property damage. Urban fires primarily involve the uncontrolled burning of residential, commercial, or industrial structures due to human activities. Wildland fires affect grassland, brush or woodlands, and any structures on or near these fires. Such fires can result from either human made or natural causes.

Urban fires comprise the majority of fires in the City of Merced. The site is surrounded by urban uses and some open space. These lots contain areas of grass and other vegetation that could be susceptible to fires. However, the City of Merced Fire Department has procedures in place to address the issue of wildland fires, so no additional mitigation would be necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
20. Wildfire. If located in or near stat responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
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?				✓

Impact Analysis

Would the project:

a) *Substantially impair an adopted emergency response plan or emergency evacuation plan?*

The project construction of new roadways for the project is limited to the internal driveway network and upgrades to existing roadways (see Section 17, Transportation/Traffic for more details). The project would also be required to comply with all applicable requirements of the California Fire Code. As such, the project would not have major impact on an adopted emergency response plan or emergency evacuation plan. This impact would be **less than significant.**

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?*

According to the California Department of Forestry and Fire Protection, the project site is not located in any fire hazard zone. The areas surrounding the project site are mostly developed, urban land.

There is a low potential for wildland fires within these parameters. Additionally, the California Building Code and the California Fire Codes work together to regulate building construction and related items such as the care of vacant lots and the storage of flammable liquids.

To provide effective fire prevention activities for low hazard occupancies, the Fire Department conducts seasonal hazard removal programs (primarily weed abatement). The City of Merced employs a weed abatement program, which requires property owners to eliminate flammable vegetation and rubbish from their properties. Each property within the City is surveyed each spring and notices are sent to the property owners whose properties have been identified to pose a fire risk. Since inception of this program in 1992, grass or brush related fires within the City have been greatly reduced. The City also picks up abandoned vehicles. A permanent bulky refuge drop-off facility has been located near Highway 59 and Yosemite Avenue. Further, staging areas, building areas, and/or areas slated for development using spark-producing equipment are cleared of dried vegetation or other materials that could serve as fuel for combustion; impacts are considered **less than significant**.

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?*

The project would be required to repair/replace any missing or damaged infrastructure along their property frontage. However, the on-going maintenance of roadways would fall to the City. All other infrastructure or utilities exist in the area. No additional infrastructure or on-going maintenance would be required that would cause an impact to the environment. This impact is **less than significant.**

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?*

The project site and surrounding area is relatively flat with no risk of downslope or downstream flooding or landslides. Therefore, there is **no impact.**

21. Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
21. Mandatory Findings of Significance. Would the project:				
a) Have the 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?			✓	
b) 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 probably future projects?)			✓	

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			✓	

Impact Analysis

Would the project:

a) *Have the 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?*

As previously discussed in this document, the project does not have the potential to adversely affect biological resources or cultural resources because such resources are lacking on the project site, and any potential impacts would be avoided with implementation of the mitigation measures and other applicable codes identified in this report. Also, the project would not significantly change the existing urban setting of the project area. Thus, this impact would be **less than significant.**

b) *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 probably future projects?)*

The Program Environmental Impact Report conducted for the *Merced Vision 2030 General Plan, and the General Plan Program EIR* (SCH# 2008071069) has recognized that future development and build-out of the SUDP/SOI will result in cumulative and unavoidable impacts in the areas of Air Quality and Loss of Agricultural Soils. In conjunction with this conclusion, the City has adopted a Statement of Overriding Considerations for these impacts (Resolution #2011-63) which is herein incorporated by reference.

The certified General Plan EIR addressed and analyzed cumulative impacts resulting from changing agricultural use to urban uses. No new or unaddressed cumulative impacts will result from the Project that have not previously been considered by the certified General Plan EIR or by the Statement of Overriding Considerations, or mitigated by this Expanded Initial Study. This Initial Study does not disclose any new and/or feasible mitigation measures which would lessen the unavoidable and significant cumulative impacts.

The analysis of impacts associated with the development of the proposed change will contribute to the cumulative impacts identified in the General Plan EIR. The nature and extent of these impacts, however, falls within the parameters of impacts previously analyzed in the General Plan EIR. No individual or cumulative impacts will be created by the Project that have not previously been considered at the program level by the General Plan EIR or mitigated by this Initial Study. This impact is **less than significant.**

c) *Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

Development anticipated by the *Merced Vision 2030 General Plan* will have significant adverse effects on human beings. These include the incremental degradation of air quality in the San Joaquin Basin, the loss of prime agricultural soils, the incremental increase in traffic, and the increased demand on natural resources, public services, and facilities. However, consistent with the provisions of CEQA previously identified, the analysis of the Project is limited to those impacts which are peculiar to the Project site or which were not previously identified as significant effects in the prior EIR. The previously-certified General Plan EIR and the Statement of Overriding Considerations addressed those cumulative impacts; hence, there is no requirement to address them again as part of this Project.

This previous EIR has concluded that these significant adverse impacts are accounted for in the mitigation measures incorporated into the General Plan EIR. In addition, a Statement of Overriding Considerations has been adopted by City Council Resolution #2011-63 that indicates that the significant impacts associated with development of the Project are offset by the benefits that will be realized in providing necessary jobs for residents of the City. The analysis and mitigation of impacts has been detailed in the Environmental Impact Report prepared for the *Merced Vision 2030 General Plan*, which are incorporated into this document by reference.

While this issue was addressed and resolved with the General Plan EIR in an abundance of caution, in order to fulfill CEQA's mandate to fully disclose potential environmental consequences of projects, this analysis is considered herein. However, as a full disclosure document, this issue is repeated in abbreviated form for purposes of disclosure, even though it was resolved as a part of the General Plan.

Potential impacts associated with the Project's development have been described in this Initial Study. All impacts were determined to either be **less than significant** or **less than significant with mitigation measures.**

<u>Attachments:</u>

A) Public Hearing Notice and Notice Area Map
B) Mitigation Monitoring Program for Initial Study #20-36

<u>Appendices:</u>

A) Air Quality and Greenhouse Gas Impact Analysis for General Plan Amendment #20-02
B) Traffic Impact Analysis for General Plan Amendment #20-02

NOTICE OF PUBLIC HEARING VIA TELECONFERENCE
FOR GENERAL PLAN AMENDMENT #20-02, SITE UTILIZATION
PLAN REVISION #1 TO PLANNED DEVELOPMENT (P-D) #12,
AND NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

A public hearing will be held via teleconference by the Merced City Planning Commission on Wednesday, February 17, 2021, at 7:00 p.m., or as soon thereafter as may be heard, concerning General Plan Amendment #20-02 and Site Utilization Plan Revision #1 to Planned Development #12, initiated by Robert Vermeltfoort on behalf of REM Land Group, LLC, Property Owner. The application involves a change from the current land use designations of Commercial Office (CO) and Industrial (IND) to Business Park (BP). The new Site Utilization Plan envisions a proposed mini-mart with fuel island, a proposed drive-through business and a proposed office/retail building. The 3.38-acre property is generally located at the northeast corner of State Highway 59 and Olive Avenue. The property is more particularly described as Adjusted Parcel 1 as described in the Grant Deed recorded as Document No. 2020047663, on December 10, 2020, in Merced County Records; also known as a portion of Assessor's Parcel Number (APN) 058-030-037.

An environmental review checklist has been filed, and an initial study recommending a draft mitigated negative declaration (i.e. no significant effect in this case because of mitigation measures and/or modifications described in the draft) has been prepared under the California Environmental Quality Act. A copy of this staff evaluation ("Initial Study") is available for public inspection at the City of Merced Planning Department or City Clerk's office during regular business hours at 678 W. 18th Street, Merced, CA, or on the City's website at www.cityofmerced.org. A copy may also be requested by emailing planningweb@cityofmerced.org.

All persons in favor of, opposed to, or in any manner interested in this request for a General Plan Amendment and Site Utilization Plan Revision are invited to comment via email or voicemail (see instructions below). The public review period for the environmental determination begins on January 28, 2020, and ends on February 17, 2021. Please call the Planning Department at (209) 385-6858 for additional information. If you challenge the decision of the Planning Commission in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City of Merced at, or prior to, the public hearing.

After the Planning Commission makes its recommendation on this matter, the matter will also be considered at a public hearing before the City Council. A separate notice of that public hearing will also be given.

Pursuant to Governor Newsom's Executive Order N-29-20, this meeting will be conducted by teleconference and there will be no in-person public access to the meeting location. Please submit your public comment to the Planning Commission electronically no later than 1:00 PM on the day of the meeting. Comments received before the deadline will be sent to the Planning Commission and made part of the record. Material may be emailed to planningweb@cityofmerced.org and should be limited to 300 words or less. Please specify which portion of the agenda you are commenting on, i.e. item # or Oral Communications. Your comments will be provided to the Planning Commission at the appropriate time. Any correspondence received before, during, or after the meeting will be distributed to the Planning Commission and retained for the official record.

You may provide telephonic comments via voicemail by calling (209) 388-7390 by no later than 1:00 PM on the day of the meeting to be added to the public comment. Voicemails will be limited to a time limit of three (3) minutes. Please specify which portion of the agenda you are commenting on, i.e. item # or Oral Communications. Your comments will be played during the meeting to the Planning Commission at the appropriate time.

To view video (if available) or listen to the Planning Commission meeting live, go to the City's website www.cityofmerced.org, Facebook Live, or Comcast Public Access Channel 96.

/s/ Kim Espinosa

January 28, 2021 KIM ESPINOSA,
Planning Manager

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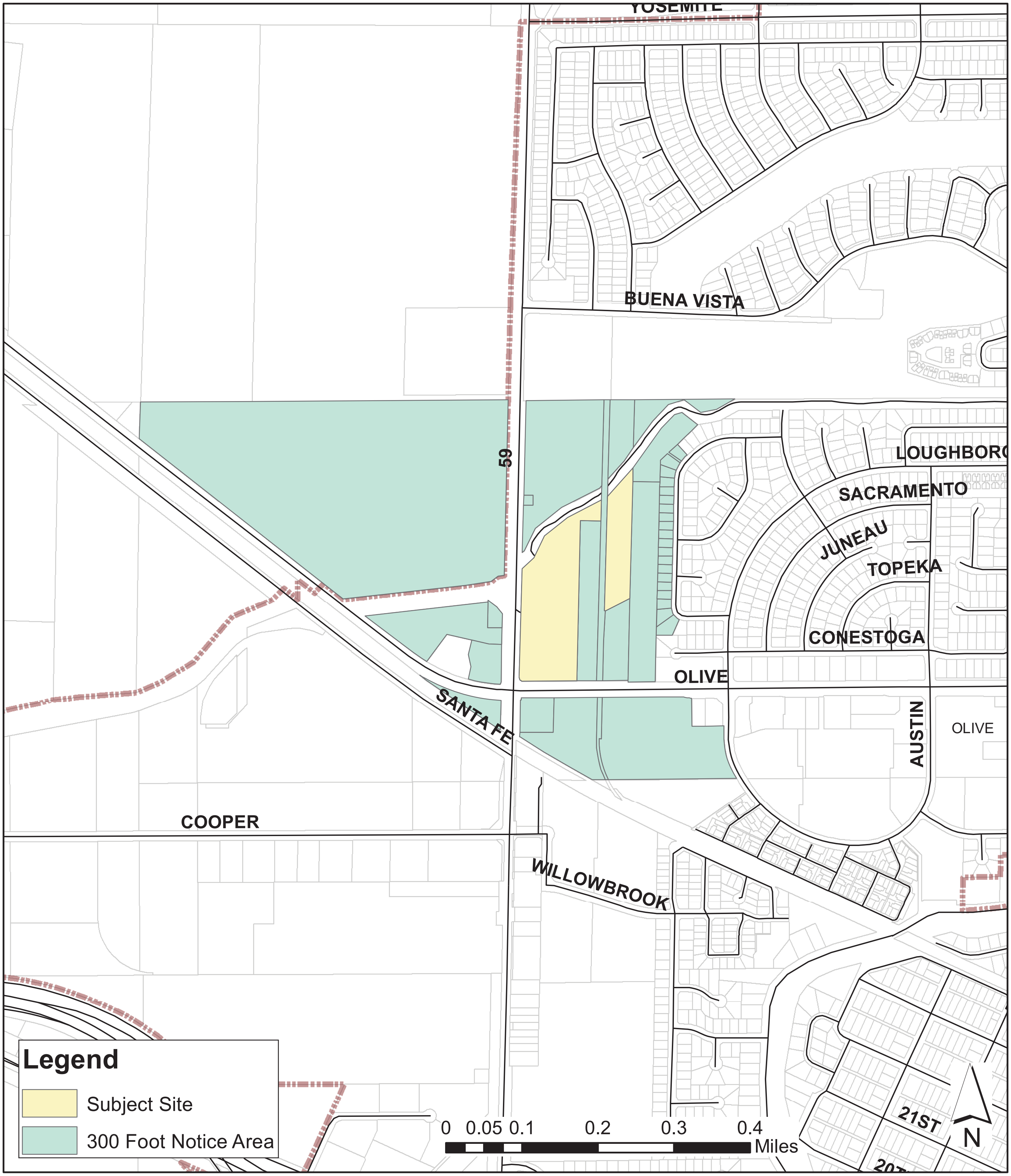
Pursuant to Governor Newsom's Executive Order N-29-20, this meeting will be conducted by teleconference and there will be no in-person public access to the meeting location. Please submit your public comment to the Planning Commission electronically no later than 1:00 PM on the day of the meeting. Comments received before the deadline will be sent to the Planning Commission and made part of the record. Material may be emailed to planningweb@cityofmerced.org and should be limited to 300 words or less. Please specify which portion of the agenda you are commenting on, i.e. item # or Oral Communications. Your comments will be provided to the Planning Commission at the appropriate time. Any correspondence received before, during, or after the meeting will be distributed to the Planning Commission and retained for the official record.

You may provide telephonic comments via voicemail by calling (209) 388-7390 by no later than 1:00 PM on the day of the meeting to be added to the public comment. Voicemails will be limited to a time limit of three (3) minutes. Please specify which portion of the agenda you are commenting on, i.e. item # or Oral Communications. Your comments will be played during the meeting to the Planning Commission at the appropriate time.

To view video (if available) or listen to the Planning Commission meeting live, go to the City's website www.cityofmerced.org, Facebook Live, or Comcast Public Access Channel 96.

/s/ Kim Espinosa

January 28, 2021 KIM ESPINOSA,
Planning Manager



Disclaimer: This document was prepared for general inquiries only. The City of Merced makes no warranty, representation, or guarantee regarding the accuracy of this map. The City of Merced is not responsible for errors or omissions that might occur. Official information regarding specific parcels should be obtained from official recorded or adopted City documents.

General Plan Amendment #20-02,
Site Utilization Plan Revision #1
to Planned Development #12,
and Environmental Review #20-36

ENVIRONMENTAL REVIEW #20-36
Mitigation Monitoring Program

MITIGATION MONITORING CONTENTS

This mitigation monitoring program includes a brief discussion of the legal basis and purpose of the mitigation monitoring program, a key to understanding the monitoring matrix, a discussion of noncompliance complaints, and the mitigation monitoring matrix itself.

LEGAL BASIS AND PURPOSE OF THE MITIGATION MONITORING PROGRAM

Public Resource Code (PRC) 21081.6 requires public agencies to adopt mitigation monitoring or reporting programs whenever certifying an environmental impact report or mitigated negative declaration. This requirement facilitates implementation of all mitigation measures adopted through the California Environmental Quality Act (CEQA) process.

The City of Merced has adopted its own "Mitigation Monitoring and Reporting Program" (MMC 19.28). The City's program was developed in accordance with the advisory publication, *Tracking CEQA Mitigation Measures*, from the Governor's Office of Planning and Research.

As required by MMC 19.28.050, the following findings are made:

1) The requirements of the adopted mitigation monitoring program for the General Plan Amendment #19-03 and Site Utilization Plan Revision #3 to Planned Development #72 shall run with the real property. Successive owners, heirs, and assigns of this real property are bound to comply with all of the requirements of the adopted program.
2) Prior to any lease, sale, transfer, or conveyance of any portion of the subject real property, the applicant shall provide a copy of the adopted program to the prospective lessee, buyer, transferee, or one to whom the conveyance is made.

MITIGATION MONITORING PROCEDURES

In most cases, mitigation measures can be monitored through the City's construction plan approval/plan check process. When the approved project plans and specifications, with mitigation measures, are submitted to the City Development Services Department, a copy of the monitoring checklist will be attached to the submittal. The Mitigation Monitoring Checklist will be filled out upon project approval with mitigation measures required. As project plans and specifications are checked, compliance with each mitigation measure can be reviewed.

In instances where mitigation requires on-going monitoring, the Mitigation Monitoring Checklist will be used until monitoring is no longer necessary. The Development Services Department will be required to file periodic reports on how the implementation of various mitigation measures is progressing or is being maintained. Department staff may be required to conduct periodic inspections to assure compliance. In some instances, outside agencies and/or consultants may be required to conduct necessary periodic inspections as part of the mitigation monitoring program. Fees may be imposed per MMC 19.28.070 for the cost of implementing the monitoring program.

General Plan Mitigation Measures

As a second tier environmental document, Initial Study #20-36 incorporates some mitigation measures adopted as part of the *Merced Vision 2030 General Plan Program Environmental Impact Report* (SCH# 2008071069), as mitigation for potential impacts of the Project.

Noncompliance Complaints

Any person or agency may file a complaint asserting noncompliance with the mitigation measures associated with the project. The complaint shall be directed to the Director of Development Services in written form providing specific information on the asserted violation. The Director of Development Services shall cause an investigation and determine the validity of the complaint. If noncompliance with a mitigation measure has occurred, the Director of Development Services shall cause appropriate actions to remedy any violation. The complainant shall receive written confirmation indicating the results of the investigation or the final action corresponding to the particular noncompliance issue. Merced Municipal Code (MMC) Sections 19.28.080 and 19.28.090 outline the criminal penalties and civil and administrative remedies which may be incurred in the event of noncompliance. MMC 19.28.100 spells out the appeals procedures.

Monitoring Matrix

The following pages provide a series of tables identifying the mitigation measures proposed specifically for General Plan Amendment #20-02 and Site Utilization Plan Revision #1 to Planned Development #12. The columns within the tables are defined as follows:

Mitigation Measure:	Describes the Mitigation Measure (referenced by number).
Timing:	Identifies at what point in time or phase of the project that the mitigation measure will be completed.
Agency/Department Consultation:	This column references any public agency or City department with which coordination is required to satisfy the identified mitigation measure.
Verification:	These columns will be initialed and dated by the individual designated to verify adherence to the project specific mitigation.

General Plan Amendment #20-36/Site Utilization Plan Revision #1 to Planned Development #12 Mitigation Monitoring Checklist

Project Name:______________________ **File Number:**______________________
Approval Date:______________________ **Project Location** ______________________
Brief Project Description______________________

The following environmental mitigation measures were incorporated into the Conditions of Approval for this project in order to mitigate identified environmental impacts to a level of insignificance. A completed and signed checklist for each mitigation measure indicates that this mitigation measure has been complied with and implemented, and fulfills the City of Merced's Mitigation Monitoring Requirements (MMC 19.28) with respect to Assembly Bill 3180 (Public Resources Code Section 21081.6).

3) Air Quality

Impact	*Mitigation Measures*	*Timing*	*Agency or Department*	*City Verification (date and initials)*
c	AIR-1) Consistent with SJVAPCD Regulation VIII (Fugitive PM10 Prohibitions), the following controls are required to be included as specifications for the proposed project and implemented at the construction site: -All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover. -All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant -All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. -When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. -All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. *(continued on next page)*			

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
c	-The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. - Following the addition of materials to, or the removal of materials from, the surface of out-door storage piles, said piles shall be effectively stabilized of fugitive dust emission utilizing sufficient water or chemical stabilizer/suppressant.	Building Permits	Planning Department	
c	AIR-2) The project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project meet the California Air Resources Board (CARB) Tier 2 with a Level 3 Diesel Particulate Filter emissions standards or equivalent.	Building Permits	Planning Department	

4) Biological Resources

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	BIO-1) Impacts to wildlife habitat can be reduced by using native plant materials in landscaping to the greatest extent possible. Native plant species provide the best wildlife habitat since native vegetation has co-evolved with the wildlife and affords food sources for which wildlife is best adapted. Native species cannot always be used to produce the desired form and floral characteristics, but some native species can usually be incorporated.	Building Permits	Planning Department	

5) Cultural Resources

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	CUL-1) If unknown pre-contact or historic-period archaeological materials are encountered during project activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resources materials may include pre-contact resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations shall be required to mitigate adverse impacts from project implementation. These additional studies may include, but are not limited to, recordation, archaeological excavation, or other forms of significance evaluations. The applicant shall inform its contractor(s) of the sensitivity of the project site for archaeological deposits, and include the following directive in the appropriate contract documents: *(continued on next page)*			

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
	"The subsurface of the construction site is sensitive for archaeological deposits. If archaeological deposits are encountered during project subsurface construction, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist shall assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Project personnel shall not collect or move any archaeological materials. Archaeological deposits can include, but are not limited to, shellfish remains; bones, including human remains; and tools made from, obsidian, chert, and basalt; mortars and pestles; historical trash deposits containing glass, ceramics, and metal artifacts; and structural remains, including foundations and wells." The City shall verify that the language has been included in the grading plans prior to issuance of a grading permit or other permitted project action that includes ground-disturbing activities on the project site.	Building Permits	Planning Department	

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
b	CUL-2) Implementation of Mitigation Measure CUL-1.	Building Permits	Planning Department	

c	CUL-3) If human remains are identified during construction and cannot be preserved in place, the applicant shall fund: 1) the removal and documentation of the human remains from the project corridor by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology; 2) the scientific analysis of the remains by a qualified archaeologist, should such analysis be permitted by the Native American Most Likely Descendant; and, 3) the reburial of the remains, as appropriate. All excavation, analysis, and reburial of Native American human remains shall be done in consultation with the Native American Most Likely Descendant, as identified by the California Native American Heritage Commission.	Building Permits	Planning Department	
6) Energy				
a	ENE-1) The applicant shall comply with all applicable California Energy Code, AB 341, and San Joaquin Valley Air Pollution Control District rules and regulations regulating energy efficiency and waste.	Building Permits	Building Department	

b	ENE-2) Implementation of Mitigation Measure ENE-1.	Building Permits	Building Department	

7) Geology and Soils

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
b	GEO-1) The project shall comply with all requirements of the State Water Resources Board (SWRCB) and obtain a General Construction Activity Stormwater Permit.	Building/ Encroachment Permits	Engineering Department	

8) Greenhouse Gas Emissions

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	**GHG-1)** The project applicant shall demonstrate compliance with the applicable BPS strategies to the Planning Division prior to the issuance of a building permit. The following BPS strategies are considered to be applicable, feasible, and effective in reducing GHG emissions generated by the project: • The project applicant shall provide a pedestrian access network that internally links all uses and connects to existing external streets and pedestrian facilities. *(continued on next page)*			

a	• The project applicant shall ensure site design and building placement minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between nonresidential uses that impede bicycle or pedestrian circulation shall be eliminated. In addition, barriers to pedestrian access of neighboring facilities and sites shall be minimized. • The project applicant shall design roadways to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming measures. Traffic calming measures include: bike lanes, center islands, closures (cul-de-sacs), diverters, education, forced turn lanes, and roundabouts. • The project shall provide car sharing programs, accommodations such as parking spaces for the car share vehicles at convenient locations accessible by public transportation. • The project applicant shall plant trees to provide shade. • The project applicant shall install energy efficient heating and cooling systems, appliances and equipment, and control systems.	Prior to Issuance of Building Permit	Engineering/Building/ Planning Departments	

8) Hydrology and Water Quality				
a, c	HYDRO-1) To minimize any potential short-term water quality effects from project-related construction activities, the project contractor shall implement Best Management Practices (BMPs) in conformance with the California Storm Water Best Management Practice Handbook for Construction Activity. In addition, the proposed project shall be in compliance with existing regulatory requirements, including the Water Pollution Control Preparation (WPCP) Manual. In addition, implementation of a Storm Water Pollution Prevention Plan (SWPPP) would be required under the National Pollutant Discharge Elimination System (NPDES) to regulate water quality associated with construction activities.	Building/ Encroachment Permits	Engineering Department	

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	HYDRO-2 If any storm drainage from the site is to drain into MID facilities, the developer shall first enter into a "Storm Drainage Agreement" with MID and pay all applicable fees.	Building/ Encroachment Permits	Engineering Department	
a	HYDRO-3A) Prior to the issuance of building permits, the project applicant shall submit a final Storm Water Mitigation Plan (SWMP) to the City of Merced for review and approval. The plan shall be developed using the California Stormwater Quality Association's "New Development and Redevelopment Handbook." The SWMP shall identify pollution prevention measures and BMPs necessary to control stormwater pollution from operational activities and facilities, and provide for appropriate maintenance over time. The SWMP shall include design concepts that are intended to accomplish a "first flush" objective that would remove contaminants from the first 2 inches of stormwater before it enters area waterways. The project applicant shall also prepare and submit an Operations and Maintenance Agreement to the City identifying procedures to ensure that stormwater quality control measures work properly during operations.	Prior to Issuance of Building Permits	Engineering Department	

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	HYDRO-3B) Prior to issuance of a building permit or as required by the City Engineer, the developer shall demonstrate to the City that storm drainage facilities are adequate to meet the Project demands and that improvements are consistent with the City Standards and the City's Storm Drain Master Plan. Prior to the issuance of grading permits, the project applicant shall file a Notice of Intent with and obtain a facility identification number from the State Water Resources Control Board. The project applicant shall also submit a Stormwater Pollution Prevention Plan (SWPPP) to the City of Merced that identifies specific actions and Best Management Practices (BMPs) to prevent stormwater pollution during construction activities. The SWPPP shall identify a practical sequence for BMP implementation, site restoration, contingency measures, responsible parties, and agency contacts. The SWPPP shall include, but not be limited to, the following elements: *(continued on next page)*	Building/ Encroachment Permits	Engineering Department	

	• Comply with the requirements of the State of California’s most current Construction Stormwater Permit. • Temporary erosion control measures shall be implemented on all disturbed areas. • Disturbed surfaces shall be treated with erosion control measures during the October 15 to April 15 rainy season. • Sediment shall be retained on-site by a system of sediment basins, traps, or other BMPs. • The construction contractor shall prepare Standard Operating Procedures for the handling of hazardous materials on the construction site to eliminate discharge of materials to storm drains. • BMP performance and effectiveness shall be determined either by visual means where applicable (e.g., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination (such as inadvertent petroleum release) is required by the Central Valley Regional Water Quality Control Board to determine adequacy of the measure. • In the event of significant construction delays or delays in final landscape installation, native grasses or other appropriate vegetative cover shall be established on the construction site as soon as possible after disturbance, as an interim erosion control measure throughout the wet season. *(continued on next page)*			

	• Specifically, the SWPPP shall identify and describe source control measures, treatment controls, and BMP maintenance requirements to ensure that the project complies with post-construction stormwater management requirements of the RWQCB.			
Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
c	HYDRO-4 Prior to issuance of a building permit or as required by the City Engineer, the developer shall demonstrate to the City that storm drainage facilities are adequate to meet the Project demands and that improvements are consistent with the City Standards and the City's Storm Drain Master Plan.	Prior to Issuance of Building Permit	Engineering	
c	HYDRO-5 Building and changing grades within the Regulatory Floodway is prohibited. The City shall not approve any plan or proposal that indicates building footprints or changes of grades in the Regulatory Floodway. Prior to construction, the applicant shall cause to be performed a survey of the regulatory floodway that is deemed appropriate by the City Engineer or their designee. The project shall also be designed to meet all requirements of Flood Zone "AE."	Prior to Site Plan Approval	Engineering	

13) Noise				
Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
a	NOI-1) To reduce potential construction noise impacts, the following multi-part mitigation measure shall be implemented for the project: • The construction contractor shall ensure that all internal combustion engine-driven equipment is equipped with mufflers that are in good condition and appropriate for the equipment. • The construction contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors when sensitive receptors adjoin or are near a construction disturbance area. In addition, the project contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site. • The construction contractor shall prohibit unnecessary idling of internal combustion engines (i.e., idling in excess of 5 minutes is prohibited). • The construction contractor shall locate, to the maximum extent practical, on-site equipment staging areas so as to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction. *(continued on next page)*	Building Permit	Building Department	

Impact No.	***Mitigation Measures***	***Timing***	***Agency or Department***	***City Verification (date and initials)***
	• The construction contractor shall limit all noise producing construction activities, including deliveries and warming up of equipment, to the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday. No such work shall be permitted on Sundays or federal holidays without prior approval from the City.	Building Permit	Planning Department	
17) Transportation and Traffic				
a, c	**TRA-01** The Project shall coordinate with Caltrans in order to optimize traffic signal timing after the project is occupied.	After Project Occupation	Engineering Department	
a, c	**TRA-02** The Project shall provide fair share contributions to intersection improvements including: • Reconstruct westbound Olive Avenue to provide dual left turn lanes onto Southbound SR 59. • Reconfigure the westbound right turn lane to create a 3rd through and right turn lane, and extend that through lane across SR 59 along the project's frontage. • Reconstruct the existing northbound right turn lane as a "free" right turn with median island separating eastbound and right turning traffic. • Reconstruct the Eastbound Santa Fe Drive approach to provide dual left turn lane.	Building Permit	Engineering Department	
a, c	**TRA-03** The Project shall install a 75-foot median in the Olive Avenue driveway.	Building Permit	Planning/ Engineering Department	

a, c	**TRA-04** The Project shall add a westbound right turn lane on Olive Avenue.	Building Permit	Planning/ Engineering Department	
a, c	**TRA-05** The Project shall add a northbound right turn lane on SR-59 in coordination with Caltrans.	Building Permit	Planning/ Engineering Department	

Certificate of Completion:
By signing below, the environmental coordinator confirms that the required mitigation measures have been implemented as evidenced by the Schedule of Tasks and Sign-Off Checklist, and that all direct and indirect costs have been paid. This act constitutes the issuance of a *Certificate of Completion*.

Environmental Coordinator

Date

Draft Analysis of Impacts to Air Quality and Public Health from Proposed Commercial Center

Merced, California

January 04, 2021
Revised January 11, 2021

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TABLE OF CONTENTS

SECTION 1: INTRODUCTION

1.1 Introduction

Environmental Permitting Specialists (EPS) has been retained by Vermeltfoort Architects, Inc. (VAI) to evaluate impacts to air quality, greenhouse gas emissions and public health from a proposed commercial center to be located in the City of Merced. The project would consist of a gas station, convenience store, a drive-thru restaurant and an office/retail building. This analysis has been requested by the City of Merced as part of their environmental review for this project.

1.2 Project Location and Scope

The project would be located on the Northeast corner of State Route 59 and Olive Avenue in the City of Merced. The area is zoned commercial/retail/residential. There are retail stores and restaurants to the South and North of the project site. There are also homes to the East approximately 260 meters (853 feet) from the project site. Figures 1 and 2 illustrate the project location and site map respectively. The overall site will occupy 3.06 acres with 16,014 square feet of building area. The project consists of the following elements:

- Fuel dispensing area consists of eight pumps (4,284 square feet)
- Convenience Store/Mini-Mart (4,088 square feet)
- Drive Thru Restaurant (2,805 square feet)
- Office Retail Building (4,837 square feet)
- Parking Area (89 spaces)

Construction is tentatively scheduled to begin April 15, 2021 and be completed by the end of January 2022. It is possible that this schedule may be delayed, however, this would not affect the results presented in this report.

1.3 Report Content and Organization

The objective of the proposed analysis is to evaluate four categories of impacts associated with the construction and operation (occupancy) of this Project:

1. Air Quality Impacts
2. Impacts from Greenhouse Gas Emissions
3. Impacts to Public Health
4. Odor Impacts and general compliance with existing Air Quality Plans

Impacts to air quality are evaluated by calculating expected air emissions of regulated air pollutants such as oxides of nitrogen (NOx), carbon monoxide (CO), fine particulate (PM-10) and others. Greenhouse gas emissions include carbon dioxide and methane. These are referred to as "Criteria Air Pollutants".

Impacts to public health are evaluated by calculating expected emission rates of toxic air pollutants such as benzene, xylene, diesel particulate matter, etc. The emission rates are then used to calculate public health risks. Three types of health risks are calculated:

- Cancer Risk
- Non-Cancer Chronic Risk
- Non-Cancer- Acute Risk

Under Appendix G of the California Environmental Quality Act (CEQA), the significance of project impacts are determined using the following five (5) criteria:

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

d) Expose sensitive receptors to substantial pollutant concentrations?

e) Would the project create objectionable odors affecting a substantial number of people?

Project is considered to have a significant air quality impact if the response is affirmative to one or more of the above criteria.

This report is divided into 6 sections. Immediately following this Introduction, Section 2 provides the projects metrics. The applicable regulations that apply to this project are discussed in Section 3. Project impacts are discussed in Section 4. The significance of the project's impacts are discussed in Section 5. References, technical details and calculations are provided in Section 6 and in the Appendices respectively.

Figure 1-1
Vicinity Map

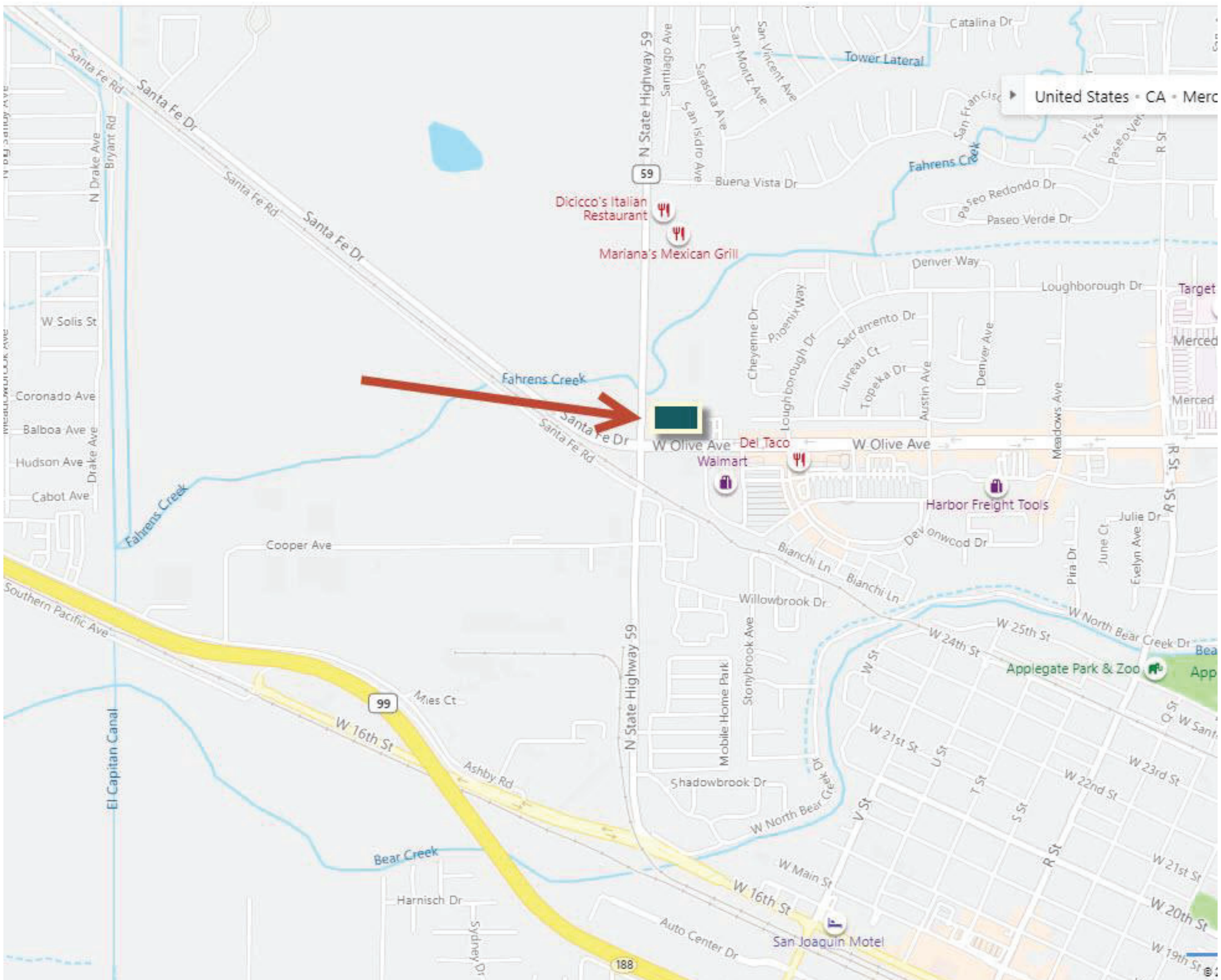
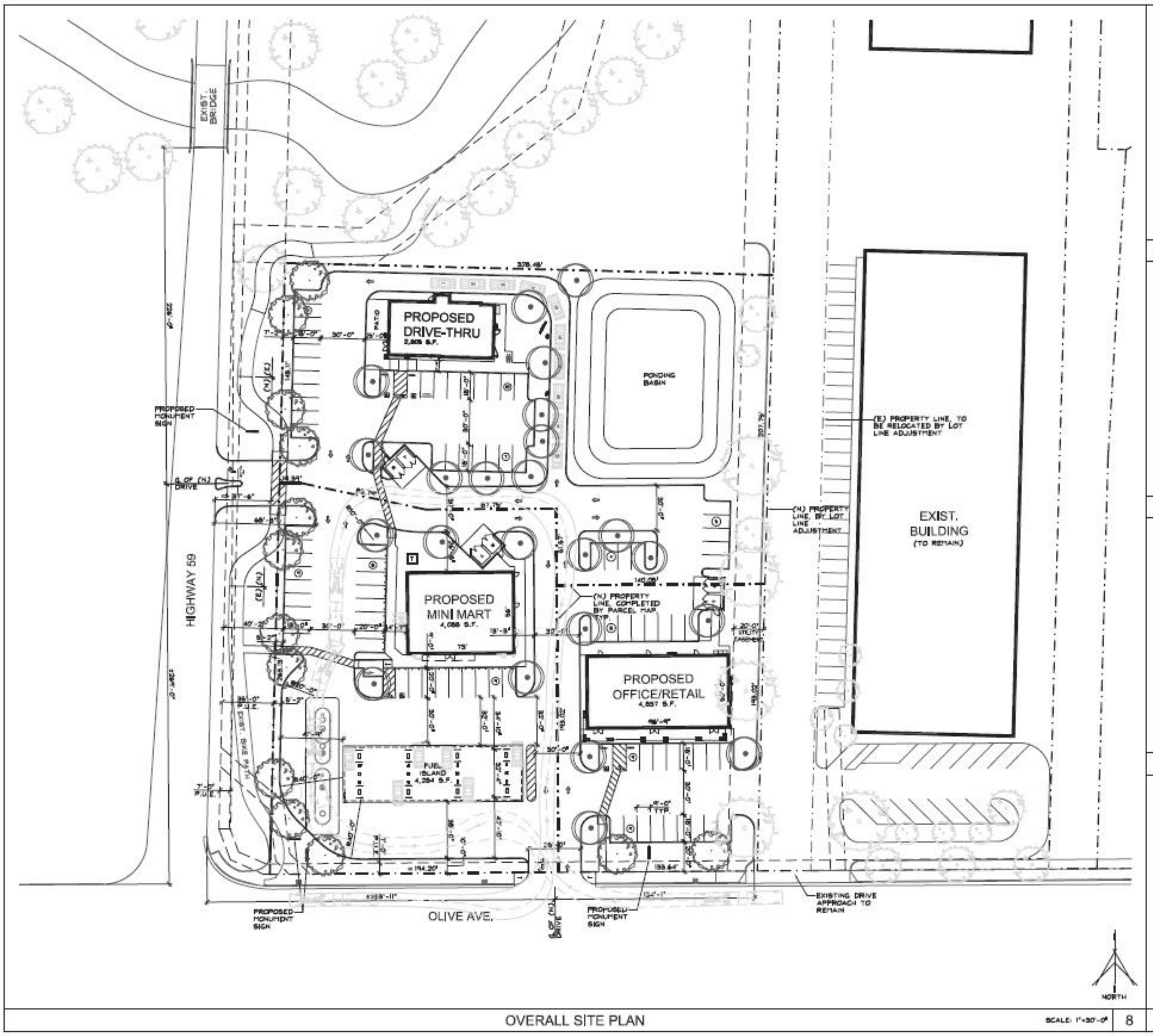


Figure 1-2
Site Map
Source: VAI



SECTION 2: PROJECT DETAILS

As noted in the Introduction, the proposed project would occupy 3.06 acres at the Northeast corner of Highway 59 and Olive Avenue in Merced. The total building area of16,014 square feet is apportioned as follows:

Table 2-1 Breakdown of Building Area by Project Element	
Convenience Store/Mini-Mart	4,088 sq feet
Drive-Thru Restaurant	2,805 sq feet
Office/Retail	4,837 sq feet
Fuel Island	4,284 sq feet
Parking Spaces	89 spaces

There are no structures at the site, therefore, no demolition would be required. The site will require infill to be above flood plain elevations and as such, normal earthwork compaction and construction equipment will be used during grading phases. The actual building would be constructed with hand tools, portable compressors, a forklift and a portable power generator. No heavy equipment would be used during the actual building of the proposed buildings.

The current analysis relies on a traffic study completed by K. D. Anderson dated November 30, 2020. That study determined, in part, that 1,811 new trips (in and out) would be generated on a daily basis.

Table 2-2 summarizes all the project metrics based on information from the Project developer.

Table 2-2
Project Metrics

Phase		**Details**	**Comments**
Construction	Start Date	April 15, 2021	Based on data provided by project developer.
	End Date	January 31, 2022	
	Lot Size	3.06 acres	
	Parking Spaces	3.54	
	Parking Area	70,115 square feet paved asphalt	
	Construction Related Traffic	Default Values	Note 1.
Operational	Start Date	February 1, 2022	
	Average Daily Traffic	1,811	From Traffic Study prepared by K. D. Anderson, November 30, 2020.
	Trip Length	1.0 7.3 miles to 9.5 miles	Please See Note 1

	Volume of Gasoline Dispensed	2.0 million gallons gasoline per year	Fuel would be delivered in 8,500 gallon tanker trucks. 120 fuel deliveries per year
	Energy Usage (Electricity)	582,486 kWh/yr	Note 1
	Energy Usage (Natural Gas)	12,000 kBTU/yr	Note 1
	Water Usage	0.57 million gallons/yr (indoor) 0.547 million gallons (outdoor)	Note 1
	Solid Waste	15.56 tons/yr	Note 1
Note 1. Based on recommended default value for commercial development Ref: CalEEMod emissions model version 2016.3.2. Available at: http://caleemod.com/			

The project would comply with California's Title 24 energy efficiency standards as well as use of renewable electricity from Merced Irrigation District (MID). MID's generation portfolio includes electricity from solar and hydroelectric sources. Solid waste generated from the project will be sent to the Merced County Regional Waste Authority landfill that is equipped with a gas collection system and a waste to energy (WTE) plant. The WTE generates 3.2 MW of renewable electric power.

SECTION 3: REGULATORY SETTING

Air quality in the City and County of Merced is regulated by the following agencies:

- Federal Environmental Protection Agency (EPA)
- State of California Air Resources Board (ARB)
- San Joaquin Valley Air Pollution Control District (SJVAPCD)
- City of Merced

3.1 Federal Regulations and Plans

The federal EPA is responsible for setting the national ambient air quality standards (NAAQS) under the Clean Air Act (CAA) enacted by the Congress in 1990. The CAA requires each state to prepare an air quality plan (State Implementation Plan) that regulates air emissions and brings the state into compliance with the NAAQS. The SIP is prepared by the ARB with input from each air district. Since California's air quality regulations are more stringent that the federal regulations, the state's regulation take precedence.

In 2007, the Supreme Court ruled that carbon dioxide (CO_2) is an air pollutant under the CAA and that EPA has the authority to regulate it. However, there are no federal regulations related to greenhouse gas emissions that apply to this project.

3.2 State Regulations and Plans

The California Air Resources Board (ARB) is responsible for submitting the State Implementation Plan to the EPA showing how each non-attainment area will come into compliance with NAAQS. The most recent SIPs for the San Joaquin Valley air basin are:

- 2018 PM-2.5 Plan
- 2016 Ozone Plan

In addition to managing and submitting the SIPs, ARB is the lead agency responsible for promulgating and enforcing the following Regulations and legislative directives.

Air Toxics Control Measure (ATCM) for Diesel Fueled Commercial Vehicles (13 CCR Chapter 10 Section 2485)

Limits stationary idling by diesel-fueled commercial trucks to 5 minutes. This requirement applies to trucks delivering fuel to the project site.

Vapor Recovery Systems in Gasoline Marketing Operations (17 CCR Chapter 1 Section 94010)

Establishes requirements for controlling gasoline vapor emissions from gasoline dispensing pumps for both above ground and underground storage tanks. The current project is subject to this regulation. The authority for this regulation, however, has been delegated to the SJVAPCD.

Assembly Bill 1493 (13 CCR 1961.1)

Limits and sets standards for GHG emissions (in grams per mile) from passenger cars and light duty trucks starting with model year 2009.

Executive Order S-3-05

Established emission reduction to 1990 levels by 2020 and 80% below 1990 levels by 2050. Requires the Secretary of the California Environmental Protection Agency to coordinate a multi-agency effort to reduce GHG emissions to the target levels. In response to this Executive Order, the Secretary of CalEPA established the Climate Action Team (CAT) made up of various agencies and stakeholders. The CAT has proposed to reach the GHG emission targets through voluntary actions of California businesses, local government and community actions.

Assembly Bill 32

Established regulatory, reporting and market mechanisms to achieve quantifiable reductions in GHG emissions and cap statewide GHG emissions. Established the Cap and Trade Program. The current project is exempt from AB 32 as annual GHG emissions are below the threshold requiring reporting and reducing such emissions. The threshold in 2018 was 25,000 metric tons of GHG emissions per year. As a result, portions of AB-32 that apply to mandatory reporting or Cap and Trade do not apply to the current project.

Senate Bill 1368

Companion Bill to AB 32 that limits emissions from investor owned electric utilities. This bill is not applicable to the current project.

Senate Bills 1771 and 527

Established the California Climate Action Registry that serves to establish a baseline against future GHG emission reduction. The Registry has developed industry specific protocols that provide guidance on how to inventory GHG emissions and participate in the Registry. Small retail establishments (gas stations, convenience stores and restaurants) are not currently included in the Registry

Senate Bill 97

This Bill directs the State Office of Planning and Research to prepare guidelines for feasible mitigation of GHG emissions or effects of GHG emissions from projects as required by CEQA.

3.3 Regional Regulations and Plans

The SJVAPCD regulates air quality in the eight county region in the Central Valley, including Merced County. The District regulates air quality through the development and enforcement of regulations and the development of air quality plans aimed at the long-term improvement of air quality in the Central Valley. Specific Regulations applicable to this project are identified in Table 3-1.

Table 3-1
Summary of Applicable SJVAPCD Regulations

Rule	Title	Requirement
2201	New and Modified Stationary Source Review	Requires stationary sources to obtain air permits. The gasoline dispensing pumps are subject to Rule 2201
3135	Dust Control Plan Fee	Requires facilities to pay an emissions fee based on their annual emissions of PM-10.
4101	Visible Emissions	Limits opacity to Ringlemann opacity chart #1
4102	Nuisance	Requires facility not to cause a nuisance, such as odors, that affect nearby occupants
4622	Gasoline Transfer into Motor Vehicles	Requires installation of vapor recovery systems
4623	Storage of Organic Liquids	Requires the use of pressure relief valves with vapor recovery
4692	Commercial Charbroiling	Requires registration of under and overfire charbroilers used at commercial kitchens and restaurants
8021	Control of fugitive dust emissions from demolition, excavation and earthmoving activities	Requires use of water sprays or dust suppressants to control visible dust emissions
8041	Trackout/carryout of dirt onto paved public roads	Requires that any carryout and trackout of dust on adjacent roadways be removed by sweeping or use of water
9510	Indirect Source Review	Requires projects to reduce NOx and PM-10 to a level stipulated by the Rule or pay a mitigation fee

The following Air Quality Plans have been developed by the SJVAPCD to reduce emissions in the Central valley and bring the region into compliance with the federal and state ozone, PM-2.5 and PM-10 ambient air quality standards.

Table 3-2 Summary of Applicable SJVAPCD Air Quality Plans		
Pollutant	**Plan Title and Date**	**Status**
Ozone	RACT Demonstration (2020)	District adopted the Plan June 18_2020 for complying with the 8-hour ozone standard
Ozone	Plan for the 2008 8-Hour Ozone Standard (2016)	Plan was approved June 16_2016 to bring the region into attaining the 8-hour federal ozone standard by December 31, 2031.
PM-2.5	PM 2.5 Plan (2018)	The District adopted the Plan on November 15, 2018. This Plan addresses the federal annual and 24-hour PM-2.5 standards
PM-10	PM 10 Maintenance Plan (2007)	The Disitrict adopted the Plan in September 2007 to assure continued attainment with the federal PM-10 standard.

3.4 City of Merced

The City of Merced has prepared "Merced Vision 2030 General Plan" that addresses the City's commitment to sustainable development in the city through urban design land use policies, a climate action plan, urban expansion, etc. The General Plan serves as a blue print for future growth and development for the City. Specific elements of the General Plan that apply to this project are:

- Land Use
- Urban Design
- Sustainable Development

Collectively, these elements encourage develop commercial development which conveniently serve residential population, provide employment and contribute to the tax base. Many of the state's executive orders for GHG emissions are incorporated into the 2030 General Plan by reference.

SECTION 4: PROJECT IMPACTS

The construction and operation of the proposed gas station and convenience store project would release a variety of air pollutants, including GHG emissions and emissions of toxic air pollutants (TACs). Project impacts are a result of short-term and long-term emissions of these pollutants.

Under CEQA Guidelines Appendix G, the following specific impacts are required to be analyzed:

f) Would the project conflict with or obstruct implementation of the applicable air quality plan?

g) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

h) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

i) Expose sensitive receptors to substantial pollutant concentrations?

j) Would the project create objectionable odors affecting a substantial number of people?

As noted in Appendix G, significance criteria established by the applicable air quality management or air quality control district may be relied upon to make the above determinations.

The SJVAPCD (GAMAQI 2015) has established the following thresholds of significance for criteria air pollutants that can be used to determine the significance of impacts:

Table 4-1
Summary of SJVAPCD Thresholds of Significance

Pollutant	Annual Construction/Operational Thresholds in Tons per Year
NOx	10
ROG	10
PM-10	15
PM-2.5	15
SOx	27
CO	100

For toxic air contaminants, the thresholds of significance are as follows:

Cancer Risk	Risk below 20 in a million or cancer score below 10
Chronic (non-cancer) Risk	Hazard Index below 1.0
Acute (non-cancer risk)	Hazard Index below 1.0

In addition to emissions of criteria and toxic air contaminants, the significance of GHG emissions will be evaluated using the criteria established for GHG mandatory reporting. This threshold is 25,000 metric tons of CO_2 (e) emissions per year. This is the thresholds for mandatory reporting and entry into the Cap and Trade program and applies to emission sources considered significant.

4.1 Method of Analysis

The approach used in this analysis is to quantify emission rates of regulated air pollutants and then compare these emissions with the SJVAPCD Thresholds of Significance to determine the significance of impacts. Regulated air pollutants include criteria and toxic air pollutants as well as emissions of GHG.

Criteria air pollutants refers to those pollutants for which the state and/or the federal government has established ambient (outside) air quality standards. The following criteria air pollutants were quantified for the current project:

- Oxides of Nitrogen (NOx)
- Reactive Organic Compounds (ROG also referred to as VOC)
- Particulate Matter (PM-10)
- Fine Particulate Matter (PM-2.5)
- Carbon Monoxide
- Sulfur Dioxide (SO_2)

The maximum annual emission rates of each of these air pollutants will be quantified using the SJVAPCD recommended CalEEMod emissions model. Version 2016.3.2 of this model was used in the current analysis.

For toxic air contaminants, the emission rates are used to determine public health risks in terms of cancer and non-cancer health impacts. These impacts are compared with the SJVAPCD public risk thresholds of significance.

For GHG emissions, the SJVAPCD has not established any thresholds of significance. However, ARB has established 25,000 metric tons per year as a threshold for mandatory reporting and entry into the Cap and trade program. For the current project, this threshold Is used to determine significance of impacts.

4.2 Greenhouse Gas Emissions

Annual emission rates of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) were calculated using the CalEEMod model and reported as annual CO_2 equivalents (CO_2 (e)) in metric tons per year.

4.3 Emissions of Toxic Air Contaminants

There are three categories of TACs that would be released from the current project:

1. Diesel Particulate Matter (DPM) from use of construction equipment and idling of heavy duty trucks used for fuel delivery.

2. BTEX Compounds (benzene, toluene, xylene) from gasoline dispensing, storage and delivery. This includes spillage of gasoline from fuel dispensing.
3. Emissions from drive-through fast food restaurants. These emissions consist primarily of polyaromatic hydrocarbons (PAHs) from use of charbroilers or other cooking appliances.

A summary of all TACs that would be released in provided in Table 4-2.

Table 4-2
Sources of Toxic Air Contaminants

Toxic Air Contaminant	Construction Phase	Operational Phase	Calculation Methodology
Diesel Particulate Matter	Use of Diesel Fueled Construction Equipment	Idling of Fuel Delivery and Commercial Trucks	For construction phase, use "Exhaust PM-2.5" emission rates calculated using CalEEMod Emissions Model For Operational Phase – Use idling emission factors for HD Trucks using EMFAC 2017 for CY 2022. Assume 15 minutes idle time per truck delivery
Benzene	N/A	Storage and Dispensing of Gasoline EVR Phase I and II for Underground Storage Tanks	Recommended emission factors in Appendix A in the 1997 CAPCOA Air Toxics "Hot Spots" Program document, *Gasoline Service Station Industrywide Risk Assessment Guidelines*.
Ethyl Benzene	N/A	Storage and Dispensing of Gasoline	Same as Benzene
Toluene	N/A	Storage and Dispensing of Gasoline	Same as Benzene

Xylene	N/A	Storage and Dispensing of Gasoline	Same as Benzene
PAHs	N/A	Drive-Through restaurant processing 34.6 tons of meat per year.	Use throughput data for a single drive-though restaurant (Ref: Michael Poteoan, PhD, Public Research Institute. June 2001. Use SJVAPCD VOC and air toxics calculator for underfire charbroilers. (Feb 2016)

4.4 Emissions of Criteria Air Pollutants

Impacts to air quality were determined by calculating the maximum annual emission rate of each the criteria air pollutant identified earlier in Section 4.1.

Based on the use of the CalEEMod emissions model, the maximum annual emission rates are summarized in Tables 4-3 and 4-4 for the construction and operational phases respectively. Annual emissions for the construction phase range from 0.00075 tons per year to 0.41 tons per year depending on the pollutant. Emissions for the operational phase range from 0.00712 tons per year to 5.29 tons year depending on the pollutant.

These annual emissions are the same for mitigated and unmitigated emissions. This is because the unmitigated emissions were calculated with the various mitigations already incorporated into the project.

Mitigations Included

- Energy efficient building design that meets or exceeds requirements under Title 24 requirements
- Disposal of solid waste at a landfill equipped with not only a gas collection system but the conversion of the gas into energy
- Use of energy efficient indoor and outdoor lighting
- Project location close to residential area that would minimize automobile travel
- Use of renewal electricity as per the energy generation portfolio by Merced Irrigation District
- Use of VOC compliant adhesives and architectural coatings
- Use of locally sourced building materials in order to avoid truck travel to more distant sources.

Table 4-3
Summary of Maximum Annual Emissions – Construction Phase
(in tons per day)

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year	tons/yr									
2021	0.0456	0.4172	0.3229	7.5000e-004	0.0402	0.0182	0.0585	0.0160	0.0169	0.0329
2022	0.1266	0.0570	0.0620	1.3000e-004	3.0800e-003	2.5400e-003	5.6200e-003	8.3000e-004	2.3800e-003	3.2100e-003
Maximum	**0.1266**	**0.4172**	**0.3229**	**7.5000e-004**	**0.0402**	**0.0182**	**0.0585**	**0.0160**	**0.0169**	**0.0329**

Table 4-4
Summary of Maximum Annual Emissions – Operational Phase
(in tons per day)

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr									
Area	0.0768	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000
Energy	2.2300e-003	0.0203	0.0170	1.2000e-004		1.5400e-003	1.5400e-003		1.5400e-003	1.5400e-003
Mobile	0.4215	5.2723	1.7515	7.0000e-003	0.0310	4.0400e-003	0.0350	7.6000e-003	3.8100e-003	0.0114
Waste						0.0000	0.0000		0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000
Total	**0.5005**	**5.2926**	**1.7694**	**7.1200e-003**	**0.0310**	**5.5800e-003**	**0.0365**	**7.6000e-003**	**5.3500e-003**	**0.0130**

4.5 Emissions of Greenhouse Gas

As with the criteria air pollutants, GHG impacts were also calculated using the CalEEMod emissions model. The results are summarized in terms of metric tons of CO_2 equivalents in Tables 4-5 and 4-6 for the construction and operational phases respectively.

Table 4-5
Summary of Maximum Annual GHG Emissions – Construction Phase
(in metric tons per year)

Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
MT/yr					
0.0000	66.6295	66.6295	0.0133	0.0000	66.9631
0.0000	11.5694	11.5694	2.1900e-003	0.0000	11.6241
0.0000	**66.6295**	**66.6295**	**0.0133**	**0.0000**	**66.9631**

Table 4-6
Summary of Maximum Annual GHG Emissions – Operational Phase
(in metric tons per year)

Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
MT/yr					
0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
0.0000	191.4672	191.4672	8.0800e-003	1.9900e-003	192.2621
0.0000	661.8190	661.8190	0.2448	0.0000	667.9396
3.1585	0.0000	3.1585	0.1867	0.0000	7.8252
0.1826	1.4629	1.6454	0.0188	4.6000e-004	2.2518
3.3411	**854.7507**	**858.0918**	**0.4584**	**2.4500e-003**	**870.2805**

The results show that 66.96 and 870 metric tons of GHG would be released annually from the construction and operational phases respectively.

4.6 Emissions of Toxic Air Pollutants (Construction Phase)

DPM emissions for the construction phase were calculated using the CalEEMod emissions model. The annual emission rates of "Exhaust PM-2.5" were used as a surrogate for DPM. This represents DPM from construction equipment. Total annual DPM emissions over 2 years are estimated to be 0.0192 tons/year. This equates to 0.00964 tons per year or 19.28 pounds per year averaged over 2 years. A copy of the CalEEMod report is provided in Appendix A.

4.7 Emissions of Toxic Air Pollutants (Operational Phase)

On-Site Emissions From Fuel Delivery Diesel Truck Idling

The main sources of DPM for the operational phase are fuel delivery trucks. The number of fuel deliveries can be estimated by dividing the annual volume of fuel (1 million gallons) by the gallons per delivery (8,500 gallons). This equates to 118 fuel deliveries per year. Each fuel delivery truck was assumed to idle for 15 minutes although it is expected that idling would be limited to 5 minutes.

EMFAC 2017 emissions model for calendar year 2022 was used to calculate emissions from truck idling. PM-2.5 or DPM emissions equal 0.00649 grams per operating day. Assuming an 8 hour operating day, this equates to 0.000812 grams per hour per truck. Total annual emissions based on 120 trucks per year are estimated to equal 0.0001 pounds per year. Detailed calculations are provided in Appendix B.

Off-Site Emissions from Fuel Delivery Diesel Truck

In addition to on-site release of DPM from truck idling, EPS evaluated off-site DPM emissions associated with truck travel within ¼ mile of the project site. The results indicate 4.82 pounds of DPM would be released. Detailed calculation is provided in Appendix B.

On-Site Emissions from Gasoline Storage, Dispensing and Delivery

The dispensing, storage and delivery of gasoline will result in emissions of toxic air contaminants. A two-step procedure is used to estimate maximum hourly and annual emissions rates. First, the emission rate of volatile organic compounds (VOCs) is calculated based on recommended emission factors by the California Air Pollution Control Officers Association (CAPCOA) *Gasoline Service Station Industrywide Risk Assessment Guidelines (1997)*. VOCs include toxic air contaminants such as benzene, acetaldehyde, etc. The VOCs are then speciated into individual toxic compounds. The speciation data have been compiled by the San Joaquin Valley Air Pollution Control District (2017). Detailed emission calculations are provided in Appendix B.

On-Site Emissions from Drive Through Restaurant

The main source of toxic air emissions associated with drive-through restaurants is from cooking. Based on emissions inventory data reported by the SJVAPCD, grilling of meats results in the release of a variety of polycyclic hydrocarbons (PAHs). These include pyrene, anthracene. Fluorene, etc.

These data along with an estimate of annual amounts of meat grilled at a typical fast food restaurant can be used to calculate the annual emission rates of PAHs. A survey of fast food restaurants prepared by Public Research Institute (San Francisco June 2001) determined that a typical fast food restaurant grills 34.6 tons of meat per year. This data along with the emission factors developed by SJVAPCD were used to calculate the annual emissions from the drive-thru restaurant.

Summary of Emissions

The maximum hourly and annual emissions of TACs from all sources are summarized in Table 4-7. Detailed calculations are provided in Appendix B.

Table 4-7
Summary of Annual TAC Emissions
(lbs/year)

	On-Site Truck Idle	Off-Site Truck Travel	On-Site Gasoline Dispensing and Storage	Charbroiler	TOTAL (lbs/yr)
	Table 4	Table 5	Table 2	Table 6	
Benzene			5.79		5.79
DPM	0.0001	4.82			4.82
Ethyl Benzene			15.18		15.18
PAHs				6.92	6.92
Toluene			75.92		75.92
Xylene			22.78		22.78

These emissions are used to calculate public health risks.

The results of the analysis show that for the construction phase the maximum cancer risk score at the nearest homes located 260 meters East of the project site is 1.78. For the operational phase, the cancer risk score is estimated to equal 2.42. The risk score is lower at other homes. Non-cancer risks are below 0.02 at all locations for both construction and operational phases. Detailed calculation is provided in Appendix C. The significance of the risk scores is discussed in the next section.

SECTION 5: SIGNIFICANCE OF PROJECT IMPACTS

IMPACT 5.1: Would the project expose sensitive receptors to substantial pollutant concentrations?

Criteria Air Pollutants

A comparison of project's criteria emissions (both construction and operational) is summarized below:

Table 5-1 Summary of Project Level Air Quality Impacts (tons/year)				
Pollutant	Construction Phase	Operational Phase	Significance Threshold	Significant?
NOx	0.4172	5.29	10	No
VOC	0.1226	0.500	10	No
PM-10	0.0585	0.0365	15	No
PM-2.5	0.0329	0.013	15	No
CO	0.3229	1.769	100	No
SOx	0.00075	0.00712	27	No
GHG (CO2(e))	66.96	870.28	No Threshold	N/A

Section 15064.7 of CEQA expressly authorizes the adoption and use of thresholds of significance. The thresholds are an identifiable, quantitative performance level of a particular environmental effect. Non-compliance with which means the effect would be significant.

Toxic Air Contaminants

The emissions calculated in Section 4.6 were used to calculate a screening level risk score for each of the 3 types of risks. "Screening Level" refers to a rough estimate of potential risk based on conservative assumptions, such as worst-case exposure and emissions.

Unlike a detailed health risk assessment that provides a numerical probability of cancer risk, a screening level risk analysis yields a "Risk Score". The objective in preparing a screening level risk analysis is to avoid preparing a detail HRA if the screening level risk scores are below the thresholds of significance. The screening level risk calculations are based on the Air Toxics "Hot-Spots" Emissions Potency Method under the AB-2588 regulation.

The results of the analysis are summarized in Table 5-2 and show that for the construction phase the maximum cancer risk score at the nearest homes located 260 meters East of the project site is 1.78. For the operational phase, the cancer risk score is estimated to equal 2.42. The risk score is lower at other homes. Non-cancer risks are below 0.02 at all locations for both construction and operational phases. Detailed calculation is provided in Appendix C.

Table 5-2 Summary of Project Level Health Risks at Nearest Residence 250 meters South of the Project Site			
Construction Phase	Operational (Occupancy) Phase	Significance Threshold	Significant?
1.78	2.41	10	Insignificant for Construction Phase Insignificant for Operational Phase
Not Applicable	0.00183	1.0	No
Not Applicable	0.00179	1.0	No

The cancer and non-cancer risk scores are well below the thresholds of significance. These results indicate that the project would not pose a significant public health risk. Detailed risk calculations appear in Appendix C.

Level of Significance: Less than significant
Mitigation Measures: None required. Mitigation was included in the project design and therefore, no further mitigation is required. The following mitigation measures are included in the project design:

- Energy efficient building design per California's Title 24 energy efficiency standards, including use of efficient lighting
- Use of vapor recovery system for gasoline dispending and storage
- Use of electricity generated from renewable and non-renewable sources
- Incorporation of emission controls in restaurant food preparation
- Disposal of solid waste at a landfill equipped with gas collection system and waste to energy conversion

IMPACT 5.2: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Since the project's construction and operational emissions are below the thresholds of significance, the project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. The ambient concentration of each criteria air pollutant directly related to its emission rate. Therefore, a demonstration of emission rates below the thresholds allows us to conclude that impacts are less than significance.

Level of Significance: Less than significant
Mitigation Measures: Mitigation has been included in the project design as discussed in the previously. Therefore, no additional mitigation is required.

IMPACT 5.3: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Ozone (RACT Demonstration (2020) Plan

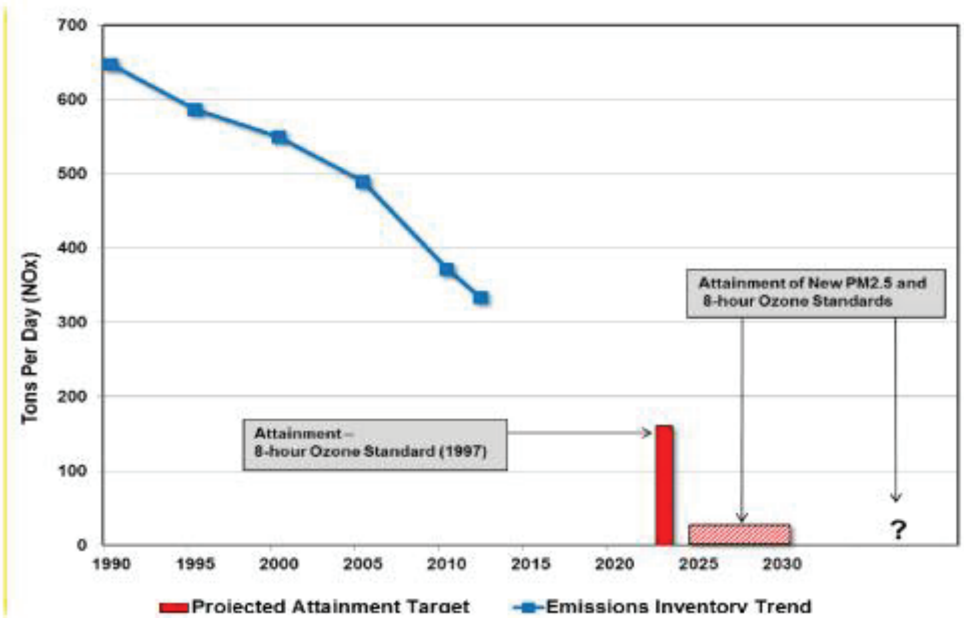
This Plan lists a variety of emission control techniques aimed at reducing emissions of VOCs from a varity of sources and processes. One of the emission control techniques specifically recommended the use of vapor recovery devices and systems. SJVAPCD adopted Rules 4621 and 4623 that require the use of vapor recovery systems. Since the The current project would use vapor recovery in the dispensing and storage of gasoline it would comply with this Plan.

Ozone Plan for the 2008 8-Hour Ozone Standard (2016)

This Plan is a commitment by SJVAPCD to reduce NOx and VOC emissions over the next decade in order to achieve compliance with federal NAAQS. The Plan specifically requires the reduction of NOx emissions by 60% by the year 2031.

Since mobile sources contribute to 85% of all the NOx emission, and since the District does not regulate mobile sources, the Plan relies on the state and federal government to reduction in tailpipe emissions to achieve these reductions. The District's efforts are aimed at reduing emissions from stationary sources. These include the control of VOC emissions from gasoline stations and restaurants. The current project complies with Rules 4621, 4623 and 4692 that are aimed at controlling VOC emissions.

The current project does not involve generating new traffic, but provides services to existing cars and trucks. In other words, if the project was not built, there would not be any reductions in NOx (and VOC) emissions. That's because those vehicles would purchase gasoline and other goods from other facilities. Based on historic trends in NOx emissions (see next page), the District is on target to meet the 2008 8-hour standard by 2031.



Source: 2016 8-Hour Ozone Plan

Ozone (RACT Demonstration (2020) Plan

The project would use vapor recovery in the dispensing and storage of gasoline as required under the RACT, and therefore would be in compliance with the Plan.

PM-2.5 Plan (2018) and PM-10 Maintenance Plan (2007)

Dust emissions would be reduced through the required implementation of SJVAPCD Regulation VIII, enforcement of which is the responsibility of the SJVAPCD. Conformance with plans and specifications is monitoring by City building inspectors. Regulation VIII contains the following dust emission control measures:

- Air emissions related to the project shall be limited to 20% opacity (opaqueness, lack of transparency) or less, as defined in SJVAPCD Rule 8011. The dust control measures specified below shall be applied as required to maintain the Visible Dust Emissions standard.

- The contractor shall pre-water any excavation, land leveling, grading, etc.

- The contractor shall apply water, chemical/organic stabilizer/suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads, throughout the period of soil disturbance, as required.

- The contractor shall restrict vehicular access to the disturbance area during periods of inactivity.

- The contractor shall apply water or chemical/organic stabilizers/suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials as needed.

- When materials are transported off-site, the contractor shall stabilize and cover all materials to be transported and maintain six inches of freeboard space from the top of the container.

- The contractor shall remove carryout and trackout of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and trackout extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.

Conformance with SJVAPCD dust control standards will also be facilitated by the City by the incorporation of dust control requirements in project conditions of approval. Dust control provisions are also routinely included in site improvement plans and specifications.

Project construction would be subject to Rule 9510 as it exceeds 2,000 square feet of commercial space. Rule 9510 requires that emissions of NOx and VOC be reduced by or an emissions mitigation fee be paid

Level of Significance: Less than significant. Project would not generate any new NOx emissions, expect for some space heating. PM-10 and PM-2.5 emissions would comply with District regulations related to particulate control and indirect source review (Rule 9510). This rule requires payment of emission mitigation fees.

Mitigation Measures: No additional mitigation required beyond project design and payment of mitigation fees.

6.4 Consistency with Greenhouse Gas Plans

Federal Plans

The federal government does not have a separate GHG emission reduction strategy. However, it has adopted several GHG reduction strategies through the Clean Air Act, Section 202(a). In addition, the federal government, in coordination with U. S. Department of Transportation and the EPA has issued vehicle economy standards that indirectly reduce GHG emissions. In addition, the federal government has set GHG emission thresholds that affect new sources under the Prevention of Significant Deterioration (PSD) regulations and the Title V Operating Permit Program.

The current project is too small to be subject to these federal programs. However, the City of Merced does benefit from the overall federal strategy to limit emissions from cars, trucks and off-road equipment that will be used during the construction phase.

State Plans

The state of California has issued several regulations through Assembly Bill 32, Executive Orders S-3-05 and B-30-15, Senate Bill 32 and Senate Bill 375 (Sustainable Communities Strategy).

The overall goal of these Plans and strategies are to reduce GHG emissions to below 40% of the 1990 emission levels by the year 2030. This is done through the use of the Cap and Trade Program, Clean Fuels Program, water and energy conservation and reduction/recycling of solid waste.

The current project is subject to and is compliant with stringent energy conservation under Title 24 as well as solid waste recycling and use of renewable energy through Merced Irrigation District Water and Power.

Local Plans

The City of Merced has adopted a Climate Action Plan (CAP) to meet or exceed the State's goals of reducing GHG emissions. The CAP specifically includes:

- Enhanced Mobility of all transportation Modes
- Energy Efficient Building Design
- Reduce Vehicle Trips
- Use of Clean Energy, Especially Renewable Energy
- Preparation of GHG Inventories

CAP is a long-range plan that outlines specific strategies to reduce GHG emissions. CAP also establishes a baseline for GHG emissions in order to better forecast future emissions and to assess the effectiveness of the City's efforts in reducing GHG emisisons and meeting the tagets set by the state.

In order to minimize electricity usage, the current project complies with the state's Title 24 energy efficiency requirements, which includes the use of energy efficient lighting.

To encourage walking and bicycle use, the project is located within the neighborhood allowing local residents to visit the facility without the need to drive.

The current project provides quantitative estimate of GHG emissions for both the construction and operational phases. These estimates assist the City in maintaining an up to date emissions inventory as required in the CAP.

Level of Significance: Less than significant

Mitigation Measures: None required beyond those incorporated in the project design

IMPACT 5.4: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Currently, Merced County is non-attainment for the 8-hour ozone standard (both state and federal) as well as for PM-10 and PM-2.5. Emissions of NOx, VOC , PM-10 and PM-2.5 are below the thresholds of significance. In addition, the project complies with air quality plans for ozone, PM-10 and PM-2.5 as discussed previously. As a result, the project would not result in a cumulatively considerable net increase of NOx, VOCs, PM-10 and PM-2.5 emissions.

Level of Significance: Less Than Significant

Mitigation Required: Mitigation is included in the project design. No additional mitigation required.

IMPACT 5.5: Would the project create objectionable odors affecting a substantial number of people?

The current project is not considered a source of odors. The retail convenience market would not generate any odors. The gasoline dispensing pumps are equipped with vapor recovery nozzles to capture any gasoline vapors and fumes. There is a potential for odors from fuel delivery trucks. These trucks would release diesel exhaust that can cause odors. The trucks, however, are limited to idling for no more than 5 minutes and only occur when fuel is being delivered.

The drive through restaurant may involve cooking/charbroiling. However, under current District prohibitory rules 4102 (Nuisance) and 4692 (commercial charbroiling), the applicant is required to control such odors and ensure odors do not impact nearby residences or workers.

Level of Significance: Less Than Significant

Mitigation Required: No additional mitigation required beyond what is included in the project design.

IMPACT 5.6: Would the project directly or indirectly generate over 25,000 metric tons of GHG emissions per year which would result in a significant impact on the environment?

Annual GHG emissions are estimated to equal 870 MT of GHG emissions for the operational phase. For the construction phase, the annual emissions would equal 66.9 MT of GHG emissions per year. These annual emission rates are well below the thresholds set by the state to require mandatory reporting and entry into the Cap and Trade program.

Level of Significance: Less Than Significant

Mitigation Required: No additional mitigation required beyond what is included in the project design.

SECTION 6: REFERENCES

CalEMOD (2020): California Emissions Model Estimator. Version 2016.3.2. Available at: http://www.caleemod.com/

CAPCOA (1997) Gasoline Service Station Industrywide Risks Assessment Guidelines. Available at: https://ww2.arb.ca.gov/sites/default/files/classic//ab2588/rrap-iwra/gasiwra.pdf

CARB (2003) HARP User's Guide. Available at: http://www.arb.ca.gov/toxics/harp/harp.htm December 2003.

CEQA (2019) Appendix G Section 21000 to 21189.3, Public Resources Code, State of California.

Merced (2012) Merced Climate Action Plan. Available at: https://www.cityofmerced.org/Home/ShowDocument?id=5756

OEHHA (2014) Consolidated Table of Approved health Risk Values. Cal EPA, Office of Environmental Health Hazard Assessment. Available at: file:///C:/2014%20Feather%20River%20AQMD/Hollycross%20Cemetary/OEHHA%20contable.pdf. July 3, 2014.

SJVAPCD (2015) Guidance for Assessing and Mitigating Air Quality Impacts. Available at: https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF

Appendices

Appendix A: Annual Construction and Operational Emissions

Appendix B: Detailed Emission Calculations

Appendix C: Screening Level Risk Evaluation

Appendix A: Annual Construction and Operational Emission Calculations

711 Merced Gas Stn

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	4.84	1000sqft	0.11	4,837.00	0
User Defined Commercial	1.00	User Defined Unit	0.00	2,805.00	0
Parking Lot	89.00	Space	0.80	35,600.00	0
Convenience Market With Gas Pumps	1.00		2.15	8,372.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per project specifications.

Commercial User Defined 2,805 sq feet refers to drive-thru restaurant

Construction Phase - No Demolition Required
Per Project Spects

Off-road Equipment -

Off-road Equipment - Per Specs

Off-road Equipment - No Demolition

Off-road Equipment - Minimal grading required as site is already graded.

Off-road Equipment - Per specs

Off-road Equipment - Minimal site prep needed.

Vehicle Trips - Per Traffic Study

Energy Use - Defaults for..

Water And Wastewater - Default..

Solid Waste - Default Value for Gas Station/Convenience Store (User Defined Commercial)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	8,009.00	8,007.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	24,026.00	24,021.00
tblAreaCoating	Area_Nonresidential_Exterior	8009	8007
tblAreaCoating	Area_Nonresidential_Interior	24026	24021
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	5.00	22.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	230.00	174.00
tblConstructionPhase	NumDays	18.00	10.00
tblConstructionPhase	NumDays	18.00	10.00
tblEnergyUse	LightingElect	4.53	15.17

711 Merced Gas Stn - Merced County, Annual

tblEnergyUse	LightingElect	3.58	2.92
tblEnergyUse	LightingElect	0.00	17.31
tblEnergyUse	NT24E	2.30	9.40
tblEnergyUse	NT24E	3.58	3.56
tblEnergyUse	NT24E	0.00	45.58
tblEnergyUse	NT24NG	2.08	8.75
tblEnergyUse	NT24NG	0.28	13.00
tblEnergyUse	NT24NG	0.00	25.25
tblEnergyUse	T24E	2.77	8.75
tblEnergyUse	T24E	3.45	2.62
tblEnergyUse	T24E	0.00	18.37
tblEnergyUse	T24NG	10.42	8.75
tblEnergyUse	T24NG	15.38	13.00
tblEnergyUse	T24NG	0.00	25.25
tblFleetMix	HHD	0.15	0.00
tblFleetMix	HHD	0.15	0.00
tblFleetMix	LDA	0.50	0.00
tblFleetMix	LDA	0.50	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.16	0.00
tblFleetMix	LDT2	0.16	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6010e-003	0.00
tblFleetMix	LHD2	4.6010e-003	0.00
tblFleetMix	MCY	6.2300e-003	0.00

tblFleetMix	MCY	6.2300e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	6.2800e-004	0.00
tblFleetMix	MH	6.2800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.3970e-003	0.00
tblFleetMix	OBUS	2.3970e-003	0.00
tblFleetMix	SBUS	1.5540e-003	0.00
tblFleetMix	SBUS	1.5540e-003	0.00
tblFleetMix	UBUS	2.1560e-003	0.00
tblFleetMix	UBUS	2.1560e-003	0.00
tblGrading	AcresOfGrading	0.00	4.00
tblLandUse	LandUseSquareFeet	4,840.00	4,837.00
tblLandUse	LandUseSquareFeet	0.00	2,805.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblSolidWaste	SolidWasteGenerationRate	0.00	11.06
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	15.00
tblTripsAndVMT	WorkerTripNumber	5.00	20.00
tblVehicleTrips	CC_TTP	0.00	80.00
tblVehicleTrips	CNW_TTP	0.00	10.00
tblVehicleTrips	CW_TTP	0.00	10.00
tblVehicleTrips	ST_TR	0.00	1,811.00
tblVehicleTrips	SU_TR	0.00	1,811.00
tblVehicleTrips	WD_TR	0.00	1,811.00
tblWater	IndoorWaterUseRate	860,231.34	302,810.00

tblWater	IndoorWaterUseRate	0.00	272,586.00
tblWater	OutdoorWaterUseRate	527,238.56	380,080.00
tblWater	OutdoorWaterUseRate	0.00	167,069.38

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0456	0.4172	0.3229	7.5000e-004	0.0402	0.0182	0.0585	0.0160	0.0169	0.0329	0.0000	66.6295	66.6295	0.0133	0.0000	66.9631
2022	0.1266	0.0570	0.0620	1.3000e-004	3.0800e-003	2.5400e-003	5.6200e-003	8.3000e-004	2.3800e-003	3.2100e-003	0.0000	11.5694	11.5694	2.1900e-003	0.0000	11.6241
Maximum	**0.1266**	**0.4172**	**0.3229**	**7.5000e-004**	**0.0402**	**0.0182**	**0.0585**	**0.0160**	**0.0169**	**0.0329**	**0.0000**	**66.6295**	**66.6295**	**0.0133**	**0.0000**	**66.9631**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0456	0.4172	0.3229	7.5000e-004	0.0402	0.0182	0.0585	0.0160	0.0169	0.0329	0.0000	66.6295	66.6295	0.0133	0.0000	66.9630
2022	0.1266	0.0570	0.0620	1.3000e-004	3.0800e-003	2.5400e-003	5.6200e-003	8.3000e-004	2.3800e-003	3.2100e-003	0.0000	11.5694	11.5694	2.1900e-003	0.0000	11.6240
Maximum	**0.1266**	**0.4172**	**0.3229**	**7.5000e-004**	**0.0402**	**0.0182**	**0.0585**	**0.0160**	**0.0169**	**0.0329**	**0.0000**	**66.6295**	**66.6295**	**0.0133**	**0.0000**	**66.9630**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	3-16-2021	6-15-2021	0.1447	0.1447
3	6-16-2021	9-15-2021	0.1484	0.1484
4	9-16-2021	12-15-2021	0.1471	0.1471
5	12-16-2021	3-15-2022	0.2149	0.2149
		Highest	0.2149	0.2149

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0768	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
Energy	2.2300e-003	0.0203	0.0170	1.2000e-004		1.5400e-003	1.5400e-003		1.5400e-003	1.5400e-003	0.0000	191.4672	191.4672	8.0800e-003	1.9900e-003	192.2621
Mobile	0.4215	5.2723	1.7515	7.0000e-003	0.0310	4.0400e-003	0.0350	7.6000e-003	3.8100e-003	0.0114	0.0000	661.8190	661.8190	0.2448	0.0000	667.9396
Waste						0.0000	0.0000		0.0000	0.0000	3.1585	0.0000	3.1585	0.1867	0.0000	7.8252
Water						0.0000	0.0000		0.0000	0.0000	0.1826	1.4629	1.6454	0.0188	4.6000e-004	2.2518
Total	**0.5005**	**5.2926**	**1.7694**	**7.1200e-003**	**0.0310**	**5.5800e-003**	**0.0365**	**7.6000e-003**	**5.3500e-003**	**0.0130**	**3.3411**	**854.7507**	**858.0918**	**0.4584**	**2.4500e-003**	**870.2805**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0768	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
Energy	2.2300e-003	0.0203	0.0170	1.2000e-004		1.5400e-003	1.5400e-003		1.5400e-003	1.5400e-003	0.0000	191.4672	191.4672	8.0800e-003	1.9900e-003	192.2621
Mobile	0.4215	5.2723	1.7515	7.0000e-003	0.0310	4.0400e-003	0.0350	7.6000e-003	3.8100e-003	0.0114	0.0000	661.8190	661.8190	0.2448	0.0000	667.9396
Waste						0.0000	0.0000		0.0000	0.0000	3.1585	0.0000	3.1585	0.1867	0.0000	7.8252
Water						0.0000	0.0000		0.0000	0.0000	0.1826	1.4629	1.6454	0.0188	4.6000e-004	2.2518
Total	**0.5005**	**5.2926**	**1.7694**	**7.1200e-003**	**0.0310**	**5.5800e-003**	**0.0365**	**7.6000e-003**	**5.3500e-003**	**0.0130**	**3.3411**	**854.7507**	**858.0918**	**0.4584**	**2.4500e-003**	**870.2805**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/15/2021	4/14/2021	5	0	
2	Site Preparation	Site Preparation	4/15/2021	5/15/2021	5	22	
3	Grading	Grading	5/15/2021	5/30/2021	5	10	
4	Building Construction	Building Construction	6/1/2021	1/30/2022	5	174	
5	Paving	Paving	1/15/2022	1/30/2022	5	10	
6	Architectural Coating	Architectural Coating	1/15/2022	1/28/2022	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0.8

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 24,021; Non-Residential Outdoor: 8,007; Striped Parking Area: 2,136 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	4.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Grading	Excavators	0	4.00	158	0.38
Grading	Graders	0	4.00	187	0.41
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	2.00	46	0.45
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	6.00	132	0.36
Paving	Rollers	1	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	0	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	2	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	20.00	8.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	2	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5300e-003	0.0000	7.5300e-003	4.1400e-003	0.0000	4.1400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7800e-003	0.0708	0.0346	6.0000e-005		3.5400e-003	3.5400e-003		3.2600e-003	3.2600e-003	0.0000	5.6294	5.6294	1.8200e-003	0.0000	5.6750
Total	**6.7800e-003**	**0.0708**	**0.0346**	**6.0000e-005**	**7.5300e-003**	**3.5400e-003**	**0.0111**	**4.1400e-003**	**3.2600e-003**	**7.4000e-003**	**0.0000**	**5.6294**	**5.6294**	**1.8200e-003**	**0.0000**	**5.6750**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.7000e-004	6.0100e-003	2.0000e-005	1.5800e-003	1.0000e-005	1.5900e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3949	1.3949	4.0000e-005	0.0000	1.3960
Total	**8.3000e-004**	**5.7000e-004**	**6.0100e-003**	**2.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.5900e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.3949**	**1.3949**	**4.0000e-005**	**0.0000**	**1.3960**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5300e-003	0.0000	7.5300e-003	4.1400e-003	0.0000	4.1400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7800e-003	0.0708	0.0346	6.0000e-005		3.5400e-003	3.5400e-003		3.2600e-003	3.2600e-003	0.0000	5.6294	5.6294	1.8200e-003	0.0000	5.6749
Total	**6.7800e-003**	**0.0708**	**0.0346**	**6.0000e-005**	**7.5300e-003**	**3.5400e-003**	**0.0111**	**4.1400e-003**	**3.2600e-003**	**7.4000e-003**	**0.0000**	**5.6294**	**5.6294**	**1.8200e-003**	**0.0000**	**5.6749**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	5.7000e-004	6.0100e-003	2.0000e-005	1.5800e-003	1.0000e-005	1.5900e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3949	1.3949	4.0000e-005	0.0000	1.3960
Total	**8.3000e-004**	**5.7000e-004**	**6.0100e-003**	**2.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.5900e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.3949**	**1.3949**	**4.0000e-005**	**0.0000**	**1.3960**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0322	0.0158	3.0000e-005		1.6100e-003	1.6100e-003		1.4800e-003	1.4800e-003	0.0000	2.5588	2.5588	8.3000e-004	0.0000	2.5795
Total	**3.0800e-003**	**0.0322**	**0.0158**	**3.0000e-005**	**0.0142**	**1.6100e-003**	**0.0158**	**6.8500e-003**	**1.4800e-003**	**8.3300e-003**	**0.0000**	**2.5588**	**2.5588**	**8.3000e-004**	**0.0000**	**2.5795**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.2000e-004	2.2800e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5284	0.5284	2.0000e-005	0.0000	0.5288
Total	**3.1000e-004**	**2.2000e-004**	**2.2800e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5284**	**0.5284**	**2.0000e-005**	**0.0000**	**0.5288**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0800e-003	0.0322	0.0158	3.0000e-005		1.6100e-003	1.6100e-003		1.4800e-003	1.4800e-003	0.0000	2.5588	2.5588	8.3000e-004	0.0000	2.5795
Total	**3.0800e-003**	**0.0322**	**0.0158**	**3.0000e-005**	**0.0142**	**1.6100e-003**	**0.0158**	**6.8500e-003**	**1.4800e-003**	**8.3300e-003**	**0.0000**	**2.5588**	**2.5588**	**8.3000e-004**	**0.0000**	**2.5795**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.2000e-004	2.2800e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5284	0.5284	2.0000e-005	0.0000	0.5288
Total	**3.1000e-004**	**2.2000e-004**	**2.2800e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.0000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5284**	**0.5284**	**2.0000e-005**	**0.0000**	**0.5288**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0260	0.2408	0.2032	3.4000e-004		0.0127	0.0127		0.0118	0.0118	0.0000	29.0603	29.0603	8.7000e-003	0.0000	29.2778
Total	**0.0260**	**0.2408**	**0.2032**	**3.4000e-004**		**0.0127**	**0.0127**		**0.0118**	**0.0118**	**0.0000**	**29.0603**	**29.0603**	**8.7000e-003**	**0.0000**	**29.2778**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0682	0.0142	1.8000e-004	4.0800e-003	2.1000e-004	4.2900e-003	1.1800e-003	2.0000e-004	1.3800e-003	0.0000	16.6085	16.6085	1.6000e-003	0.0000	16.6486
Worker	6.4500e-003	4.4200e-003	0.0468	1.2000e-004	0.0123	9.0000e-005	0.0124	3.2600e-003	9.0000e-005	3.3500e-003	0.0000	10.8492	10.8492	3.3000e-004	0.0000	10.8575
Total	**8.6100e-003**	**0.0727**	**0.0610**	**3.0000e-004**	**0.0164**	**3.0000e-004**	**0.0167**	**4.4400e-003**	**2.9000e-004**	**4.7300e-003**	**0.0000**	**27.4577**	**27.4577**	**1.9300e-003**	**0.0000**	**27.5061**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0260	0.2408	0.2032	3.4000e-004		0.0127	0.0127		0.0118	0.0118	0.0000	29.0603	29.0603	8.7000e-003	0.0000	29.2777
Total	**0.0260**	**0.2408**	**0.2032**	**3.4000e-004**		**0.0127**	**0.0127**		**0.0118**	**0.0118**	**0.0000**	**29.0603**	**29.0603**	**8.7000e-003**	**0.0000**	**29.2777**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0682	0.0142	1.8000e-004	4.0800e-003	2.1000e-004	4.2900e-003	1.1800e-003	2.0000e-004	1.3800e-003	0.0000	16.6085	16.6085	1.6000e-003	0.0000	16.6486
Worker	6.4500e-003	4.4200e-003	0.0468	1.2000e-004	0.0123	9.0000e-005	0.0124	3.2600e-003	9.0000e-005	3.3500e-003	0.0000	10.8492	10.8492	3.3000e-004	0.0000	10.8575
Total	**8.6100e-003**	**0.0727**	**0.0610**	**3.0000e-004**	**0.0164**	**3.0000e-004**	**0.0167**	**4.4400e-003**	**2.9000e-004**	**4.7300e-003**	**0.0000**	**27.4577**	**27.4577**	**1.9300e-003**	**0.0000**	**27.5061**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0200e-003	0.0278	0.0259	4.0000e-005		1.3900e-003	1.3900e-003		1.3000e-003	1.3000e-003	0.0000	3.7758	3.7758	1.1300e-003	0.0000	3.8039
Total	**3.0200e-003**	**0.0278**	**0.0259**	**4.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3000e-003**	**1.3000e-003**	**0.0000**	**3.7758**	**3.7758**	**1.1300e-003**	**0.0000**	**3.8039**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	8.4000e-003	1.6700e-003	2.0000e-005	5.3000e-004	2.0000e-005	5.5000e-004	1.5000e-004	2.0000e-005	1.8000e-004	0.0000	2.1369	2.1369	2.0000e-004	0.0000	2.1420
Worker	7.7000e-004	5.1000e-004	5.5300e-003	2.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3595
Total	**1.0300e-003**	**8.9100e-003**	**7.2000e-003**	**4.0000e-005**	**2.1300e-003**	**3.0000e-005**	**2.1600e-003**	**5.7000e-004**	**3.0000e-005**	**6.1000e-004**	**0.0000**	**3.4954**	**3.4954**	**2.4000e-004**	**0.0000**	**3.5015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0200e-003	0.0278	0.0259	4.0000e-005		1.3900e-003	1.3900e-003		1.3000e-003	1.3000e-003	0.0000	3.7758	3.7758	1.1300e-003	0.0000	3.8039
Total	**3.0200e-003**	**0.0278**	**0.0259**	**4.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3000e-003**	**1.3000e-003**	**0.0000**	**3.7758**	**3.7758**	**1.1300e-003**	**0.0000**	**3.8039**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	8.4000e-003	1.6700e-003	2.0000e-005	5.3000e-004	2.0000e-005	5.5000e-004	1.5000e-004	2.0000e-005	1.8000e-004	0.0000	2.1369	2.1369	2.0000e-004	0.0000	2.1420
Worker	7.7000e-004	5.1000e-004	5.5300e-003	2.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3595
Total	**1.0300e-003**	**8.9100e-003**	**7.2000e-003**	**4.0000e-005**	**2.1300e-003**	**3.0000e-005**	**2.1600e-003**	**5.7000e-004**	**3.0000e-005**	**6.1000e-004**	**0.0000**	**3.4954**	**3.4954**	**2.4000e-004**	**0.0000**	**3.5015**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2900e-003	0.0130	0.0165	3.0000e-005		6.9000e-004	6.9000e-004		6.4000e-004	6.4000e-004	0.0000	2.2064	2.2064	7.1000e-004	0.0000	2.2243
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.3400e-003**	**0.0130**	**0.0165**	**3.0000e-005**		**6.9000e-004**	**6.9000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2064**	**2.2064**	**7.1000e-004**	**0.0000**	**2.2243**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.6000e-004	2.7600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6793	0.6793	2.0000e-005	0.0000	0.6797
Total	**3.9000e-004**	**2.6000e-004**	**2.7600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6793**	**0.6793**	**2.0000e-005**	**0.0000**	**0.6797**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2900e-003	0.0130	0.0165	3.0000e-005		6.9000e-004	6.9000e-004		6.4000e-004	6.4000e-004	0.0000	2.2064	2.2064	7.1000e-004	0.0000	2.2242
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.3400e-003**	**0.0130**	**0.0165**	**3.0000e-005**		**6.9000e-004**	**6.9000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**2.2064**	**2.2064**	**7.1000e-004**	**0.0000**	**2.2242**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.6000e-004	2.7600e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6793	0.6793	2.0000e-005	0.0000	0.6797
Total	**3.9000e-004**	**2.6000e-004**	**2.7600e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6793**	**0.6793**	**2.0000e-005**	**0.0000**	**0.6797**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.1198**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.5000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1360
Total	**8.0000e-005**	**5.0000e-005**	**5.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1359**	**0.1359**	**0.0000**	**0.0000**	**0.1360**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1188					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0200e-003	7.0400e-003	9.0700e-003	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2787
Total	**0.1198**	**7.0400e-003**	**9.0700e-003**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2787**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	5.0000e-005	5.5000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1359	0.1359	0.0000	0.0000	0.1360
Total	**8.0000e-005**	**5.0000e-005**	**5.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1359**	**0.1359**	**0.0000**	**0.0000**	**0.1360**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4215	5.2723	1.7515	7.0000e-003	0.0310	4.0400e-003	0.0350	7.6000e-003	3.8100e-003	0.0114	0.0000	661.8190	661.8190	0.2448	0.0000	667.9396
Unmitigated	0.4215	5.2723	1.7515	7.0000e-003	0.0310	4.0400e-003	0.0350	7.6000e-003	3.8100e-003	0.0114	0.0000	661.8190	661.8190	0.2448	0.0000	667.9396

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	53.39	11.91	5.08	96,926	96,926
Parking Lot	0.00	0.00	0.00		
User Defined Commercial	1,811.00	1,811.00	1811.00		
Total	1,864.39	1,822.91	1,816.08	96,926	96,926

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
User Defined Commercial	9.50	7.30	7.30	10.00	80.00	10.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Convenience Market With Gas Pumps	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
General Office Building	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Parking Lot	0.498498	0.030090	0.155509	0.109662	0.018147	0.004601	0.015536	0.154991	0.002397	0.002156	0.006230	0.001554	0.000628
User Defined Commercial	0.498498	0.030090	0.155509	0.109662	0.018147	0.004601	0.015536	0.154991	0.002397	0.002156	0.006230	0.001554	0.000628

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	169.3786	169.3786	7.6600e-003	1.5800e-003	170.0422
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	169.3786	169.3786	7.6600e-003	1.5800e-003	170.0422
NaturalGas Mitigated	2.2300e-003	0.0203	0.0170	1.2000e-004		1.5400e-003	1.5400e-003		1.5400e-003	1.5400e-003	0.0000	22.0886	22.0886	4.2000e-004	4.0000e-004	22.2199
NaturalGas Unmitigated	2.2300e-003	0.0203	0.0170	1.2000e-004		1.5400e-003	1.5400e-003		1.5400e-003	1.5400e-003	0.0000	22.0886	22.0886	4.2000e-004	4.0000e-004	22.2199

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market With Gas Pumps	146510	7.9000e-004	7.1800e-003	6.0300e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8183	7.8183	1.5000e-004	1.4000e-004	7.8648
General Office Building	125762	6.8000e-004	6.1600e-003	5.1800e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.7111	6.7111	1.3000e-004	1.2000e-004	6.7510
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	141653	7.6000e-004	6.9400e-003	5.8300e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.5591	7.5591	1.4000e-004	1.4000e-004	7.6040
Total		**2.2300e-003**	**0.0203**	**0.0170**	**1.2000e-004**		**1.5500e-003**	**1.5500e-003**		**1.5500e-003**	**1.5500e-003**	**0.0000**	**22.0886**	**22.0886**	**4.2000e-004**	**4.0000e-004**	**22.2199**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Convenience Market With Gas Pumps	146510	7.9000e-004	7.1800e-003	6.0300e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8183	7.8183	1.5000e-004	1.4000e-004	7.8648
General Office Building	125762	6.8000e-004	6.1600e-003	5.1800e-003	4.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	6.7111	6.7111	1.3000e-004	1.2000e-004	6.7510
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	141653	7.6000e-004	6.9400e-003	5.8300e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.5591	7.5591	1.4000e-004	1.4000e-004	7.6040
Total		**2.2300e-003**	**0.0203**	**0.0170**	**1.2000e-004**		**1.5500e-003**	**1.5500e-003**		**1.5500e-003**	**1.5500e-003**	**0.0000**	**22.0886**	**22.0886**	**4.2000e-004**	**4.0000e-004**	**22.2199**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market With Gas Pumps	278955	81.1512	3.6700e-003	7.6000e-004	81.4692
General Office Building	44016.7	12.8050	5.8000e-004	1.2000e-004	12.8551
Parking Lot	31328	9.1137	4.1000e-004	9.0000e-005	9.1494
User Defined Commercial	227934	66.3087	3.0000e-003	6.2000e-004	66.5685
Total		**169.3786**	**7.6600e-003**	**1.5900e-003**	**170.0422**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market With Gas Pumps	278955	81.1512	3.6700e-003	7.6000e-004	81.4692
General Office Building	44016.7	12.8050	5.8000e-004	1.2000e-004	12.8551
Parking Lot	31328	9.1137	4.1000e-004	9.0000e-005	9.1494
User Defined Commercial	227934	66.3087	3.0000e-003	6.2000e-004	66.5685
Total		**169.3786**	**7.6600e-003**	**1.5900e-003**	**170.0422**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0768	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
Unmitigated	0.0768	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0119					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0648					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
Total	**0.0768**	**1.0000e-005**	**8.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7100e-003**	**1.7100e-003**	**0.0000**	**0.0000**	**1.8300e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0119					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0648					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7100e-003	1.7100e-003	0.0000	0.0000	1.8300e-003
Total	**0.0768**	**1.0000e-005**	**8.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7100e-003**	**1.7100e-003**	**0.0000**	**0.0000**	**1.8300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.6454	0.0188	4.6000e-004	2.2518
Unmitigated	1.6454	0.0188	4.6000e-004	2.2518

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0.30281 / 0.38008	0.9597	9.9100e-003	2.4000e-004	1.2792
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0.272586 / 0.167069	0.6857	8.9100e-003	2.2000e-004	0.9726
Total		**1.6454**	**0.0188**	**4.6000e-004**	**2.2518**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0.30281 / 0.38008	0.9597	9.9100e-003	2.4000e-004	1.2792
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0.272586 / 0.167069	0.6857	8.9100e-003	2.2000e-004	0.9726
Total		**1.6454**	**0.0188**	**4.6000e-004**	**2.2518**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.1585	0.1867	0.0000	7.8252
Unmitigated	3.1585	0.1867	0.0000	7.8252

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	4.5	0.9135	0.0540	0.0000	2.2631
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	11.06	2.2451	0.1327	0.0000	5.5621
Total		**3.1585**	**0.1867**	**0.0000**	**7.8252**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	4.5	0.9135	0.0540	0.0000	2.2631
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	11.06	2.2451	0.1327	0.0000	5.5621
Total		**3.1585**	**0.1867**	**0.0000**	**7.8252**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B: Detailed Emission Calculations

Table 1
Summary of TAC Emissions Operational Phase

	On-Site Truck Idle	Off-Site Truck Travel	On-Site Gasoline Dispensing and Storage	Charbroiler	TOTAL (lbs/yr)
	Table 4	Table 5	Table 2	Table 7	
Benzene			5.79		5.79
DPM	0.0001	4.82			4.82
Ethyl Benzene			15.18		15.18
PAHs				6.92	6.92
Toluene			75.92		75.92
Xylene			22.78		22.78

Table 2
Calculation of VOC Emissions

Gasoline Dispensing Operations VOC Calculator

Applicability	Use this spreadsheet to calculate VOC emissions from gasoline dispensing operations. Entries required in yellow areas, output in grey areas.			
Author or updater	Matthew Cegielski		*Last Update*	January 25, 2017
Facility: **ID#:** **Project #:**	SR 59 / Olive Ave Commercial Center Merced, CA			
Inputs	gal/day	gal/yr	**Formula**	
	5.00E+03	1.00E+06		
	1,000 gal /hr	1,000 gal /yr		
Gasoline Throughput	2.08E-01	1.00E+03	Enter the **change** in gas station throughput in units of gallons/day and gallons/yr. Select the Phase I and Phase II type using the drop down provided. VOC emissions are calculated by the multiplication of Throughput Rates and Emission Factors.	
Application Type	Type #			
EVR Phase I and EVR Phase II Installed Underground Tank	9			
Substances	**lb VOC/ 1,000 gal**	**LB/HR**	**LB/YR**	
Vapor Tank Filling Loss VOC	0.08	1.75E-02	8.40E+01	
Vehicle Refueling VOC	0.42	8.75E-02	4.20E+02	
Breathing Loss VOC	0.03	5.21E-03	2.50E+01	
Spillage VOC	0.42	8.75E-02	4.20E+02	
Total VOC	0.95	1.98E-01	9.49E+02	

References:

* The emission factors are derived from Appendix A in the 1997 CAPCOA Air Toxics "Hot Spots" Program document, *Gasoline Service Station Industrywide Risk Asessment Guidelines* .

Table 3
Calculation of TACs from Gasoline Storage Tank Filling

	lbs/hr	lbs/yr	
Total Vapor VOCs (Re-Fuel) Less Spillage	1.10E-01	5.29E+02	*(From Table 1)*
Total Liquid VOCs (Spillage)	8.75E-02	4.20E+02	*(From Table 1)*
TOTAL VOCs	0.198	949	

	Benzene	Ethyl Benzene	Toluene	Xylenes
EF Vapor (lbs/lb VOC)	3.00E-03	1.60E-02	8.00E-02	2.40E-02
Emissions (lbs/hr)	3.31E-04	1.76E-03	8.82E-03	2.65E-03
Emissions (lbs/yr)	1.59E+00	8.46E+00	4.23E+01	1.27E+01
EF Liquid (lb/lb VOC)	1.00E-02	1.60E-02	8.00E-02	2.40E-02
Emissions (lbs/hr)	8.75E-04	1.40E-03	7.00E-03	2.10E-03
Emissions (lbs/yr)	4.20E+00	6.72E+00	3.36E+01	1.01E+01
Total (lbs/hr)	1.21E-03	3.16E-03	1.58E-02	4.75E-03
Total (lbs/yr)	5.79E+00	1.52E+01	7.59E+01	2.28E+01

EFs from SJVAPCD Speciation Guidance March 27, 2017.

Table 4
Calculation of DPM Emissions from
Idling of Diesel Fuelled Trucks

IDLING EMISSIONS FUEL DELIVERY	**Units**	
Deliveries per year		120
Idle Time per Truck (min)	*min*	15
Total Annual Idle Time	*min*	1800
	`	30.0
Emission Factor for Truck Idling (Note 1)	*(grams/hr)*	0.000812
Idling Emissions All Trucks	*(grams/yr)*	0.0244
	(lbs/yr)	0.0001

Note 1. From EMFAC 2011 Idle EFs for in-stet HD Trucks. Units: grams/day (8 hrs)

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air District
Region: SAN JOAQUIN VALLEY UNIFIED APCD
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Category	Model Yea	Speed	Fuel	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW
SAN JOAC	2022	T6 instate heavy	Aggregate	Aggregate	DSL	0.026643548	0.006494491	0	0.003000001	0.055860016
SAN JOAC	2022	T6 instate small	Aggregate	Aggregate	DSL	0.052734355	0.013483993	0	0.003000001	0.055860016

Table 5
Calculation of DPM Emissions from
Truck Travel within 0.25 Miles of Truck Stop

Daily Vehicle Count	*(vehicles/day)*	120
Fraction Trucks		100%
	(trucks/day)	120
	(trucks/yr)	43,800
Emission Factor EMFAC 2017 (Note 1)	*(grams/mile)*	0.0266
Distance Travelled	*(mile/truck)*	0.25
	(total miles)	10,950
Emissions of DPM	*(grams/yr)*	2,190
	(lbs/yr)	4.82

Note 1:
Emissions based on EMFAC 2017 Aggregate statewide for HD trucks for CY 2022
Excerts of EMFAC 2017 Model appear below.

Table 6
Calculation of Hourly and Annual PAH Emissions from Restaurants

Name:	**Underfired Charbroiler - Hamburger**			
Applicability:	Use this spreadsheet to calculate emissions generated from hamburger cooked on underfired charbroilers. Entries required in yellow areas, output in grey areas.			
Author or updater:	Matthew Cegielski	*Last Update:*	February 25, 2016	
Facility:	711 Merced Commercial Project			
ID#:	Prepared by Ray Kapahi December 20_2020			
Project #:	Annual Amount based on 34.5 tons/yr per restaurant, operaintg 12 hours/day			
Inputs:	Capacity Ton/hr	Capacity Ton /yr	**Formula**	
Process Rate	0.0158	34.60	Emissions are calculated by the multiplication of Process Rates and Emission Factors	

Substances	CAS#	Emission Factor Lb/Ton	LB/HR	LB/YR
Acenaphthene	**83329**	3.00E-04	4.74E-06	1.04E-02
Acenaphthylene	**208968**	8.48E-03	1.34E-04	2.93E-01
Anthracene	**120127**	1.88E-03	2.97E-05	6.50E-02
Benz[a]Anthracene	**56553**	4.40E-04	6.95E-06	1.52E-02
Benzo[a]Pyrene	**50328**	3.00E-04	4.74E-06	1.04E-02
Benzo[g,h,i,]Perylene	**191242**	3.40E-04	5.37E-06	1.18E-02
Biphenyl	**92524**	3.44E-03	5.44E-05	1.19E-01
Fluoranthene	**206440**	2.80E-03	4.42E-05	9.69E-02
Fluorene	**86737**	2.52E-03	3.98E-05	8.72E-02
Indeno[1,2,3-c,d]Pyrene	**193395**	1.80E-04	2.84E-06	6.23E-03
Naphthalene	**91203**	3.80E-02	6.00E-04	1.31E+00
Phenanthrene	**85018**	9.76E-03	1.54E-04	3.38E-01
Pyrene	**129000**	3.80E-03	6.00E-05	1.31E-01
Total PAH	**1150**	1.00E-01	1.58E-03	3.46E+00

References:

Emission factors are derived from District adjustments of Charbroiler emission factors in EPA's 2002 NEI database (Appendix C1).

Pollutants required for toxic reporting: TACs w/o Risk Factor. Current as of update date.

Appendix C: Screening Level Risk Evaluation

	A	B	C	D	E	F	G	H
1	**Name**	**Prioritization Calculator**						
2	**Applicability**	Use to provide a Prioritization score based on the emission potency method. Entries required in yellow areas, output in gray areas.						
3	*Author or updater*	Matthew Cegielski		*Last Update*	March 17, 2020			
4	**Facility:**	Merced 711 Commercial project						
5	**Location**	Hwy 59 / Olive Ave						
6	**Project Phase:**	Construction Phase						
7	**Modeler:**	R. Kapahi						
8	**Operating Hours hr/yr**	8,760.00						
9	Receptor Proximity and Proximity Factors	**Cancer**	**Chronic**	**Acute**				
10		**Score**	**Score**	**Score**	**Max Score**	Receptor proximity is in meters. Priortization scores are calculated by multiplying the total scores summed below by the proximity factors. Record the Max score for your receptor distance. If the substance list for the unit is longer than the number of rows here or if there are multiple processes use additional worksheets and sum the totals of the Max Scores.		
11	**0< R<100 1.000**	4.45E+01	6.60E-02	0.00E+00	4.45E+01			
12	**100≤R<250 0.250**	1.11E+01	1.65E-02	0.00E+00	1.11E+01			
13	**250≤R<500 0.040**	1.78E+00	2.64E-03	0.00E+00	1.78E+00			
14	**500≤R<1000 0.011**	4.90E-01	7.26E-04	0.00E+00	4.90E-01			
15	**1000≤R<1500 0.003**	1.34E-01	1.98E-04	0.00E+00	1.34E-01			
16	**1500≤R<2000 0.002**	8.91E-02	1.32E-04	0.00E+00	8.91E-02			
17	**2000<R 0.001**	4.45E-02	6.60E-05	0.00E+00	4.45E-02			
18		Enter the unit's CAS# of the substances emitted and their amounts.				Prioritzation score for each substance generated below. Totals on last row.		
19	**R. Kapahi**							
20	**Substance**	**CAS#**	**Annual Emissions (lbs/yr)**	**Maximum Hourly (lbs/hr)**	**Average Hourly (lbs/hr)**	**Cancer**	**Chronic**	**Acute**
21	**Diesel engine exhaust, particulate matter (Diesel PM)**	9901	1.93E+01		2.20E-03	4.45E+01	6.60E-02	0.00E+00
22					0.00E+00	0.00E+00	0.00E+00	0.00E+00
23					0.00E+00	0.00E+00	0.00E+00	0.00E+00
24					0.00E+00	0.00E+00	0.00E+00	0.00E+00

Name	Prioritization Calculator						
Applicability	Use to provide a Prioritization score based on the emission potency method. Entries required in yellow areas, output in gray areas.						
Author or updater	Matthew Cegielski		*Last Update*	March 17, 2020			
Facility:	76 Gas Station Screening Risk Evaluation						
Location	7599 Stockton Blvd., Sacramento						
Project Phase:	Operational Phase						
Modeler:	R. Kapahi						

Operating Hours hr/yr	8,760.00				
Receptor Proximity and Proximity Factors	Cancer Score	Chronic Score	Acute Score	Max Score	Receptor proximity is in meters. Priortization scores are calculated by multiplying the total scores summed below by the proximity factors. Record the Max score for your receptor distance. If the substance list for the unit is longer than the number of rows here or if there are multiple processes use additional worksheets and sum the totals of the Max Scores.
0< R<100 1.000	6.05E+01	4.56E-02	4.49E-02	6.05E+01	
100≤R<250 0.250	1.51E+01	1.14E-02	1.12E-02	1.51E+01	
250≤R<500 0.040	2.42E+00	1.83E-03	1.79E-03	2.42E+00	
500≤R<1000 0.011	6.66E-01	5.02E-04	4.93E-04	6.66E-01	
1000≤R<1500 0.003	1.82E-01	1.37E-04	1.35E-04	1.82E-01	
1500≤R<2000 0.002	1.21E-01	9.13E-05	8.97E-05	1.21E-01	
2000<R 0.001	6.05E-02	4.56E-05	4.49E-05	6.05E-02	

R. Kapahi	Enter the unit's CAS# of the substances emitted and their amounts.				Prioritzation score for each substance generated below. Totals on last row.		
Substance	**CAS#**	**Annual Emissions (lbs/yr)**	**Maximum Hourly (lbs/hr)**	**Average Hourly (lbs/hr)**	**Cancer**	**Chronic**	**Acute**
Diesel engine exhaust, particulate matter (Diesel PM)	9901	2.00E-04	1.88E-08	2.28E-08	4.62E-04	6.85E-07	0.00E+00
Benzene	71432	6.94E+00	7.96E-04	7.92E-04	1.55E+00	3.96E-02	4.42E-02
Ethyl benzene	100414	1.82E+01	2.09E-03	2.08E-03	3.50E-01	1.56E-04	0.00E+00
Toluene	108883	9.11E+01	1.04E-02	1.04E-02	0.00E+00	5.20E-03	4.22E-04
Xylene	1330207	2.73E+01	3.13E-03	3.12E-03	0.00E+00	6.68E-04	2.13E-04
PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	1151	6.92E+00	3.13E-03	7.90E-04	5.86E+01	0.00E+00	0.00E+00
				0.00E+00	0.00E+00	0.00E+00	0.00E+00
				0.00E+00	0.00E+00	0.00E+00	0.00E+00

TRAFFIC IMPACT ANALYSIS

FOR

SR 59 / OLIVE AVENUE COMMERCIAL CENTER

Merced, CA

Prepared For:

CHASE PARTNERS
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Prepared By:

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November 30, 2020

1378-01

SR 59 / Olive Avenue Commercial Center TIA 11-30-20.rpt

TRAFFIC IMPACT ANALYSIS FOR
SR 59 / OLIVE AVENUE COMMERCIAL CENTER

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November 30, 2020

TRAFFIC IMPACT ANALYSIS FOR
SR 59 / OLIVE AVENUE COMMERCIAL CENTER
Merced, California

EXECUTIVE SUMMARY

Project Description

The SR 59 / Olive Avenue Commercial Center project is a proposed convenience commercial development that will occupy 3 acres on the northeast corner of the intersection of State Route 59 (SR 59) and Olive Avenue - Santa Fe Drive. The proposed development plan includes a gasoline station with convenience store, a fast-food restaurant and other office / retail uses.

Access. The project proposes right-turn only access to SR 59 north of Olive Avenue, as well as a new right-turn only driveway on Olive Avenue.

Trip Generation. Based on approved trip generation rates that account for the specific land uses included in the project, after discount for these "pass-by" trips the project could be expected to result in 1,811 net new trips (in and out) on a daily basis, with 139 new trips in the a.m. peak hour and 155 new trips in the p.m. peak hour.

Improvements. The project is assumed to complete frontage improvements on SR 59 and Santa Fe Drive that are consistent with the City's Arterial Street standard. Work required along SR 59 would be conducted under an encroachment permit acquired through Caltrans.

Study Scope

This analysis addresses two issues.

Vehicle Miles Traveled (VMT). Under SB 743 the evaluation of the significance of a project's transportation impacts under the California Environmental Quality Act (CEQA) has moved from consideration of Level of Service to evaluation of the projects effects on regional Vehicle Miles Traveled (VMT). This report discusses the impacts of the project on VMT based on guidance provided by the Governor's Office of Planning and Research (OPR).

Local Transportation Analysis (LTA). While not a requirement under CEQA, the project's effects on the operation of the local area transportation system has been evaluated within the context of the project's effects in comparison to the requirements of the City of Merced General Plan and Caltrans minimum standards.

This LTA addresses traffic conditions occurring on weekday a.m. and p.m. commute periods. The analysis addresses the operation of seven (7) existing intersections in the west Merced area that were identified during the scoping process in consultation with City staff and is consistent with the analysis required for similar neighboring projects.

1. SR 59 / Yosemite Avenue
2. SR 59 / Buena Vista Drive

3. SR 59 / Santa Fe Drive / W. Olive Avenue
4. W. Olive Avenue / Loughborough Drive
5. W. Olive Avenue / Austin Avenue
6. SR 59 / Cooper Avenue / Willowbrook Drive
7. SR 59 / W. 16th Street

The analysis also addresses conditions on segments of SR 59 and Olive Avenue based on daily traffic volumes.

At City of Merced direction, the traffic study considers the following scenarios:

- Existing Conditions
- Existing Conditions plus Project with access as proposed
- Existing plus Other Approved Project (EPAP)
- EPAP plus Project
- Year 2035 Cumulative Conditions without the Project
- Year 2035 Cumulative Conditions with Project

Existing Traffic Conditions

The City of Merced General Plan establishes Level of Service (LOS) D as the minimum acceptable standard for intersections and roadways.

Based on direction from City staff, because COVID-19 makes collection of new traffic count data impractical, traffic counts conducted in 2017 were expanded to Year 2020 by 1% annually to established existing conditions. Two safety intersection improvement projects recently completed by the City and Caltrans are assumed in the evaluation of existing conditions at the SR 59 / Olive Avenue / Santa Fe Drive intersection and at the SR 59 / W. 16th Street intersection.

All study intersections operate at LOS D or better during the study hours. However, the two-lane portion of SR 59 between W. 16th Street and Olive Avenue carries daily traffic volumes that are indicative of LOS F conditions.

The existing system of pedestrian and bicycle facilities in this area include limited sidewalks and Class I bike paths, but pedestrians and bicycles use paved shoulder elsewhere. Sidewalks do not exist along the project's Olive Avenue frontage, but a class 1 trail exists along SR 59. Recent Caltrans improvements have included high visibility crosswalks at the SR 59 / Olive Avenue intersection.

Vehicle Miles Traveled Impacts

Under SB 743 evaluation of transportation impacts under CEQA requires that agencies move from Level of Service based analysis to consideration of a project's effect on regional Vehicle Miles Traveled (VMT). The CEQA Guidelines and the California Governor's Office of Planning and Research (OPR) document *Technical Advisory on Evaluating Transportation Impacts in CEQA* (California Governor's Office of Planning and Research 2018) provide general guidance as to thresholds of significance for determining when a project would have significant transportation impacts based on the new metric of VMT, rather than operating Level of Service (LOS) until local agencies adopt their own standards. Because Merced County and the City of Merced have not yet adopted methods for estimating regional VMT or significance criteria for evaluating impacts based on VMT, the OPR technical advisory has been followed.

Screening. The OPR Technical Advisory speaks to two screening criteria that would be applicable to the proposed project.

- **Locally Serving Retail Projects**. The OPR advisory recognize that by offering additional shopping/service opportunities, retail projects have the effect of reducing regional VMT and suggest that retail uses of 50,000 square feet or less can be assumed to have a less than significant effect on regional VMT.
- **Small Projects**. The OPR advisory suggests that the VMT contribution of small projects need not be considered significant. OPR suggests that agencies can find projects generating fewer than 110 vehicles trips a day to be less than significant.

Assessment. The proposed project is generally comprised of convenience retail uses that will serve motorists already traveling on SR 59 and on Olive Avenue or who live or work in the immediate area. The project also includes up to 6,000 sf of office space. Based on OPR guidance the project's VMT impacts can be judged as follows.

As the retail elements of the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 59 or on Olive Avenue, and the project's total building floor area is far below the 50,000 sf threshold identified by OPR, the impacts of the project's retail uses on regional VMT is not significant.

The office space included in the project is projected to generate 74 daily trips. As this trip generation estimate falls below the 110 daily trip threshold identified by OPR, the office portion of the proposed project qualifies as a "small project" that can be assumed to have a less than significant impact on regional VMT.

Existing Plus SR 59 / Olive Avenue Commercial Center Conditions

The impacts of SR 59 / Olive Avenue Commercial Center were identified by superimposing project trips onto the current background traffic volume levels. The directional distribution of project trips was identified using the Merced County Association of Governments (MCAG) regional traffic model, and that analysis tool indicated that the majority of project trips will arrive and depart via SR 59 and Olive Avenue to the east under short term future conditions.

Project Traffic Effects. If no improvements to the area circulation system are made all off-site study intersections would continue to operate with LOS D or better conditions, and the project would be consistent with the Merced General Plan. The project will add traffic to the two-lane segments of SR 59 south of Olive Avenue that today exceed the minimum LOS standard, but the amount of traffic added by the project is not significant based on the incremental change permitted under City of Merced policy. The project will add traffic to the westbound left turn lane on Olive Avenue approaching the SR 59 intersection, and traffic signal timing in conjunction with Caltrans District 10 is recommended to minimize the project's on peak period queues.

Effects on Alternative Transportation Modes. The project may result in pedestrians walking to and from the site. Sidewalk should be installed along Olive Avenue with project frontage improvements.

Existing Plus Approved Project Plus SR 59 / Olive Avenue Commercial Center Conditions

The approved SR 59 / Olive Avenue Retail Center project will occupy 8 acres on the northwest corner of the intersection of SR 59 and Olive Avenue - Santa Fe Drive. The approved development plans include roughly 42,800 sf of retail commercial uses, including a gasoline station with convenience store, fast food restaurants, coffee kiosk and other retail uses. The development will have a right turn-only access on SR 59 north of Olive Avenue as well as two driveways on Santa Fe Drive. On the two driveways, the more westerly Santa Fe Drive access will provide full access and will be signalized.

EPAP Plus Project. If the proposed SR 59 / Olive Avenue Commercial Center project is built out in addition to the approved project and anticipated improvements are made along the project's frontage then all study intersections will operate with Level of Service that satisfy the City's LOS D minimum. The addition of traffic from the proposed project does not appreciably change queuing conditions on northbound and southbound SR 59, but the same traffic signal timing recommendation made for Existing Plus Project Conditions is applicable.

TABLE A1
IMPROVEMENT / MITIGATION SUMMARY

Location	Impact	Mitigation	Ramification
EXISTING PLUS PROJECT CONDTIONS			
SR 59 / Olive Avenue	Lengthening of peak period queues	Optimize traffic signal timing after project is occupied	Requires Caltrans coordination and approval
CUMULATIVE PLUS PROJECT CONDTIONS			
SR 59 / Olive Avenue / Santa Fe Drive	Significantly exacerbate LOS F conditions during a.m. and p.m. peak hours	Fair share contribution to intersection improvements including: • Reconstruct westbound Olive Avenue to provide dual left turn lanes onto Southbound SR 59. • Reconfigure the westbound right turn lane to create a 3rd through and right turn lane, and extend that through lane across SR 59 along the project's frontage. • Reconstruct the existing northbound right turn lane as a "free" right turn with median island separating eastbound and right turning traffic. • Reconstruct the Eastbound Santa Fe Drive approach to provide dual left turn lane.	
PROJECT ACCESS AND CIRCULATION			
Olive Avenue Driveway	Queues exceed driveway throat depth	Install 75 foot median in driveway	
	Right turn deceleration conflict with through traffic	Add westbound right turn lane	
SR 59 driveway	Right turn deceleration conflict with through traffic	Add northbound right turn lane	

Year 2035 Cumulative Plus SR 59 / Olive Avenue Commercial Center Conditions

Basis for Traffic Volumes. The Merced County Association of Governments (MCAG) Year 2035 travel demand forecast model was refined and used to develop background traffic volume projections that assume the SR 59 / Olive Avenue Retail Center Project is developed as proposed. A portion of the City of Atwater's approved Ferrari Ranch Annexation was assumed to be developed by 2035.

Assumed Improvements. The following regional improvements were assumed for this cumulative analysis:

- 2015 RTP improvement assumed in the MCAG traffic model
- Widen SR 59 to 4-lanes from W. 16th Street to Olive Avenue
- Campus Parkway extend to Yosemite Avenue
- AME remains terminated at Green Sands Avenue

Cumulative Effects. If SR 59 / Olive Avenue Retail Center and other Merced area development proceeds as anticipated by the Year 2035, but no additional improvements are made, then two off-site intersections will operate at LOS F.

The **SR 59 / Olive Avenue / Santa Fe Drive intersection** will operate at LOS F with and without the project. The project's cumulative impact is significant based on the change in overall delay at the intersection. As noted in Table A1 intersection improvements that are consistent with the Circulation Element have been identified, and the project would contribute its fair share to the cost of these improvements. With that contribution the project's impact is not significant.

The **SR 59 / W. 16th Street intersection** would operate at LOS with and without the project, but the project's incremental change in delay is less than the increment permitted by the City. This impact is not significant and mitigation is not required.

Mainline SR 59 from to Yosemite Avenue is projected to operate at LOS F with and without the project. However, the incremental increase in volume contributed by the project is less than the 5% increase permitted under City guidelines. As a result, the project's effect does not result in inconsistency with the General Plan, mitigation is not required.

Site Access and Circulation

Driveway Throat Depths. The adequacy of the driveway throats was determined based on the length of exiting queue at the driveway. The LOS analysis indicates that the 95th percentile queue in the SR 59 driveway would be one vehicle or less, while the 95th percentile queue in the Olive Avenue driveway could be 75 feet (i.e., three vehicles). The queues at the SR 59 driveway are less than the available throat depth, and no changes are recommended. However, the Olive Avenue driveway has a limited throat depth, and the anticipated Year 2035 queue would block entry into the southern portion of the canopy area. To address this issue it would be necessary to place a median in the driveway that would extend for 75 feet.

Fuel Delivery Truck Circulation. The fuel storage tanks are shown in the southwest corner of the site. The site plan indicates that the tanks would be accessed from the Olive Avenue driveway with travel in a clockwise direction. With installation of the driveway median island noted above, counterclockwise circulation would be needed.

Fast Food Restaurant Drive Thru Aisle. The plan indicates that 200 feet of storage would be available from the delivery window to the entrance, providing room for up to ten waiting vehicles. This storage is adequate for most fast food franchises, the entrance to the drive thru is far enough from adjoining street to accommodate additional vehicles without interfering with the flow of traffic on public streets (i.e., 225 feet to SR 59 and 275 feet to Olive Avenue).

Right Turn Channelization at Entrances. The need for separate right turn lanes on the entries to project driveways has been considered within the context of the precedence under similar condition elsewhere in Merced and typical engineering practice. At both locations the number of right turns turns reaches that level that would typically justify a separate right turn deceleration lane. In this case separate right turn lanes are desirable and on Olive Avenue the lane is needed to provide adequate LOS under long term conditions. A turn lane should be provided but should be incorporated into the ultimate design of the area street system. Initially, a separate right turn lane can be provided on Olive Avenue in advance of the driveway in the remaining 120 feet of project frontage. Based on the distance from the SR 59 intersection to the project's Olive Avenue driveway (i.e., 175 feet), this lane can then be extend to Olive Avenue if the City elects to install the westbound left turn lane described in the Year 2035 traffic analysis. A northbound right turn lane should be included in the project's SR 59 frontage improvements. The design requirements of this lane would be determined in consultation with Caltrans.

TRAFFIC IMPACT ANALYSIS FOR
SR 59 / OLIVE AVENUE COMMERCIAL CENTER PROJECT
Merced, California

INTRODUCTION

Project Description

The SR 59 / Olive Avenue Commercial Center project is a proposed convenience commercial development that will occupy 3 acres abutting State Route 59 (SR 59) at its intersection with Olive Avenue and Santa Fe Drive, as noted in Figure 1. As noted in Figure 2 (site plan), the proposed development plan includes a gasoline station with convenience store, a fast-food restaurant and other office/retail uses.

Access to the site is a primary consideration of this traffic study. As presented in the site plan, the project includes right-turn only driveways on SR 59 and on Olive Avenue.

Traffic Study Scope

Vehicle Miles Traveled (VMT). Under SB 743 the evaluation of the significance of a project's transportation impacts under the California Environmental Quality Act (CEQA) has moved from consideration of Level of Service to evaluation of the projects effects on regional Vehicle Miles Traveled (VMT). Because the City of Merced and Merced County have not formally adopted guidelines for evaluating the significance of VMT impact effects, this report discusses the impacts of the project on VMT based on guidance provide by the Governor's Office of Planning and Research (OPR).

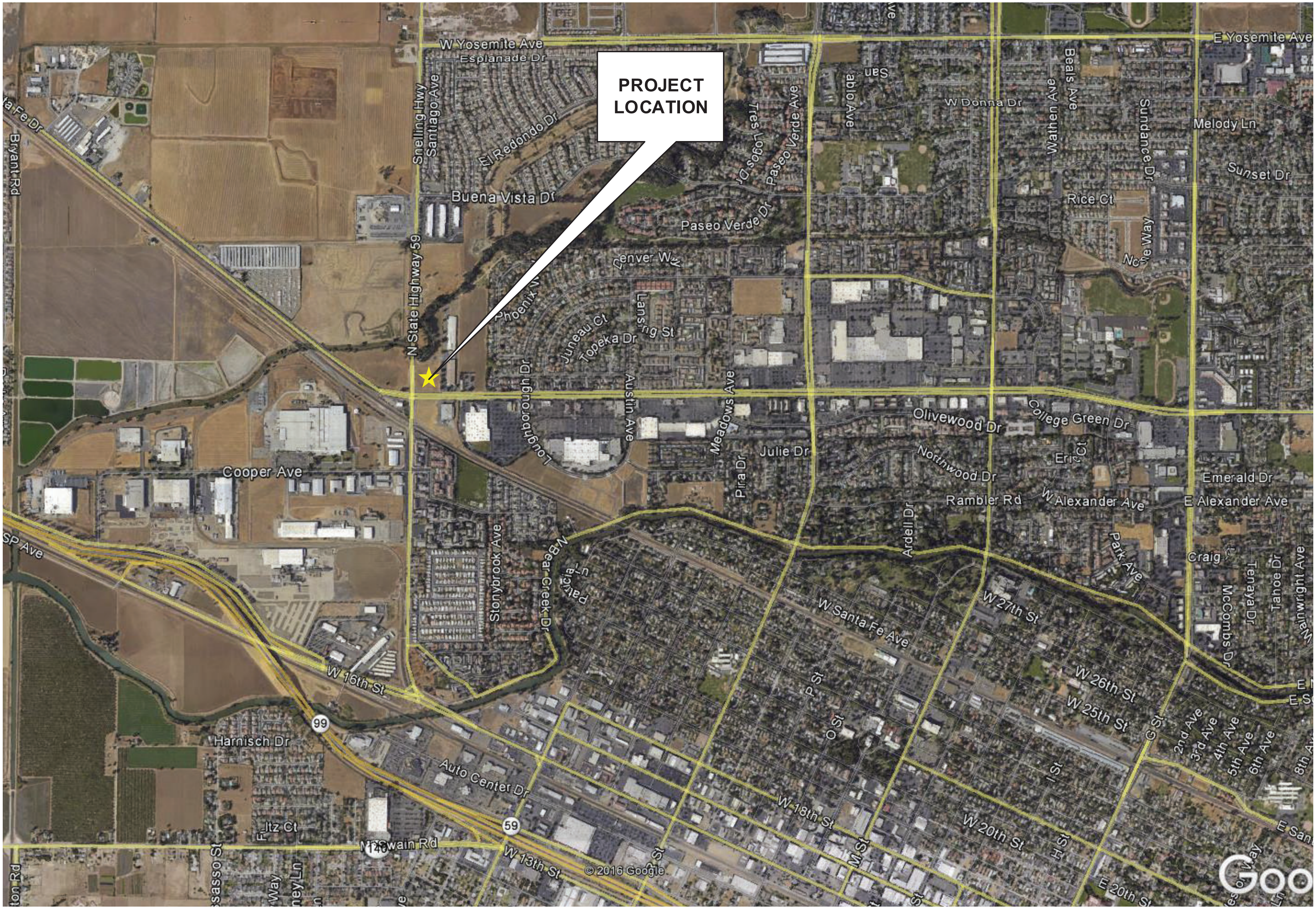
Local Transportation Analysis (LTA). While not a requirement under CEQA, the project's effects on the operation of the local area transportation system has been evaluated within the context of the project's effects in comparison to the requirements of the City of Merced General Plan and Caltrans minimum standards.

This LTA is intended to evaluate the relative traffic effects of the project within a range of relevant scenarios as required under City of Merced guidelines and requested by Caltrans. The analysis considers traffic conditions occurring during weekday a.m. and p.m. peak hours.

At City of Merced direction, the traffic study considers the following scenarios:

- Existing Conditions
- Existing Conditions Plus Project Build Out
- Existing Plus Other Approved Projects (EPAP)
- EPAP Plus Proposed Project
- Year 2035 Cumulative Conditions no development on the site
- Year 2035 Cumulative Conditions with Project Build Out

The traffic analysis also addresses project impacts to alternative transportation modes.

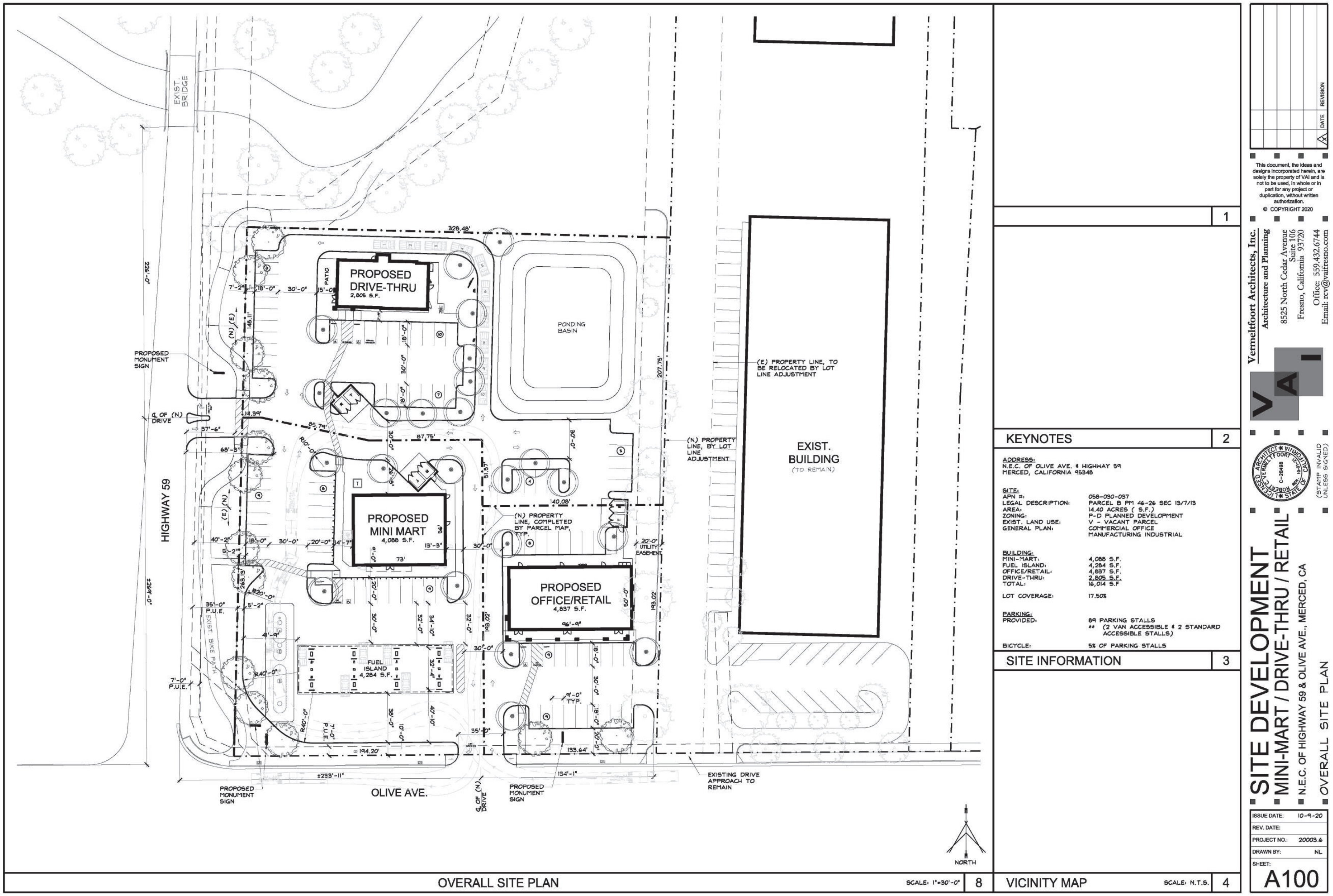


VICINITY MAP

KD Anderson & Associates, Inc.
Transportation Engineers

0780-06 RA 11/30/2020

figure 1



KD Anderson & Associates, Inc.
Transportation Engineers

0780-06 RA 11/30/2020

SITE PLAN

figure 2

EXISTING SETTING

This portion of this traffic impact study presents a description of the existing transportation system in the vicinity of the proposed project site.

Study Area - Roadways

The following is a description of roadways that provide access to the proposed SR 59 / Olive Avenue Commercial Center project.

State Route 99 (SR 99). SR 99 is the primary north-south route through the San Joaquin Valley and the major point of access to the City of Merced. SR 99 is generally a controlled access freeway with local connections limited to grade separated interchanges. SR 99 has 4 to 6 mainline travel lanes at various locations in Merced County but is a four-lane roadway in the immediate area of the proposed project. The speed limit on SR 99 is posted at 65 mph.

The most recent traffic volume counts published by Caltrans reveal an *Annual Average Daily Traffic (AADT)* volume of 59,000 vehicles per day in the area of the project north of the V Street interchange (2015). Trucks comprise roughly 27% of the daily traffic volume on SR 99 in this area.

Four (4) roadways provide regional access to the project.

State Route 59 (SR 59). SR 59 is an important route through Merced County which links the City of Merced with SR 152 at the Madera County line and extends north to the Snelling area of northern Merced County. SR 59 is a Major Arterial in the Merced General Plan (128' ROW). In the vicinity of the proposed project, SR 59 is a two-lane conventional highway which is being incrementally widened to a four-lane section as adjoining development occurs. Implementation of improvements to SR 59 is constrained by two key physical features. The highway crosses the UPRR at a two lane at-grade crossing roughly midway between the Olive Avenue and Cooper Avenue – Willowbrook Drive intersection. The highway also crosses Rascal Creek on a two-lane structure just north of the proposed project. SR 59 is designated an STAA Terminal Access route.

Traffic count information (2018) provided by Caltrans indicates a daily volume of 18,200 AADT in the area north of 16th Street and 14,000 AAST approaching W. Olive Avenue. The daily volume drops to 12,000 AADT north of Olive Avenue. Trucks comprise 5% to 6% of the daily traffic volume on SR 59 in this area.

Santa Fe Drive is an east-west Principal Arterial roadway across Merced County that connects the project with the Atwater area to the west. Santa Fe Drive enters Merced County east of Turlock and extends across the northern Atwater area past the project site to an intersection in the City of Merced on State Route 59 at Olive Avenue. In the area of the project Santa Fe Drive is a four-lane street with a continuous center Two-Way Left-Turn (TWLT) lane. There are no sidewalks along Santa Fe Drive, but the roadway has paved shoulders. The BN&SF railroad runs parallel to and south of Santa Fe Drive and limits the number of connections to Santa Fe Drive from the south. Today the posted speed limit on Santa Fe Drive is 55 mph.

Olive Avenue. Olive Avenue is a major east-west route through Merced. Olive Avenue begins at the SR 59 / Santa Fe Drive intersection and continues easterly beyond the City limits into rural Merced County. In the area of the project W. Olive Avenue is a six-lane facility with a raised landscaped median. Sidewalk has been provided along W. Olive Avenue in the commercial area east of the project but is missing in the immediate vicinity of SR 59 where development has not occurred. The posted speed limit on W. Olive Avenue is 45 mph.

16th Street. 16th Street is an element of the City's downtown grid street system running parallel to and north of SR 99. 16th Street originates at on- and off-ramps from southbound SR 99 about ¾ mile west of the SR 59 intersection and continues easterly to the SR 99 / SR 140 interchange in eastern Merced. SR 59 follows the segment of 16th Street west of V Street. In the area of the project W. 16th Street is a four-lane facility. The posted speed limit on W. 16th Street is 40 mph.

Other roadways link the project with Merced neighborhoods.

Yosemite Avenue. Yosemite Avenue is an east-west Major Arterial street that traverses Merced in the area roughly a mile north of Olive Avenue. Today the portion of Yosemite Avenue between SR 59 and San Augustine Avenue is two lanes, but Yosemite Avenue has been widened to a four-lane section from San Augustine Avenue easterly. Ultimately, this portion of Yosemite Avenue will be a four-lane roadway, but widening is not expected until the property north of Yosemite Avenue is annexed to the city and developed. The posted speed limit on Yosemite Avenue is 45 mph.

Buena Vista Drive. Buena Vista Drive is a two-lane collector street aligned in an east-west direction. Buena Vista Drive extends east from an intersection on SR 59 across R Street to an intersection on M Street in central Merced. Access to Buena Vista Drive is somewhat limited, as commercial properties near SR 59 have driveways on Buena Vista Drive, but only public street intersections are permitted in the area between the project and R Street. The posted speed limit is 35 mph. Buena Vista Drive is designated a *Primary Emergency Response Route* in the City's Neighborhood Traffic Calming Guidelines.

Cooper Avenue. Cooper Avenue is a local two-lane collector street that provides access to the City's industrial area west of SR 59 and north of SR 99. Cooper Avenue intersects SR 59 roughly 1,000 feet south of W. Olive Avenue and continues westerly for about a mile to an intersection on Ashby Road. The posted speed limit on Cooper Avenue is 40 mph.

Willowbrook Drive. Willowbrook Drive is a two-lane local street that extends east from the SR 59 / Cooper Avenue intersection to provide access to the residential area between SR 59 and Bear Creek. A prima facie 25 mph speed limit exists on Willowbrook Drive.

Loughborough Drive. Loughborough Drive is a two-lane street that provides access to the retail commercial area south of W. Olive Avenue and continues to the northeast parallel to W. Olive Avenue to M Street. The portion of Loughborough Drive north of W. Olive Avenue is designated a collector street. The posted speed limit is 30 mph.

Austin Avenue. Austin Avenue is a local street that extends north and south from W. Olive Avenue to provide access to existing retail commercial and residential areas.

<u>Study Area - Intersections</u>

The quality of traffic flow is typically governed by the operation of major intersections. Based on direction from City and Caltrans staff seven (7) existing intersections were analyzed for this traffic study. The locations of the study intersections are shown on Figure 3. The study area will also include the project's two driveways that do not exist today. Traffic volumes have been identified at a low volume right turn only driveway on Olive Avenue immediately east of the project, but the operation of this location was not addressed due to the minimal number of vehicles using this access.

1. SR 59 / Yosemite Avenue –Traffic Signal
2. SR 59 / Buena Vista Drive – Traffic Signal
3. SR 59 / Santa Fe Drive / W. Olive Avenue – Traffic Signal
4. W. Olive Avenue / Loughborough Drive – Traffic Signal
5. W. Olive Avenue / Austin Avenue – Traffic Signal
6. SR 59 / Cooper Avenue / Willowbrook Drive – Traffic Signal
7. SR 59 / W. 16th Street – All-Way Stop

The geometric configuration of each intersection and its traffic controls are described in the text which follows.

The **SR 59 / Yosemite Avenue intersection** is a "tee" controlled by a traffic signal. The intersection is configured with separate left turn lanes on each approach, and the northbound SR 59 approach and westbound Yosemite Avenue approach have separate right turn lanes. Crosswalks are striped across the northern and eastern legs of the intersection.

The **SR 59 / Buena Vista Drive intersection** is a "tee" controlled by a traffic signal. The intersection is configured with a separate southbound left turn lane and a separate northbound right turn lane. The westbound Buena Vista Drive approach is striped as a single lane but is generally wide enough to allow right turns around the queue of traffic waiting to turn left. Crosswalks are striped across the north and east legs of the intersection.

The **SR 59 / Santa Fe Drive / W. Olive Avenue intersection** is controlled by a traffic signal. With the completion of recent Caltrans improvements each approach has separate left turn lanes and right turn lanes. U-turns are prohibited on southbound SR 59 but are permitted on westbound Olive Avenue. Today high visibility crosswalks exist on all four legs of the intersection, and the recent Caltrans safety project provided landing pads and detectable warning surfaces in the shoulder area for pedestrians/bicyclists.

The **W. Olive Avenue / Loughborough Drive intersection** is controlled by a traffic signal. The intersection has separate left turn lanes on each approach, and the northbound Loughborough Drive approach also provides a combined left turn and through lane. The eastbound W. Olive

Avenue and northbound Loughborough Drive approaches have separate right turn lanes. Crosswalks are striped across all four legs of the intersection.

The **W. Olive Avenue / Austin Avenue intersection** is controlled by a traffic signal. The intersection has separate left turn lanes on each approach, and the eastbound W. Olive Avenue has a separate right turn lane. Crosswalks are striped across all four legs of the intersection.

The **SR 59 / Cooper Avenue / Willowbrook Drive intersection** is controlled by a traffic signal. This intersection has been widened to provide two through southbound lanes on SR 59, although these lanes do not extend to adjoining signalized intersections. Each approach has a separate left turn and right turn lane. Crosswalks are striped on all four legs of the intersection.

Today the **SR 59 / W. 16th Street intersection** is controlled by a traffic signal. The southbound SR 59 approach has separate left turn and right turn lanes. The westbound W. 16th Street approach has two through lanes and a separate right turn lane. The eastbound W. 16th Street approach includes a through lane and separate left turn lane. Crosswalks have been provided with the City recent improvement project.

Level of Service Analysis Procedures

Level of Service (LOS) analysis provides a basis for describing existing traffic conditions and for evaluating the significance of project traffic impacts. Level of Service measures the quality of traffic flow and is represented by letter designations from A to F, with a grade of A referring to the best conditions, and F representing the worst conditions. The characteristics associated with the various LOS for intersections are presented in Table 1.

TABLE 1 LEVEL OF SERVICE DEFINITIONS		
Level of Service	**Signalized Intersection**	**Unsignalized Intersection**
A	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/vehicle
B	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/vehicle and ≤ 15 sec/vehicle
C	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/vehicle and ≤ 25 sec/vehicle
D	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/vehicle and ≤ 35 sec/vehicle
E	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/vehicle and ≤ 50 sec/vehicle
F	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/vehicle
Source: Transportation Research Board 2010.		

Intersection Level of Service Methodology. Intersection Level of Service was calculated for this traffic impact study using the methodology contained in the *Highway Capacity Manual 2010* (Transportation Research Board 2010) (HCM 2010) using Synchro 10.0 software. HCM techniques identify the average length of delays and use that information to determine the operating Level of Service. An overall average delay and Level of Service is determined for intersections controlled by traffic signals or all-way stops. At locations controlled by side street stops, delays can be determined for each movement that must yield the right of way, and the "worst case" delay is employed for analysis.

Roadway Segment Level of Service Methodology. The Merced General Plan presents daily traffic volume Level of Service thresholds than can be employed on a planning level basis (GP Table 4.3), and these values are presented in Table 2.

TABLE 2 LEVEL OF SERVICE THRESHOLDS FOR ROADWAY SEGMENTS					
	Daily Roadway Segment Level of Service Thresholds				
Roadway Type	**LOS A**	**LOS B**	**LOS C**	**LOS D**	**LOS E**
6 lane Freeway	25,900	42,600	57,800	68,400	76,000
4 lane Freeway	40,000	65,800	89,200	105,600	117,400
2 lane Arterial	-	-	11,600	16,000	16,800
4 lane Arterial	-	4,100	26,800	33,700	35,400
6 lane Arterial	-	6,600	41,800	50,700	53,200
2 lane Collector	-	-	4,800	10,300	13,200
4 lane Collector	-	-	11,300	22,200	26,400

Standards of Significance. The methods employed to determine the significance of Level of Service are noted in the General Plan and in Merced's traffic study guidelines.

Implementing Action T-1.8.b of the *Merced Vision 2030 General Plan* (City of Merced 2010) establishes an acceptable LOS of D for intersections and roadways. Action T-1.8.b states:

> "1.8.b Use peak-hour Level of Service "D" ("Tolerable Delays") as the design standard for new streets and intersections in new growth areas.
>
> "The preferred LOS levels are typically "C" and "D," particularly for larger roads and major intersections. With LOS C the road provides stable operation but is still underutilized to some degree. LOS D represents a fine balance between the relatively large number of vehicles served and the generally acceptable level of service provided. It is the intent of the City's standards and policies for new and most upgraded intersections and road segments to be designed and built so as not to drop below LOS D ("tolerable delay") during peak traffic periods."

Therefore, in this traffic impact study, LOS A through D are considered acceptable for signalized intersections, while LOS E and F are unacceptable.

At two-way stop-sign-controlled intersections (or one-way stop T intersections), Level of Service can be calculated for each movement where motorists yield the right of way, as well as for the intersection as a whole. Significance is based on the length of the average delay experienced by motorists on the worst case movement, which is typically a left turn made from the stop-sign-controlled approach to the intersection. It should be noted that overall intersection average LOS at un-signalized intersections is better, often much better, than LOS on the worst single movement.

Under City of Merced guidelines, however, a poor "worst case" LOS is not necessarily significant unless the intersection also carries traffic volumes which satisfy **peak hour traffic signal warrant** requirements. Traffic signal warrants are a series of several standards which provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously-uncontrolled major street, and may increase the occurrence of particular types of accidents.

Consistent with the California Environmental Quality Act (CEQA), the City will use the traffic study to determine the project's impact to two broad CEQA checklist topics: (1) substantial increases in traffic; and (2) changes to level-of-service. Each of these broad categories have distinct thresholds of significance (described below) and are to be utilized in the traffic study.

1. Topic: Substantial Increase in Traffic Levels

A. Arterial Level Road: The threshold of significance is a project ADT contribution equal or greater than 5% of the current ADT for an "arterial roadway" that is, or will be, operating at an unacceptable LOS "E" or "F".

B. Collector Level Road: The threshold of significance is an amount where the Project contributes more than 20% of the current ADT on roads carrying at least 3,000 ADT. Thus, a significant impact would occur if a Project adds 601 ADT to a collector road that currently has 3,000 ADT. [3,000(.20)]

2. Topic: Change in Level of Service (LOS) Rating

Merced Vision 2015 General Plan Policy T-1.8 states: Use A Minimum Peak Hour Level of Service (LOS) "D" As a Design Objective for All New Streets in New Growth Areas and for Most Existing City Streets Except Under Special Circumstances. *To implement this Policy, the City focuses on four different street system categories, each described in greater detail below: (A) roadways; (B) signalized intersections; (C) un-signalized intersections; and (D) roads within established neighborhoods.*

A. Roadways and Signalized Intersections: *Merced Vision 2015 General Plan,* Implementing Action T-1.8.b, establishes an acceptable LOS of "D" for intersection and roadway operations.

1.8.b Use peak-hour Level of Service "D" ("Tolerable Delays") as the design standard for new streets and intersections in new growth areas.
The preferred LOS levels are typically "C" and "D," particularly for larger roads and major intersections. With LOS C the road provides stable operation but is still underutilized to some degree. LOS D represents a fine balance between the relatively large number of vehicles served and the generally acceptable level of service provided. It is the intent of the City's standards and policies for new and most upgraded intersections and road segments to be designed and built so as not to drop below LOS D ("tolerable delay") during peak traffic periods.

Existing Traffic Conditions and Levels of Service

Traffic count data for the weekday a.m. and p.m. peak hours, as well as 24-hour weekday counts were collected for this traffic impact study at the existing study intersections on March 26, 2017 and on roadway segments on March 28, 2017. Weekday counts were conducted when local schools were in session. Count data were collected in 15-minute intervals for the period from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. on weekdays and from noon to 2:00 p.m. on Saturdays. The contiguous one-hour period within each period with the highest volumes was used in this traffic impact study as the peak hour. Because of the effect of COVID-19 on current traffic volumes, for this analysis year 2020 conditions were estimated by applying a 1% annual growth rate to the year 2017 volumes. Figure 3 presents the existing lane configurations and Year 2020 a.m. and p.m. peak hour traffic volumes at the existing study intersections.

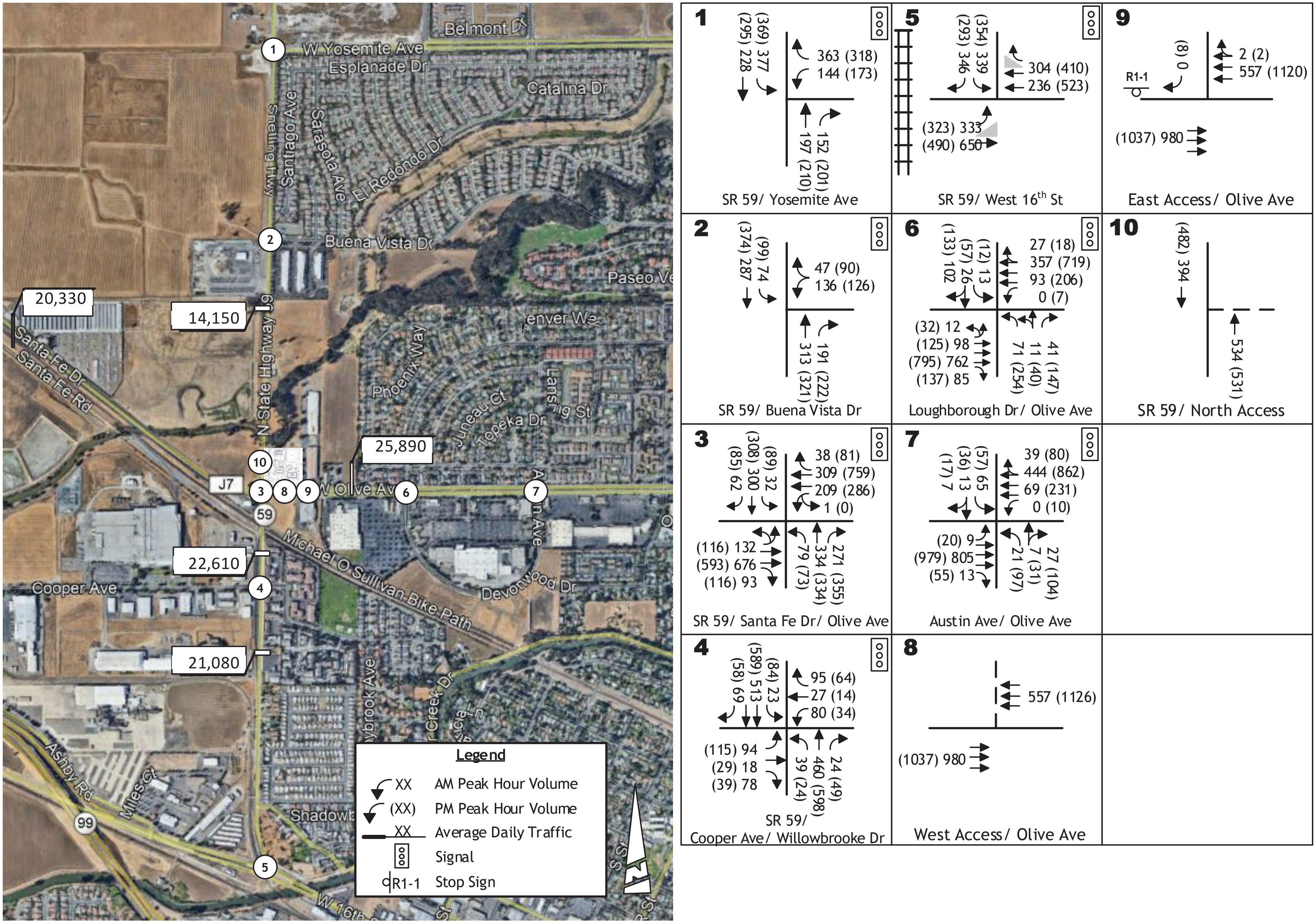
The extent to which traffic within the hour was concentrated into any particular 15-minute period was determined based on the *Peak Hour Factor (PHF)* at each intersection. The observed PHF was incorporated into the LOS analysis to address the specific peaking characteristics of traffic near area schools, but in each case a maximum PHF of 0.92 was used.

Intersection Levels of Service. Table 3 presents existing a.m. peak hour and p.m. peak hour LOS at the existing study intersections. The worksheets presenting the calculation of LOS and signal warrants under all development conditions including Existing Conditions are included in the Appendix. As indicated, all intersections operate at acceptable LOS (i.e., LOS D or better) during all three time periods.

TABLE 3
EXISTING PEAK HOUR LEVELS OF SERVICE

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 59 / Yosemite Ave	Signal	22.2	C	23.2	C
2	SR 59 / Buena Vista Dr	Signal	8.9	A	12.2	B
3	SR 59 / Santa Fe Dr / W. Olive Ave	Signal	25.9	C	36.5	D
4	SR 59 / Cooper Ave / Willowbrook Dr	Signal	15.2	B	18.8	B
5	SR 59 / W. 16th Street	Signal	16.0	B	22.5	B
6	W. Olive Ave / Loughborough Dr	Signal	14.9	B	28.7	C
7	W. Olive Ave / Austin Ave	Signal	7.5	A	17.5	B

BOLD values are Levels of Service in excess of LOS D.



EXISTING (YEAR 2020) TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 3

Roadway Segments. Table 4 identifies Year 2020 traffic volumes created by applying a 1% annual growth rate to year 2017 daily traffic volumes on study area roadways as well as the applicable Level of Service based on Merced General Plan thresholds. As indicated, the two-lane segments of SR from the W. 16th Street intersection to W. Olive Avenue carry volumes that are indicative of LOS F conditions. This exceeds the City's minimum LOS D standard. All other roadways carry traffic volumes that indicate LOS D or better conditions.

TABLE 4
EXISTING ROADWAY SEGMENTS VOLUMES AND LEVELS OF SERVICE

Street	from	To	Classification	Daily Volume	LOS
SR 59	Buena Vista Dr	W. Olive Ave	2 lane Arterial	14,150	D
	W. Olive Ave	NB & SF RR	2 lane Arterial	22,610	F
	BN&SF RR	W 16th Street	2 lane Arterial	21,080	F
Santa Fe Drive	Beachwood Dr	SR 59	4 lane Arterial	20,330	C
W. Olive Ave	SR 59	Loughborough Dr	6 lane Arterial	25,890	C

Alternative Transportation Modes

The section which follows describes existing and planned facilities for pedestrians, bicyclists and transit riders in the area of the proposed project.

Pedestrians. Sidewalks are generally absent along rural Merced County roads but are constructed as properties are annexed into the City of Merced and developed. The text which follows notes the availability of pedestrian facilities in the study area.

To the north the bike path extends on the east side of SR 59 from W. Olive Avenue to Rascal Creek, and the path continues to the east along the creek. No facilities exist on the creek crossing or in the area north of the creek for roughly 1,000 feet to the point where sidewalk was installed with commercial property at the Buena Vista Drive intersection. To the south along SR 59 no pedestrian facilities exist on the west side of SR 59 in the area from the Santa Fe Drive across the BN&SF railroad to Cooper Avenue, and no shoulder is available in some areas. A separated bike path exists on the east side of SR 59, and that facility extends to the BN&SF crossing. Sidewalk begins south of the railroad crossing.

No sidewalk exists immediately east of SR 59 along W. Olive Avenue. Pedestrians typically walk off the roadway on and unimproved paths have been worn in this area. Sidewalks exist on W. Olive Avenue starting roughly 300 feet east of SR 59.

There are no dedicated facilities on Santa Fe Drive and pedestrians use the paved shoulders.

Bicycles. The City of Merced General Plan includes the Bicycle Master Plan which identifies existing and planned facilities. Bicycle facilities are divided into three classes:

- Class I (Bike Paths or Trails) which are a completely separate right-of way designated for the exclusive use of bicycles and pedestrians.
- Class II (Bike Lanes) which provide restricted right-of-way on the street for the exclusive or semi-exclusive use of bicycles.
- Class III (Bike Routes) where bicycles are encouraged but bike lanes are not provided and motor vehicles and bicyclists share the right of way.

Today Class I facilities exist along the east side of SR 59 from the BNSF crossing to Black Rascal Creek.

The Merced 2013 Bicycle Transportation Plan and General Plan indicates that Class II lanes are to be created on SR 59 from W. 16th Street to W. Olive Avenue, but none exist today in this area.

Transit. The City of Merced is served by a local public bus system, inter-regional private bus companies, and private taxicabs, as well as rail and air passenger services that are both dealt with under separate headings. The public bus system, created in 1974, served the community as the Merced Transit System (MTS)/City Shuttle for more than two decades. Its primary goal over time remained to serve senior citizens, low-income people and the disabled, even as the system expanded. Originally created solely as a demand responsive Dial-A-Ride operation, the service extended as time passed to include a number of fixed routes within the City.

Today *Route M1 – Merced West* serves the area of the proposed project. This route originates at the downtown Transportation Center on 16th Street and extends north on SR 59 beyond the project site to a stop on Buena Vista Drive (refer to map in Appendix). M1 runs from 6:30 a.m. to 8:00 p.m. Monday thru Friday on roughly ½ hour headways. The route runs from 8:30 a.m. to 6:00 p.m. Saturday and Sunday.

Route M6 – Olive Loops follows Olive Avenue as far west as the Loughborough Drive intersection roughly ¼ mile east of the project. M6 runs from 7:15 a.m. to 8:00 p.m. Monday thru Friday on roughly ½ hour headways. The route runs from 8:45 a.m. to 5:00 p.m. Saturday and Sunday.

Intersection Queuing. The length of peak period queues has been estimated as a byproduct of the Level of Service analysis, and the results are presented in Table 5.

TABLE 5 ESTIMATED EXISTING PEAK HOUR QUEUES AT SR 59 / OLIVE AVENUE						
Approach	**Lane**	**Storage (feet)**	**AM Peak Hour**		**PM Peak Hour**	
			Volume	**95th % Queue (feet)**	**Volume**	**95th % Queue (feet)**
Southbound	Left turn	100	32	55	89	**120**
Northbound	Left turn	80	73	**110**	73	**105**
Eastbound	Left turn	460	132	200	116	180
Westbound	Left turn	500	60	280	286	435
HIGHLIGHTED values exceed available storage by 20 or more feet						

PROJECT CHARACTERISTICS

Project Use / Access Characteristics

The SR 59 / Olive Avenue Commercial Center plan includes a variety of convenience-oriented retail land uses. The development plan includes two points of access that are also evaluated in this analysis.

Trip Generation Rates. The number of vehicle trips that are expected to be generated by development of the proposed project has been estimated using trip generation rates based on the nature and size of project land uses. Data compiled by the Institute of Transportation Engineers (ITE) and presented in the publication *Trip Generation, 9th Edition* (Institute of Transportation Engineers 2012) is the source of trip generation rates for the uses within the proposed project. The trip generation rates used in this analysis are presented in Table 6.

A conservative approach has been taken to estimate project trip generation which yields a "worst case" assessment. As indicated, available rates have been employed for those areas with a specific land use designation, including those areas designated for food services, gasoline sales, and office / retail use. Those areas broadly designated as "office /retail" have been assigned trip generation rates based on the average rates from the ITE "Small Office" land use category 712.

Trip Generation Forecasts. Table 7 identifies the results of applying the identified trip generation rates to the land use inventory. A portion of these trips would likely be made between uses on the site, but to provide a "worst case" evaluation no internal capture has been assumed. Many of the trips associated with retail uses are typically drawn from the stream of background traffic passing the site as part of another trip. Table 7 identifies the typical share of the trips associated with various types of retail uses. After discount for these "pass-by" trips the project could be expected to result in 1,811 net new trips on a daily basis, with 139 new trips in the a.m. peak hour and 155 new trips in the p.m. peak hour.

TABLE 6
TRIP GENERATION RATES FOR SR 59 / OLIVE COMMERCIAL CENTER

ITE Code	Description	Quantity	Trips per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
712	Small Office	ksf	16.19	83%	17%	1.92	32%	68%	2.45
934	Fast Food Restaurant with Drive-thru	ksf	496.12	51%	49%	45.42	52%	48%	32.65
946	Gasoline / Service Station with C store and Car Wash	fueling position	152.84	51%	49%	11.84	51%	49%	13.86

TABLE 7 TRIP GENERATION FORECASTS FOR SR 59 / OLIVE RETAIL CENTER									
ITE Code	**Description**	**Quantity**	**Trips per Unit**						
			Daily	**AM Peak Hour**			**PM Peak Hour**		
				In	**Out**	**Total**	**In**	**Out**	**Total**
945	*Gasoline with C Store*	16 positions	2,445	97	92	189	113	109	222
	Pass-by (56% daily, 62% a.m., 56% p.m.)		1,369	60	57	117	63	61	124
	Net New Trips		**1,076**	**37**	**35**	**72**	**50**	**48**	**98**
934	*Fast Food with Drive Thru*	2.81 ksf	1,323	58	55	113	48	44	92
	Pass-by (50% daily and p.m., 49% a.m.)		662	28	27	55	23	23	46
	Net New Trips		**661**	**30**	**28**	**58**	**25**	**21**	**46**
826	*Small Office*	4.54 ksf	74	7	2	9	3	8	11
	Net New Trips		**74**	**7**	**2**	**9**	**3**	**8**	**11**
PROJECT TOTAL NET NEW TRIPS			**1,811**	**74**	**65**	**139**	**78**	**77**	**155**

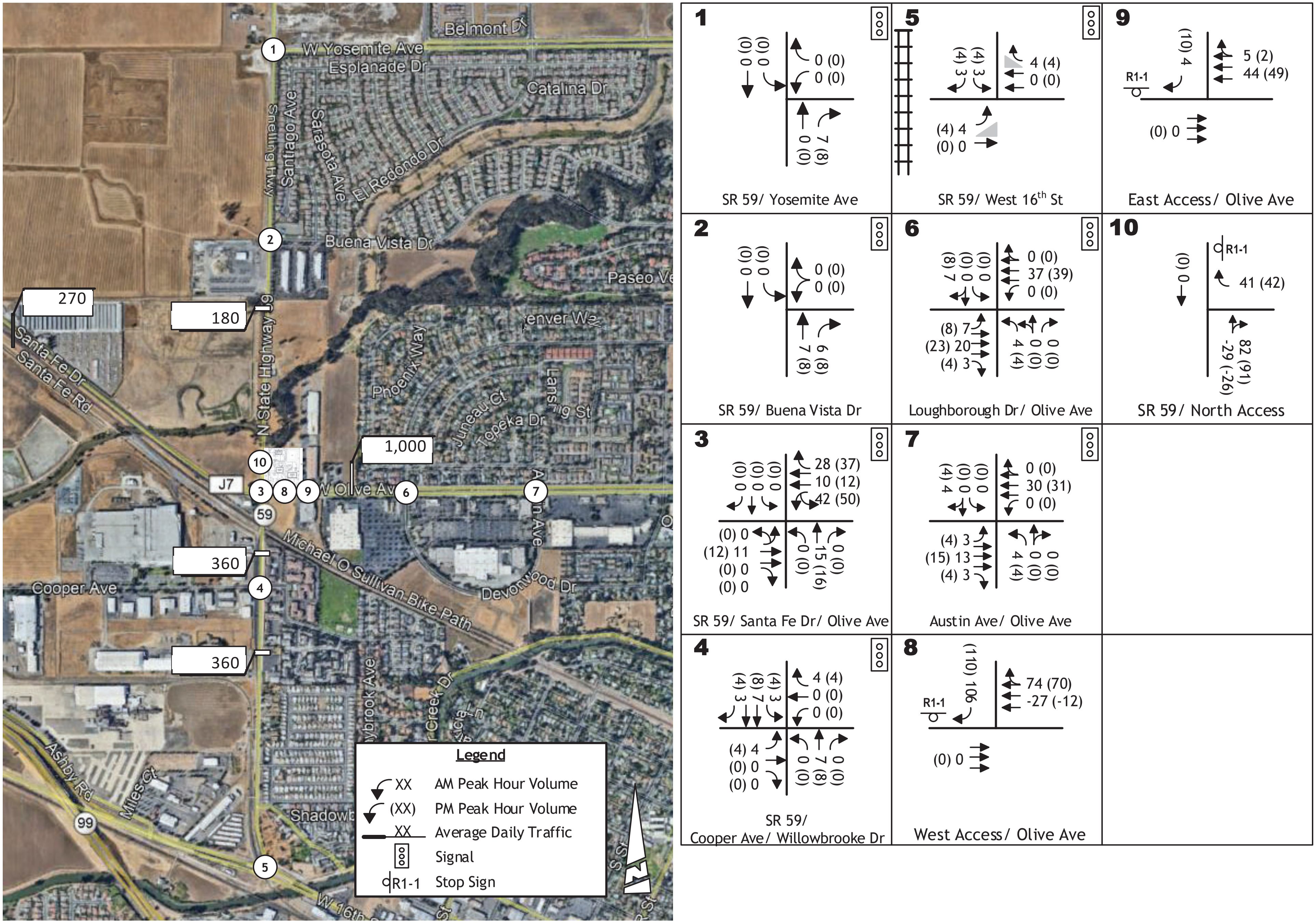
Trip Distribution. The geographic distribution of vehicle trips associated with the proposed project has been determined from review of select zone analysis results from the MCAG regional travel demand forecasting model, consideration of the nature of land uses in each area, understanding of the effects of local traffic controls and consideration of current travel patterns. Table 8 indicates the directional allocation of new trips. Because right turns are prohibited at the project's access and southbound u-turns are prohibited at the SR 59 / Olive Avenue intersection, it is unlikely that customers making new trips from the area to the north of the site will arrive via SR 59. However, those customers will be able to exit the site and return to their trip origin via SR 59. Because westbound u-turns are accommodated access is available for customers traveling to and from the east on Olive Avenue.

Pass-by trips were assigned in proportion to the volume of traffic passing along the site in the directions where access is feasible, and the shares may vary based on time of day. Because southbound access from SR 59 is limited, no pass-by trips are anticipated from that direction. The share drawn from each stream is also presented in Table 8.

TABLE 8
SR 59 / OLIVE AVENUE RETAIL CENTER COMMERCIAL USES
TRIP DISTRIBUTION ASSUMPTIONS

Direction	**Route**	**Percentage of Total Trips**	
New Trips			***Pass-by Trips***
North	SR 59 beyond Yosemite Avenue	0%	
	Yosemite Avenue east of SR 59[1]	10%	
	Buena Vista Drive east of SR 59[1]	10%	
East	W. Olive Avenue beyond Austin Avenue	20%	
	Loughborough Drive off of W. Olive Avenue	15%	
	Austin Avenue off of W. Olive Avenue	10%	
West	Santa Fe Drive west of SR 59	15%	
South	W. 16th Street beyond SR 59	10%	
	Cooper Avenue west of SR 59	5%	
	Willowbrook Drive east of SR 59	5%	
Total		100%	
[1] Inbound trips via R Street to Olive Avenue, outbound trips via SR 59			
Direction		**AM Peak Hour**	**PM Peak Hour**
Northbound on SR 59		33%	33%
Southbound on SR 59		0%	0%
Westbound on Santa Fe Drive		67%	67%
Eastbound on Santa Fe Drive		0%	0%

Trip Assignment. Figure 4 illustrates "project only" trips through study area intersections and at project driveways under the distribution percentages noted above with access as proposed.



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Transportation Engineers

PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS

0780-06 RA 11/30/2020

figure 4

Project Improvements. The project will install frontage improvements along SR 59 and Olive Avenue as required by the City and Caltrans in a manner that is consistent with their standards. All work conducted in the state right of way will require an encroachment permit from Caltrans. A requirement to widen SR 59 to provide two northbound through travel lanes is anticipated. The SR 59 access will be limited to right turns only, and if no median area treatment is installed by others before the proposed project proceeds a raised island will be constructed in the driveway to preclude left turns in and out. Evaluation of the need to provide a northbound right turn lane to accommodate access on SR 59 is a part of this analysis.

On Olive Avenue the new access will be limited to right turns only by the existing raised center area median. No driveway treatment is required to limit access. It is assumed that the third westbound travel lane anticipated under the General Plan will be installed along the project frontage. This analysis evaluates the need for separate right turn lanes at the site access and at the SR 59 intersection in addition to that work.

The project will also install frontage improvements features for bicycles and pedestrians typically required by the City of Merced, including sidewalks on Olive Avenue.

Truck Access. Retail businesses attract truck traffic to stock stores and supply restaurants, and in the case of gasoline sales fuel trucks will visit the site regularly. Trucks typically stage in aisles in front of fast-food restaurants and small trucks will unload at the rear of retail stores. The project driveways will be designed to accommodate the turning requirements of full-size trucks. Because fuel storage tanks are planned in the southwest corner of the site, project proponents have designed internal circulation to accommodate fuel delivery trucks arriving on westbound Olive Avenue, circling the site clockwise and exiting back onto westbound Olive Avenue. However, trucks can be accommodated at all driveways.

VEHICLE TRAVELED (VMT) IMPACTS

Vehicle Miles Traveled Approach

Direction. The CEQA Guidelines and the California Governor's Office of Planning and Research (OPR) document *Technical Advisory on Evaluating Transportation Impacts in CEQA* (California Governor's Office of Planning and Research 2018) encourage all public agencies to develop and publish thresholds of significance to assist with determining when a project would have significant transportation impacts based on the new metric of VMT, rather than operating Level of Service (LOS). The CEQA Guidelines generally state that projects that decrease VMT can be assumed to have a less than significant transportation impact. The CEQA Guidelines do not provide any specific criteria on how to determine what level of project VMT would be considered a significant impact. Merced County and the City of Merced have not yet adopted methods for estimating regional VMT or significance criteria for evaluating impacts based on VMT.

Screening. Under OPR direction, the following categories of land development projects are judged to have a less than significant impact on regional VMT.

- Location Based Screening
  - Near High Quality Transit facilities
  - In VMT efficiency areas where evidence exists that development yields VMT metrics that satisfy the OPR recommended significance criteria of a 15% reduction (i.e., 85% of average).
- Other Factors
  - Small projects
  - Local-serving retail
  - Local-serving public uses
  - Affordable housing

The Technical Advisory speaks to two screening criteria that would be applicable to the proposed project.

- **Locally Serving Retail Projects**. The OPR advisory recognize that by offering additional shopping/service opportunities, retail projects have the effect of reducing regional VMT and suggest that retail uses of 50,000 square feet or less can be assumed to have a less than significant effect on regional VMT. As the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 99 or on Arch Road, the project's impact based on VMT is not significant.

- **Small Projects.** The OPR advisory suggests that the VMT contribution of small projects need not be considered significant. OPR suggests that agencies can find projects generating fewer than 110 vehicles trips a day to be less than significant.

VMT Impacts

Assessment. The proposed project is generally comprised of convenience retail uses that will serve motorists already traveling on SR 59 and on Olive Avenue or who live or work in the immediate area. The project also includes up to 6,000 sf of office space. Based on OPR guidance the project's VMT impacts can be judged as follows.

- As the retail elements of the project would serve customers generated in the local area or simply stopping at the site as part of a trip on SR 59 or on Olive Avenue, and the project's total building floor area is far below the 50,000 sf threshold identified by OPR, the impacts of the project's retail uses on regional VMT is not significant.

- The office space included in the project is projected to generate 74 daily trips. As this trip generation estimate falls below the 110 daily trip threshold identified by OPR, the office portion of the proposed project qualifies as a "small project" that can be assumed to have a less than significant impact on regional VMT.

EXISTING PLUS SR 59 / OLIVE AVENUE COMMERCIAL CENTER TRAFFIC CONDITIONS

This LTA scenario assumes that the SR 59 / Olive Avenue Commercial Center project is fully developed immediately.

Traffic Volumes

Existing Plus Project Traffic Volumes. Figure 5 presents resulting a.m. and p.m. peak hour volumes assuming the project is built out with access as proposed.

Intersection Level of Service

Table 9 present the a.m. and p.m. peak hour Level of Service at each study intersection under Existing Plus Project conditions with access as proposed. As indicated projected Levels of Service at off-site intersections will fall within the LOS D minimum established by the City of Merced. Thus, the project does not cause effects that are inconsistent with the requirements of the Merced General Plan.

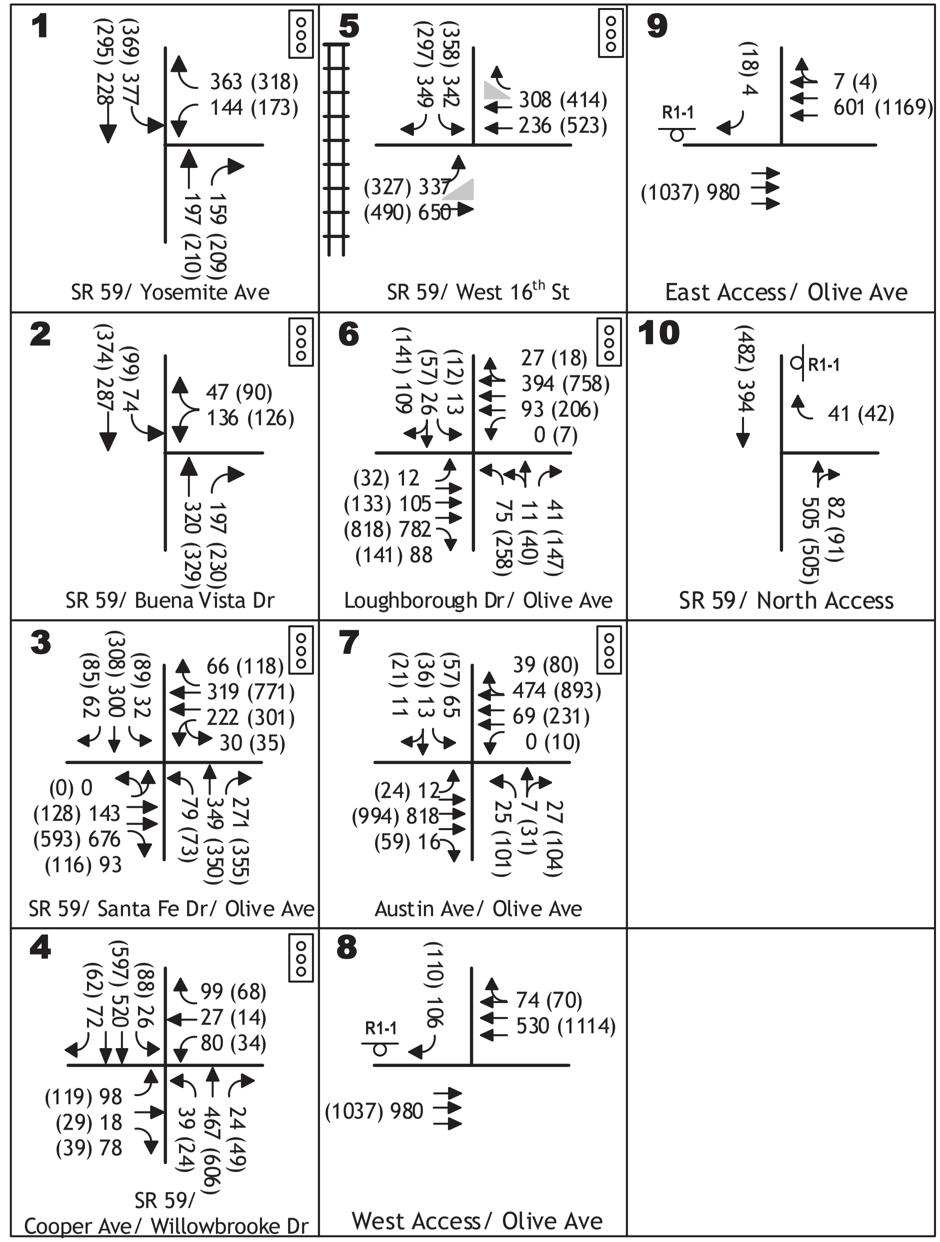
SR 59 / Olive Avenue Intersection Queues

Table 10 compares current southbound queues with those that would be expected if the proposed project is completed. As shown the same peak period queues that exceed available storage in the southbound and northbound SR 59 left turn lanes will continue to do so. Development of the project would increase the volume of traffic on the westbound Olive Avenue left turn lane, and if no changes were made to signal timing the 95th percentile queue could exceed the available storage in the p.m. peak hour.

To address the effects of the project on peak period queuing it would be appropriate to work with Caltrans District 10 to optimize the traffic signal timing at the SR 59 / Olive Avenue intersection after the proposed project is completed.

Roadway Segment Level of Service

Table 11 compares current Levels of Service based on daily traffic volumes with those conditions occurring after the project is completed. As indicated, the project will add traffic to all neighboring streets but will not result in any additional streets operating with Level of Service in excess of the LOS D standard. The project will increase the daily traffic volume on the segments of SR 59 south of the W. Olive Avenue intersection that already experience LOS F conditions. Because the minimum standard is exceeded with and without the project, the significance of the project’s impact is determined based on the percentage change in traffic volume. Project trips represent 1.6% to 1.7% of the current daily volume on SR 59 in this area. Because these increases do not exceed the 5.0% increase permitted under City traffic study guidelines, the project’s effect Is not inconsistent with the General Plan and its impact based on LOS would not be significant. Mitigation is not required.



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EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

0780-06 RA 11/30/2020

figure 5

TABLE 9
EXISTING PLUS PROJECT PEAK HOUR LEVELS OF SERVICE

#	Intersection	Control	AM Peak Hour				PM Peak Hour			
			Existing		Existing Plus Project		Existing		Existing Plus Project	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 59 / Yosemite Ave	Signal	22.2	C	22.3	C	23.2	C	23.6	C
2	SR 59 / Buena Vista Dr	Signal	8.9	A	9.0	B	12.2	B	12.2	B
3	SR 59 / Santa Fe Dr / W. Olive Ave	Signal	25.9	C	28.6	C	36.6	D	41.8	D
4	SR 59 / Cooper Ave / Willowbrook Dr	Signal	15.2	B	15.6	B	18.8	B	19.5	B
5	SR 59 / W. 16th Street	Signal	16.0	B	16.2	B	22.5	C	23.0	C
6	W. Olive Ave / Loughborough Dr	Signal	14.9	B	15.2	B	28.7	C	29.5	C
7	W. Olive Ave / Austin Ave	Signal	7.5	A	7.6	B	17.5	B	17.7	B
8	SR 59 / Project Access WB right turn	WB Stop			12.9	B			15.8	C
9	Olive Ave / Project Access SB right turn	SB Stop			13.1	B			20.6	C

BOLD values are Levels of Service in excess of LOS D. **HIGHLIGHTED** values are significantly inconsistent with the General Plan

TABLE 10
EXISTING PLUS PROJECT PEAK HOUR QUEUES AT SR 50 / OLIVE AVENUE

Approach	Lane	Storage (feet)	AM Peak Hour					PM Peak Hour				
			Existing		Existing Plus Project			Existing		Existing Plus Project		
			Volume (vph)	95th % Queue (feet)	Volume (vph) Project Only	Volume (vph) Total	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph) Project Only	Volume (vph) Total	95th % Queue (feet)
Southbound	Left turn	100	32	55	0	32	55	89	**120**	0	89	**120**
Northbound	Left turn	80	79	**110**	0	79	**110**	73	**105**	0	73	**105**
Eastbound	Left turn	460	132	200	11	143	220	116	180	12	128	205
Westbound	Left turn	500	210	280	42	252	355	286	435	50	336	**525**

HIGHLIGHTED values exceed storage by 20 feet or more

TABLE 11
EXISTING ROADWAY SEGMENTS VOLUMES AND LEVELS OF SERVICE

Street	from	To	Classification	Existing		Existing Plus Project			
				Daily Volume	LOS	Daily Volume Project Only	Daily Volume Total	Daily Volume Percentage Increase	LOS
SR 59	Buena Vista Dr	W. Olive Ave	2 lane Arterial	14,150	D	180	14,330	1.3%	D
	W. Olive Ave	BN & SF RR	2 lane Arterial	**22,610**	**F**	360	**22,970**	1.6%	**F**
	BN&SF RR	W 16th St	2 lane Arterial	**21,080**	**F**	360	**21,440**	1.7%	**F**
Santa Fe Dr	Beachwood Dr	SR 59	4 lane Arterial	20,330	C	270	20,600	1.3%	C
W. Olive Ave	SR 59	Loughborough Dr	6 lane Arterial	25,890	C	1,000	26,890	3.9%	C

BOLD values exceed minimum Level of Service standard. **HIGHLIGHTED** values are significantly inconsistent with the General Plan

Traffic Signal Warrants

The volume of traffic occurring at the project's two access points was compared to MUTCD peak hour traffic signal warrants to determine whether a traffic signal may be justified.

As shown in Table 12, with access as proposed the traffic volumes at the SR 59 access do not reach a level that satisfies peak hour warrants. Technically, the volumes at the Olive Avenue access would satisfy "rural" peak hour warrants. However, because both access points are limited to right-turns-only traffic signals would not be recommended.

TABLE 12
PEAK HOUR TRAFFIC SIGNAL WARRANTS AT PROJECT ACCESS

Location	Time	speed	Hourly Volume		Signal Warrants met	
			Major Street	Minor Street (right turn)	Rural (>40 mph)	Urban (>40 mph)
SR 59 Access	AM	40	981	41	No	No
	PM	40	1,078	42	No	No
Olive Avenue Access	AM	45	1,584	106	Yes	No
	PM	45	2,221	110	Yes	No

Impacts to Alternative Transportation Modes

Pedestrians. The project could attract pedestrians from the neighborhoods to the east, north and south of the site, although the exact number of pedestrians is unknown. The project would be accompanied by standard City of Merced street frontage improvements that include sidewalks. With the project frontage improvements, adequate facilities will exit to deliver pedestrians to the west side of SR 59 and the south side of Olive Avenue. Pedestrian access to the north is available via the existing Class I trail, and access to the east is available via existing sidewalks that begin at the project's eastern boundary.

The project site plan identifies dedicated paths of travel for pedestrians from Olive Avenue and from SR 59, as well as sidewalks around the exterior of all buildings.

Bicycles. The project can be expected to attract bicyclists from various Merced neighborhoods. As noted in the Setting, bicycle facilities already exist as Class I trails on the east side of SR 59, but are nonexistent elsewhere. Bicycle lanes are not designated on SR 59 north of Olive Avenue on Santa Fe Drive nor on Olive Avenue in the Merced County General Plan Circulation Element. Under the Circulation Element bicycles are expected to mix with motor vehicles on other streets.

Transit. The project will likely attract some persons from throughout the Merced area who may wish to use public transit. Route M1 passes the site on SR 59 every thirty minutes and M6 reaches the Olive Avenue / Loughborough Drive intersection. These services are adequate for a project of this nature, and the impacts of the project on transit are not significant.

EXISTING PLUS APPROVED PROJECTS BACKGROUND CONDITIONS

This analysis scenario considers the relative impacts of the project within a short-term future condition that assumes build out of other approved projects identified by the City of Merced.

Background Information

Land Use. City of Merced staff were asked for input regarding other approved projects that might reasonably add traffic to the study area circulation system. Particular attention was directed to approved developments at the SR 59 / Olive Avenue intersection. In this case another retail commercial project has been approved on the northwest corner of the SR 59 / Santa Fe Drive intersections, and its traffic has been included in this analysis.

The Northwest SR 59 / Olive Avenue Retail Center project will occupy 8 acres on the northwest corner of the intersection of SR 59 and Olive Avenue - Santa Fe Drive. The approved development plans include roughly 42,800 sf of retail commercial uses, including a gasoline station with convenience store, fast food restaurants, coffee kiosk and other retail uses. The development will have a right turn-only access on SR 59 north of Olive Avenue as well as two driveways on Santa Fe Drive. On the two driveways, the more westerly Santa Fe Drive access will provide full access and will be signalized.

The approved project was the subject of a traffic analysis completed in January 2018[1]. That analysis addressed both project specific and long-term cumulative conditions. Because the Santa Fe Drive traffic was added as a condition of approval after the traffic analysis was prepared, it was necessary to adjust the traffic volumes contained in that document to reflect the approved access.

The approved project is conditioned to make local circulation system improvements and to participate in the cost of long-term improvements by fair share contribution to identified projects or by paying adopted traffic impact fees. The traffic study indicated that the approved project would be required to lengthen the southbound left turn lane on SR 59 approaching the Olive Avenue intersection.

Trip Generation / Assignment. Table 13 identifies the daily and peak hour trip generation estimates prepared for the approved project. As indicated, this development is expected to generate 4,040 net new daily trips, with 300 trips in the a.m. peak hour and 320 trips in the p.m. peak hour. The new and pass-by trips associated with this use were assigned to the local street system following the assumptions contained in the 2018 traffic study.

[1] Traffic Impact Analysis for SR 59 / Olive Avenue Retail Center, KDA, January 3, 2018

TABLE 13
TRIP GENERATION FORECASTS FOR APPROVED NORTHWEST SR 59 / OLIVE RETAIL CENTER

ITE Code	Description	Quantity	Trips per Unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
	Phase 1: Gasoline with C Store and Car Wash plus Fast Food and Coffee / Kiosk								
946	*Gasoline with C Store and Car Wash*	16 positions	2,445	97	92	189	113	109	222
	Pass-by (56% daily, 62% a.m., 56% p.m.)		1,369	60	57	117	63	61	124
	Net New Trips		**1,076**	**37**	**35**	**72**	**50**	**48**	**98**
826	*Fast Food with Drive Thru*	3.46 ksf	1,717	80	77	157	59	54	113
	Pass-by (50% daily and p.m., 49% a.m.)		858	39	38	77	29	27	56
	Net New Trips		**859**	**41**	**39**	**80**	**30**	**27**	**51**
938	*Coffee / Donut Shop with Drive thru and No Indoor Seating*	*0.824 ksf*	1,648	139	139	278	35	34	69
	Pass-by (89%)		1,467	124	123	247	31	30	61
	Net New Trips		**181**	**15**	**16**	**31**	**4**	**4**	**8**
	Phase 1 Total Net New Trips		**1,116**	**93**	**90**	**183**	**84**	**79**	**163**
	Phase 2: Pharmacy, Fast Food and Retail								
826	*General Retail*	18.2 ksf	777	11	6	17	32	36	68
	Pass-by (15% daily and p.m.)		116	2	0	2	5	5	9
	Net New Trips		**661**	**8**	**5**	**13**	**27**	**31**	**58**
934	*Fast Food Restaurant with Drive Thru*	2.7 ksf	1,340	63	60	123	46	42	88
	Pass-by (50% daily and p.m., 49% a.m.)		670	31	29	60	23	21	44
	Net New Trips		**670**	**32**	**31**	**63**	**23**	**21**	**44**
880	*Pharmacy without Drive Thru*	14.0 ksf	1,261	27	14	41	58	60	118
	Pass-by (53% daily and p.m.)		668	0	0	0	31	32	63
	Net New Trips		**593**	**27**	**14**	**41**	**27**	**28**	**55**
	Phase 2 Total Net New Trips		**1,924**	**67**	**50**	**117**	**77**	**80**	**157**
PROJECT TOTAL NET NEW TRIPS			**4,040**	**160**	**140**	**300**	**161**	**159**	**320**

Existing Plus Approved Projects Traffic Volumes

Figure 6 presents resulting daily, a.m. and p.m. peak hour volumes assuming the approved project proceeds. Figure 7 illustrates volumes with the addition of trips from the proposed project.

Intersection Level of Service

Table 14 presents the a.m. and p.m. peak hour Level of Service at each study intersection under Existing Plus Approved Projects (EPAP) conditions with and without build out of the proposed project.

Existing Plus Approved Project. As indicated if the approved project proceeds alone, then the projected Levels of Service at study intersection will continue to satisfy the General Plan's minimum LOS D standard.

EPAP Plus Project. If the proposed SR 59 / Olive Avenue Commercial Center project is built out in addition to approved project and anticipated improvements are made along the project's frontage then all study intersections will also operate with Level of Service that satisfy the City's LOS D minimum, as shown in Table 14.

Peak Period Queues

Existing Plus Approved Project. As noted in Table 15, 95th percentile queue will lengthen with the development of the approved project. That project was conditioned to lengthen the southbound left turn lane on SR 59. However, that work is being deferred as the City of Merced is in the process of designing an SR 59 widening project in this area.

EPAP Plus Project. The addition of traffic from the proposed project does not appreciably change queuing conditions on northbound and southbound SR 59. With the occupancy of both the approved and proposed projects, the length of queues in the westbound Olive Avenue left turn lane would remain within the available storage. These conditions would be addressed by retiming the traffic signals as was noted under Existing Plus Project Conditions.

Roadway Segment Level of Service

Table 16 compares current Levels of Service based on daily traffic volumes with those conditions occurring after the approved project are completed with and without build out of the proposed project. As indicated, the approved project will add traffic to all neighboring streets but will not result in any additional streets operating with Level of Service in excess of the LOS D standard. Similarly, the addition of project traffic to the EPAP condition does not result in any additional segment operating with LOS in excess of the minimum.

Because the minimum standard is exceeded on SR 59 with and without the project, the significance of the project's impact is determined based on the percentage change in traffic volume. Project trips represent 1.5% to 1.6% of the current daily volume on SR 59 in this area. Because these increases do not exceed the 5.0% increase permitted under City traffic study guidelines, the project's effect is not inconsistent with the General Plan and its impact based on LOS would not be significant. Mitigation is not required.

TABLE 14
EPAP PLUS PROJECT PEAK HOUR LEVELS OF SERVICE

#	Intersection	Control	AM Peak Hour				PM Peak Hour			
			Existing plus Approved Projects		EPAP Plus Project		Existing Plus Approved Projects		EPAP Plus Project	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 59 / Yosemite Ave	Signal	22.6	C	22.6	C	24.0	C	24.4	C
2	SR 59 / Buena Vista Dr	Signal	9.3	A	9.3	B	12.5	B	12.6	B
3	SR 59 / Santa Fe Dr / W. Olive Ave	Signal	32.7	C	37.9	C	48.5	D	53.7	D
4	SR 59 / Cooper Ave / Willowbrook Dr	Signal	15.9	B	16.2	B	20.2	C	21.0	B
5	SR 59 / W. 16th Street	Signal	16.5	B	16.7	B	23.6	C	24.1	C
6	W. Olive Ave / Loughborough Dr	Signal	15.6	B	15.9	B	30.4	C	31.4	C
7	W. Olive Ave / Austin Ave	Signal	7.7	A	7.8	B	17.9	B	18.3	B
8	SR 59 / Project Access WB right turn	WB Stop			13.2	B			13.3	B
9	Olive Ave / Project Access SB right turn	SB Stop			13.6	B			21.9	B

BOLD values are Levels of Service in excess of LOS D. **HIGHLIGHTED** values are significantly inconsistent with the General Plan

TABLE 15
EPAP PLUS PROJECT PEAK HOUR QUEUES AT SR 50 / OLIVE AVENUE

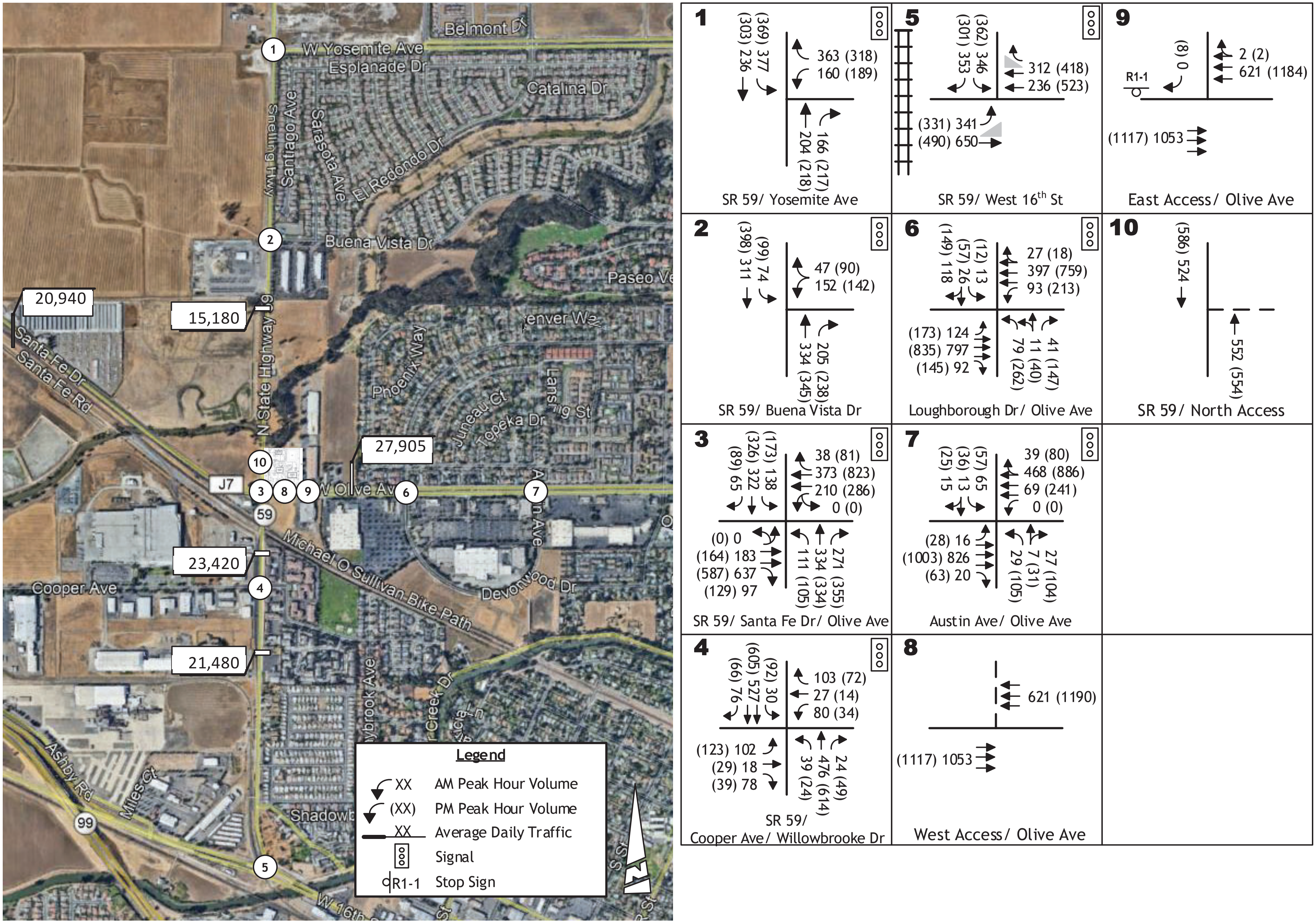
Approach	Lane	Storage (feet)	AM Peak Hour					PM Peak Hour				
			Existing Plus Approved Projects		EPAP Plus Project			Existing Plus Approved Projects		EPAP Plus Project		
			Volume (vph)	95th % Queue (feet)	Volume (vph)		95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph)		95th % Queue (feet)
					Project Only	Total				Project Only	Total	
Southbound	Left turn	100	138	205	0	138	205	173	290	0	173	305
Northbound	Left turn	80	111	175	0	111	175	105	190	0	105	190
Eastbound	Left turn	460	183	305	11	194	325	176	260	12	188	275
Westbound	Left turn	500	210	285	42	252	365	336	425	50	386	505

HIGHLIGHTED values exceed available storage by 20 or more feet

TABLE 16
EPAP PLUS PROJECT ROADWAY SEGMENTS VOLUMES AND LEVELS OF SERVICE

Street	From	To	Classification	Existing Plus Approved Projects		EPAP Plus Project			
				Daily Volume	LOS	Daily Volume			LOS
						Project Only	Total	Percentage Increase	
SR 59	Buena Vista Dr	W. Olive Ave	2 lane Arterial	15,180	D	180	15,360	1.2%	D
	W. Olive Ave	NB & SF RR	2 lane Arterial	**23,420**	**F**	360	**23,780**	1.5%	**F**
	BN&SF RR	W 16th St	2 lane Arterial	**21,480**	**F**	360	**21,840**	1.6%	**F**
Santa Fe Dr	Beachwood Dr	SR 59	4 lane Arterial	20,940	C	270	21,210	1.3%	C
W. Olive Ave	SR 59	Loughborough Dr	6 lane Arterial	27,905	C	1,000	28,905	3.6%	C

BOLD values exceed minimum Level of Service standard. **HIGHLIGHTED** values are significantly inconsistent with the General Plan



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EXISTING PLUS APPROVED PROJECTS TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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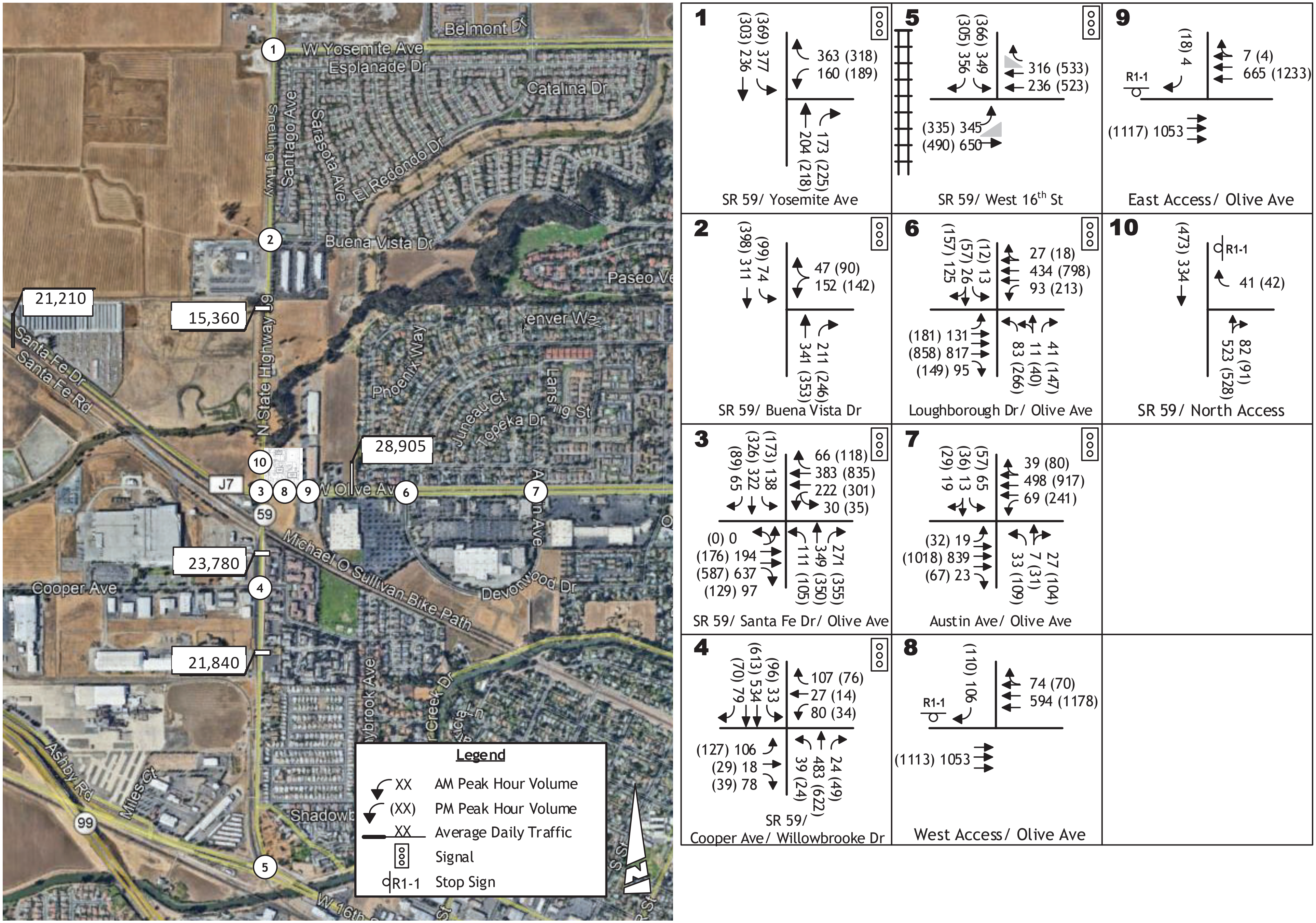
figure 6



EPAP PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 7

Traffic Signal Warrants

The volume of traffic occurring at the project's two access points was again compared to MUTCD peak hour traffic signal warrants to determine whether a traffic signal may be justified.

As shown in Table 17, with access as proposed the traffic volumes at the SR 59 access do not reach a level that satisfies peak hour warrants. Technically, the volumes at the Olive Avenue access would satisfy "rural" peak hour warrants. However, because both access points are limited to right-turns-only a traffic signal would not be recommended.

TABLE 17
PEAK HOUR TRAFFIC SIGNAL WARRANTS AT PROJECT ACCESS

Location	Time	speed	Hourly Volume		Signal Warrants met	
			Major Street	Minor Street (right turn)	Rural (>40 mph)	Urban (>40 mph)
SR 59 Access	AM	40	939	41	No	No
	PM	40	1,092	42	No	No
Olive Avenue Access	AM	45	1,721	106	Yes	No
	PM	45	2,361	110	Yes	No

LONG TERM YEAR 2035 CUMULATIVE CONDITIONS

Overview

The cumulative Year 2035 analysis presented herein is intended to evaluate the relative cumulative impact of the project assuming implementation of long-term circulation system improvements and continuing development in the Merced area. City of Merced staff directed that the cumulative analysis contained in the approved Northwest SR 59 / Olive Avenue Retail Center traffic study be the analysis basis. The Merced County Association of Governments (MCAG) regional travel demand forecasting model was the tool employed for that analysis.

Circulation System Improvements. The City of Merced General Plan Circulation Element and GPU EIR suggest that appreciable improvements will be needed to accommodate the future traffic volumes accompanying build out of the General Plan. SR 59 is projected to be a 6-lane facility from W. 16th Street to Yosemite Avenue (refer to GP Table 4.4) and a four-lane facility north of Yosemite Avenue. Santa Fe Drive and Olive Avenue are to be 6-lane arterials. Regionally, the General Plan envisions the completion of the Atwater Merced Expressway and Campus Parkway.

Anticipated funding constrains the level of future improvements assumed in this analysis. The MCAG model reflects implementation of Tier I improvements noted in the 2014 Regional Transportation Plan. In addition, at the direction of City of Merced staff the model was refined to reflect the extension of Campus Parkway beyond SR 140 to Yosemite Avenue. However, as directed by City staff the prior cumulative analysis assumed that the AME is not extended beyond its current terminus at Green Sands Avenue. Similarly, that analysis assumed that SR 59 is widened to provide two through travel lanes in each direction in the area from W. 16th Street to Olive Avenue. The section of SR 59 north of Olive Avenue was assumed to remain a two-lane roadway.

Approach to Developing Traffic Volume Forecasts. Because the Santa Fe Drive access traffic signal required of the approved project was not assumed to be constructed in its traffic study, a long term "Cumulative Plus Approved Project" traffic base was created by manually redistributing that project's trips as applicable. Figure 8 presents the resulting traffic volumes which represent the "Cumulative No Project" condition for this analysis. The trips associated with the proposed project were then superimposed onto that background condition to create the "Cumulative Plus Project" condition noted in Figure 9.

Daily Traffic Volumes / Levels of Service

Traffic Volumes. Table 18 identifies projected Year 2035 traffic volumes on study area roadway segments and resulting Levels of Service. As indicated the volume of traffic on study area roads is projected to increase appreciably in the future. The daily traffic volume on SR 59 is projected to approach the capacity of the highway with and without the proposed project.

Levels of Service. As indicated, while Santa Fe Drive and Olive Avenue are projected to operate with Level of Service that satisfy the City's LOS D minimum, SR 59 is projected to operate at LOS F with and without the project. To meet the City's minimum standard SR 59 would need to be widened in a manner that is consistent with the facility anticipated for General Plan buildout (i.e., 6-lanes) in the area south of Olive Avenue, and a four lane section is needed to the north. Alternatively, completion of other elements of the regional street system may alter the volume of traffic on these roads under Year 2035 conditions.

Because conditions exceed the adopted minimum LOS standard with and without the proposed project, the significance of the project's impact on roadway segments is determined based on the incremental change in traffic volume attributed to the project. As shown, the project adds roughly 4.0% and 1.7 % to the projected daily volume on SR 59 north and south of the W. Olive Avenue intersection. As these changes do not exceed the 5.0% increment permitted under City of Merced policy, the project's impact to mainline SR 59 is not significant, and mitigation to address this impact is not required.

TABLE 18
YEAR 2035 PLUS PROJECT ROADWAY SEGMENTS VOLUMES AND LEVELS OF SERVICE

Street	From	To	Classification	No Project		Year 2035 Plus Project			
						Daily Volume			
				Daily Volume	LOS	Project Only	Total	Percentage Increase	LOS
SR 59	Buena Vista Dr	W. Olive Ave	2 lane Arterial	**25,025**	**F**	180	**25,205**	0.7%	**F**
	W. Olive Ave	BN&SF RR	4 lane Arterial	**47,150**	**F**	360	**47,510**	0.8%	**F**
	BN&SF RR	W 16th Street	4 lane Arterial	**47,700**	**F**	360	**48,060**	0.8%	**F**
Santa Fe Drive	Beachwood Dr	SR 59	4 lane Arterial	28,220	C	270	28,490	1.0%	C
W. Olive Ave	SR 59	Loughborough Dr	6 lane Arterial	38,700	C	1,000	39,700	2.6%	C

BOLD values exceed minimum Level of Service standard. **HIGHLIGHTED** values are significantly inconsistent with the General Plan

Peak Hour Intersection Volumes and Levels of Service

Traffic Volumes. Figures 8 and 9 that identify cumulative traffic volume also identify assumed improvements to intersections that would accompany the assumed widening of SR 59 to 4 lanes from W. Olive Avenue to W. 16th Street. This analysis assumes that two through lanes would be provided in each direction on SR 59 through the Olive Avenue intersection but would not continue to Buena Vista Drive.

Intersection Level of Service. Table 19 displays the a.m. and p.m. peak hour Levels of Service at each study intersection under future Cumulative Year 2035 conditions with and without the project.

Year 2035 No Project. If the project does not proceed and the site remains vacant, then two intersections are projected to operate with Level of Service that exceed the LOS D minimum standard. The **SR 59 / Olive Avenue / Santa Fe Drive intersection** is projected to operate at LOS F. This conclusion is consistent with Level of Service projected for SR 59 on a daily basis. Regional and local improvements might be considered to alleviate this deficiency. Regionally the extension of AME to Bellevue Road could alter travel patterns, although simply completing that improvement may not result in conditions that satisfy the minimum standard, and funding for that improvement is not secured. Locally, widening the intersection to provide additional capacity would be needed to achieve LOS D. These improvements are consistent with the planned 6 lane facilities and include:

1. Reconstruct westbound Olive Avenue to provide dual left turn lanes onto southbound SR 59.
2. Reconfigure the westbound right turn lane to create a combination through & right turn lane and extend that through lane across SR 59 along the project's frontage.
3. Reconstruct the existing northbound right turn lane as a "free" right turn with median island separating eastbound and right turning traffic.
4. Reconstruct the eastbound Santa Fe Drive approach to provide dual left turn lane.

This level of improvement would yield Level of Service D in the a.m. peak hour and LOS D in the p.m. peak hour.

The **SR 59 / W. 16th Street intersection** is also projected to operate at LOS F if the proposed project does not proceed. At this location the introduction of a second southbound left turn lane would reduce delays, and LOS D would result. This improvement would be consistent with widening the highway to 4 lanes.

Year 2035 Plus Project Conditions. The addition of project trips will increase the length of delays at all intersections, but under City of Merced guidelines the impact of the project is only significant at one off-site intersection. The **SR 59 / Olive Avenue / Santa Fe Drive intersection** is projected to operate at LOS F. Because the intersection is projected to operate at LOS F with and without the project, the significance of the project's impact is determined based on the incremental difference in average delay. In this case, the project adds 10.4 and 14.6 seconds during the a.m. and p.m. peak hour, respectively. As these increases exceed the City's 5.0

second permissible increment, ***the project's effect is cumulatively inconsistent with General Plan requirements.***

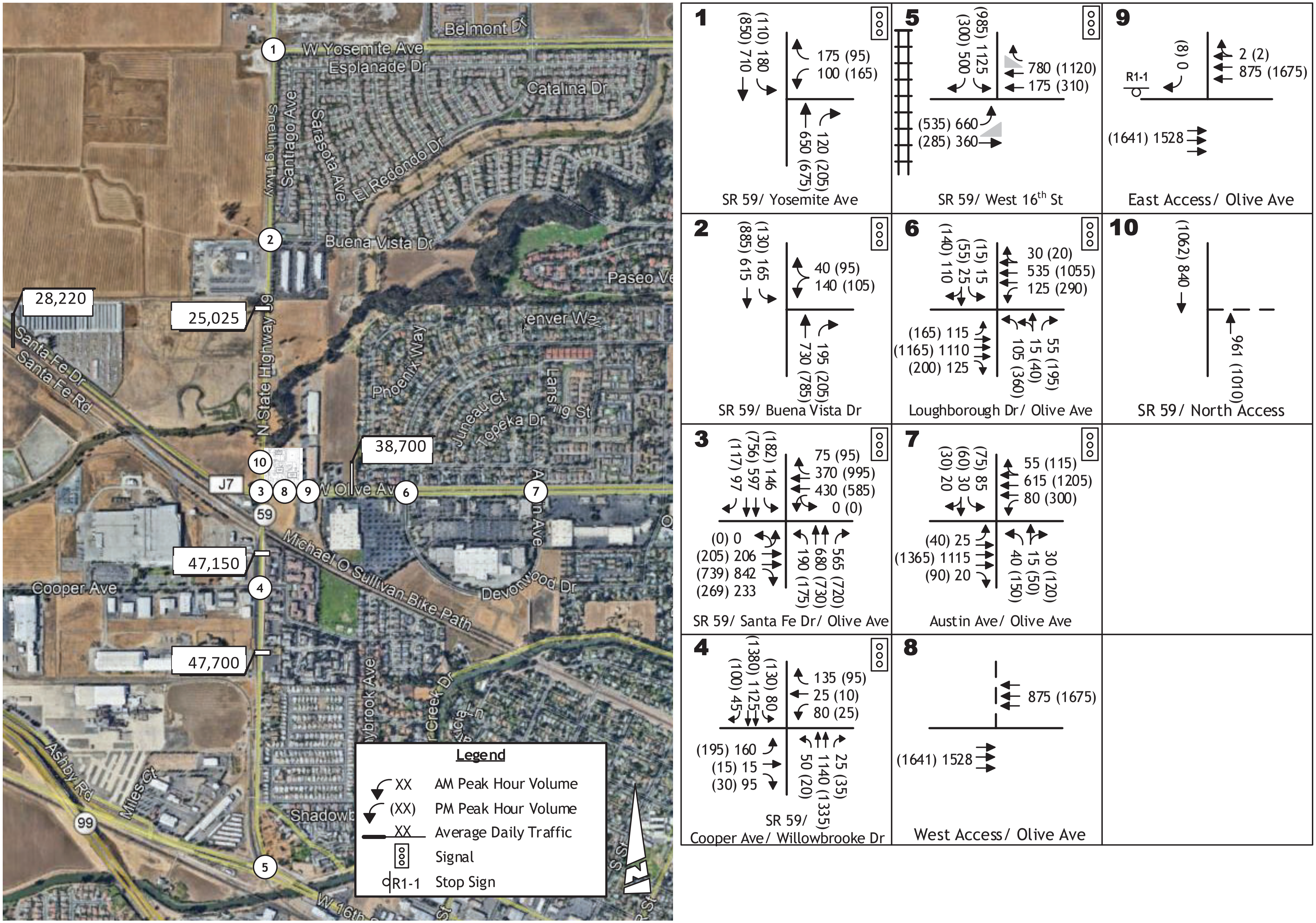
The measures identified for background conditions would also reduce the project's effect but would be close to delivering Level of Service meeting the City's LOS D minimum standard. To achieve LOS D a westbound right turn lane would need to be added on Olive Avenue. The project should contribute its fair share to the cost of these improvements, and with this improvement the project's effect is consistent with the General Plan.

The SR 59 / W. 16th Street intersection is projected to operate at LOS F with and without the project. Because the increment change in delay is less than the 5.0 second threshold employed by the City of Merced, the project's impact to this location is not significant, and mitigation is not required.

The project's access on Olive Avenue is projected to operate at LOS E in the p.m. peak hour. Adding a separate westbound right turn lane would reduce delay and provide near LOS D conditions.

<u>SR 59 / Olive Avenue Intersection Queues</u>

Table 20 compares southbound queues on SR 59 approaching the W. Olive Avenue intersection with and without the proposed project. The left turn and through lane queues will extend beyond the driveway if no improvements are made. The improvements required to mitigate cumulative intersection LOS impacts will reduce the length of queues.

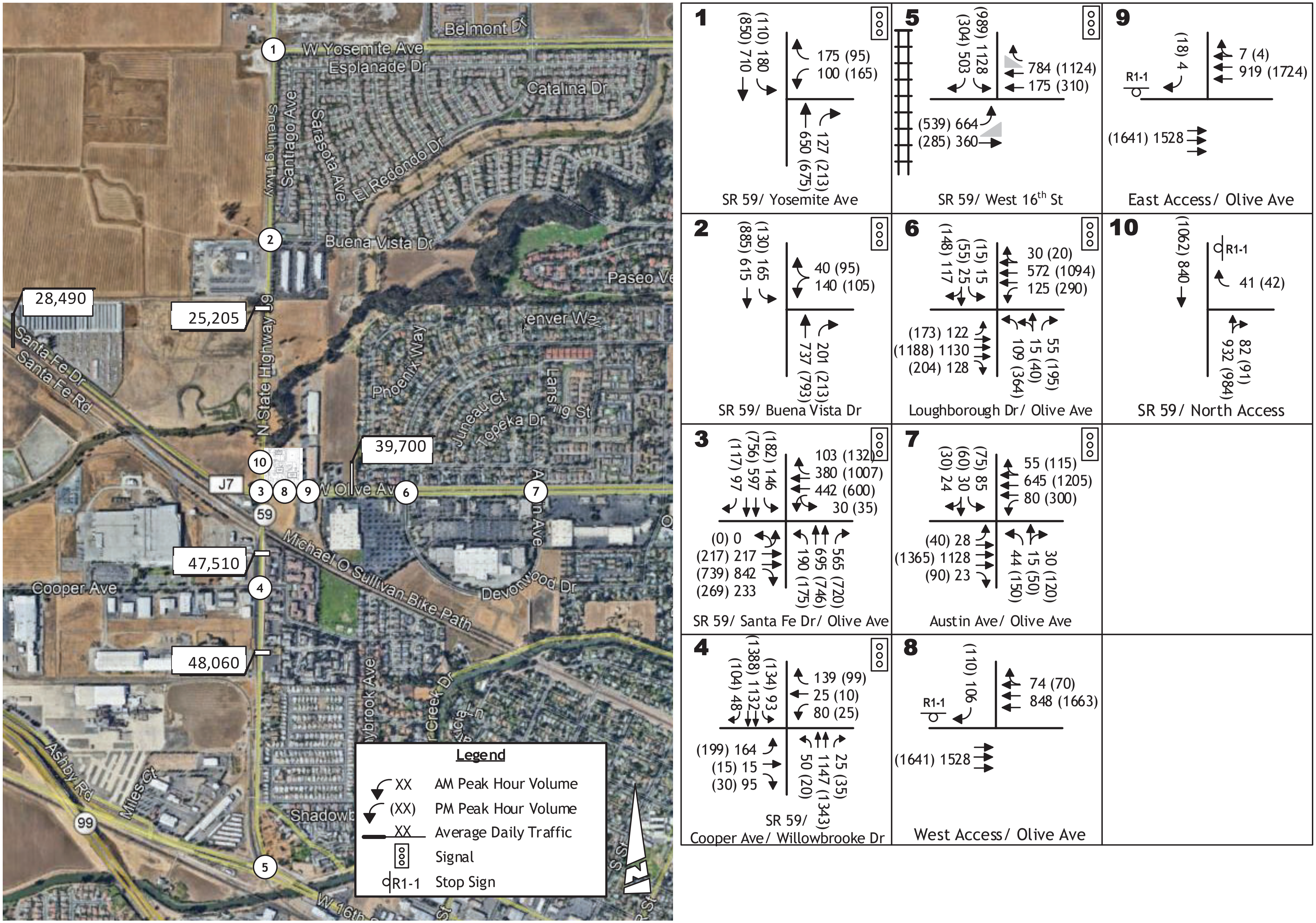


CUMULATIVE (2035) TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

0780-06 RA 11/30/2020

figure 8



CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

TABLE 19
YEAR 2035 PLUS PROJECT PEAK HOUR LEVELS OF SERVICE

#	Intersection	Control	AM Peak Hour				PM Peak Hour			
			Year 2035		2035 Plus Project		Year 2035		2035 Plus Project	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	SR 59 / Yosemite Avenue	Signal	17.2	B	17.1	B	17.7	B	17.6	B
2	SR 59 / Buena Vista Drive	Signal	21.4	C	22.3	C	40.7	D	42.3	D
3	SR 59 / Santa Fe Dr / W. Olive Ave	Signal	**107.7**	**F**	**118.1**	**F**	**128.9**	**F**	**143.5**	**F**
		w/mit	45.1	D			52.7	D		
			-	-	47.7	D	-	-	55.0	D
4	SR 59/ Cooper Ave / Willowbrook Dr	Signal	23.0	C	23.7	C	32.1	C	34.0	C
5	SR 59 / W. 16th Street	Signal	**246.2**	**F**	**248.2**	**F**	**226.9**	**F**	**228.8**	**F**
6	W. Olive Avenue / Loughborough Dr	Signal	17.5	B	17.9	B	46.4	D	48.4	D
7	W. Olive Avenue / Austin Avenue	Signal	9.0	B	9.0	B	37.5	D	37.5	D
8	SR 59 / Project Access Westbound right turn	WB Stop			12.9	B			13.2	B
9	Olive Avenue / Project Access Southbound right turn	SB Stop			16.3	C			**39.0**[1]	**E**

BOLD values are Levels of Service in excess of LOS D. **HIGHLIGHTED** values are significantly inconsistent with the General Plan.
[1] average delay is 35.4 seconds with westbound right turn lane.

TABLE 20
YEAR 2035 PLUS PROJECT PEAK HOUR QUEUES AT SR 59 / OLIVE AVENUE

Approach	Lane	Storage (feet)	AM Peak Hour					PM Peak Hour				
			Year 2035 No Project		Year 2035 Plus Project			Year 2035 No Project		Year 2035 Plus Project		
			Volume (vph)	95th % Queue (feet)	Volume (vph) Project Only	Volume (vph) Total	95th % Queue (feet)	Volume (vph)	95th % Queue (feet)	Volume (vph) Project Only	Volume (vph) Total	95th % Queue (feet)
Southbound	Left turn	100	146	**220**	0	146	**220**	182	**320**	0	182	**320**
Northbound	Left turn	80	190	**330**	0	190	**330**	175	**330**	0	175	**330**
Eastbound	Left turn	460	206	350	11	217	370	205	335	12	217	355
Westbound	Left turn	500	430	**685**	42	472	**760**	585	**940**	50	635	**1025**

HIGHLIGHTED values exceed available storage by 20 or more feet

Traffic Signal Warrants

The volume of traffic occurring at the project's two access points was again compared to MUTCD peak hour traffic signal warrants to determine whether a traffic signal may be justified.

As shown in Table 21, with access as proposed the traffic volumes at the SR 59 access do not reach a level that satisfies peak hour warrants. Technically, the volumes at the Olive Avenue access would satisfy "rural" peak hour warrants. However, because both access points are limited to right-turns-only traffic signal would not be recommended.

TABLE 21
PEAK HOUR TRAFFIC SIGNAL WARRANTS AT PROJECT ACCESS

Location	Time	speed	Hourly Volume		Signal Warrants met	
			Major Street	Minor Street (right turn)	Rural (>40 mph)	Urban (>40 mph)
SR 59 Access	AM	40	939	41	No	No
	PM	40	1,092	42	No	No
Olive Avenue Access	AM	45	1,721	106	Yes	No
	PM	45	2,361	110	Yes	No

SITE ACCESS ASSESSMENT

The adequacy of site access has been evaluated within the context of the issues which can affect the operation of adjoining public streets.

Driveway Throat Depth. The driveway throat is the area available for exiting vehicles to wait without blocking the path of arriving traffic. The adequacy of the driveway throat is determined based on the length of exiting queue at the driveway. The LOS analysis indicates that the 95^{th} percentile queue in the SR 59 driveway would be one vehicle or less, while the 95^{th} percentile queue in the Olive Avenue driveway could be 75 feet (i.e., three vehicles).

Table 22 compares forecast queue and available throat depth. As shown, under Year 2035 conditions the forecast 95^{th} percentile queues at the SR 59 driveway are less than the available throat depth, and no changes are recommended. However, the Olive Avenue driveway has a limited throat depth, and the anticipated Year 2035 queue would block entry into the southern portion of the canopy area. To address this issue it would be necessary to place a median in the driveway that would extend for 75 feet.

TABLE 22
DRIVEWAY THROAT DEPTH ANALYSIS AT PROJECT ACCESS

Location	Throat Depth (feet)	AM Peak Hour		P.m. Peak Hour	
		Volume (vph)	95^{th} % Queue (feet)	Volume (vph)	95^{th} % Queue (feet)
SR 59 Access	75	41	<25	42	<25
Olive Avenue Access	25	106	30	110	75

Fuel Delivery Truck Circulation. The fuel storage tanks are shown in the southwest corner of the site. The site plan indicates that the tanks would be accessed from the Olive Avenue driveway with travel in a clockwise direction. With installation of the driveway median island noted above, counterclockwise circulation would be needed.

Drive-Thru Aisle. The site plan places the entrance to the fast-food restaurant's drive-thru aisle towards the center of the site. The plan indicates that 200 feet of storage would be available from the delivery window to the entrance, providing room for up to ten waiting vehicles. While this storage is adequate for more fast food franchise, the entrance to the drive-thru is far enough from adjoining street to accommodate additional vehicles without interfering with the flow of traffic on public streets (i.e., 225 feet to SR 59 and 275 feet to Olive Avenue). In addition, if needed the presence of the separate parking area north of the office building provides the opportunity to circulate the drive-thru traffic into that area and provide another 200 feet of storage in advance of the entrance.

Right Turn Channelization at Entrances. The need for separate right turn lanes on the entries to project driveways has been considered within the context of the precedence under similar condition elsewhere in Merced and typical engineering practice.

The volume of traffic entering the site at each driveway has been identified. The Olive Avenue driveway is projected to handle 70 to 74 inbound peak hour right turns, while the SR 59 access is expected to accommodate 82 to 91 right turns. In both locations the number of turns reaches the level that would typically justify a separate right turn deceleration lane (i.e., more than 50 right turns).

Right turn treatments elsewhere have been reviewed. Access to Olive Avenue is limited, and separate right turn lanes have been provided elsewhere on Olive Avenue east of the project site, particularly at access to major commercial areas. However, the industrial driveways just east of the project do not have right turn lanes.

In this case separate right turn lanes are desirable and are needed to provide adequate LOS under long term conditions. A turn lane should be provided but should be incorporated into the ultimate design of the area street system. Initially, a separate right turn lane can be provided on Olive Avenue in advance of the driveway in the remaining 120 feet of project frontage. Based on the distance from the SR 59 intersection to the project's Olive Avenue driveway (i.e., 175 feet), this lane can then be extended to Olive Avenue if the City elects to install the westbound left turn lane described in the Year 2035 traffic analysis.

A northbound right turn lane should be included in the project's SR 59 frontage improvements. The design requirements of this lane would be determined in consultation with Caltrans.

IMPROVEMENTS / MITIGATION

The preceding analysis has identified impacts on traffic operations that would occur without roadway improvements or mitigation. The text that follows identifies measures for improving traffic operations with the goal of achieving the City's LOS D minimum standard.

Existing Conditions

All study intersections and roadways currently operate at LOS D or better, which satisfies the City's minimum LOS D threshold. No specific improvements are required. The volume of traffic on the two-lane portion of SR 59 south of Olive Avenue is indicative of LOS F conditions under the capacity thresholds employed for the City of Merced General Plan. The roadway would need to be widened to provide four travel lanes to meet the General Plan minimum LOS D standard.

Vehicle Miles Traveled (VMT) Impacts

The proposed project's impact based on VMT are not significant, and no improvements are required/

Existing Plus SR 59 / Olive Avenue Commercial Center Conditions

Level of Service Effects. The traffic operational analysis concludes that without improvements all study intersections will continue to operate with Levels of Service that satisfy the minimum LOS D standard.

Queueing Effects. The project will add traffic to the westbound left turn lane on Olive Avenue at the SR 59 intersection. It will be necessary to work with Caltrans to optimize the traffic signal timing at this location in order to ensure that projected 95th percentile queues do not exceed the available storage.

Roadway Segment LOS Effects. The project will add traffic to the two-lane segment of SR 59 south of Olive Avenue that already operates at LOS F. However, because the LOS D minimum is exceeded with and without the project, General Plan consistency is determined based on the relative change in the current traffic volume. Because the increase is less than the 5% threshold adopted by the City, the project's effect in this area does not results in a general plan inconsistency, and improvements are not required.

Pedestrian Impacts. The project will provide standard frontage improvements required by the City of Merced, including sidewalk on Olive Avenue.

Existing Plus Approved Project Plus SR 59 / Olive Avenue Commercial Center Conditions

Level of Service Effects. The traffic operational analysis concludes that without improvements all study intersections will continue to operate with Levels of Service that satisfy the minimum LOS D standard with and without the proposed project.

Queueing Effects. The approved project will create the need to lengthen the southbound left turn lane on SR 59 at Olive Avenue, and that improvement is a condition of approval for that project. The proposed project causes no additional queuing issues.

Roadway Segment LOS Effects. The project will add traffic to the two-lane segment of SR 59 south of Olive Avenue that operates at LOS F under Existing Plus Approved Project conditions. However, because the LOS D minimum is exceeded with and without the project, General Plan consistency is determined based on the relative change in the current traffic volume. Because the increase is less than the 5% threshold adopted by the City, the project's effect in this area does not results in a general plan inconsistency, and improvements are not required.

<u>**Cumulative Year 2035 Plus SR 59 / Olive Avenue Commercial Center Conditions**</u>

Level of Service Effects. The traffic impact analysis concludes that without improvements the **SR 59 / Olive Avenue intersection** will operate with Levels of Service that exceed the minimum LOS D standard during some time period and will be significantly affected by the project. The project shall contribute its fair share to the cost of intersection improvements that include:

- Reconstruct westbound Olive Avenue to provide dual left turn lanes onto southbound SR 59,
- Reconstruct the westbound approach to provide a third through and separate right turn lane, and extend that through lane across SR 59,
- Reconstruct the existing northbound right turn lane on SR 59 as a "free" right turn with median island separating eastbound and right turning traffic,
- Reconstruct the eastbound Santa Fe Drive approach to provide dual left turn lane.

This level of improvement would yield LOS D in the a.m. peak hour and LOS D in the p.m. peak hour.

<u>**Site Access & Circulation**</u>

Driveway Throat Depth. Under Year 2035 conditions the forecast 95th percentile queue at the Olive Avenue driveway exceeds the driveway's limited throat depth. To address this issue, it would be necessary to place a median in the driveway that would extend for 75 feet.

Fuel Delivery Truck Circulation. The fuel storage tanks are shown in the southwest corner of the site. With installation of the driveway median island noted above, counterclockwise circulation via the Olive Avenue driveway will need to be accommodated.

Right Tun Lane Channelization. The number of right turns reaches the level that would typically justify a separate right turn deceleration lane at each driveway. A separate lane is needed to provide adequate LOS at the exit under long term conditions. A westbound turn lane should be provided but should be incorporated into the ultimate design of the area street system. Initially, a separate right turn lane can be provided on Olive Avenue in advance of the driveway in the remaining 120 feet of project frontage. Based on the distance from the SR 59 intersection to the project's Olive Avenue driveway (i.e., 175 feet), this lane can then be extended to Olive Avenue if the City elects to install the westbound left turn lane described in the Year 2035 traffic analysis.

A northbound right turn lane should be included in the project's SR 59 frontage improvements. The design requirements of this lane would be determined in consultation with Caltrans.

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APPENDICES

(under separate cover)

TECHNICAL APPENDIX

FOR

SR 59 / OLIVE AVENUE COMMERCIAL CENTER TRAFFIC IMPACT ANALYSIS

Merced, CA

Prepared For:

CHASE PARTNERS
P.O. Box 3944
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Prepared By:

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November 30, 2020

1378-01

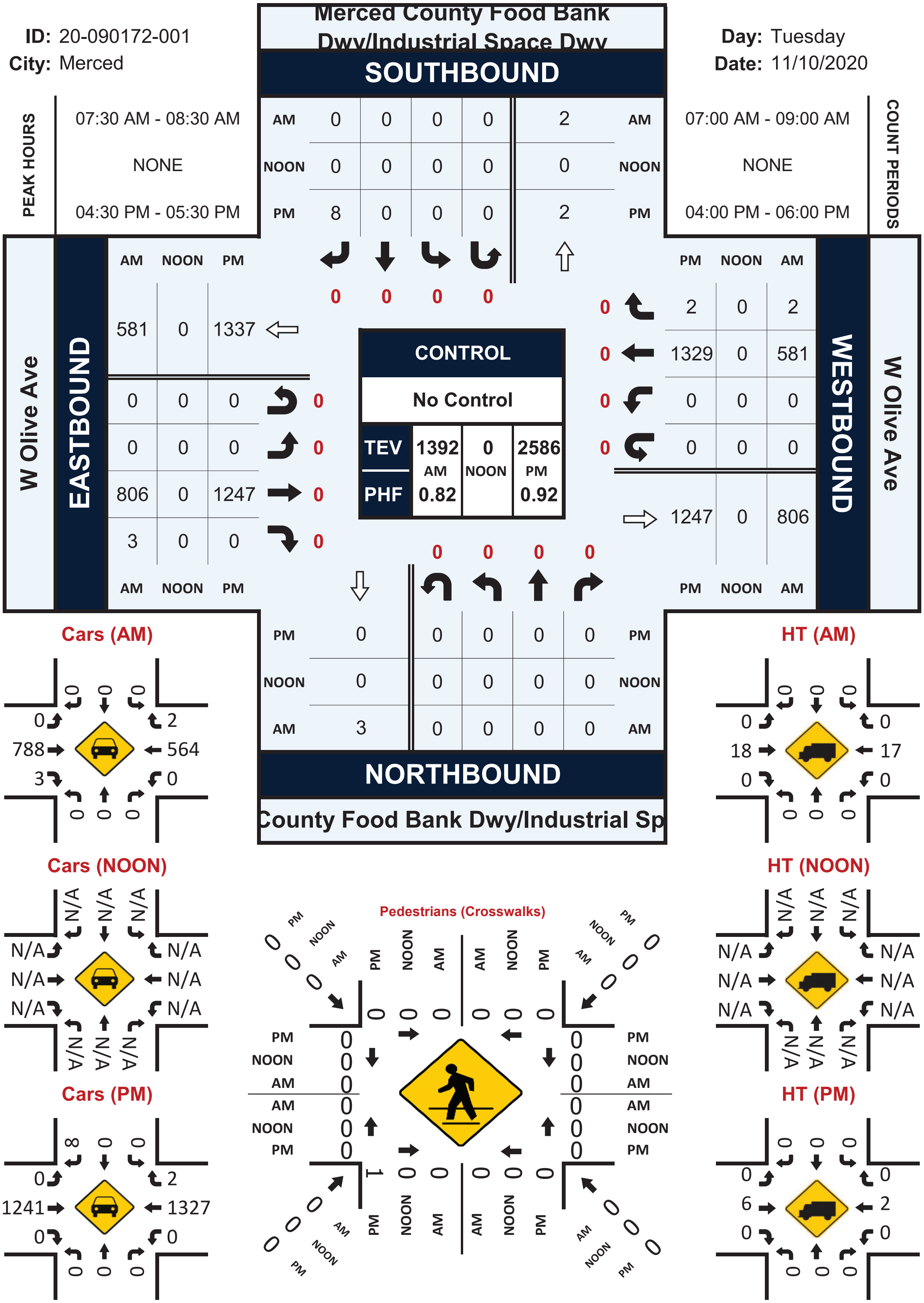
Prepared by National Data & Surveying Services

Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave

Peak Hour Turning Movement Count

ID: 20-090172-001
City: Merced

Day: Tuesday
Date: 11/10/2020



National Data & Surveying Services

Intersection Turning Movement Count

Location: Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave
City: Merced
Control: No Control

Project ID: 20-090172-001
Date: 11/10/2020

Total

NS/EW Streets:	Merced County Food Bank Dwy/Industrial Space Dwy				Merced County Food Bank Dwy/Industrial Space Dwy				W Olive Ave				W Olive Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	121	2	0	0	112	0	0	236
7:15 AM	0	0	1	0	0	0	0	0	0	142	0	0	0	129	0	0	272
7:30 AM	0	0	0	0	0	0	0	0	0	169	0	0	0	141	0	0	310
7:45 AM	0	0	0	0	0	0	0	0	0	266	2	0	0	154	0	0	422
8:00 AM	0	0	0	0	0	0	0	0	0	194	1	0	0	140	0	0	335
8:15 AM	0	0	0	0	0	0	0	0	0	177	0	0	0	146	2	0	325
8:30 AM	0	0	1	0	0	0	1	0	0	169	0	0	0	100	5	0	276
8:45 AM	0	0	0	0	0	0	0	0	0	215	1	0	0	137	7	0	360
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	3	0	0	0	1	0	0	1453	6	0	0	1059	14	0	2536
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	99.59%	0.41%	0.00%	0.00%	98.70%	1.30%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	806	3	0	0	581	2	0	1392
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.758	0.375	0.000	0.000	0.943	0.250	0.000	0.825
									0.755				0.946				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	3	0	0	307	1	0	0	295	0	0	607
4:15 PM	0	0	1	0	0	0	0	0	0	329	1	0	0	322	0	0	653
4:30 PM	0	0	0	0	0	0	1	0	0	303	0	0	0	312	0	0	616
4:45 PM	0	0	0	0	0	0	4	0	0	317	0	0	0	294	1	0	616
5:00 PM	0	0	0	0	0	0	2	0	0	291	0	0	0	358	1	0	652
5:15 PM	0	0	0	0	0	0	1	0	0	336	0	0	0	365	0	0	702
5:30 PM	0	0	0	0	0	0	0	0	0	269	0	0	0	302	0	0	571
5:45 PM	0	0	0	0	0	0	0	0	0	287	0	0	0	293	0	0	580
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	11	0	0	2439	2	0	0	2541	2	0	4997
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	99.92%	0.08%	0.00%	0.00%	99.92%	0.08%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	8	0	0	1247	0	0	0	1329	2	0	2586
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.928	0.000	0.000	0.000	0.910	0.500	0.000	0.921
					0.500				0.928				0.912				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave
City: Merced
Control: No Control

Project ID: 20-090172-001
Date: 11/10/2020

Cars

NS/EW Streets:	Merced County Food Bank Dwy/Industrial Space Dwy				Merced County Food Bank Dwy/Industrial Space Dwy				W Olive Ave				W Olive Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	0	117	2	0	0	108	0	0	228
7:15 AM	0	0	0	0	0	0	0	0	0	138	0	0	0	125	0	0	263
7:30 AM	0	0	0	0	0	0	0	0	0	167	0	0	0	137	0	0	304
7:45 AM	0	0	0	0	0	0	0	0	0	262	2	0	0	150	0	0	414
8:00 AM	0	0	0	0	0	0	0	0	0	187	1	0	0	134	0	0	322
8:15 AM	0	0	0	0	0	0	0	0	0	172	0	0	0	143	2	0	317
8:30 AM	0	0	0	0	0	0	1	0	0	166	0	0	0	98	5	0	270
8:45 AM	0	0	0	0	0	0	0	0	0	212	1	0	0	132	7	0	352
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	1	0	0	1421	6	0	0	1027	14	0	2470
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	99.58%	0.42%	0.00%	0.00%	98.66%	1.34%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	788	3	0	0	564	2	0	1357
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.752	0.375	0.000	0.000	0.940	0.250	0.000	0.819
									0.749				0.943				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	3	0	0	307	1	0	0	294	0	0	606
4:15 PM	0	0	1	0	0	0	0	0	0	327	1	0	0	318	0	0	647
4:30 PM	0	0	0	0	0	0	1	0	0	302	0	0	0	311	0	0	614
4:45 PM	0	0	0	0	0	0	4	0	0	314	0	0	0	294	1	0	613
5:00 PM	0	0	0	0	0	0	2	0	0	290	0	0	0	358	1	0	651
5:15 PM	0	0	0	0	0	0	1	0	0	335	0	0	0	364	0	0	700
5:30 PM	0	0	0	0	0	0	0	0	0	268	0	0	0	300	0	0	568
5:45 PM	0	0	0	0	0	0	0	0	0	286	0	0	0	293	0	0	579
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	11	0	0	2429	2	0	0	2532	2	0	4978
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	99.92%	0.08%	0.00%	0.00%	99.92%	0.08%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	8	0	0	1241	0	0	0	1327	2	0	2578
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.926	0.000	0.000	0.000	0.911	0.500	0.000	0.921
					0.500				0.926				0.913				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave
City: Merced
Control: No Control

Project ID: 20-090172-001
Date: 11/10/2020

HT

NS/EW Streets:	Merced County Food Bank Dwy/Industrial Space Dwy				Merced County Food Bank Dwy/Industrial Space Dwy				W Olive Ave				W Olive Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	8
7:15 AM	0	0	1	0	0	0	0	0	0	4	0	0	0	4	0	0	9
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
7:45 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	8
8:00 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0	0	13
8:15 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0	8
8:30 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	2	0	0	6
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	0	0	0	32	0	0	0	32	0	0	66
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	**07:30 AM - 08:30 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	18	0	0	0	17	0	0	35
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.000	0.000	0.000	0.708	0.000	0.000	0.673
									0.643				0.708				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	10	0	0	0	9	0	0	19
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	**04:30 PM - 05:30 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	0	8
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.667
									0.500				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave
City: Merced
Control: No Control

Project ID: 20-090172-001
Date: 11/10/2020

Bikes

NS/EW Streets:	Merced County Food Bank Dwy/Industrial Space Dwy				Merced County Food Bank Dwy/Industrial Space Dwy				W Olive Ave				W Olive Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.500
										0.250				0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Merced County Food Bank Dwy/Industrial Space Dwy & W Olive Ave **Project ID:** 20-090172-001
City: Merced **Date:** 11/10/2020

Pedestrians (Crosswalks)

NS/EW Streets:	Merced County Food Bank Dwy/Industrial Space Dwy		Merced County Food Bank Dwy/Industrial Space Dwy		W Olive Ave		W Olive Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	1
APPROACH %'s :			100.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	1
APPROACH %'s :			100.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	1
PEAK HR FACTOR :			0.250						0.250
			0.250						

National Data and Surveying Services

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7242-001 SR 59 & Yosemite Ave
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	SR 59 Southbound					Yosemite Ave Westbound					SR 59 Northbound					Yosemite Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	33	27	0	0	60	40	0	62	0	102	0	39	23	0	62	0	0	0	0	0	224	0
7:15	52	35	0	0	87	35	0	75	0	110	0	48	38	0	86	0	0	0	0	0	283	0
7:30	102	52	0	0	154	39	0	104	0	143	0	45	37	0	82	0	0	0	0	0	379	0
7:45	124	65	0	0	189	35	0	98	0	133	0	48	50	0	98	0	0	0	0	0	420	0
Total	311	179	0	0	490	149	0	339	0	488	0	180	148	0	328	0	0	0	0	0	1306	0
8:00	83	57	0	0	140	29	0	86	0	115	0	51	25	0	76	0	0	0	0	0	331	0
8:15	57	47	0	0	104	37	0	64	0	101	0	47	36	0	83	0	0	0	0	0	288	0
8:30	81	36	0	0	117	27	0	63	0	90	0	46	38	0	84	0	0	0	0	0	291	0
8:45	63	33	0	0	96	32	0	46	0	78	0	30	36	0	66	0	0	0	0	0	240	0
Total	284	173	0	0	457	125	0	259	0	384	0	174	135	0	309	0	0	0	0	0	1150	0
16:00	65	72	0	0	137	45	0	68	0	113	0	40	35	0	75	0	0	0	0	0	325	0
16:15	35	79	0	0	114	32	0	51	0	83	0	50	34	0	84	0	0	0	0	0	281	0
16:30	73	69	0	0	142	51	0	78	0	129	0	48	49	0	97	0	0	0	0	0	368	0
16:45	82	78	0	0	160	39	0	81	0	120	0	43	45	0	88	0	0	0	0	0	368	0
Total	255	298	0	0	553	167	0	278	0	445	0	181	163	0	344	0	0	0	0	0	1342	0
17:00	88	60	0	0	148	35	0	77	0	112	0	58	58	0	116	0	0	0	0	0	376	0
17:15	115	79	0	0	194	43	0	73	0	116	0	55	43	0	98	0	0	0	0	0	408	0
17:30	66	56	0	0	122	42	0	64	0	106	0	47	42	0	89	0	0	0	0	0	317	0
17:45	64	45	0	0	109	38	0	38	0	76	0	40	44	0	84	0	0	0	0	0	269	0
Total	333	240	0	0	573	158	0	252	0	410	0	200	187	0	387	0	0	0	0	0	1370	0
Grand Total	1183	890	0	0	2073	599	0	1128	0	1727	0	735	633	0	1368	0	0	0	0	0	5168	0
Apprch %	57.1%	42.9%	0.0%	0.0%		34.7%	0.0%	65.3%	0.0%		0.0%	53.7%	46.3%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	22.9%	17.2%	0.0%	0.0%	40.1%	11.6%	0.0%	21.8%	0.0%	33.4%	0.0%	14.2%	12.2%	0.0%	26.5%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Yosemite Ave Westbound					SR 59 Northbound					Yosemite Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	102	52	0	0	154	39	0	104	0	143	0	45	37	0	82	0	0	0	0	0	379
7:45	124	65	0	0	189	35	0	98	0	133	0	48	50	0	98	0	0	0	0	0	420
8:00	83	57	0	0	140	29	0	86	0	115	0	51	25	0	76	0	0	0	0	0	331
8:15	57	47	0	0	104	37	0	64	0	101	0	47	36	0	83	0	0	0	0	0	288
Total Volume	366	221	0	0	587	140	0	352	0	492	0	191	148	0	339	0	0	0	0	0	1418
% App Total	62.4%	37.6%	0.0%	0.0%		28.5%	0.0%	71.5%	0.0%		0.0%	56.3%	43.7%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.738	.850	.000	.000	.776	.897	.000	.846	.000	.860	.000	.936	.740	.000	.865	.000	.000	.000	.000	.000	.844

PM PEAK HOUR	SR 59 Southbound					Yosemite Ave Westbound					SR 59 Northbound					Yosemite Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	73	69	0	0	142	51	0	78	0	129	0	48	49	0	97	0	0	0	0	0	368
16:45	82	78	0	0	160	39	0	81	0	120	0	43	45	0	88	0	0	0	0	0	368
17:00	88	60	0	0	148	35	0	77	0	112	0	58	58	0	116	0	0	0	0	0	376
17:15	115	79	0	0	194	43	0	73	0	116	0	55	43	0	98	0	0	0	0	0	408
Total Volume	358	286	0	0	644	168	0	309	0	477	0	204	195	0	399	0	0	0	0	0	1520
% App Total	55.6%	44.4%	0.0%	0.0%		35.2%	0.0%	64.8%	0.0%		0.0%	51.1%	48.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.778	.905	.000	.000	.830	.824	.000	.954	.000	.924	.000	.879	.841	.000	.860	.000	.000	.000	.000	.000	.931

National Data and Surveying Services

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7242-001 SR 59 & Yosemite Ave
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	SR 59 Southbound					Yosemite Ave Westbound					SR 59 Northbound					Yosemite Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	2	1
Grand Total	0	0	0	2	0	0	0	1	3	1	0	1	0	0	1	0	0	0	0	0	2	5
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	50.0%		50.0%	0.0%	50.0%	0.0%		50.0%	0.0%	0.0%	0.0%		0.0%	100.0%	

PM PEAK HOUR	SR 59 Southbound					Yosemite Ave Westbound					SR 59 Northbound					Yosemite Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

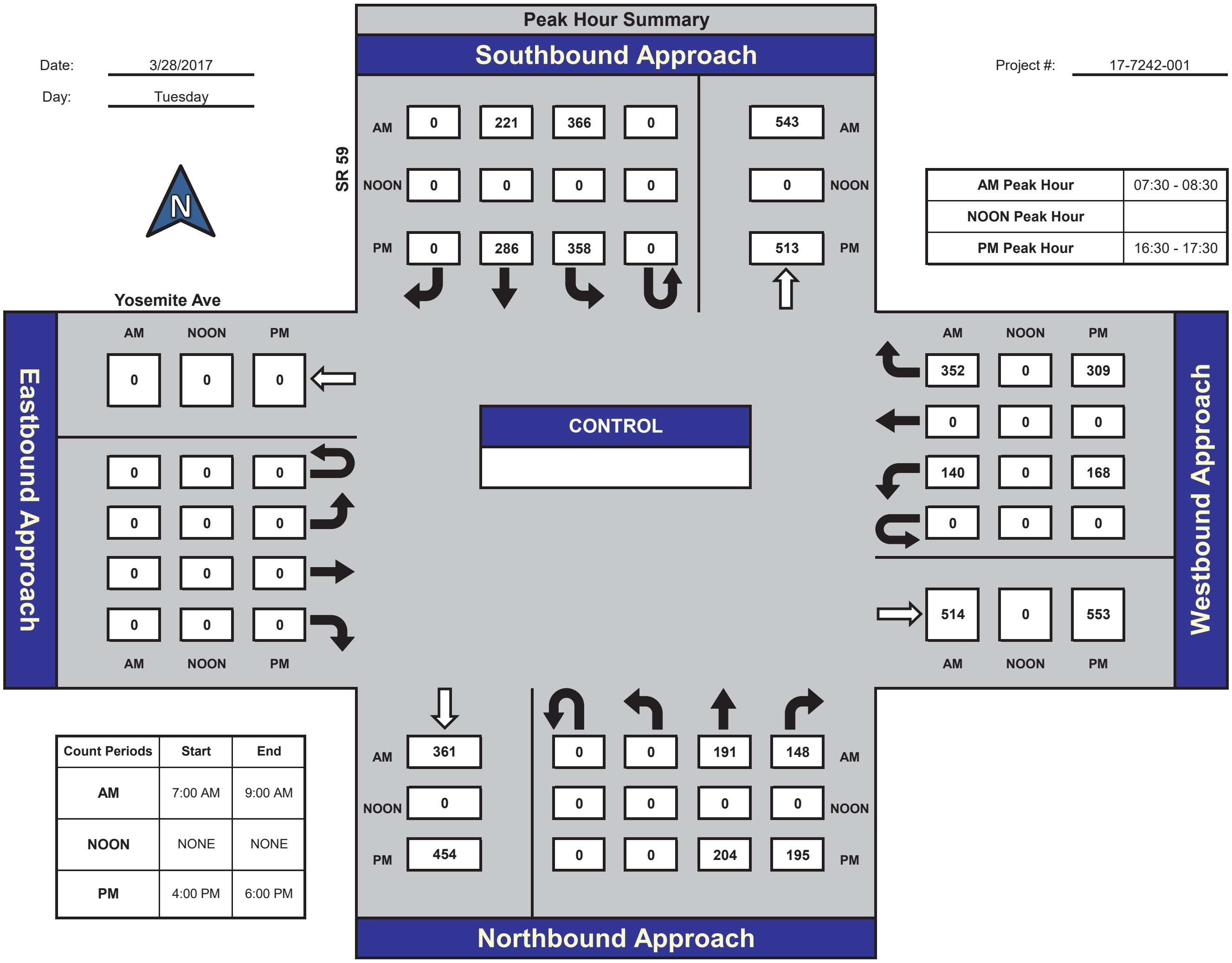
SR 59 & Yosemite Ave

Date: 3/28/2017

Day: Tuesday

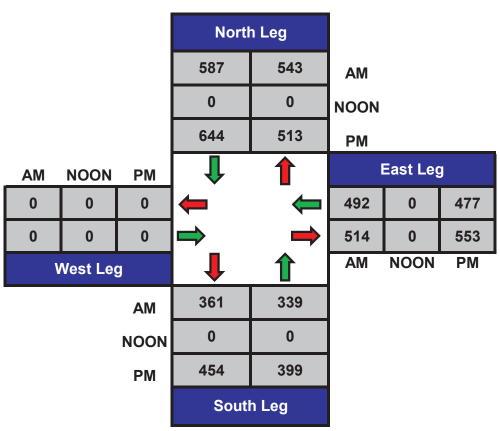
Project #: 17-7242-001

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

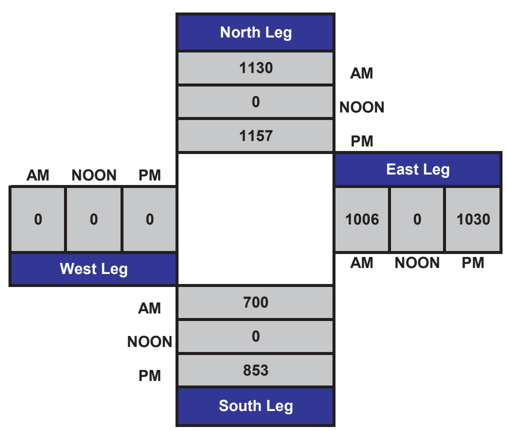


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



SR 59 & Yosemite Ave

Date: 3/28/2017

Day: Tuesday

Project #: 17-7242-001

SR 59

Yosemite Ave

N

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Peak Hour Summary

Southbound Approach

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	1	PM

Eastbound Approach

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
AM	NOON	PM

CONTROL

Westbound Approach

AM	NOON	PM
0	0	1
0	0	0
0	0	0
0	0	0
0	0	0
AM	NOON	PM

Northbound Approach

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	0	0	
NOON	0	0	
PM	0	1	

East Leg

AM	NOON	PM
0	0	1
0	0	0

West Leg

AM	NOON	PM
0	0	0
0	0	0

South Leg

AM	0	0
NOON	0	0
PM	0	0

Total Volume Per Leg

North Leg

AM	0
NOON	0
PM	1

East Leg

AM	NOON	PM
0	0	1

West Leg

AM	NOON	PM
0	0	0

South Leg

AM	0
NOON	0
PM	0

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-002 SR 59 & Buena Vista Dr
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	6	62	0	0	68	30	0	8	0	38	0	59	22	0	81	0	0	0	0	0	187	0
7:15	8	63	0	0	71	40	0	14	0	54	0	79	36	0	115	0	0	0	0	0	240	0
7:30	12	75	0	0	87	32	0	15	0	47	0	66	46	0	112	0	0	0	0	0	246	0
7:45	36	74	0	0	110	36	0	10	0	46	0	87	58	0	145	0	0	0	0	0	301	0
Total	62	274	0	0	336	138	0	47	0	185	0	291	162	0	453	0	0	0	0	0	974	0
8:00	16	67	0	0	83	24	0	7	0	31	0	72	45	0	117	0	0	0	0	0	231	0
8:15	21	68	0	0	89	20	0	10	0	30	0	73	46	0	119	0	0	0	0	0	238	0
8:30	9	52	0	0	61	30	0	12	0	42	0	72	46	0	118	0	0	0	0	0	221	0
8:45	17	47	0	0	64	27	0	12	0	39	0	55	45	0	100	0	0	0	0	0	203	0
Total	63	234	0	0	297	101	0	41	0	142	0	272	182	0	454	0	0	0	0	0	893	0
16:00	22	102	0	0	124	26	0	24	0	50	0	58	47	0	105	0	0	0	0	0	279	0
16:15	16	84	0	0	100	36	0	9	0	45	0	68	45	0	113	0	0	0	0	0	258	0
16:30	21	93	0	0	114	32	0	16	0	48	0	83	47	0	130	0	0	0	0	0	292	0
16:45	25	97	0	0	122	25	0	16	0	41	0	75	47	0	122	0	0	0	0	0	285	0
Total	84	376	0	0	460	119	0	65	0	184	0	284	186	0	470	0	0	0	0	0	1114	0
17:00	14	90	0	0	104	35	0	31	0	66	0	72	60	0	132	0	0	0	0	0	302	0
17:15	36	83	0	0	119	30	0	24	0	54	0	82	62	0	144	0	0	0	0	0	317	0
17:30	20	83	0	0	103	39	0	19	0	58	0	78	45	0	123	0	0	0	0	0	284	0
17:45	15	73	0	0	88	22	0	23	0	45	0	55	41	0	96	0	0	0	0	0	229	0
Total	85	329	0	0	414	126	0	97	0	223	0	287	208	0	495	0	0	0	0	0	1132	0
Grand Total	294	1213	0	0	1507	484	0	250	0	734	0	1134	738	0	1872	0	0	0	0	0	4113	0
Apprch %	19.5%	80.5%	0.0%	0.0%		65.9%	0.0%	34.1%	0.0%		0.0%	60.6%	39.4%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	7.1%	29.5%	0.0%	0.0%	36.6%	11.8%	0.0%	6.1%	0.0%	17.8%	0.0%	27.6%	17.9%	0.0%	45.5%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	8	63	0	0	71	40	0	14	0	54	0	79	36	0	115	0	0	0	0	0	240
7:30	12	75	0	0	87	32	0	15	0	47	0	66	46	0	112	0	0	0	0	0	246
7:45	36	74	0	0	110	36	0	10	0	46	0	87	58	0	145	0	0	0	0	0	301
8:00	16	67	0	0	83	24	0	7	0	31	0	72	45	0	117	0	0	0	0	0	231
Total Volume	72	279	0	0	351	132	0	46	0	178	0	304	185	0	489	0	0	0	0	0	1018
% App Total	20.5%	79.5%	0.0%	0.0%		74.2%	0.0%	25.8%	0.0%		0.0%	62.2%	37.8%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.500	.930	.000	.000	.798	.825	.000	.767	.000	.824	.000	.874	.797	.000	.843	.000	.000	.000	.000	.000	.846

PM PEAK HOUR	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	21	93	0	0	114	32	0	16	0	48	0	83	47	0	130	0	0	0	0	0	292
16:45	25	97	0	0	122	25	0	16	0	41	0	75	47	0	122	0	0	0	0	0	285
17:00	14	90	0	0	104	35	0	31	0	66	0	72	60	0	132	0	0	0	0	0	302
17:15	36	83	0	0	119	30	0	24	0	54	0	82	62	0	144	0	0	0	0	0	317
Total Volume	96	363	0	0	459	122	0	87	0	209	0	312	216	0	528	0	0	0	0	0	1196
% App Total	20.9%	79.1%	0.0%	0.0%		58.4%	0.0%	41.6%	0.0%		0.0%	59.1%	40.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.667	.936	.000	.000	.941	.871	.000	.702	.000	.792	.000	.940	.871	.000	.917	.000	.000	.000	.000	.000	.943

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-002 SR 59 & Buena Vista Dr
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	2	0	0	2	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	4	0
Grand Total	1	2	0	0	3	2	0	0	1	2	0	0	1	0	1	0	0	0	0	0	6	1
Apprch %	33.3%	66.7%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%				
Total %	16.7%	33.3%	0.0%		50.0%	33.3%	0.0%	0.0%		33.3%	0.0%	0.0%	16.7%		16.7%	0.0%	0.0%	0.0%		0.0%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
% App Total	100.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.000	.000		.250	.250	.000	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	SR 59 Southbound					Buena Vista Dr Westbound					SR 59 Northbound					Buena Vista Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
16:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
% App Total	0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.250	.000		.250	.250	.000	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.500

SR 59 & Buena Vista Dr

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-002

Peak Hour Summary

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

SR 59

Buena Vista Dr

Southbound Approach

AM	0	279	72	0	350
NOON	0	0	0	0	0
PM	0	363	96	0	399

Eastbound Approach

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

Westbound Approach

AM	NOON	PM
46	0	87
0	0	0
132	0	122
0	0	0
257	0	312

CONTROL

Northbound Approach

AM	411	0	0	304	185
NOON	0	0	0	0	0
PM	485	0	0	312	216

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	351	350
NOON	0	0
PM	459	399

East Leg

AM	NOON	PM
178	0	209
257	0	312

West Leg

AM	NOON	PM
0	0	0
0	0	0

South Leg

AM	411	489
NOON	0	0
PM	485	528

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	701	0	858
East Leg	435	0	521
West Leg	0	0	0
South Leg	900	0	1013

SR 59 & Buena Vista Dr

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-002

Peak Hour Summary

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

SR 59

Buena Vista Dr

Southbound Approach

AM	0	0	1	0	0
NOON	0	0	0	0	0
PM	0	1	0	0	0

Eastbound Approach

	AM	NOON	PM
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	0	0	0

Westbound Approach

	AM	NOON	PM
	0	0	0
	0	0	0
	1	0	1
	0	0	0
	1	0	0

CONTROL

Northbound Approach

AM	1	0	0	0	0
NOON	0	0	0	0	0
PM	2	0	0	0	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	1	0
NOON	0	0
PM	1	0

East Leg

	AM	NOON	PM
	1	0	1
	1	0	0

West Leg

	AM	NOON	PM
	0	0	0
	0	0	0

South Leg

AM	1	0
NOON	0	0
PM	2	0

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	1	0	1
East Leg	2	0	1
West Leg	0	0	0
South Leg	1	0	2

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-003 SR 59 & Santa Fe Dr/Olive Ave
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	3	73	13	0	89	46	47	6	1	100	19	60	40	0	119	12	73	24	0	109	417	1
7:15	9	83	16	0	108	45	71	11	1	128	6	80	49	0	135	27	88	24	0	139	510	1
7:30	6	72	14	0	92	45	77	7	0	129	25	88	69	0	182	28	148	18	0	194	597	0
7:45	7	90	16	0	113	62	69	9	0	140	16	97	73	0	186	43	182	22	0	247	686	0
Total	25	318	59	0	402	198	264	33	2	497	66	325	231	0	622	110	491	88	0	689	2210	2
8:00	8	64	16	0	88	47	82	7	1	137	15	67	60	0	142	25	172	27	0	224	591	1
8:15	10	65	14	0	89	49	72	14	0	135	21	72	61	0	154	32	154	23	0	209	587	0
8:30	9	53	18	0	80	32	80	16	3	131	14	73	67	0	154	19	134	27	0	180	545	3
8:45	10	57	19	0	86	46	81	19	0	146	15	66	79	0	160	41	112	25	0	178	570	0
Total	37	239	67	0	343	174	315	56	4	549	65	278	267	0	610	117	572	102	0	791	2293	4
16:00	18	74	20	0	112	77	170	28	1	276	15	66	104	0	185	20	150	28	0	198	771	1
16:15	27	81	24	0	132	60	169	20	0	249	19	80	77	0	176	21	176	30	0	227	784	0
16:30	16	76	24	0	116	70	168	18	0	256	21	84	94	0	199	32	133	28	0	193	764	0
16:45	21	72	17	0	110	68	185	14	0	267	21	88	97	0	206	25	116	36	0	177	760	0
Total	82	303	85	0	470	275	692	80	1	1048	76	318	372	0	766	98	575	122	0	795	3079	1
17:00	21	66	25	0	112	67	204	20	0	291	11	54	73	0	138	24	179	24	0	227	768	0
17:15	28	85	17	0	130	73	180	27	0	280	18	98	81	0	197	32	145	25	0	202	809	0
17:30	23	75	12	0	110	62	146	16	0	224	20	77	76	0	173	23	126	23	0	172	679	0
17:45	18	71	17	0	106	73	134	16	0	223	16	74	82	0	172	18	139	26	0	183	684	0
Total	90	297	71	0	458	275	664	79	0	1018	65	303	312	0	680	97	589	98	0	784	2940	0
Grand Total	234	1157	282	0	1673	922	1935	248	7	3112	272	1224	1182	0	2678	422	2227	410	0	3059	10522	7
Apprch %	14.0%	69.2%	16.9%	0.0%		29.6%	62.2%	8.0%	0.2%		10.2%	45.7%	44.1%	0.0%		13.8%	72.8%	13.4%	0.0%			
Total %	2.2%	11.0%	2.7%	0.0%	15.9%	8.8%	18.4%	2.4%	0.1%	29.6%	2.6%	11.6%	11.2%	0.0%	25.5%	4.0%	21.2%	3.9%	0.0%	29.1%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	6	72	14	0	92	45	77	7	0	129	25	88	69	0	182	28	148	18	0	194	597
7:45	7	90	16	0	113	62	69	9	0	140	16	97	73	0	186	43	182	22	0	247	686
8:00	8	64	16	0	88	47	82	7	1	137	15	67	60	0	142	25	172	27	0	224	591
8:15	10	65	14	0	89	49	72	14	0	135	21	72	61	0	154	32	154	23	0	209	587
Total Volume	31	291	60	0	382	203	300	37	1	541	77	324	263	0	664	128	656	90	0	874	2461
% App Total	8.1%	76.2%	15.7%	0.0%		37.5%	55.5%	6.8%	0.2%		11.6%	48.8%	39.6%	0.0%		14.6%	75.1%	10.3%	0.0%		
PHF	.775	.808	.938	.000	.845	.819	.915	.661	.250	.966	.770	.835	.901	.000	.892	.744	.901	.833	.000	.885	.897

PM PEAK HOUR	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	16	76	24	0	116	70	168	18	0	256	21	84	94	0	199	32	133	28	0	193	764
16:45	21	72	17	0	110	68	185	14	0	267	21	88	97	0	206	25	116	36	0	177	760
17:00	21	66	25	0	112	67	204	20	0	291	11	54	73	0	138	24	179	24	0	227	768
17:15	28	85	17	0	130	73	180	27	0	280	18	98	81	0	197	32	145	25	0	202	809
Total Volume	86	299	83	0	468	278	737	79	0	1094	71	324	345	0	740	113	573	113	0	799	3101
% App Total	18.4%	63.9%	17.7%	0.0%		25.4%	67.4%	7.2%	0.0%		9.6%	43.8%	46.6%	0.0%		14.1%	71.7%	14.1%	0.0%		
PHF	.768	.879	.830	.000	.900	.952	.903	.731	.000	.940	.845	.827	.889	.000	.898	.883	.800	.785	.000	.880	.958

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-003 SR 59 & Santa Fe Dr/Olive Ave
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	1	0	1	4	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	1	1	0	2	5	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Total	0	2	0	0	2	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:30	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1	2
16:45	0	1	0	0	1	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	3	1
Total	0	1	0	0	1	1	0	1	3	2	0	2	0	0	2	0	0	0	0	0	5	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	2	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2	0
Total	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	1	0	4	1
Grand Total	0	5	0	0	5	2	0	2	3	4	0	5	1	1	6	0	1	1	1	2	17	5
Apprch %	0.0%	100.0%	0.0%			50.0%	0.0%	50.0%			0.0%	83.3%	16.7%			0.0%	50.0%	50.0%				
Total %	0.0%	29.4%	0.0%		29.4%	11.8%	0.0%	11.8%		23.5%	0.0%	29.4%	5.9%		35.3%	0.0%	5.9%	5.9%		11.8%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	1	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.250		.250	.000	.250	.000		.250	.500

PM PEAK HOUR	SR 59 Southbound					Santa Fe Dr/Olive Ave Westbound					SR 59 Northbound					Santa Fe Dr/Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	1
16:45	0	1	0	0	1	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	2
Total Volume	0	2	0	0	2	1	0	1	3	2	0	2	0	0	2	0	0	0	1	0	6
% App Total	0.0%	100.0%	0.0%			50.0%	0.0%	50.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.250	.000	.250		.500	.000	.500	.000		.500	.000	.000	.000		.000	.500

SR 59 & Santa Fe Dr/Olive Ave

Peak Hour Summary

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-003

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach (SR 59)

	Right	Through	Left	U-Turn	Out
AM	60	291	31	0	489
NOON	0	0	0	0	0
PM	83	299	86	0	516

Eastbound Approach (Santa Fe Dr/Olive Ave)

	AM	NOON	PM
Out	437	0	891
U-Turn	0	0	0
Left	128	0	113
Through	656	0	573
Right	90	0	113

Westbound Approach

	AM	NOON	PM
Right	37	0	79
Through	300	0	737
Left	203	0	278
U-Turn	1	0	0
Out	951	0	1004

CONTROL

Northbound Approach

	Out	U-Turn	Left	Through	Right
AM	584	0	77	324	263
NOON	0	0	0	0	0
PM	690	0	71	324	345

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg	AM	382	489
North Leg	NOON	0	0
North Leg	PM	468	516
West Leg	AM	437	874
West Leg	NOON	0	0
West Leg	PM	891	799
East Leg	AM	541	951
East Leg	NOON	0	0
East Leg	PM	1094	1004
South Leg	AM	584	664
South Leg	NOON	0	0
South Leg	PM	690	740

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	871	0	984
West Leg	1311	0	1690
East Leg	1492	0	2098
South Leg	1248	0	1430

SR 59 & Santa Fe Dr/Olive Ave

Date: 3/28/2017

Day: Tuesday

Project #: 17-7242-003

Peak Hour Summary

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

SR 59

Santa Fe Dr/Olive Ave

Southbound Approach

AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	2	0	0	3

Eastbound Approach

AM	NOON	PM
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0

Westbound Approach

AM	NOON	PM
0	0	1
0	0	0
0	0	1
0	0	0
2	0	0

CONTROL

Northbound Approach

AM	0	0	0	0	1
NOON	0	0	0	0	0
PM	3	0	0	2	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	0	0
NOON	0	0
PM	2	3

West Leg

AM	NOON	PM
0	0	0
1	0	0

East Leg

AM	NOON	PM
0	0	2
2	0	0

South Leg

AM	0	1
NOON	0	0
PM	3	2

Total Volume Per Leg

North Leg

AM	0
NOON	0
PM	5

West Leg

AM	NOON	PM
1	0	0

East Leg

AM	NOON	PM
2	0	2

South Leg

AM	1
NOON	0
PM	5

National Data and Surveying Services

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7242-004 SR 59 & Cooper Ave/Willowbrook Dr
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	3	118	11	0	132	16	8	17	0	41	13	75	4	0	92	35	8	45	0	88	353	0
7:15	7	139	12	0	158	17	3	21	0	41	12	108	8	0	128	19	1	12	0	32	359	0
7:30	4	108	15	0	127	23	6	25	0	54	5	131	5	0	141	19	5	10	0	34	356	0
7:45	8	133	29	0	170	22	9	29	0	60	8	133	6	0	147	18	3	9	0	30	407	0
Total	22	498	67	0	587	78	26	92	0	196	38	447	23	0	508	91	17	76	0	184	1475	0
8:00	9	122	10	1	142	16	3	20	0	39	13	121	5	0	139	8	0	8	0	16	336	1
8:15	6	111	17	0	134	11	0	14	0	25	12	132	6	0	150	15	1	10	0	26	335	0
8:30	6	109	5	0	120	10	3	9	0	22	6	135	9	0	150	8	1	9	0	18	310	0
8:45	13	106	12	0	131	4	2	14	0	20	8	127	5	0	140	11	3	2	0	16	307	0
Total	34	448	44	1	527	41	8	57	0	106	39	515	25	0	579	42	5	29	0	76	1288	1
16:00	22	154	13	0	189	5	6	13	0	24	4	140	12	0	156	29	5	13	0	47	416	0
16:15	22	140	19	0	181	7	2	16	0	25	5	147	10	0	162	22	6	5	0	33	401	0
16:30	19	136	10	0	165	10	4	20	0	34	7	125	14	0	146	46	7	9	0	62	407	0
16:45	19	142	14	0	175	11	2	13	0	26	7	169	12	0	188	15	10	11	0	36	425	0
Total	82	572	56	0	710	33	14	62	0	109	23	581	48	0	652	112	28	38	0	178	1649	0
17:00	23	118	9	0	150	1	5	17	0	23	1	118	15	0	134	14	6	10	0	30	337	0
17:15	21	145	12	0	178	3	2	20	0	25	4	159	16	0	179	13	10	1	0	24	406	0
17:30	18	135	15	0	168	3	2	15	0	20	4	147	17	0	168	15	4	10	0	29	385	0
17:45	26	122	16	0	164	9	1	9	0	19	12	144	16	0	172	12	1	2	0	15	370	0
Total	88	520	52	0	660	16	10	61	0	87	21	568	64	0	653	54	21	23	0	98	1498	0
Grand Total	226	2038	219	1	2484	168	58	272	0	498	121	2111	160	0	2392	299	71	166	0	536	5910	1
Apprch %	9.1%	82.0%	8.8%	0.0%		33.7%	11.6%	54.6%	0.0%		5.1%	88.3%	6.7%	0.0%		55.8%	13.2%	31.0%	0.0%			
Total %	3.8%	34.5%	3.7%	0.0%	42.0%	2.8%	1.0%	4.6%	0.0%	8.4%	2.0%	35.7%	2.7%	0.0%	40.5%	5.1%	1.2%	2.8%	0.0%	9.1%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	3	118	11	0	132	16	8	17	0	41	13	75	4	0	92	35	8	45	0	88	353
7:15	7	139	12	0	158	17	3	21	0	41	12	108	8	0	128	19	1	12	0	32	359
7:30	4	108	15	0	127	23	6	25	0	54	5	131	5	0	141	19	5	10	0	34	356
7:45	8	133	29	0	170	22	9	29	0	60	8	133	6	0	147	18	3	9	0	30	407
Total Volume	22	498	67	0	587	78	26	92	0	196	38	447	23	0	508	91	17	76	0	184	1475
% App Total	3.7%	84.8%	11.4%	0.0%		39.8%	13.3%	46.9%	0.0%		7.5%	88.0%	4.5%	0.0%		49.5%	9.2%	41.3%	0.0%		
PHF	.688	.896	.578	.000	.863	.848	.722	.793	.000	.817	.731	.840	.719	.000	.864	.650	.531	.422	.000	.523	.906

PM PEAK HOUR	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	22	154	13	0	189	5	6	13	0	24	4	140	12	0	156	29	5	13	0	47	416
16:15	22	140	19	0	181	7	2	16	0	25	5	147	10	0	162	22	6	5	0	33	401
16:30	19	136	10	0	165	10	4	20	0	34	7	125	14	0	146	46	7	9	0	62	407
16:45	19	142	14	0	175	11	2	13	0	26	7	169	12	0	188	15	10	11	0	36	425
Total Volume	82	572	56	0	710	33	14	62	0	109	23	581	48	0	652	112	28	38	0	178	1649
% App Total	11.5%	80.6%	7.9%	0.0%		30.3%	12.8%	56.9%	0.0%		3.5%	89.1%	7.4%	0.0%		62.9%	15.7%	21.3%	0.0%		
PHF	.932	.929	.737	.000	.939	.750	.583	.775	.000	.801	.821	.859	.857	.000	.867	.609	.700	.731	.000	.718	.970

National Data and Surveying Services

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7242-004 SR 59 & Cooper Ave/Willowbrook Dr
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	1	0	0	0	1	0	1	0	0	2	0	2	2	0	0	0	2	5	1
7:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0
7:30	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
7:45	0	0	0	0	0	0	0	1	1	1	0	1	1	0	2	0	0	0	0	0	3	1
Total	0	1	2	2	3	0	0	2	2	2	0	1	3	0	4	2	0	1	0	3	12	4
8:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
8:30	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2	1
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	2	1	0	0	1	1	1	0	0	0	1	0	0	1	0	0	1	3	4
16:00	0	0	2	0	2	0	0	0	1	0	1	1	0	0	2	3	0	0	0	3	7	1
16:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
16:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0
Total	0	2	3	0	5	0	0	0	1	0	1	3	0	0	4	4	0	1	0	5	14	1
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	2
17:30	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0
17:45	0	0	1	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	5
Total	0	1	1	0	2	0	0	0	8	0	0	2	0	0	2	0	0	0	0	0	4	8
Grand Total	0	4	7	4	11	0	0	3	12	3	1	6	3	1	10	6	1	2	0	9	33	17
Apprch %	0.0%	36.4%	63.6%			0.0%	0.0%	100.0%			10.0%	60.0%	30.0%			66.7%	11.1%	22.2%				
Total %	0.0%	12.1%	21.2%		33.3%	0.0%	0.0%	9.1%		9.1%	3.0%	18.2%	9.1%		30.3%	18.2%	3.0%	6.1%		27.3%	100.0%	

AM PEAK HOUR	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	0	0	1	0	0	0	1	0	1	0	0	2	0	2	2	0	0	0	2	5
7:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
7:30	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45	0	0	0	0	0	0	0	1	1	1	0	1	1	0	2	0	0	0	0	0	3
Total Volume	0	1	2	2	3	0	0	2	2	2	0	1	3	0	4	2	0	1	0	3	12
% App Total	0.0%	33.3%	66.7%			0.0%	0.0%	100.0%			0.0%	25.0%	75.0%			66.7%	0.0%	33.3%			
PHF	.000	.250	.500		.375	.000	.000	.500		.500	.000	.250	.375		.500	.250	.000	.250		.375	.600

PM PEAK HOUR	SR 59 Southbound					Cooper Ave/Willowbrook Dr Westbound					SR 59 Northbound					Cooper Ave/Willowbrook Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	2	0	2	0	0	0	1	0	1	1	0	0	2	3	0	0	0	3	7
16:15	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
16:45	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total Volume	0	2	3	0	5	0	0	0	1	0	1	3	0	0	4	4	0	1	0	5	14
% App Total	0.0%	40.0%	60.0%			0.0%	0.0%	0.0%			25.0%	75.0%	0.0%			80.0%	0.0%	20.0%			
PHF	.000	.500	.375		.625	.000	.000	.000		.000	.250	.375	.000		.500	.333	.000	.250		.417	.500

SR 59 & Cooper Ave/Willowbrook Dr

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-004

N

SR 59

Cooper Ave/Willowbrook Dr

Peak Hour Summary

AM Peak Hour	07:00 - 08:00
NOON Peak Hour	
PM Peak Hour	16:00 - 17:00

Southbound Approach

	Right	Thru	Left	U-Turn	Out
AM	67	498	22	0	630
NOON	0	0	0	0	0
PM	56	572	82	0	755

Eastbound Approach

	AM	NOON	PM
Out	131	0	93
U-Turn	0	0	0
Left	91	0	112
Thru	17	0	28
Right	76	0	38

Westbound Approach

	AM	NOON	PM
Right	92	0	62
Thru	26	0	14
Left	78	0	33
U-Turn	0	0	0
Out	62	0	158

Northbound Approach

	Out	U-Turn	Left	Thru	Right
AM	652	0	38	447	23
NOON	0	0	0	0	0
PM	643	0	23	581	48

CONTROL

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	587	630
North Leg	NOON	0	0
North Leg	PM	710	755
South Leg	AM	652	508
South Leg	NOON	0	0
South Leg	PM	643	652

West Leg	AM	NOON	PM
	131	0	93
	184	0	178

East Leg	AM	NOON	PM
	196	0	109
	62	0	158

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	1217	0	1465
West Leg	315	0	271
East Leg	258	0	267
South Leg	1160	0	1295

SR 59 & Cooper Ave/Willowbrook Dr

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-004

Peak Hour Summary

AM Peak Hour	07:00 - 08:00
NOON Peak Hour	
PM Peak Hour	16:00 - 17:00

N

SR 59

Cooper Ave/Willowbrook Dr

CONTROL

Southbound Approach

	Right	Through	Left	U-Turn	Out
AM	2	1	0	0	5
NOON	0	0	0	0	0
PM	3	2	0	0	7

Westbound Approach

	AM	NOON	PM
Right	2	0	0
Through	0	0	0
Left	0	0	0
U-Turn	0	0	0
Out	3	0	0

Northbound Approach

	Out	U-Turn	Left	Through	Right
AM	2	0	0	1	3
NOON	0	0	0	0	0
PM	3	0	1	3	0

Eastbound Approach

	AM	NOON	PM
Out	2	0	4
U-Turn	0	0	0
Left	2	0	4
Through	0	0	0
Right	1	0	1

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	3	5
North Leg	NOON	0	0
North Leg	PM	5	7
East Leg	AM	2	3
East Leg	NOON	0	0
East Leg	PM	0	0
South Leg	AM	2	4
South Leg	NOON	0	0
South Leg	PM	3	4
West Leg	AM	2	3
West Leg	NOON	0	0
West Leg	PM	4	5

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	8	0	12
East Leg	5	0	0
South Leg	6	0	7
West Leg	5	0	9

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-005 SR 59 & West 16th St
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	71	0	78	0	149	0	44	53	0	97	0	0	0	0	0	44	77	0	0	121	367	0
7:15	84	0	110	0	194	0	45	74	0	119	0	0	0	0	0	77	112	0	0	189	502	0
7:30	74	0	79	0	153	0	64	71	0	135	0	0	0	0	0	87	168	0	0	255	543	0
7:45	90	0	83	0	173	0	48	64	0	112	0	0	0	0	0	93	198	0	0	291	576	0
Total	319	0	350	0	669	0	201	262	0	463	0	0	0	0	0	301	555	0	0	856	1988	0
8:00	81	0	64	0	145	0	72	86	0	158	0	0	0	0	0	66	153	0	0	219	522	0
8:15	78	0	60	0	138	0	57	79	0	136	0	0	0	0	0	65	139	0	0	204	478	0
8:30	65	0	47	0	112	0	64	80	0	144	0	0	0	0	0	82	134	0	0	216	472	0
8:45	85	0	60	0	145	0	49	78	0	127	0	0	0	0	0	71	109	0	0	180	452	0
Total	309	0	231	0	540	0	242	323	0	565	0	0	0	0	0	284	535	0	0	819	1924	0
16:00	90	0	65	0	155	0	100	105	0	205	0	0	0	0	0	73	143	0	0	216	576	0
16:15	80	0	97	0	177	0	96	103	0	199	0	0	0	0	0	78	110	0	0	188	564	0
16:30	92	0	71	0	163	0	108	109	0	217	0	0	0	0	0	71	117	0	0	188	568	0
16:45	85	0	70	0	155	0	117	102	0	219	0	0	0	0	0	91	125	0	0	216	590	0
Total	347	0	303	0	650	0	421	419	0	840	0	0	0	0	0	313	495	0	0	808	2298	0
17:00	83	0	60	0	143	0	152	91	0	243	0	0	0	0	0	74	138	0	0	212	598	0
17:15	84	0	83	0	167	0	131	96	0	227	0	0	0	0	0	78	96	0	0	174	568	0
17:30	78	0	69	0	147	0	95	104	0	199	0	0	0	0	0	63	91	0	0	154	500	0
17:45	91	0	57	0	148	0	85	97	0	182	0	0	0	0	0	66	107	0	0	173	503	0
Total	336	0	269	0	605	0	463	388	0	851	0	0	0	0	0	281	432	0	0	713	2169	0
Grand Total	1311	0	1153	0	2464	0	1327	1392	0	2719	0	0	0	0	0	1179	2017	0	0	3196	8379	0
Apprch %	53.2%	0.0%	46.8%	0.0%		0.0%	48.8%	51.2%	0.0%		0.0%	0.0%	0.0%	0.0%		36.9%	63.1%	0.0%	0.0%			
Total %	15.6%	0.0%	13.8%	0.0%	29.4%	0.0%	15.8%	16.6%	0.0%	32.5%	0.0%	0.0%	0.0%	0.0%	0.0%	14.1%	24.1%	0.0%	0.0%	38.1%	100.0%	

AM PEAK HOUR	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	84	0	110	0	194	0	45	74	0	119	0	0	0	0	0	77	112	0	0	189	502
7:30	74	0	79	0	153	0	64	71	0	135	0	0	0	0	0	87	168	0	0	255	543
7:45	90	0	83	0	173	0	48	64	0	112	0	0	0	0	0	93	198	0	0	291	576
8:00	81	0	64	0	145	0	72	86	0	158	0	0	0	0	0	66	153	0	0	219	522
Total Volume	329	0	336	0	665	0	229	295	0	524	0	0	0	0	0	323	631	0	0	954	2143
% App Total	49.5%	0.0%	50.5%	0.0%		0.0%	43.7%	56.3%	0.0%		0.0%	0.0%	0.0%	0.0%		33.9%	66.1%	0.0%	0.0%		
PHF	.914	.000	.764	.000	.857	.000	.795	.858	.000	.829	.000	.000	.000	.000	.000	.868	.797	.000	.000	.820	.930

PM PEAK HOUR	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	92	0	71	0	163	0	108	109	0	217	0	0	0	0	0	71	117	0	0	188	568
16:45	85	0	70	0	155	0	117	102	0	219	0	0	0	0	0	91	125	0	0	216	590
17:00	83	0	60	0	143	0	152	91	0	243	0	0	0	0	0	74	138	0	0	212	598
17:15	84	0	83	0	167	0	131	96	0	227	0	0	0	0	0	78	96	0	0	174	568
Total Volume	344	0	284	0	628	0	508	398	0	906	0	0	0	0	0	314	476	0	0	790	2324
% App Total	54.8%	0.0%	45.2%	0.0%		0.0%	56.1%	43.9%	0.0%		0.0%	0.0%	0.0%	0.0%		39.7%	60.3%	0.0%	0.0%		
PHF	.935	.000	.855	.000	.940	.000	.836	.913	.000	.932	.000	.000	.000	.000	.000	.863	.862	.000	.000	.914	.972

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-005 SR 59 & West 16th St
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	1	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	1
Grand Total	1	0	0	1	1	0	0	2	0	2	0	0	0	0	0	0	1	0	0	1	4	1
Apprch %	100.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	25.0%	0.0%	0.0%		25.0%	0.0%	0.0%	50.0%		50.0%	0.0%	0.0%	0.0%		0.0%	0.0%	25.0%	0.0%		25.0%	100.0%	

AM PEAK HOUR	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% App Total	100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.000	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.250

PM PEAK HOUR	SR 59 Southbound					West 16th St Westbound					SR 59 Northbound					West 16th St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.000		.000	.000	.250	.000		.250	.500

SR 59 & West 16th St

Date: 3/28/2017

Day: Tuesday

Project #: 17-7242-005

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Peak Hour Summary

N

SR 59

West 16th St

CONTROL

Southbound Approach

AM	336	0	329	0	618	AM
NOON	0	0	0	0	0	NOON
PM	284	0	344	0	712	PM

Eastbound Approach

AM	NOON	PM
565	0	792
0	0	0
323	0	314
631	0	476
0	0	0
AM	NOON	PM

Westbound Approach

AM	NOON	PM
295	0	398
229	0	508
0	0	0
0	0	0
960	0	820
AM	NOON	PM

Northbound Approach

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg		
665	618	AM
0	0	NOON
628	712	PM

West Leg	AM	NOON	PM
	565	0	792
	954	0	790

East Leg	AM	NOON	PM
	524	0	906
	960	0	820

South Leg		
AM	0	0
NOON	0	0
PM	0	0

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	1283	0	1340
West Leg	1519	0	1582
East Leg	1484	0	1726
South Leg	0	0	0

SR 59 & West 16th St

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-005

Peak Hour Summary

SR 59

West 16th St

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach

	Right	Through	Left	U-Turn	Exiting
AM	0	0	1	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	1

Eastbound Approach

	AM	NOON	PM
Exiting	0	0	0
U-Turn	0	0	0
Left	0	0	0
Through	0	0	1
Right	0	0	0

Westbound Approach

	AM	NOON	PM
Right	0	0	1
Through	0	0	0
Left	0	0	0
U-Turn	0	0	0
Exiting	1	0	1

CONTROL

Northbound Approach

	Exiting	U-Turn	Left	Through	Right
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	1	0
NOON	0	0
PM	0	1

East Leg

	AM	NOON	PM
	0	0	1
	1	0	1

West Leg

	AM	NOON	PM
	0	0	0
	0	0	1

South Leg

AM	0	0
NOON	0	0
PM	0	0

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	1	0	1
East Leg	1	0	2
West Leg	0	0	1
South Leg	0	0	0

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-006 Loughborough Dr & Olive Ave
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	2	2	22	0	26	12	60	0	0	72	18	4	6	0	28	9	93	7	2	111	237	2
7:15	7	6	22	0	35	5	88	1	0	94	14	1	20	0	35	17	111	16	1	145	309	1
7:30	8	2	35	0	45	14	74	7	0	95	13	2	9	0	24	17	172	14	1	204	368	1
7:45	4	4	25	0	33	14	91	2	0	107	21	1	8	0	30	28	216	14	0	258	428	0
Total	21	14	104	0	139	45	313	10	0	368	66	8	43	0	117	71	592	51	4	718	1342	4
8:00	0	6	23	0	29	21	86	11	0	118	17	3	13	0	33	21	194	17	2	234	414	2
8:15	7	4	24	0	35	23	80	7	0	110	17	4	7	0	28	28	160	27	6	221	394	6
8:30	2	11	27	0	40	32	90	6	0	128	14	3	12	0	29	18	170	25	4	217	414	4
8:45	5	14	16	0	35	26	89	1	0	116	36	6	18	0	60	15	159	19	2	195	406	2
Total	14	35	90	0	139	102	345	25	0	472	84	16	50	0	150	82	683	88	14	867	1628	14
16:00	8	11	26	0	45	52	183	3	3	241	54	16	32	0	102	35	188	26	3	252	640	6
16:15	7	15	26	0	48	57	151	4	5	217	55	9	22	0	86	24	188	32	6	250	601	11
16:30	1	18	27	0	46	40	175	5	1	221	52	8	35	0	95	34	221	44	15	314	676	16
16:45	6	12	30	0	48	48	171	5	2	226	55	10	29	0	94	23	185	27	3	238	606	5
Total	22	56	109	0	187	197	680	17	11	905	216	43	118	0	377	116	782	129	27	1054	2523	38
17:00	2	15	34	0	51	56	177	3	3	239	73	12	44	0	129	23	175	34	5	237	656	8
17:15	3	10	38	0	51	56	175	4	1	236	67	9	35	0	111	41	191	28	8	268	666	9
17:30	6	11	19	0	36	40	152	5	1	198	62	18	31	0	111	21	159	31	2	213	558	3
17:45	5	19	26	0	50	50	145	4	1	200	61	11	38	0	110	26	160	26	3	215	575	4
Total	16	55	117	0	188	202	649	16	6	873	263	50	148	0	461	111	685	119	18	933	2455	24
Grand Total	73	160	420	0	653	546	1987	68	17	2618	629	117	359	0	1105	380	2742	387	63	3572	7948	80
Apprch %	11.2%	24.5%	64.3%	0.0%		20.9%	75.9%	2.6%	0.6%		56.9%	10.6%	32.5%	0.0%		10.6%	76.8%	10.8%	1.8%			
Total %	0.9%	2.0%	5.3%	0.0%	8.2%	6.9%	25.0%	0.9%	0.2%	32.9%	7.9%	1.5%	4.5%	0.0%	13.9%	4.8%	34.5%	4.9%	0.8%	44.9%	100.0%	

AM PEAK HOUR	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	4	4	25	0	33	14	91	2	0	107	21	1	8	0	30	28	216	14	0	258	428
8:00	0	6	23	0	29	21	86	11	0	118	17	3	13	0	33	21	194	17	2	234	414
8:15	7	4	24	0	35	23	80	7	0	110	17	4	7	0	28	28	160	27	6	221	394
8:30	2	11	27	0	40	32	90	6	0	128	14	3	12	0	29	18	170	25	4	217	414
Total Volume	13	25	99	0	137	90	347	26	0	463	69	11	40	0	120	95	740	83	12	930	1650
% App Total	9.5%	18.2%	72.3%	0.0%		19.4%	74.9%	5.6%	0.0%		57.5%	9.2%	33.3%	0.0%		10.2%	79.6%	8.9%	1.3%		
PHF	.464	.568	.917	.000	.856	.703	.953	.591	.000	.904	.821	.688	.769	.000	.909	.848	.856	.769	.500	.901	.964

PM PEAK HOUR	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	1	18	27	0	46	40	175	5	1	221	52	8	35	0	95	34	221	44	15	314	676
16:45	6	12	30	0	48	48	171	5	2	226	55	10	29	0	94	23	185	27	3	238	606
17:00	2	15	34	0	51	56	177	3	3	239	73	12	44	0	129	23	175	34	5	237	656
17:15	3	10	38	0	51	56	175	4	1	236	67	9	35	0	111	41	191	28	8	268	666
Total Volume	12	55	129	0	196	200	698	17	7	922	247	39	143	0	429	121	772	133	31	1057	2604
% App Total	6.1%	28.1%	65.8%	0.0%		21.7%	75.7%	1.8%	0.8%		57.6%	9.1%	33.3%	0.0%		11.4%	73.0%	12.6%	2.9%		
PHF	.500	.764	.849	.000	.961	.893	.986	.850	.583	.964	.846	.813	.813	.000	.831	.738	.873	.756	.517	.842	.963

National Data and Surveying Services

(323) 782-0090
info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-006 Loughborough Dr & Olive Ave
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0	0	1	3	1
Total	0	0	0	0	0	0	1	0	1	1	0	0	2	0	2	1	2	0	1	3	6	2
8:00	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	2
8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	1	2
8:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	1
8:45	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	1	5
Total	0	0	2	1	2	0	0	0	2	0	0	0	0	2	0	2	1	0	5	3	5	10
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	1	2
16:45	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	0	0	2	3	1
Total	0	0	0	0	0	0	0	1	2	1	0	0	1	0	1	1	1	0	7	2	4	9
17:00	0	0	0	2	0	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0	9
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	3
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Total	0	0	0	2	0	0	0	0	4	0	0	0	0	3	0	0	0	0	7	0	0	16
Grand Total	0	0	2	3	2	0	1	1	9	2	0	0	3	5	3	4	4	0	20	8	15	37
Apprch %	0.0%	0.0%	100.0%			0.0%	50.0%	50.0%			0.0%	0.0%	100.0%			50.0%	50.0%	0.0%				
Total %	0.0%	0.0%	13.3%		13.3%	0.0%	6.7%	6.7%		13.3%	0.0%	0.0%	20.0%		20.0%	26.7%	26.7%	0.0%		53.3%	100.0%	

AM PEAK HOUR	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	0	0	1	3
8:00	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	1
8:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
Total Volume	0	0	1	1	1	0	1	0	3	1	0	0	1	1	1	2	2	0	1	4	7
% App Total	0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	100.0%			50.0%	50.0%	0.0%			
PHF	.000	.000	.250		.250	.000	.250	.000		.250	.000	.000	.250		.250	.500	.500	.000		.500	.583

PM PEAK HOUR	Loughborough Dr Southbound					Olive Ave Westbound					Loughborough Dr Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	1
16:45	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	1	0	0	2	3
17:00	0	0	0	2	0	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0
17:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0
Total Volume	0	0	0	2	0	0	0	1	5	1	0	0	1	3	1	1	1	0	5	2	4
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	100.0%			0.0%	0.0%	100.0%			50.0%	50.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.250		.250	.000	.000	.250		.250	.250	.250	.000		.250	.333

Loughborough Dr & Olive Ave

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-006

N

Peak Hour Summary

AM Peak Hour	07:45 - 08:45
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach

Loughborough Dr

AM	99	25	13	0	132
NOON	0	0	0	0	0
PM	129	55	12	0	177

Eastbound Approach

Olive Ave

	AM	NOON	PM
	527	0	1105
	12	0	31
	95	0	121
	740	0	772
	83	0	133

CONTROL

Westbound Approach

	AM	NOON	PM
	26	0	17
	347	0	698
	90	0	200
	0	0	7
	793	0	934

Northbound Approach

AM	198	0	69	11	40
NOON	0	0	0	0	0
PM	388	0	247	39	143

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg			
AM	137	132	
NOON	0	0	
PM	196	177	

West Leg	AM	NOON	PM
	527	0	1105
	930	0	1057

East Leg	AM	NOON	PM
	463	0	922
	793	0	934

South Leg		
AM	198	120
NOON	0	0
PM	388	429

Total Volume Per Leg

	North Leg	West Leg	East Leg	South Leg
AM	269	1457	1256	318
NOON	0	0	0	0
PM	373	2162	1856	817

Loughborough Dr & Olive Ave

Date: 3/28/2017

Day: Tuesday

Project #: 17-7242-006

N

Loughborough Dr

Olive Ave

Peak Hour Summary

AM Peak Hour	07:45 - 08:45
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach

AM	1	0	0	0	2
NOON	0	0	0	0	0
PM	0	0	0	0	2

Westbound Approach

	AM	NOON	PM
	0	0	1
	1	0	0
	0	0	0
	0	0	0
	3	0	2

Eastbound Approach

	AM	NOON	PM
	2	0	0
	0	0	0
	2	0	1
	2	0	1
	0	0	0

CONTROL

Northbound Approach

AM	0	0	0	0	1
NOON	0	0	0	0	0
PM	0	0	0	0	1

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg		
1	2	AM
0	0	NOON
0	2	PM

West Leg	AM	NOON	PM
	2	0	0
	4	0	2

East Leg	AM	NOON	PM
	1	0	1
	3	0	2

South Leg		
AM	0	1
NOON	0	0
PM	0	1

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	3	0	2
West Leg	6	0	2
East Leg	4	0	3
South Leg	1	0	1

National Data and Surveying Services

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info@ndsdata.com

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

File Name : 17-7242-007 Austin Ave & Olive Ave
Date : 3/28/2017

Unshifted Count = All Vehicles & Uturns

	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	14	1	3	0	18	2	70	6	0	78	2	0	2	0	4	1	94	4	0	99	199	0
7:15	22	4	1	0	27	4	87	4	0	95	1	2	2	0	5	2	115	0	0	117	244	0
7:30	20	3	1	0	24	9	93	4	1	107	4	1	3	0	8	2	165	0	0	167	306	1
7:45	23	5	2	0	30	12	112	11	0	135	2	1	5	0	8	1	240	3	0	244	417	0
Total	79	13	7	0	99	27	362	25	1	415	9	4	12	0	25	6	614	7	0	627	1166	1
8:00	16	3	2	0	21	16	106	9	0	131	2	1	7	0	10	3	189	1	0	193	355	0
8:15	13	1	3	0	17	18	98	11	0	127	7	3	4	0	14	2	185	7	0	194	352	0
8:30	11	4	0	0	15	21	115	7	0	143	10	2	10	0	22	3	168	2	0	173	353	0
8:45	7	2	3	0	12	28	110	7	3	148	7	3	11	0	21	6	178	9	0	193	374	3
Total	47	10	8	0	65	83	429	34	3	549	26	9	32	0	67	14	720	19	0	753	1434	3
16:00	20	9	2	0	31	61	206	16	4	287	24	7	27	0	58	5	221	11	0	237	613	4
16:15	20	6	5	0	31	48	169	18	3	238	26	8	18	0	52	11	234	9	0	254	575	3
16:30	17	4	3	0	24	48	206	16	2	272	23	12	26	0	61	8	242	14	0	264	621	2
16:45	12	13	5	0	30	62	194	24	4	284	19	6	18	1	44	5	237	13	0	255	613	5
Total	69	32	15	0	116	219	775	74	13	1081	92	33	89	1	215	29	934	47	0	1010	2422	14
17:00	11	9	1	0	21	55	227	17	1	300	23	6	34	0	63	4	235	13	0	252	636	1
17:15	15	9	7	0	31	59	210	21	3	293	28	6	23	0	57	2	236	13	0	251	632	3
17:30	11	9	3	0	23	47	158	24	2	231	28	5	19	0	52	3	197	12	0	212	518	2
17:45	8	5	4	0	17	62	181	13	4	260	25	2	32	0	59	4	217	12	0	233	569	4
Total	45	32	15	0	92	223	776	75	10	1084	104	19	108	0	231	13	885	50	0	948	2355	10
Grand Total	240	87	45	0	372	552	2342	208	27	3129	231	65	241	1	538	62	3153	123	0	3338	7377	28
Apprch %	64.5%	23.4%	12.1%	0.0%		17.6%	74.8%	6.6%	0.9%		42.9%	12.1%	44.8%	0.2%		1.9%	94.5%	3.7%	0.0%			
Total %	3.3%	1.2%	0.6%	0.0%	5.0%	7.5%	31.7%	2.8%	0.4%	42.4%	3.1%	0.9%	3.3%	0.0%	7.3%	0.8%	42.7%	1.7%	0.0%	45.2%	100.0%	

AM PEAK HOUR	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	23	5	2	0	30	12	112	11	0	135	2	1	5	0	8	1	240	3	0	244	417
8:00	16	3	2	0	21	16	106	9	0	131	2	1	7	0	10	3	189	1	0	193	355
8:15	13	1	3	0	17	18	98	11	0	127	7	3	4	0	14	2	185	7	0	194	352
8:30	11	4	0	0	15	21	115	7	0	143	10	2	10	0	22	3	168	2	0	173	353
Total Volume	63	13	7	0	83	67	431	38	0	536	21	7	26	0	54	9	782	13	0	804	1477
% App Total	75.9%	15.7%	8.4%	0.0%		12.5%	80.4%	7.1%	0.0%		38.9%	13.0%	48.1%	0.0%		1.1%	97.3%	1.6%	0.0%		
PHF	.685	.650	.583	.000	.692	.798	.937	.864	.000	.937	.525	.583	.650	.000	.614	.750	.815	.464	.000	.824	.885

PM PEAK HOUR	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	17	4	3	0	24	48	206	16	2	272	23	12	26	0	61	8	242	14	0	264	621
16:45	12	13	5	0	30	62	194	24	4	284	19	6	18	1	44	5	237	13	0	255	613
17:00	11	9	1	0	21	55	227	17	1	300	23	6	34	0	63	4	235	13	0	252	636
17:15	15	9	7	0	31	59	210	21	3	293	28	6	23	0	57	2	236	13	0	251	632
Total Volume	55	35	16	0	106	224	837	78	10	1149	93	30	101	1	225	19	950	53	0	1022	2502
% App Total	51.9%	33.0%	15.1%	0.0%		19.5%	72.8%	6.8%	0.9%		41.3%	13.3%	44.9%	0.4%		1.9%	93.0%	5.2%	0.0%		
PHF	.809	.673	.571	.000	.855	.903	.922	.813	.625	.958	.830	.625	.743	.250	.893	.594	.981	.946	.000	.968	.983

National Data and Surveying Services

City of Merced
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7242-007 Austin Ave & Olive Ave
Date : 3/28/2017

Bank 1 Count = Peds & Bikes

	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0
7:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0
7:30	0	1	0	0	1	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	2	2
7:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	2	2	3	2
Total	1	1	0	0	2	0	1	1	2	2	0	0	0	0	0	0	5	0	2	5	9	4
8:00	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0
8:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	1
8:45	0	1	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0	0	2	0	2	4
Total	1	2	0	1	3	0	0	1	3	1	0	0	1	1	1	0	1	0	2	1	6	7
16:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	1
16:15	0	0	0	0	0	1	1	0	4	2	0	0	0	0	0	1	0	0	0	1	3	4
16:30	1	0	0	0	1	1	0	0	3	1	0	0	0	0	0	0	0	0	2	0	2	5
16:45	0	0	0	0	0	0	1	0	4	1	0	0	0	0	0	1	0	0	1	1	2	5
Total	1	0	0	0	1	2	2	0	12	4	0	0	0	0	0	2	1	0	3	3	8	15
17:00	0	0	0	1	0	0	0	0	5	0	1	0	0	4	1	0	0	0	1	0	1	11
17:15	0	0	0	2	0	0	0	1	0	1	0	1	0	2	1	0	1	0	3	1	3	7
17:30	0	0	0	4	0	0	0	1	8	1	0	0	0	2	0	0	0	0	0	0	1	14
17:45	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	7	0	1	0	3	13	4	1	1	0	8	2	0	1	0	6	1	7	34
Grand Total	3	3	0	8	6	3	3	5	30	11	1	1	1	9	3	2	8	0	13	10	30	60
Apprch %	50.0%	50.0%	0.0%			27.3%	27.3%	45.5%			33.3%	33.3%	33.3%			20.0%	80.0%	0.0%				
Total %	10.0%	10.0%	0.0%		20.0%	10.0%	10.0%	16.7%		36.7%	3.3%	3.3%	3.3%		10.0%	6.7%	26.7%	0.0%		33.3%	100.0%	

AM PEAK HOUR	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:45 to 08:45																					
Peak Hour For Entire Intersection Begins at 07:45																					
7:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	2	2	3
8:00	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
Total Volume	1	1	0	1	2	0	1	1	2	2	0	0	0	0	0	0	3	0	2	3	7
% App Total	50.0%	50.0%	0.0%			0.0%	50.0%	50.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.250	.000		.500	.000	.250	.250		.500	.000	.000	.000		.000	.000	.375	.000		.375	.583

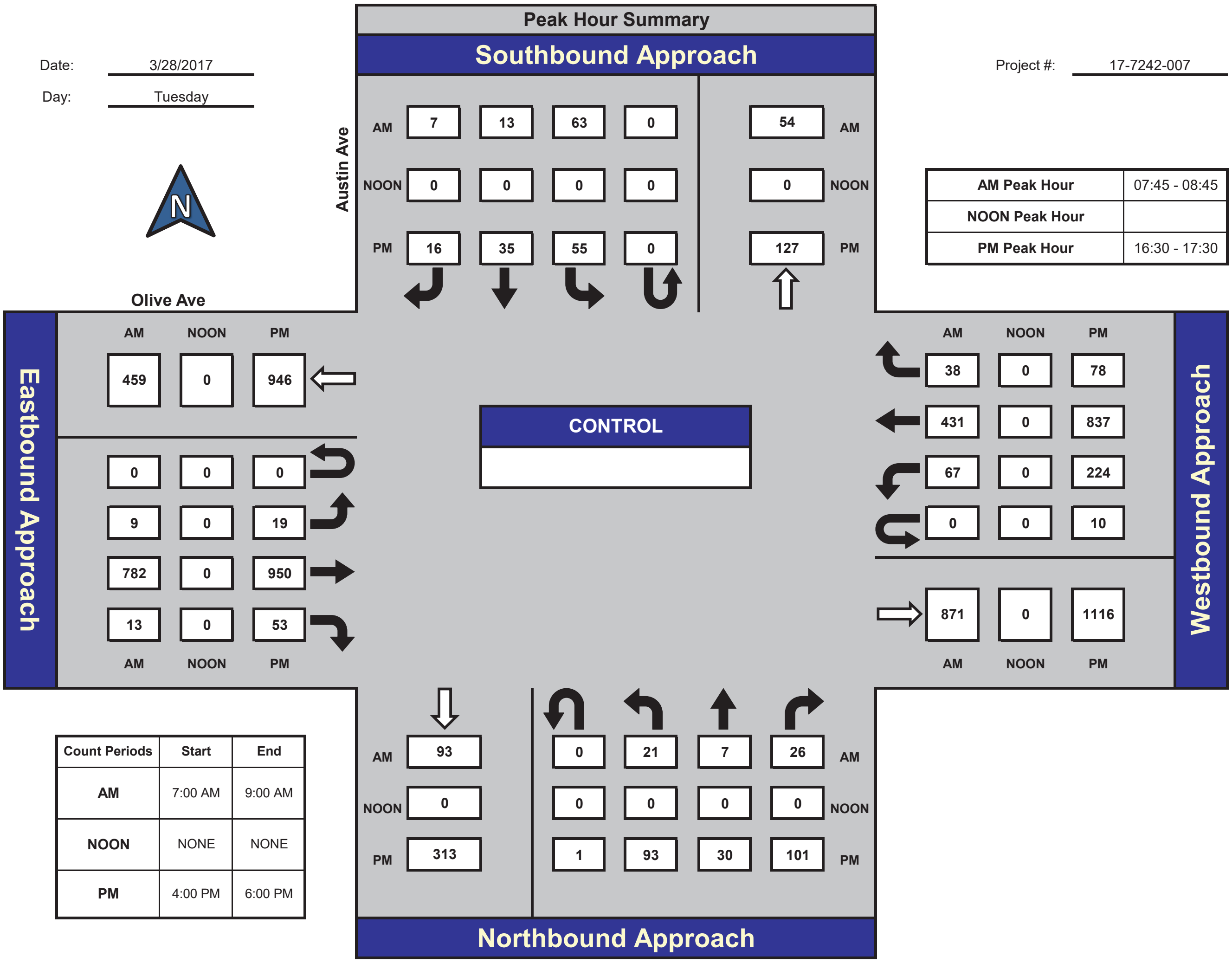
PM PEAK HOUR	Austin Ave Southbound					Olive Ave Westbound					Austin Ave Northbound					Olive Ave Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	1	0	0	0	1	1	0	0	3	1	0	0	0	0	0	0	0	0	2	0	2
16:45	0	0	0	0	0	0	1	0	4	1	0	0	0	0	0	1	0	0	1	1	2
17:00	0	0	0	1	0	0	0	0	5	0	1	0	0	4	1	0	0	0	1	0	1
17:15	0	0	0	2	0	0	0	1	0	1	0	1	0	2	1	0	1	0	3	1	3
Total Volume	1	0	0	3	1	1	1	1	12	3	1	1	0	6	2	1	1	0	7	2	8
% App Total	100.0%	0.0%	0.0%			33.3%	33.3%	33.3%			50.0%	50.0%	0.0%			50.0%	50.0%	0.0%			
PHF	.250	.000	.000		.250	.250	.250	.250		.750	.250	.250	.000		.500	.250	.250	.000		.500	.667

Austin Ave & Olive Ave

Date: 3/28/2017
Day: Tuesday

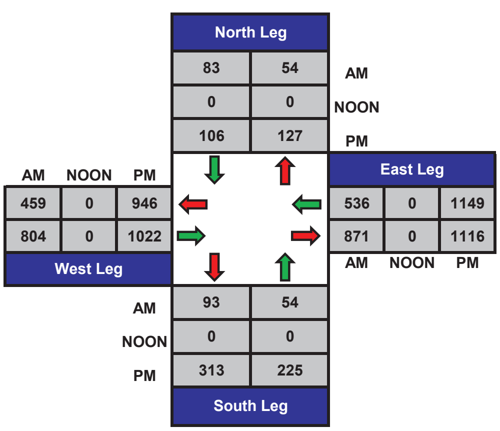
Project #: 17-7242-007

AM Peak Hour	07:45 - 08:45
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

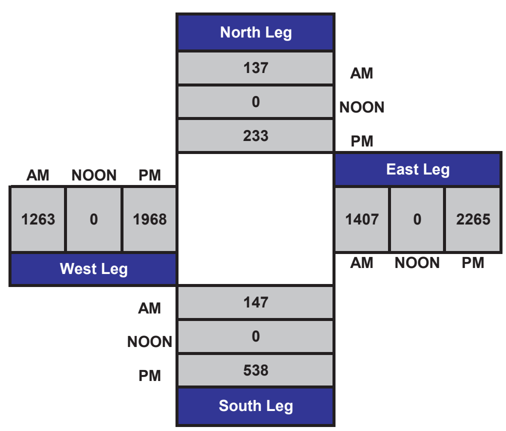


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Austin Ave & Olive Ave

Date: 3/28/2017
Day: Tuesday

Project #: 17-7242-007

N

Peak Hour Summary

AM Peak Hour	07:45 - 08:45
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach (Austin Ave)

	Right	Thru	Left	U-Turn	Out
AM	0	1	1	0	1
NOON	0	0	0	0	0
PM	0	0	1	0	3

Eastbound Approach (Olive Ave)

	AM	NOON	PM
Out	1	0	2
U-Turn	0	0	0
Left	0	0	1
Thru	3	0	1
Right	0	0	0

CONTROL

Westbound Approach

	AM	NOON	PM
Right	1	0	1
Thru	1	0	1
Left	0	0	1
U-Turn	0	0	0
Out	4	0	2

Northbound Approach

	Out	U-Turn	Left	Thru	Right
AM	1	0	0	0	0
NOON	0	0	0	0	0
PM	1	0	1	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	2	1
North Leg	NOON	0	0
North Leg	PM	1	3
South Leg	AM	1	0
South Leg	NOON	0	0
South Leg	PM	1	2

West Leg	AM	NOON	PM
Out	1	0	2
In	3	0	2

East Leg	AM	NOON	PM
In	2	0	3
Out	4	0	2

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	3	0	4
West Leg	4	0	4
East Leg	6	0	5
South Leg	1	0	3

Prepared by NDS/ATD

VOLUME

Santa Fe Dr Bet. Beachwood Dr & SR 59

Day: Tuesday
Date: 3/28/2017

City: Merced
Project #: CA17_7243_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,226	9,507	19,733

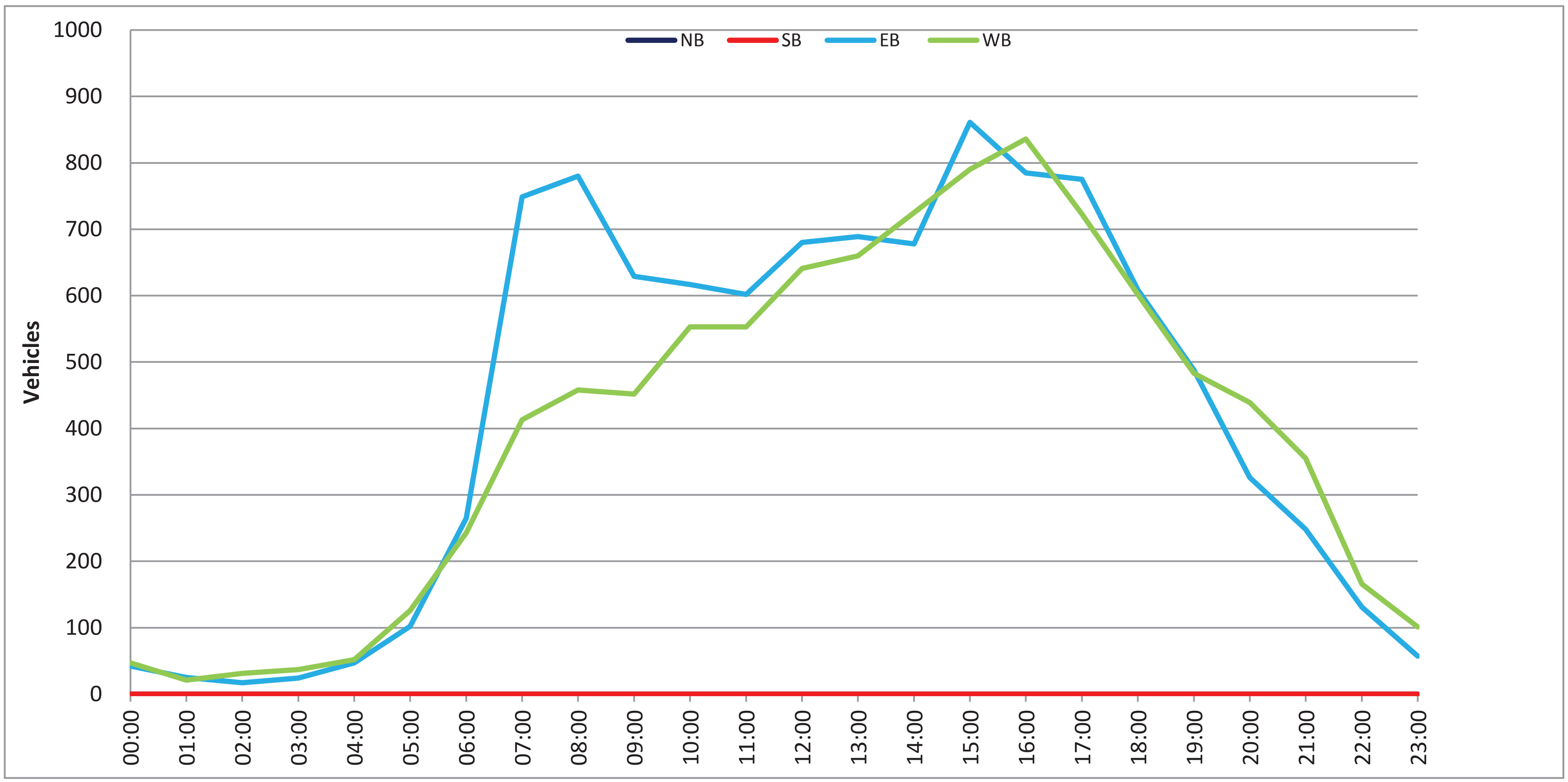
AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			12		18		30		12:00			154		156		310	
00:15			8		10		18		12:15			191		166		357	
00:30			13		11		24		12:30			166		151		317	
00:45			9	42	8	47	17	89	12:45			169	680	168	641	337	1321
01:00			10		2		12		13:00			167		153		320	
01:15			7		5		12		13:15			165		174		339	
01:30			2		9		11		13:30			160		166		326	
01:45			6	25	5	21	11	46	13:45			197	689	167	660	364	1349
02:00			3		4		7		14:00			160		170		330	
02:15			2		11		13		14:15			156		196		352	
02:30			6		7		13		14:30			158		157		315	
02:45			6	17	9	31	15	48	14:45			204	678	202	725	406	1403
03:00			3		7		10		15:00			229		182		411	
03:15			4		2		6		15:15			207		215		422	
03:30			7		13		20		15:30			222		185		407	
03:45			10	24	15	37	25	61	15:45			203	861	208	790	411	1651
04:00			13		7		20		16:00			205		203		408	
04:15			6		17		23		16:15			221		205		426	
04:30			8		11		19		16:30			188		205		393	
04:45			20	47	17	52	37	99	16:45			171	785	223	836	394	1621
05:00			13		20		33		17:00			225		214		439	
05:15			26		30		56		17:15			208		188		396	
05:30			25		38		63		17:30			172		161		333	
05:45			38	102	38	126	76	228	17:45			170	775	160	723	330	1498
06:00			37		39		76		18:00			165		159		324	
06:15			49		58		107		18:15			151		156		307	
06:30			52		76		128		18:30			143		164		307	
06:45			127	265	70	243	197	508	18:45			150	609	123	602	273	1211
07:00			114		82		196		19:00			136		148		284	
07:15			154		91		245		19:15			121		103		224	
07:30			216		113		329		19:30			121		121		242	
07:45			265	749	127	413	392	1162	19:45			110	488	111	483	221	971
08:00			215		118		333		20:00			93		138		231	
08:15			208		100		308		20:15			78		121		199	
08:30			175		118		293		20:30			81		94		175	
08:45			182	780	122	458	304	1238	20:45			74	326	86	439	160	765
09:00			131		123		254		21:00			71		102		173	
09:15			159		96		255		21:15			70		96		166	
09:30			177		119		296		21:30			56		81		137	
09:45			162	629	114	452	276	1081	21:45			51	248	76	355	127	603
10:00			136		130		266		22:00			45		49		94	
10:15			168		119		287		22:15			28		52		80	
10:30			143		153		296		22:30			30		36		66	
10:45			170	617	151	553	321	1170	22:45			28	131	29	166	57	297
11:00			158		134		292		23:00			12		39		51	
11:15			142		147		289		23:15			20		28		48	
11:30			156		123		279		23:30			9		18		27	
11:45			146	602	149	553	295	1155	23:45			16	57	16	101	32	158
TOTALS				3899		2986		6885	TOTALS				6327		6521		12848
SPLIT %				56.6%		43.4%		34.9%	SPLIT %				49.2%		50.8%		65.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	10,226	9,507	19,733

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:30	11:45	07:30	PM Peak Hour			14:45	16:15	15:30
AM Pk Volume			904	622	1362	PM Pk Volume			862	847	1652
Pk Hr Factor			0.853	0.937	0.869	Pk Hr Factor			0.941	0.950	0.969
7 - 9 Volume	0	0	1529	871	2400	4 - 6 Volume	0	0	1560	1559	3119
7 - 9 Peak Hour			07:30	07:45	07:30	4 - 6 Peak Hour			16:15	16:15	16:15
7 - 9 Pk Volume	0	0	904	463	1362	4 - 6 Pk Volume	0	0	805	847	1652
Pk Hr Factor	0.000	0.000	0.853	0.911	0.869	Pk Hr Factor	0.000	0.000	0.894	0.950	0.941

Prepared by NDS/ATD

Project #:	CA17_7243_001	**City:**	Merced
Location:	Santa Fe Dr Bet. Beachwood Dr & SR 59	**Date:**	3/28/2017



Prepared by NDS/ATD

VOLUME

Olive Ave Bet. SR 59 & Loughborough Dr

Day: Tuesday
Date: 3/28/2017

City: Merced
Project #: CA17_7243_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,859	12,272	25,131

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			23		31		54		12:00			203		211		414	
00:15			20		14		34		12:15			235		192		427	
00:30			22		20		42		12:30			211		202		413	
00:45			17	82	12	77	29	159	12:45			217	866	213	818	430	1684
01:00			12		8		20		13:00			203		207		410	
01:15			10		15		25		13:15			210		226		436	
01:30			9		14		23		13:30			213		219		432	
01:45			11	42	6	43	17	85	13:45			220	846	193	845	413	1691
02:00			13		13		26		14:00			211		228		439	
02:15			10		12		22		14:15			187		231		418	
02:30			6		7		13		14:30			235		224		459	
02:45			8	37	10	42	18	79	14:45			246	879	201	884	447	1763
03:00			7		14		21		15:00			254		219		473	
03:15			3		9		12		15:15			212		249		461	
03:30			9		13		22		15:30			265		247		512	
03:45			17	36	21	57	38	93	15:45			289	1020	215	930	504	1950
04:00			15		14		29		16:00			279		282		561	
04:15			7		16		23		16:15			279		272		551	
04:30			15		18		33		16:30			239		259		498	
04:45			27	64	33	81	60	145	16:45			227	1024	259	1072	486	2096
05:00			13		29		42		17:00			254		289		543	
05:15			20		48		68		17:15			257		255		512	
05:30			18		54		72		17:30			224		217		441	
05:45			51	102	59	190	110	292	17:45			235	970	226	987	461	1957
06:00			36		58		94		18:00			192		208		400	
06:15			59		93		152		18:15			204		212		416	
06:30			65		81		146		18:30			192		226		418	
06:45			119	279	99	331	218	610	18:45			172	760	182	828	354	1588
07:00			118		113		231		19:00			201		190		391	
07:15			145		123		268		19:15			166		152		318	
07:30			243		128		371		19:30			182		172		354	
07:45			261	767	158	522	419	1289	19:45			145	694	132	646	277	1340
08:00			234		127		361		20:00			147		174		321	
08:15			211		121		332		20:15			114		150		264	
08:30			210		137		347		20:30			137		134		271	
08:45			190	845	145	530	335	1375	20:45			94	492	130	588	224	1080
09:00			161		133		294		21:00			101		137		238	
09:15			188		137		325		21:15			93		123		216	
09:30			198		142		340		21:30			84		96		180	
09:45			201	748	144	556	345	1304	21:45			89	367	90	446	179	813
10:00			191		167		358		22:00			63		87		150	
10:15			196		139		335		22:15			50		77		127	
10:30			207		185		392		22:30			40		61		101	
10:45			221	815	190	681	411	1496	22:45			47	200	33	258	80	458
11:00			197		153		350		23:00			28		54		82	
11:15			196		195		391		23:15			31		43		74	
11:30			199		171		370		23:30			30		32		62	
11:45			216	808	183	702	399	1510	23:45			27	116	29	158	56	274
TOTALS				4625		3812		8437	TOTALS				8234		8460		16694
SPLIT %				54.8%		45.2%		33.6%	SPLIT %				49.3%		50.7%		66.4%

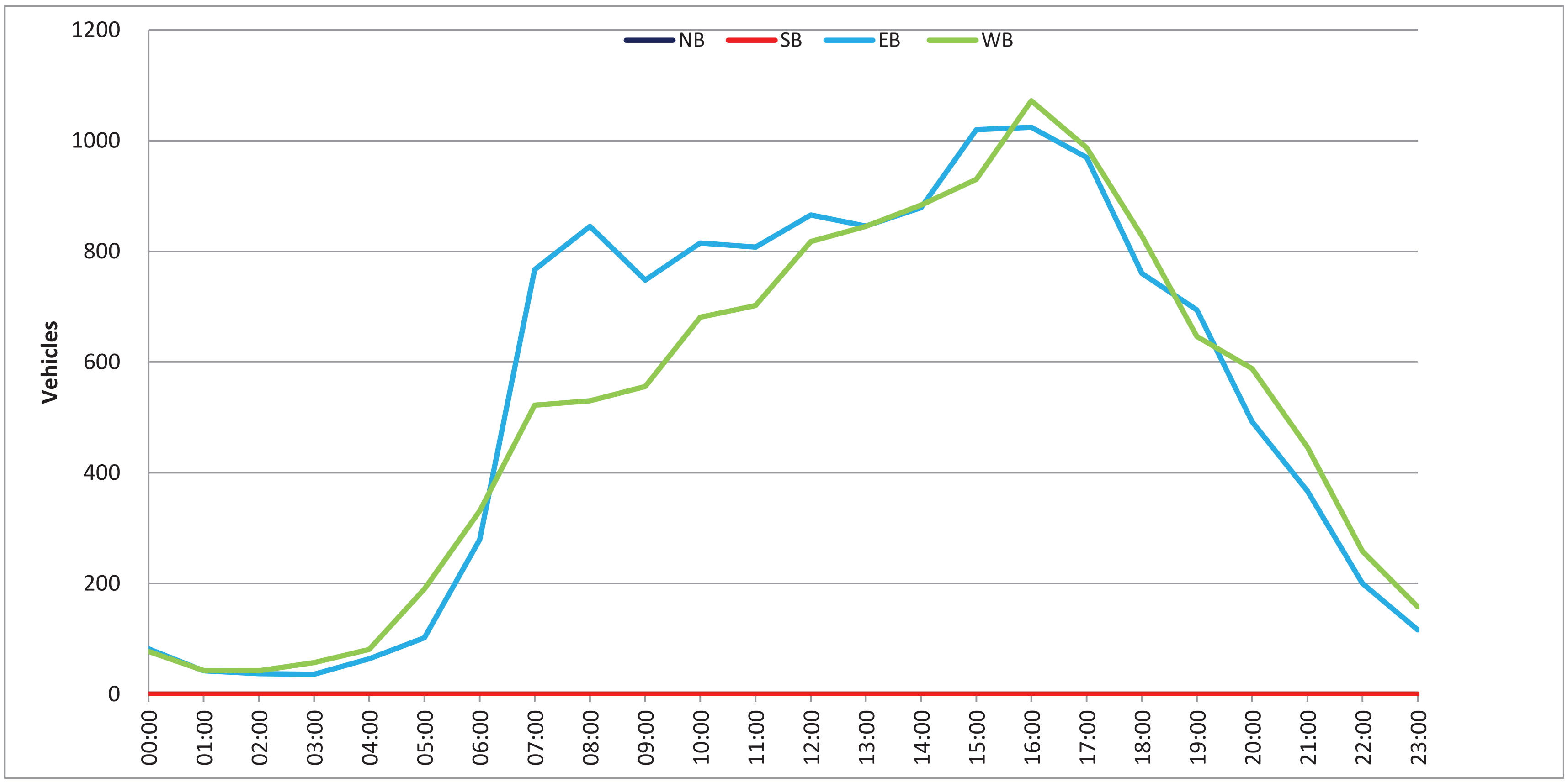
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,859	12,272	25,131

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:30	11:45	11:45	PM Peak Hour			15:30	16:15	15:30
AM Pk Volume			949	788	1653	PM Pk Volume			1112	1079	2128
Pk Hr Factor			0.909	0.934	0.968	Pk Hr Factor			0.962	0.933	0.948
7 - 9 Volume	0	0	1612	1052	2664	4 - 6 Volume	0	0	1994	2059	4053
7 - 9 Peak Hour			07:30	07:45	07:30	4 - 6 Peak Hour			16:00	16:15	16:00
7 - 9 Pk Volume	0	0	949	543	1483	4 - 6 Pk Volume	0	0	1024	1079	2096
Pk Hr Factor	0.000	0.000	0.909	0.859	0.885	Pk Hr Factor	0.000	0.000	0.918	0.933	0.934

Prepared by NDS/ATD

Project #: CA17_7243_002 **City:** Merced

Location: Olive Ave Bet. SR 59 & Loughborough Dr **Date:** 3/28/2017



Prepared by NDS/ATD

VOLUME

SR 59 Bet. W 16th St & Railroad

Day: Tuesday
Date: 3/28/2017

City: Merced
Project #: CA17_7243_003

DAILY TOTALS	NB	SB	EB	WB	Total
	10,498	9,964	0	0	20,462

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	39		24				63		12:00	179		191				370	
00:15	25		10				35		12:15	167		155				322	
00:30	23		11				34		12:30	179		151				330	
00:45	23	110	8	53			31	163	12:45	148	673	194	691			342	1364
01:00	15		15				30		13:00	121		166				287	
01:15	8		14				22		13:15	160		177				337	
01:30	14		13				27		13:30	187		154				341	
01:45	22	59	9	51			31	110	13:45	176	644	167	664			343	1308
02:00	15		20				35		14:00	140		152				292	
02:15	19		8				27		14:15	165		148				313	
02:30	10		12				22		14:30	181		184				365	
02:45	15	59	14	54			29	113	14:45	184	670	164	648			348	1318
03:00	7		10				17		15:00	159		200				359	
03:15	5		11				16		15:15	175		184				359	
03:30	20		20				40		15:30	169		259				428	
03:45	23	55	19	60			42	115	15:45	183	686	208	851			391	1537
04:00	15		25				40		16:00	191		164				355	
04:15	16		32				48		16:15	166		186				352	
04:30	19		35				54		16:30	176		173				349	
04:45	21	71	44	136			65	207	16:45	173	706	148	671			321	1377
05:00	26		42				68		17:00	146		150				296	
05:15	51		64				115		17:15	159		186				345	
05:30	72		52				124		17:30	162		139				301	
05:45	100	249	71	229			171	478	17:45	170	637	144	619			314	1256
06:00	113		74				187		18:00	159		134				293	
06:15	128		102				230		18:15	171		124				295	
06:30	153		98				251		18:30	144		151				295	
06:45	144	538	132	406			276	944	18:45	159	633	119	528			278	1161
07:00	98		157				255		19:00	159		152				311	
07:15	132		192				324		19:15	149		125				274	
07:30	169		151				320		19:30	147		114				261	
07:45	148	547	163	663			311	1210	19:45	119	574	108	499			227	1073
08:00	130		128				258		20:00	122		90				212	
08:15	142		150				292		20:15	91		99				190	
08:30	152		109				261		20:30	112		100				212	
08:45	141	565	143	530			284	1095	20:45	105	430	71	360			176	790
09:00	146		123				269		21:00	87		79				166	
09:15	158		128				286		21:15	74		95				169	
09:30	166		131				297		21:30	86		47				133	
09:45	147	617	155	537			302	1154	21:45	84	331	67	288			151	619
10:00	155		169				324		22:00	48		47				95	
10:15	140		111				251		22:15	52		46				98	
10:30	168		147				315		22:30	53		33				86	
10:45	175	638	145	572			320	1210	22:45	48	201	25	151			73	352
11:00	157		130				287		23:00	33		32				65	
11:15	168		156				324		23:15	31		30				61	
11:30	150		128				278		23:30	29		35				64	
11:45	212	687	171	585			383	1272	23:45	25	118	21	118			46	236
TOTALS		4195		3876				8071	TOTALS		6303		6088				12391
SPLIT %		52.0%		48.0%				39.4%	SPLIT %		50.9%		49.1%				60.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	10,498	9,964	0	0	20,462

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	11:45	11:45			11:45	PM Peak Hour	15:15	15:00			15:00
AM Pk Volume	737	668			1405	PM Pk Volume	718	851			1537
Pk Hr Factor	0.869	0.874			0.917	Pk Hr Factor	0.940	0.821			0.898
7 - 9 Volume	1112	1193	0	0	2305	4 - 6 Volume	1343	1290	0	0	2633
7 - 9 Peak Hour	07:30	07:00			07:15	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	589	663	0	0	1213	4 - 6 Pk Volume	706	671	0	0	1377
Pk Hr Factor	0.871	0.863	0.000	0.000	0.936	Pk Hr Factor	0.924	0.902	0.000	0.000	0.970

Prepared by NDS/ATD

Project #:	CA17_7243_003	**City:**	Merced
Location:	SR 59 Bet. W 16th St & Railroad	**Date:**	3/28/2017

Prepared by NDS/ATD

VOLUME

SR 59 Bet. Railroad & Olive Ave/Santa Fe Dr

Day: Tuesday
Date: 3/28/2017

City: Merced
Project #: CA17_7243_004

DAILY TOTALS	NB	SB	EB	WB	Total
	11,474	10,480	0	0	21,954

AM Period	NB		SB		EB	WB	TOTAL	
00:00	42		26				68	
00:15	20		12				32	
00:30	22		16				38	
00:45	20	104	13	67			33	171
01:00	9		17				26	
01:15	9		14				23	
01:30	12		12				24	
01:45	18	48	8	51			26	99
02:00	17		19				36	
02:15	15		16				31	
02:30	7		13				20	
02:45	12	51	16	64			28	115
03:00	6		10				16	
03:15	4		10				14	
03:30	21		18				39	
03:45	20	51	20	58			40	109
04:00	17		21				38	
04:15	18		35				53	
04:30	21		27				48	
04:45	19	75	49	132			68	207
05:00	27		42				69	
05:15	49		64				113	
05:30	55		67				122	
05:45	105	236	78	251			183	487
06:00	108		84				192	
06:15	135		111				246	
06:30	138		100				238	
06:45	124	505	164	459			288	964
07:00	111		156				267	
07:15	146		158				304	
07:30	186		127				313	
07:45	188	631	167	608			355	1239
08:00	149		137				286	
08:15	160		139				299	
08:30	155		109				264	
08:45	166	630	130	515			296	1145
09:00	178		140				318	
09:15	172		130				302	
09:30	186		138				324	
09:45	152	688	159	567			311	1255
10:00	194		179				373	
10:15	158		120				278	
10:30	186		145				331	
10:45	184	722	156	600			340	1322
11:00	128		131				259	
11:15	174		165				339	
11:30	184		145				329	
11:45	232	718	172	613			404	1331
TOTALS		4459		3985				**8444**
SPLIT %		52.8%		47.2%				**38.5%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	220		198				418	
12:15	199		183				382	
12:30	201		175				376	
12:45	187	807	213	769			400	1576
13:00	117		162				279	
13:15	173		183				356	
13:30	217		173				390	
13:45	199	706	176	694			375	1400
14:00	167		159				326	
14:15	168		160				328	
14:30	206		181				387	
14:45	220	761	180	680			400	1441
15:00	194		196				390	
15:15	186		210				396	
15:30	210		236				446	
15:45	224	814	188	830			412	1644
16:00	185		180				365	
16:15	187		183				370	
16:30	197		174				371	
16:45	198	767	179	716			377	1483
17:00	143		164				307	
17:15	207		181				388	
17:30	178		133				311	
17:45	165	693	165	643			330	1336
18:00	175		146				321	
18:15	191		137				328	
18:30	148		174				322	
18:45	163	677	164	621			327	1298
19:00	225		128				353	
19:15	179		137				316	
19:30	145		130				275	
19:45	125	674	115	510			240	1184
20:00	126		105				231	
20:15	106		116				222	
20:30	113		96				209	
20:45	114	459	87	404			201	863
21:00	88		92				180	
21:15	74		94				168	
21:30	93		64				157	
21:45	82	337	68	318			150	655
22:00	51		65				116	
22:15	55		52				107	
22:30	42		46				88	
22:45	41	189	28	191			69	380
23:00	43		32				75	
23:15	28		38				66	
23:30	41		22				63	
23:45	19	131	27	119			46	250
TOTALS		7015		6495				**13510**
SPLIT %		51.9%		48.1%				**61.5%**

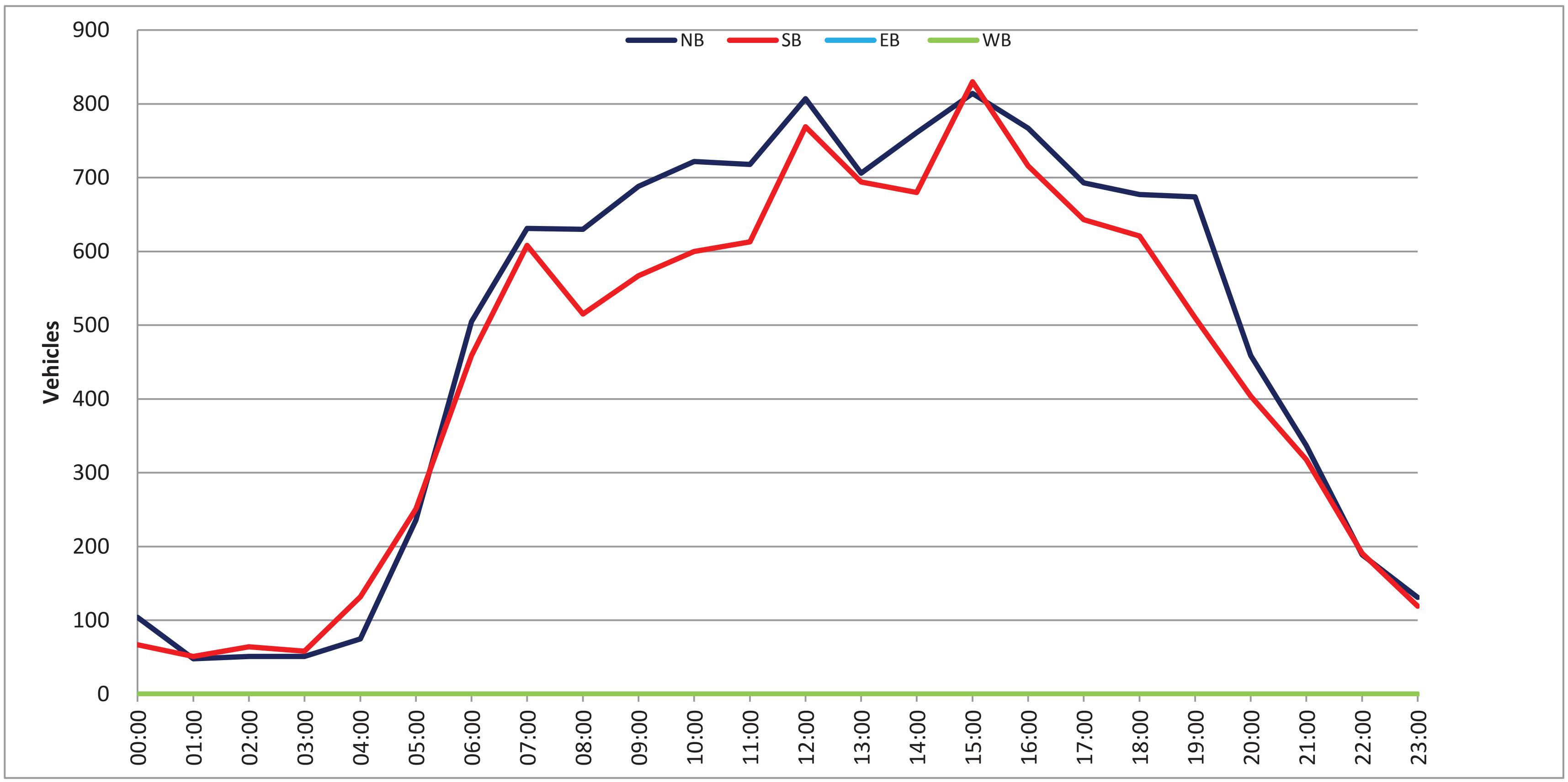
DAILY TOTALS	NB	SB	EB	WB	Total
	11,474	10,480	0	0	21,954

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	11:45	11:45			**11:45**	**PM Peak Hour**	15:00	15:00			**15:00**
AM Pk Volume	852	728			**1580**	**PM Pk Volume**	814	830			**1644**
Pk Hr Factor	0.918	0.919			**0.945**	**Pk Hr Factor**	0.908	0.879			**0.922**
7 - 9 Volume	1261	1123	0	0	**2384**	**4 - 6 Volume**	1460	1359	0	0	**2819**
7 - 9 Peak Hour	07:30	07:00			**07:15**	**4 - 6 Peak Hour**	16:00	16:00			**16:00**
7 - 9 Pk Volume	683	608	0	0	**1258**	**4 - 6 Pk Volume**	767	716	0	0	**1483**
Pk Hr Factor	0.908	0.910	0.000	0.000	**0.886**	**Pk Hr Factor**	0.968	0.978	0.000	0.000	**0.983**

Prepared by NDS/ATD

Project #: CA17_7243_004 **City:** Merced

Location: SR 59 Bet. Railroad & Olive Ave/Santa Fe Dr **Date:** 3/28/2017



Prepared by NDS/ATD

VOLUME

SR 59 Bet. Olive Ave/Santa Fe Dr & Buena Vista Dr

Day: Tuesday
Date: 3/28/2017

City: Merced
Project #: CA17_7243_005

DAILY TOTALS	NB	SB	EB	WB	Total
	6,987	6,752	0	0	13,739

AM Period	NB		SB		EB	WB	TOTAL	
00:00	25		7				32	
00:15	7		7				14	
00:30	13		6				19	
00:45	12	57	8	28			20	85
01:00	5		9				14	
01:15	4		6				10	
01:30	5		3				8	
01:45	9	23	5	23			14	46
02:00	6		14				20	
02:15	10		6				16	
02:30	2		10				12	
02:45	4	22	8	38			12	60
03:00	1		3				4	
03:15	4		3				7	
03:30	10		8				18	
03:45	8	23	9	23			17	46
04:00	11		16				27	
04:15	9		25				34	
04:30	10		17				27	
04:45	14	44	39	97			53	141
05:00	23		26				49	
05:15	39		39				78	
05:30	53		41				94	
05:45	77	192	41	147			118	339
06:00	83		63				146	
06:15	94		63				157	
06:30	89		73				162	
06:45	73	339	97	296			170	635
07:00	77		103				180	
07:15	120		116				236	
07:30	122		94				216	
07:45	154	473	119	432			273	905
08:00	92		93				185	
08:15	119		68				187	
08:30	105		83				188	
08:45	129	445	86	330			215	775
09:00	104		108				212	
09:15	114		87				201	
09:30	110		88				198	
09:45	88	416	102	385			190	801
10:00	96		108				204	
10:15	90		103				193	
10:30	101		87				188	
10:45	91	378	101	399			192	777
11:00	69		93				162	
11:15	90		81				171	
11:30	104		96				200	
11:45	108	371	108	378			216	749
TOTALS		2783		2576				**5359**
SPLIT %		51.9%		48.1%				**39.0%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	129		125				254	
12:15	106		114				220	
12:30	116		121				237	
12:45	97	448	128	488			225	936
13:00	79		108				187	
13:15	89		95				184	
13:30	119		90				209	
13:45	117	404	99	392			216	796
14:00	86		109				195	
14:15	96		100				196	
14:30	92		118				210	
14:45	115	389	130	457			245	846
15:00	125		120				245	
15:15	135		152				287	
15:30	120		161				281	
15:45	110	490	122	555			232	1045
16:00	123		189				312	
16:15	127		151				278	
16:30	122		100				222	
16:45	120	492	110	550			230	1042
17:00	98		137				235	
17:15	154		103				257	
17:30	119		73				192	
17:45	114	485	97	410			211	895
18:00	113		91				204	
18:15	116		81				197	
18:30	88		90				178	
18:45	110	427	81	343			191	770
19:00	124		79				203	
19:15	110		84				194	
19:30	87		88				175	
19:45	81	402	81	332			162	734
20:00	66		75				141	
20:15	52		70				122	
20:30	63		72				135	
20:45	85	266	46	263			131	529
21:00	53		54				107	
21:15	51		56				107	
21:30	54		59				113	
21:45	33	191	45	214			78	405
22:00	39		27				66	
22:15	34		32				66	
22:30	35		26				61	
22:45	23	131	19	104			42	235
23:00	29		30				59	
23:15	14		16				30	
23:30	21		13				34	
23:45	15	79	9	68			24	147
TOTALS		4204		4176				**8380**
SPLIT %		50.2%		49.8%				**61.0%**

DAILY TOTALS	NB	SB	EB	WB	Total
	6,987	6,752	0	0	13,739

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:15	11:45			**11:45**	**PM Peak Hour**	17:15	15:15			**15:15**
AM Pk Volume	488	468			**927**	**PM Pk Volume**	500	624			**1112**
Pk Hr Factor	0.792	0.936			**0.912**	**Pk Hr Factor**	0.812	0.825			**0.891**
7 - 9 Volume	918	762	0	0	**1680**	**4 - 6 Volume**	977	960	0	0	**1937**
7 - 9 Peak Hour	07:15	07:00			**07:15**	**4 - 6 Peak Hour**	16:30	16:00			**16:00**
7 - 9 Pk Volume	488	432	0	0	**910**	**4 - 6 Pk Volume**	494	550	0	0	**1042**
Pk Hr Factor	0.792	0.908	0.000	0.000	**0.833**	**Pk Hr Factor**	0.802	0.728	0.000	0.000	**0.835**

Prepared by NDS/ATD

Project #:	CA17_7243_005	**City:**	Merced
Location:	SR 59 Bet. Olive Ave/Santa Fe Dr & Buena	**Date:**	3/28/2017

KDA

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	144	363	197	152	377	228
Future Volume (veh/h)	144	363	197	152	377	228
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	157	395	214	165	410	248
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	539	481	351	298	479	978
Arrive On Green	0.32	0.32	0.20	0.20	0.28	0.55
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	157	395	214	165	410	248
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	4.0	13.8	6.3	5.6	13.1	4.2
Cycle Q Clear(g_c), s	4.0	13.8	6.3	5.6	13.1	4.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	539	481	351	298	479	978
V/C Ratio(X)	0.29	0.82	0.61	0.55	0.86	0.25
Avail Cap(c_a), veh/h	731	652	783	665	535	1469
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	14.9	18.3	21.2	20.9	19.7	6.9
Incr Delay (d2), s/veh	0.3	6.1	1.7	1.6	11.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	6.6	3.3	2.5	7.7	2.1
LnGrp Delay(d),s/veh	15.2	24.4	22.9	22.5	31.6	7.0
LnGrp LOS	B	C	C	C	C	A
Approach Vol, veh/h	552		379			658
Approach Delay, s/veh	21.8		22.7			22.3
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.2	15.3				35.5		22.2
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.1	8.3				6.2		15.8
Green Ext Time (p_c), s	0.4	1.2				0.9		1.7

Intersection Summary			
HCM 2010 Ctrl Delay			22.2
HCM 2010 LOS			C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	136	47	313	191	74	287
Future Volume (veh/h)	136	47	313	191	74	287
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	148	51	340	208	80	312
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	227	78	607	516	149	995
Arrive On Green	0.19	0.16	0.34	0.34	0.09	0.56
Sat Flow, veh/h	1226	422	1792	1524	1707	1792
Grp Volume(v), veh/h	200	0	340	208	80	312
Grp Sat Flow(s),veh/h/ln	1657	0	1792	1524	1707	1792
Q Serve(g_s), s	3.5	0.0	4.8	3.2	1.4	2.9
Cycle Q Clear(g_c), s	3.5	0.0	4.8	3.2	1.4	2.9
Prop In Lane	0.74	0.25		1.00	1.00	
Lane Grp Cap(c), veh/h	307	0	607	516	149	995
V/C Ratio(X)	0.65	0.00	0.56	0.40	0.54	0.31
Avail Cap(c_a), veh/h	1166	0	1383	1176	415	2052
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	0.0	8.3	7.8	13.5	3.7
Incr Delay (d2), s/veh	2.3	0.0	0.8	0.5	3.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.5	1.4	0.8	1.4
LnGrp Delay(d),s/veh	14.1	0.0	9.1	8.3	16.5	3.9
LnGrp LOS	B		A	A	B	A
Approach Vol, veh/h	200		548			392
Approach Delay, s/veh	14.1		8.8			6.4
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.7	14.4				21.1		9.7
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	3.4	6.8				4.9		5.5
Green Ext Time (p_c), s	0.1	1.9				1.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	132	676	93	210	309	38	79	334	271	32	300	62
Future Volume (veh/h)	132	676	93	210	309	38	79	334	271	32	300	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	143	735	101	228	336	41	86	363	295	35	326	67
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	195	1002	448	290	1158	518	126	489	416	65	425	361
Arrive On Green	0.11	0.29	0.29	0.17	0.34	0.34	0.07	0.27	0.27	0.04	0.24	0.24
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	143	735	101	228	336	41	86	363	295	35	326	67
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	5.8	13.8	3.6	9.1	5.1	1.3	3.5	13.1	12.4	1.4	12.1	2.5
Cycle Q Clear(g_c), s	5.8	13.8	3.6	9.1	5.1	1.3	3.5	13.1	12.4	1.4	12.1	2.5
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	195	1002	448	290	1158	518	126	489	416	65	425	361
V/C Ratio(X)	0.73	0.73	0.23	0.79	0.29	0.08	0.68	0.74	0.71	0.54	0.77	0.19
Avail Cap(c_a), veh/h	288	1269	568	432	1556	696	264	920	782	312	970	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	22.6	19.0	28.3	17.2	15.9	32.1	23.6	23.3	33.6	25.3	21.7
Incr Delay (d2), s/veh	5.2	1.7	0.3	5.6	0.1	0.1	6.3	2.2	2.2	6.8	2.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	6.7	1.5	4.8	2.4	0.6	1.9	6.8	5.5	0.8	6.3	1.1
LnGrp Delay(d),s/veh	35.7	24.3	19.2	33.8	17.3	16.0	38.5	25.8	25.6	40.5	28.3	21.9
LnGrp LOS	D	C	B	C	B	B	D	C	C	D	C	C
Approach Vol, veh/h		979			605			744			428	
Approach Delay, s/veh		25.4			23.5			27.2			28.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	23.4	16.1	24.9	9.3	20.9	12.1	28.9
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	3.4	15.1	11.1	15.8	5.5	14.1	7.8	7.1
Green Ext Time (p_c), s	0.0	2.5	0.4	2.6	0.1	1.4	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Notes

* HCM 2010 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)	94	18	78	80	27	95	39	460	24	23	513	69
Future Volume (veh/h)	94	18	78	80	27	95	39	460	24	23	513	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	102	20	85	87	29	103	42	500	26	25	558	75
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	196	234	199	182	231	196	88	664	564	66	1220	546
Arrive On Green	0.11	0.13	0.13	0.11	0.13	0.13	0.05	0.37	0.37	0.04	0.36	0.36
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	102	20	85	87	29	103	42	500	26	25	558	75
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	2.6	0.5	2.4	2.2	0.7	2.9	1.1	11.2	0.5	0.7	5.8	1.5
Cycle Q Clear(g_c), s	2.6	0.5	2.4	2.2	0.7	2.9	1.1	11.2	0.5	0.7	5.8	1.5
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	196	234	199	182	231	196	88	664	564	66	1220	546
V/C Ratio(X)	0.52	0.09	0.43	0.48	0.13	0.53	0.48	0.75	0.05	0.38	0.46	0.14
Avail Cap(c_a), veh/h	592	1267	1077	592	1267	1077	252	1726	1467	407	3590	1606
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	19.2	17.6	18.5	19.4	17.8	18.8	21.3	12.7	9.3	21.6	11.4	10.0
Incr Delay (d2), s/veh	2.1	0.2	1.5	1.9	0.2	2.2	4.0	1.8	0.0	3.5	0.3	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	1.3	0.2	1.1	1.1	0.3	1.3	0.6	5.7	0.2	0.4	2.8	0.7
LnGrp Delay(d),s/veh	21.3	17.8	19.9	21.3	18.0	20.9	25.3	14.4	9.3	25.1	11.6	10.1
LnGrp LOS	C	B	B	C	B	C	C	B	A	C	B	B
Approach Vol, veh/h		207			219			568			658	
Approach Delay, s/veh		20.4			20.7			15.0			12.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	21.1	8.9	10.3	6.4	20.5	9.3	9.9
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	2.7	13.2	4.2	4.4	3.1	7.8	4.6	4.9
Green Ext Time (p_c), s	0.0	2.1	0.2	0.4	0.0	2.8	0.2	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	333	650	236	304	339	346
Future Volume (veh/h)	333	650	236	304	339	346
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	362	707	257	0	368	376
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	455	912	547	189	560	500
Arrive On Green	0.27	0.51	0.16	0.00	0.33	0.33
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	362	707	257	0	368	376
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	9.7	15.7	3.4	0.0	9.1	10.8
Cycle Q Clear(g_c), s	9.7	15.7	3.4	0.0	9.1	10.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	455	912	547	189	560	500
V/C Ratio(X)	0.80	0.78	0.47	0.00	0.66	0.75
Avail Cap(c_a), veh/h	661	1490	1235	497	738	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	9.8	18.7	0.0	14.1	14.7
Incr Delay (d2), s/veh	4.3	1.4	0.6	0.0	1.3	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	8.0	1.6	0.0	4.4	9.0
LnGrp Delay(d),s/veh	21.0	11.2	19.3	0.0	15.4	18.2
LnGrp LOS	C	B	B		B	B
Approach Vol, veh/h		1069	257		744	
Approach Delay, s/veh		14.5	19.3		16.8	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.0		20.1	17.1	11.9
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				17.7		12.8	11.7	5.4
Green Ext Time (p_c), s				3.0		1.9	0.8	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes

* HCM 2010 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)	110	762	85	93	357	27	71	11	41	13	26	102
Future Volume (veh/h)	110	762	85	93	357	27	71	11	41	13	26	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	120	828	92	101	388	29	86	0	45	14	28	111
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	183	1592	496	156	1440	106	299	0	133	235	44	173
Arrive On Green	0.11	0.33	0.33	0.09	0.31	0.27	0.09	0.00	0.09	0.14	0.14	0.12
Sat Flow, veh/h	1707	4893	1524	1707	4651	343	3414	0	1524	1707	316	1255
Grp Volume(v), veh/h	120	828	92	101	271	146	86	0	45	14	0	139
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1732	1707	0	1524	1707	0	1571
Q Serve(g_s), s	3.0	6.1	1.9	2.6	2.8	2.9	1.1	0.0	1.2	0.3	0.0	3.8
Cycle Q Clear(g_c), s	3.0	6.1	1.9	2.6	2.8	2.9	1.1	0.0	1.2	0.3	0.0	3.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.80
Lane Grp Cap(c), veh/h	183	1592	496	156	1010	536	299	0	133	235	0	216
V/C Ratio(X)	0.65	0.52	0.19	0.65	0.27	0.27	0.29	0.00	0.34	0.06	0.00	0.64
Avail Cap(c_a), veh/h	687	3676	1145	611	2305	1224	3031	0	1352	1706	0	1570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	12.3	10.8	19.6	11.6	11.8	19.1	0.0	19.2	16.8	0.0	18.5
Incr Delay (d2), s/veh	3.9	0.3	0.2	4.4	0.1	0.3	0.5	0.0	1.5	0.1	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.8	0.8	1.4	1.3	1.4	0.5	0.0	0.6	0.2	0.0	1.8
LnGrp Delay(d),s/veh	23.1	12.5	11.0	24.0	11.8	12.1	19.6	0.0	20.7	16.9	0.0	21.7
LnGrp LOS	C	B	B	C	B	B	B		C	B		C
Approach Vol, veh/h		1040			518			131			153	
Approach Delay, s/veh		13.6			14.2			20.0			21.2	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.9	8.1	18.5		10.2	8.8	17.8
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		3.2	4.6	8.1		5.8	5.0	4.9
Green Ext Time (p_c), s		0.6	0.2	4.6		0.7	0.3	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	9	805	13	69	444	39	21	7	27	65	13	7
Future Volume (veh/h)	9	805	13	69	444	39	21	7	27	65	13	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	10	875	14	75	483	42	23	8	29	71	14	8
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	57	1912	595	144	2028	174	396	45	162	376	137	79
Arrive On Green	0.03	0.39	0.39	0.08	0.44	0.38	0.13	0.13	0.11	0.13	0.13	0.11
Sat Flow, veh/h	1707	4893	1524	1707	4590	395	1332	340	1234	1314	1072	612
Grp Volume(v), veh/h	10	875	14	75	342	183	23	0	37	71	0	22
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1723	1332	0	1575	1314	0	1684
Q Serve(g_s), s	0.2	4.0	0.2	1.3	2.0	2.1	0.5	0.0	0.6	1.6	0.0	0.4
Cycle Q Clear(g_c), s	0.2	4.0	0.2	1.3	2.0	2.1	0.8	0.0	0.6	2.2	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.78	1.00		0.36
Lane Grp Cap(c), veh/h	57	1912	595	144	1441	761	396	0	207	376	0	216
V/C Ratio(X)	0.17	0.46	0.02	0.52	0.24	0.24	0.06	0.00	0.18	0.19	0.00	0.10
Avail Cap(c_a), veh/h	302	3976	1238	447	2929	1547	1975	0	2074	1938	0	2219
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	14.3	6.9	5.7	13.4	5.3	5.5	12.0	0.0	12.0	12.9	0.0	11.8
Incr Delay (d2), s/veh	1.4	0.2	0.0	2.9	0.1	0.2	0.1	0.0	0.4	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.8	0.1	0.7	0.9	1.0	0.2	0.0	0.3	0.6	0.0	0.2
LnGrp Delay(d),s/veh	15.8	7.1	5.7	16.2	5.4	5.6	12.1	0.0	12.4	13.1	0.0	12.1
LnGrp LOS	B	A	A	B	A	A	B		B	B		B
Approach Vol, veh/h		899			600			60			93	
Approach Delay, s/veh		7.1			6.8			12.3			12.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.0	6.6	15.9		8.0	5.0	17.5
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		2.8	3.3	6.0		4.2	2.2	4.1
Green Ext Time (p_c), s		0.2	0.1	4.1		0.4	0.0	2.2

Intersection Summary		
HCM 2010 Ctrl Delay		7.5
HCM 2010 LOS		A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	980	557	0	0	0
Future Vol, veh/h	0	980	557	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1065	605	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	303
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	582
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	582
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	980	557	2	0	0
Future Vol, veh/h	0	980	557	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1065	605	2	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	304
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	581
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	581
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	534	0	0	394
Future Vol, veh/h	0	0	534	0	0	394
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	580	0	0	428

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	580	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	507	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	507	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	173	318	210	201	369	295
Future Volume (veh/h)	173	318	210	201	369	295
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	188	346	228	218	401	321
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	473	423	347	295	454	970
Arrive On Green	0.28	0.28	0.19	0.19	0.27	0.54
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	188	346	228	218	401	321
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	5.2	12.3	6.8	7.8	13.0	5.8
Cycle Q Clear(g_c), s	5.2	12.3	6.8	7.8	13.0	5.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	473	423	347	295	454	970
V/C Ratio(X)	0.40	0.82	0.66	0.74	0.88	0.33
Avail Cap(c_a), veh/h	708	632	725	616	513	1409
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	17.0	19.6	21.5	21.9	20.4	7.4
Incr Delay (d2), s/veh	0.5	5.3	2.1	3.6	15.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.7	3.6	3.6	8.0	2.9
LnGrp Delay(d),s/veh	17.5	24.8	23.7	25.6	35.5	7.6
LnGrp LOS	B	C	C	C	D	A
Approach Vol, veh/h	534		446			722
Approach Delay, s/veh	22.2		24.6			23.1
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.1	17.0				37.1		20.8
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.0	9.8				7.8		14.3
Green Ext Time (p_c), s	0.4	1.4				1.2		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	126	90	321	222	99	374
Future Volume (veh/h)	126	90	321	222	99	374
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	137	98	349	241	108	407
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	184	132	515	438	134	899
Arrive On Green	0.20	0.20	0.29	0.29	0.08	0.50
Sat Flow, veh/h	944	675	1792	1524	1707	1792
Grp Volume(v), veh/h	236	0	349	241	108	407
Grp Sat Flow(s),veh/h/ln	1626	0	1792	1524	1707	1792
Q Serve(g_s), s	4.7	0.0	6.0	4.6	2.2	5.1
Cycle Q Clear(g_c), s	4.7	0.0	6.0	4.6	2.2	5.1
Prop In Lane	0.58	0.42		1.00	1.00	
Lane Grp Cap(c), veh/h	317	0	515	438	134	899
V/C Ratio(X)	0.74	0.00	0.68	0.55	0.80	0.45
Avail Cap(c_a), veh/h	986	0	1139	968	335	1734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	10.9	10.4	15.7	5.6
Incr Delay (d2), s/veh	3.5	0.0	1.6	1.1	10.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	3.1	2.1	1.4	2.6
LnGrp Delay(d),s/veh	16.6	0.0	12.5	11.5	26.3	5.9
LnGrp LOS	B		B	B	C	A
Approach Vol, veh/h	236		590			515
Approach Delay, s/veh	16.6		12.1			10.2
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.4	15.8				23.2		11.5
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	4.2	8.0				7.1		6.7
Green Ext Time (p_c), s	0.1	2.0				1.5		0.8

Intersection Summary			
HCM 2010 Ctrl Delay			12.2
HCM 2010 LOS			B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	116	593	116	286	759	81	73	334	355	89	308	85
Future Volume (veh/h)	116	593	116	286	759	81	73	334	355	89	308	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	126	645	126	311	825	88	79	363	332	97	335	92
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	157	772	345	339	1135	508	101	463	393	124	487	414
Arrive On Green	0.09	0.23	0.23	0.20	0.33	0.33	0.06	0.26	0.26	0.07	0.27	0.27
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	126	645	126	311	825	88	79	363	332	97	335	92
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	6.3	15.7	6.1	15.6	18.6	3.6	4.0	16.4	18.0	4.9	14.6	4.1
Cycle Q Clear(g_c), s	6.3	15.7	6.1	15.6	18.6	3.6	4.0	16.4	18.0	4.9	14.6	4.1
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	157	772	345	339	1135	508	101	463	393	124	487	414
V/C Ratio(X)	0.80	0.84	0.37	0.92	0.73	0.17	0.78	0.78	0.84	0.79	0.69	0.22
Avail Cap(c_a), veh/h	221	938	420	339	1200	537	202	722	614	241	763	649
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	38.8	32.2	28.4	34.2	25.6	20.6	40.5	30.1	30.7	39.8	28.4	24.6
Incr Delay (d2), s/veh	13.2	5.6	0.6	29.0	2.1	0.2	12.4	3.0	6.4	10.4	1.7	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	3.6	8.0	2.6	10.1	9.0	1.5	2.2	8.5	8.2	2.6	7.4	1.8
LnGrp Delay(d),s/veh	52.0	37.8	29.1	63.2	27.7	20.7	52.8	33.1	37.0	50.1	30.2	24.9
LnGrp LOS	D	D	C	E	C	C	D	C	D	D	C	C
Approach Vol, veh/h		897			1224			774			524	
Approach Delay, s/veh		38.6			36.2			36.8			33.0	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	27.9	22.0	26.2	9.8	29.1	12.7	35.5
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	6.9	20.0	17.6	17.7	6.0	16.6	8.3	20.6
Green Ext Time (p_c), s	0.1	2.5	0.0	2.0	0.1	1.5	0.1	3.3

Intersection Summary		
HCM 2010 Ctrl Delay		36.5
HCM 2010 LOS		D

Notes

* HCM 2010 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)	115	29	39	34	14	64	24	598	49	84	589	58
Future Volume (veh/h)	115	29	39	34	14	64	24	598	49	84	589	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	125	32	42	37	15	70	26	650	53	91	640	63
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	181	215	183	113	143	121	40	743	631	116	1564	699
Arrive On Green	0.11	0.12	0.12	0.07	0.08	0.08	0.02	0.41	0.41	0.07	0.46	0.46
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	125	32	42	37	15	70	26	650	53	91	640	63
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	4.2	1.0	1.5	1.2	0.5	2.6	0.9	19.8	1.3	3.1	7.4	1.4
Cycle Q Clear(g_c), s	4.2	1.0	1.5	1.2	0.5	2.6	0.9	19.8	1.3	3.1	7.4	1.4
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	181	215	183	113	143	121	40	743	631	116	1564	699
V/C Ratio(X)	0.69	0.15	0.23	0.33	0.10	0.58	0.65	0.87	0.08	0.78	0.41	0.09
Avail Cap(c_a), veh/h	442	974	828	442	965	820	175	1285	1092	296	2681	1199
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	25.6	23.4	23.7	26.5	25.4	26.4	28.8	16.0	10.6	27.3	10.7	9.1
Incr Delay (d2), s/veh	4.6	0.3	0.6	1.7	0.3	4.3	16.2	3.6	0.1	10.8	0.2	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	2.2	0.5	0.7	0.6	0.2	1.2	0.6	10.5	0.5	1.8	3.5	0.6
LnGrp Delay(d),s/veh	30.2	23.8	24.3	28.2	25.7	30.6	45.0	19.6	10.6	38.1	10.9	9.1
LnGrp LOS	C	C	C	C	C	C	D	B	B	D	B	A
Approach Vol, veh/h		199			122			729			794	
Approach Delay, s/veh		27.9			29.3			19.8			13.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	30.4	8.5	11.7	6.1	33.1	10.9	9.3
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	5.1	21.8	3.2	3.5	2.9	9.4	6.2	4.6
Green Ext Time (p_c), s	0.1	2.8	0.1	0.2	0.0	3.2	0.3	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	323	490	523	410	354	293
Future Volume (veh/h)	323	490	523	410	354	293
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	351	533	568	0	385	318
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	411	957	723	323	465	415
Arrive On Green	0.24	0.53	0.21	0.00	0.27	0.27
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	351	533	568	0	385	318
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	11.4	11.4	9.1	0.0	12.3	11.1
Cycle Q Clear(g_c), s	11.4	11.4	9.1	0.0	12.3	11.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	411	957	723	323	465	415
V/C Ratio(X)	0.85	0.56	0.79	0.00	0.83	0.77
Avail Cap(c_a), veh/h	539	1207	941	421	584	521
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	8.9	21.6	0.0	19.8	19.4
Incr Delay (d2), s/veh	10.1	0.5	3.3	0.0	7.9	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	5.8	4.6	0.0	6.8	9.4
LnGrp Delay(d),s/veh	31.1	9.5	24.9	0.0	27.7	24.6
LnGrp LOS	C	A	C		C	C
Approach Vol, veh/h		884	568		703	
Approach Delay, s/veh		18.0	24.9		26.3	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.7		21.2	18.6	18.1
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				13.4		14.3	13.4	11.1
Green Ext Time (p_c), s				2.1		1.5	0.6	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Notes

* HCM 2010 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)	157	795	137	213	719	18	254	40	147	12	57	133
Future Volume (veh/h)	157	795	137	213	719	18	254	40	147	12	57	133
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	171	864	149	232	782	20	307	0	160	13	62	145
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	214	1229	383	275	1410	36	534	0	238	278	78	182
Arrive On Green	0.13	0.25	0.25	0.16	0.29	0.29	0.16	0.00	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1707	4893	1524	1707	4907	125	3414	0	1524	1707	478	1117
Grp Volume(v), veh/h	171	864	149	232	519	283	307	0	160	13	0	207
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1770	1707	0	1524	1707	0	1595
Q Serve(g_s), s	7.2	11.9	6.0	9.8	10.0	10.0	6.2	0.0	7.3	0.5	0.0	9.3
Cycle Q Clear(g_c), s	7.2	11.9	6.0	9.8	10.0	10.0	6.2	0.0	7.3	0.5	0.0	9.3
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		0.70
Lane Grp Cap(c), veh/h	214	1229	383	275	937	509	534	0	238	278	0	260
V/C Ratio(X)	0.80	0.70	0.39	0.84	0.55	0.56	0.57	0.00	0.67	0.05	0.00	0.80
Avail Cap(c_a), veh/h	398	2098	653	352	1310	711	1795	0	801	1012	0	946
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	31.5	25.3	23.1	30.2	22.4	22.4	29.0	0.0	29.5	26.2	0.0	29.9
Incr Delay (d2), s/veh	6.8	0.7	0.6	13.7	0.5	1.0	1.0	0.0	3.3	0.1	0.0	5.5
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	3.8	5.4	2.6	5.6	4.5	5.0	3.0	0.0	3.3	0.2	0.0	4.5
LnGrp Delay(d),s/veh	38.3	26.0	23.7	43.9	22.9	23.4	30.0	0.0	32.8	26.3	0.0	35.4
LnGrp LOS	D	C	C	D	C	C	C		C	C		D
Approach Vol, veh/h		1184			1034			467			220	
Approach Delay, s/veh		27.5			27.7			30.9			34.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.3	16.7	24.4		16.8	14.0	27.1
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		9.3	11.8	13.9		11.3	9.2	12.0
Green Ext Time (p_c), s		2.3	0.3	4.7		1.0	0.3	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	20	979	55	241	862	80	97	31	104	57	36	17
Future Volume (veh/h)	20	979	55	241	862	80	97	31	104	57	36	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	22	1064	60	262	937	87	105	34	113	62	39	18
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	36	1608	501	269	2120	196	358	68	225	276	215	99
Arrive On Green	0.02	0.33	0.33	0.16	0.47	0.47	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1707	4893	1524	1707	4558	422	1290	365	1213	1189	1162	536
Grp Volume(v), veh/h	22	1064	60	262	670	354	105	0	147	62	0	57
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1718	1290	0	1578	1189	0	1698
Q Serve(g_s), s	0.6	8.6	1.3	7.1	6.4	6.4	3.5	0.0	3.9	2.3	0.0	1.3
Cycle Q Clear(g_c), s	0.6	8.6	1.3	7.1	6.4	6.4	4.8	0.0	3.9	6.2	0.0	1.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.77	1.00		0.32
Lane Grp Cap(c), veh/h	36	1608	501	269	1517	799	358	0	292	276	0	314
V/C Ratio(X)	0.61	0.66	0.12	0.97	0.44	0.44	0.29	0.00	0.50	0.22	0.00	0.18
Avail Cap(c_a), veh/h	173	2432	757	269	1805	951	1221	0	1347	1074	0	1453
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	22.4	13.3	10.9	19.4	8.3	8.3	17.9	0.0	16.9	19.7	0.0	15.9
Incr Delay (d2), s/veh	15.1	0.5	0.1	47.2	0.2	0.4	0.5	0.0	1.3	0.4	0.0	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	0.4	3.9	0.5	6.8	2.8	3.0	1.3	0.0	1.8	0.8	0.0	0.6
LnGrp Delay(d),s/veh	37.6	13.8	11.0	66.5	8.5	8.7	18.4	0.0	18.3	20.1	0.0	16.2
LnGrp LOS	D	B	B	E	A	A	B		B	C		B
Approach Vol, veh/h		1146			1286			252			119	
Approach Delay, s/veh		14.1			20.4			18.3			18.2	
Approach LOS		B			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		13.3	12.0	21.0		13.3	5.7	27.3				
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8				
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6				
Max Q Clear Time (g_c+I1), s		6.8	9.1	10.6		8.2	2.6	8.4				
Green Ext Time (p_c), s		1.1	0.0	4.6		0.5	0.0	4.5				
Intersection Summary												
HCM 2010 Ctrl Delay			17.5									
HCM 2010 LOS			B									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1037	1126	0	0	0
Future Vol, veh/h	0	1037	1126	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1127	1224	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	612
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	366
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	366
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑			↱
Traffic Vol, veh/h	0	1037	1120	2	0	8
Future Vol, veh/h	0	1037	1120	2	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1127	1217	2	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	610
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	367
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	367
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	367
HCM Lane V/C Ratio	-	-	-	0.024
HCM Control Delay (s)	-	-	-	15
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	531	0	0	482
Future Vol, veh/h	0	0	531	0	0	482
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	577	0	0	524

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	577	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	509	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	509	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	144	363	197	159	377	228
Future Volume (veh/h)	144	363	197	159	377	228
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	157	395	214	173	410	248
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	538	481	352	299	479	979
Arrive On Green	0.32	0.32	0.20	0.20	0.28	0.55
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	157	395	214	173	410	248
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	4.0	13.8	6.3	5.9	13.1	4.2
Cycle Q Clear(g_c), s	4.0	13.8	6.3	5.9	13.1	4.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	538	481	352	299	479	979
V/C Ratio(X)	0.29	0.82	0.61	0.58	0.86	0.25
Avail Cap(c_a), veh/h	730	651	782	665	535	1467
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	14.9	18.3	21.2	21.1	19.7	6.9
Incr Delay (d2), s/veh	0.3	6.1	1.7	1.8	12.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	6.6	3.3	2.6	7.7	2.1
LnGrp Delay(d),s/veh	15.2	24.4	22.9	22.8	31.6	7.0
LnGrp LOS	B	C	C	C	C	A
Approach Vol, veh/h	552		387			658
Approach Delay, s/veh	21.8		22.9			22.4
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.2	15.3				35.6		22.2
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.1	8.3				6.2		15.8
Green Ext Time (p_c), s	0.4	1.2				0.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	136	47	320	197	74	287
Future Volume (veh/h)	136	47	320	197	74	287
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	148	51	348	214	80	312
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	227	78	613	521	148	999
Arrive On Green	0.19	0.16	0.34	0.34	0.09	0.56
Sat Flow, veh/h	1226	422	1792	1524	1707	1792
Grp Volume(v), veh/h	200	0	348	214	80	312
Grp Sat Flow(s),veh/h/ln	1657	0	1792	1524	1707	1792
Q Serve(g_s), s	3.5	0.0	4.9	3.3	1.4	2.9
Cycle Q Clear(g_c), s	3.5	0.0	4.9	3.3	1.4	2.9
Prop In Lane	0.74	0.25		1.00	1.00	
Lane Grp Cap(c), veh/h	307	0	613	521	148	999
V/C Ratio(X)	0.65	0.00	0.57	0.41	0.54	0.31
Avail Cap(c_a), veh/h	1156	0	1372	1166	412	2035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.8	0.0	8.3	7.8	13.6	3.7
Incr Delay (d2), s/veh	2.3	0.0	0.8	0.5	3.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.6	1.4	0.8	1.4
LnGrp Delay(d),s/veh	14.2	0.0	9.2	8.3	16.6	3.9
LnGrp LOS	B		A	A	B	A
Approach Vol, veh/h	200		562			392
Approach Delay, s/veh	14.2		8.9			6.5
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.7	14.6				21.3		9.8
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	3.4	6.9				4.9		5.5
Green Ext Time (p_c), s	0.1	1.9				1.1		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	143	676	93	252	319	66	79	349	271	32	300	62
Future Volume (veh/h)	143	676	93	252	319	66	79	349	271	32	300	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	155	735	101	274	347	72	86	379	295	35	326	67
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	206	976	437	331	1194	534	125	489	416	63	424	360
Arrive On Green	0.12	0.29	0.29	0.19	0.35	0.35	0.07	0.27	0.27	0.04	0.24	0.24
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	155	735	101	274	347	72	86	379	295	35	326	67
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	6.7	14.9	3.9	11.7	5.6	2.5	3.7	14.8	13.3	1.5	12.9	2.7
Cycle Q Clear(g_c), s	6.7	14.9	3.9	11.7	5.6	2.5	3.7	14.8	13.3	1.5	12.9	2.7
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	206	976	437	331	1194	534	125	489	416	63	424	360
V/C Ratio(X)	0.75	0.75	0.23	0.83	0.29	0.13	0.69	0.78	0.71	0.56	0.77	0.19
Avail Cap(c_a), veh/h	269	1186	530	404	1454	650	247	859	731	292	907	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)	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	32.4	24.7	20.7	29.5	17.9	16.8	34.4	25.5	25.0	36.1	27.1	23.2
Incr Delay (d2), s/veh	8.3	2.2	0.3	11.4	0.1	0.1	6.6	2.7	2.2	7.6	3.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	7.3	1.6	6.5	2.7	1.0	2.0	7.6	5.9	0.9	6.7	1.1
LnGrp Delay(d),s/veh	40.7	26.9	21.0	40.8	18.0	17.0	41.0	28.2	27.2	43.6	30.1	23.5
LnGrp LOS	D	C	C	D	B	B	D	C	C	D	C	C
Approach Vol, veh/h		991			693			760			428	
Approach Delay, s/veh		28.5			26.9			29.3			30.2	
Approach LOS		C			C			C			C	
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	24.8	18.7	25.8	9.6	22.0	13.2	31.4				
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5				
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31				
Max Q Clear Time (g_c+I1), s	3.5	16.8	13.7	16.9	5.7	14.9	8.7	7.6				
Green Ext Time (p_c), s	0.0	2.5	0.4	2.4	0.1	1.4	0.1	1.8				
Intersection Summary												
HCM 2010 Ctrl Delay			28.6									
HCM 2010 LOS			C									
Notes												

* HCM 2010 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)	98	18	78	80	27	99	39	467	24	26	520	72
Future Volume (veh/h)	98	18	78	80	27	99	39	467	24	26	520	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	107	20	85	87	29	108	42	508	26	28	565	78
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	199	244	207	180	235	200	87	668	568	70	1236	553
Arrive On Green	0.12	0.14	0.14	0.11	0.13	0.13	0.05	0.37	0.37	0.04	0.36	0.36
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	107	20	85	87	29	108	42	508	26	28	565	78
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	2.8	0.5	2.4	2.3	0.7	3.1	1.1	11.7	0.5	0.8	6.0	1.6
Cycle Q Clear(g_c), s	2.8	0.5	2.4	2.3	0.7	3.1	1.1	11.7	0.5	0.8	6.0	1.6
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	199	244	207	180	235	200	87	668	568	70	1236	553
V/C Ratio(X)	0.54	0.08	0.41	0.48	0.12	0.54	0.49	0.76	0.05	0.40	0.46	0.14
Avail Cap(c_a), veh/h	578	1237	1051	578	1237	1051	246	1685	1432	398	3504	1567
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	19.7	17.8	18.7	19.9	18.1	19.2	21.8	13.0	9.5	22.1	11.5	10.1
Incr Delay (d2), s/veh	2.2	0.1	1.3	2.0	0.2	2.3	4.2	1.8	0.0	3.7	0.3	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	1.4	0.2	1.1	1.2	0.3	1.4	0.6	6.1	0.2	0.4	2.8	0.7
LnGrp Delay(d),s/veh	21.9	18.0	20.0	21.9	18.4	21.5	26.0	14.8	9.5	25.8	11.8	10.2
LnGrp LOS	C	B	B	C	B	C	C	B	A	C	B	B
Approach Vol, veh/h		212			224			576			671	
Approach Delay, s/veh		20.8			21.2			15.4			12.2	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	21.6	9.0	10.7	6.4	21.1	9.5	10.2
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	2.8	13.7	4.3	4.4	3.1	8.0	4.8	5.1
Green Ext Time (p_c), s	0.0	2.1	0.2	0.4	0.0	2.9	0.2	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	337	650	236	308	342	349
Future Volume (veh/h)	337	650	236	308	342	349
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	366	707	257	0	372	379
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	458	913	545	188	562	501
Arrive On Green	0.27	0.51	0.16	0.00	0.33	0.33
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	366	707	257	0	372	379
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	9.9	15.8	3.4	0.0	9.2	11.0
Cycle Q Clear(g_c), s	9.9	15.8	3.4	0.0	9.2	11.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	458	913	545	188	562	501
V/C Ratio(X)	0.80	0.77	0.47	0.00	0.66	0.76
Avail Cap(c_a), veh/h	656	1478	1225	493	732	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	9.8	18.9	0.0	14.2	14.8
Incr Delay (d2), s/veh	4.6	1.4	0.6	0.0	1.4	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	8.0	1.6	0.0	4.6	9.2
LnGrp Delay(d),s/veh	21.4	11.3	19.5	0.0	15.7	18.5
LnGrp LOS	C	B	B		B	B
Approach Vol, veh/h		1073	257		751	
Approach Delay, s/veh		14.7	19.5		17.1	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.2		20.3	17.3	11.9
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				17.8		13.0	11.9	5.4
Green Ext Time (p_c), s				3.0		1.9	0.8	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Notes

* HCM 2010 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)	117	782	88	93	394	27	75	11	41	13	26	109
Future Volume (veh/h)	117	782	88	93	394	27	75	11	41	13	26	109
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	127	850	96	101	428	29	91	0	45	14	28	118
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	192	1606	500	156	1437	96	298	0	133	245	43	182
Arrive On Green	0.11	0.33	0.33	0.09	0.31	0.27	0.09	0.00	0.09	0.14	0.14	0.13
Sat Flow, veh/h	1707	4893	1524	1707	4685	314	3414	0	1524	1707	301	1268
Grp Volume(v), veh/h	127	850	96	101	297	160	91	0	45	14	0	146
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1737	1707	0	1524	1707	0	1569
Q Serve(g_s), s	3.3	6.5	2.1	2.6	3.2	3.2	1.1	0.0	1.3	0.3	0.0	4.0
Cycle Q Clear(g_c), s	3.3	6.5	2.1	2.6	3.2	3.2	1.1	0.0	1.3	0.3	0.0	4.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.81
Lane Grp Cap(c), veh/h	192	1606	500	156	1001	533	298	0	133	245	0	225
V/C Ratio(X)	0.66	0.53	0.19	0.65	0.30	0.30	0.31	0.00	0.34	0.06	0.00	0.65
Avail Cap(c_a), veh/h	672	3597	1120	598	2255	1201	2965	0	1323	1669	0	1534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	12.5	11.0	20.1	12.1	12.2	19.6	0.0	19.6	16.9	0.0	18.8
Incr Delay (d2), s/veh	3.8	0.3	0.2	4.5	0.2	0.3	0.6	0.0	1.5	0.1	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	1.7	3.0	0.9	1.4	1.4	1.6	0.6	0.0	0.6	0.2	0.0	1.9
LnGrp Delay(d),s/veh	23.3	12.8	11.2	24.5	12.2	12.5	20.1	0.0	21.1	17.0	0.0	21.9
LnGrp LOS	C	B	B	C	B	B	C		C	B		C
Approach Vol, veh/h		1073			558			136			160	
Approach Delay, s/veh		13.9			14.6			20.5			21.5	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.0	8.2	19.0		10.5	9.1	18.0
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		3.3	4.6	8.5		6.0	5.3	5.2
Green Ext Time (p_c), s		0.6	0.2	4.7		0.7	0.3	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	12	818	16	69	474	39	25	7	27	65	13	11
Future Volume (veh/h)	12	818	16	69	474	39	25	7	27	65	13	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	13	889	17	75	515	42	27	8	29	71	14	12
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	62	1921	598	144	2033	164	393	46	166	378	117	100
Arrive On Green	0.04	0.39	0.39	0.08	0.44	0.38	0.13	0.13	0.11	0.13	0.13	0.11
Sat Flow, veh/h	1707	4893	1524	1707	4616	373	1327	340	1234	1314	892	765
Grp Volume(v), veh/h	13	889	17	75	362	195	27	0	37	71	0	26
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1727	1327	0	1575	1314	0	1657
Q Serve(g_s), s	0.2	4.2	0.2	1.3	2.2	2.2	0.6	0.0	0.7	1.6	0.0	0.4
Cycle Q Clear(g_c), s	0.2	4.2	0.2	1.3	2.2	2.2	1.0	0.0	0.7	2.2	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.78	1.00		0.46
Lane Grp Cap(c), veh/h	62	1921	598	144	1437	760	393	0	211	378	0	217
V/C Ratio(X)	0.21	0.46	0.03	0.52	0.25	0.26	0.07	0.00	0.18	0.19	0.00	0.12
Avail Cap(c_a), veh/h	299	3934	1225	443	2898	1534	1944	0	2052	1918	0	2160
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	14.4	7.0	5.8	13.5	5.4	5.6	12.2	0.0	12.1	12.9	0.0	12.0
Incr Delay (d2), s/veh	1.7	0.2	0.0	2.9	0.1	0.2	0.1	0.0	0.4	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.8	0.1	0.7	1.0	1.1	0.2	0.0	0.3	0.6	0.0	0.2
LnGrp Delay(d),s/veh	16.1	7.1	5.8	16.4	5.5	5.8	12.3	0.0	12.5	13.2	0.0	12.2
LnGrp LOS	B	A	A	B	A	A	B		B	B		B
Approach Vol, veh/h		919			632			64			97	
Approach Delay, s/veh		7.2			6.9			12.4			12.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.1	6.6	16.1		8.1	5.1	17.6
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		3.0	3.3	6.2		4.2	2.2	4.2
Green Ext Time (p_c), s		0.2	0.1	4.2		0.4	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑→			↱
Traffic Vol, veh/h	0	980	530	74	0	106
Future Vol, veh/h	0	980	530	74	0	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1065	576	80	0	115

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	328
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	561
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	561
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	561
HCM Lane V/C Ratio	-	-	-	0.205
HCM Control Delay (s)	-	-	-	13.1
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑↱			↱
Traffic Vol, veh/h	0	980	601	7	0	4
Future Vol, veh/h	0	980	601	7	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1065	653	8	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	331
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	558
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	558
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	558
HCM Lane V/C Ratio	-	-	-	0.008
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	505	82	0	394
Future Vol, veh/h	0	41	505	82	0	394
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	45	549	89	0	428

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	594	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	498	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	498	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	498	-
HCM Lane V/C Ratio	-	-	0.089	-
HCM Control Delay (s)	-	-	12.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	173	318	210	209	369	295
Future Volume (veh/h)	173	318	210	209	369	295
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	188	346	228	227	401	321
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	472	421	357	303	453	976
Arrive On Green	0.28	0.28	0.20	0.20	0.27	0.54
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	188	346	228	227	401	321
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	5.3	12.5	6.8	8.2	13.2	5.8
Cycle Q Clear(g_c), s	5.3	12.5	6.8	8.2	13.2	5.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	472	421	357	303	453	976
V/C Ratio(X)	0.40	0.82	0.64	0.75	0.88	0.33
Avail Cap(c_a), veh/h	698	623	715	608	506	1390
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	17.3	19.9	21.6	22.1	20.7	7.4
Incr Delay (d2), s/veh	0.5	5.6	1.9	3.7	15.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.9	3.5	3.8	8.2	2.9
LnGrp Delay(d),s/veh	17.8	25.4	23.5	25.8	36.4	7.6
LnGrp LOS	B	C	C	C	D	A
Approach Vol, veh/h	534		455			722
Approach Delay, s/veh	22.7		24.6			23.6
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.3	17.5				37.7		20.9
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.2	10.2				7.8		14.5
Green Ext Time (p_c), s	0.4	1.4				1.2		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	126	90	329	230	99	374
Future Volume (veh/h)	126	90	329	230	99	374
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	137	98	358	250	108	407
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	184	132	524	445	134	906
Arrive On Green	0.19	0.19	0.29	0.29	0.08	0.51
Sat Flow, veh/h	944	675	1792	1524	1707	1792
Grp Volume(v), veh/h	236	0	358	250	108	407
Grp Sat Flow(s),veh/h/ln	1626	0	1792	1524	1707	1792
Q Serve(g_s), s	4.8	0.0	6.2	4.9	2.2	5.1
Cycle Q Clear(g_c), s	4.8	0.0	6.2	4.9	2.2	5.1
Prop In Lane	0.58	0.42		1.00	1.00	
Lane Grp Cap(c), veh/h	317	0	524	445	134	906
V/C Ratio(X)	0.75	0.00	0.68	0.56	0.80	0.45
Avail Cap(c_a), veh/h	976	0	1127	958	332	1716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	11.0	10.5	15.9	5.5
Incr Delay (d2), s/veh	3.5	0.0	1.6	1.1	10.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	3.2	2.2	1.4	2.6
LnGrp Delay(d),s/veh	16.8	0.0	12.5	11.6	26.4	5.9
LnGrp LOS	B		B	B	C	A
Approach Vol, veh/h	236		608			515
Approach Delay, s/veh	16.8		12.2			10.2
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.5	16.0				23.5		11.5
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	4.2	8.2				7.1		6.8
Green Ext Time (p_c), s	0.1	2.0				1.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	128	593	116	336	771	118	73	350	355	89	308	85
Future Volume (veh/h)	128	593	116	336	771	118	73	350	355	89	308	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	139	645	126	365	838	128	79	380	332	97	335	92
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	171	771	345	338	1105	495	101	464	394	124	488	414
Arrive On Green	0.10	0.23	0.23	0.20	0.32	0.32	0.06	0.26	0.26	0.07	0.27	0.27
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	139	645	126	365	838	128	79	380	332	97	335	92
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	7.0	15.8	6.1	17.3	19.2	5.4	4.0	17.4	18.0	4.9	14.6	4.1
Cycle Q Clear(g_c), s	7.0	15.8	6.1	17.3	19.2	5.4	4.0	17.4	18.0	4.9	14.6	4.1
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	171	771	345	338	1105	495	101	464	394	124	488	414
V/C Ratio(X)	0.81	0.84	0.37	1.08	0.76	0.26	0.78	0.82	0.84	0.79	0.69	0.22
Avail Cap(c_a), veh/h	221	937	419	338	1198	536	202	721	613	241	762	648
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	38.5	32.2	28.5	35.0	26.4	21.7	40.5	30.4	30.6	39.8	28.4	24.6
Incr Delay (d2), s/veh	16.1	5.7	0.6	71.4	2.6	0.3	12.4	4.3	6.3	10.4	1.7	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	4.0	8.0	2.6	14.8	9.4	2.3	2.2	9.1	8.2	2.6	7.4	1.8
LnGrp Delay(d),s/veh	54.5	37.9	29.1	106.4	29.0	22.0	52.9	34.7	36.9	50.2	30.2	24.9
LnGrp LOS	D	D	C	F	C	C	D	C	D	D	C	C
Approach Vol, veh/h		910			1331			791			524	
Approach Delay, s/veh		39.2			49.6			37.5			32.9	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	28.0	22.0	26.3	9.9	29.1	13.4	34.8
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	6.9	20.0	19.3	17.8	6.0	16.6	9.0	21.2
Green Ext Time (p_c), s	0.1	2.6	0.0	2.0	0.1	1.5	0.1	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	41.8
HCM 2010 LOS	D

Notes

* HCM 2010 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)	119	29	39	34	14	68	24	606	49	88	597	62
Future Volume (veh/h)	119	29	39	34	14	68	24	606	49	88	597	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	129	32	42	37	15	74	26	659	53	96	649	67
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	184	225	191	110	147	125	40	749	636	123	1588	710
Arrive On Green	0.11	0.13	0.13	0.06	0.08	0.08	0.02	0.42	0.42	0.07	0.47	0.47
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	129	32	42	37	15	74	26	659	53	96	649	67
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	4.5	1.0	1.5	1.3	0.5	2.9	0.9	20.8	1.3	3.4	7.7	1.5
Cycle Q Clear(g_c), s	4.5	1.0	1.5	1.3	0.5	2.9	0.9	20.8	1.3	3.4	7.7	1.5
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	184	225	191	110	147	125	40	749	636	123	1588	710
V/C Ratio(X)	0.70	0.14	0.22	0.34	0.10	0.59	0.65	0.88	0.08	0.78	0.41	0.09
Avail Cap(c_a), veh/h	428	943	801	428	934	794	170	1243	1057	286	2595	1161
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	26.4	23.9	24.2	27.5	26.1	27.2	29.7	16.5	10.8	28.0	10.8	9.2
Incr Delay (d2), s/veh	4.8	0.3	0.6	1.8	0.3	4.5	16.6	4.3	0.1	10.2	0.2	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	2.4	0.5	0.7	0.7	0.2	1.4	0.6	11.1	0.6	1.9	3.6	0.6
LnGrp Delay(d),s/veh	31.2	24.2	24.7	29.3	26.4	31.7	46.3	20.8	10.8	38.3	11.0	9.2
LnGrp LOS	C	C	C	C	C	C	D	C	B	D	B	A
Approach Vol, veh/h		203			126			738			812	
Approach Delay, s/veh		28.8			30.3			21.0			14.1	
Approach LOS		C			C			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	31.5	8.5	12.3	6.1	34.4	11.2	9.6				
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6				
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0				
Max Q Clear Time (g_c+I1), s	5.4	22.8	3.3	3.5	2.9	9.7	6.5	4.9				
Green Ext Time (p_c), s	0.1	2.9	0.0	0.2	0.0	3.3	0.3	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			19.5									
HCM 2010 LOS			B									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	327	490	523	414	358	297
Future Volume (veh/h)	327	490	523	414	358	297
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	355	533	568	0	389	323
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	414	958	720	322	468	417
Arrive On Green	0.24	0.53	0.21	0.00	0.27	0.27
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	355	533	568	0	389	323
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	11.6	11.5	9.2	0.0	12.5	11.4
Cycle Q Clear(g_c), s	11.6	11.5	9.2	0.0	12.5	11.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	414	958	720	322	468	417
V/C Ratio(X)	0.86	0.56	0.79	0.00	0.83	0.77
Avail Cap(c_a), veh/h	534	1196	932	417	578	516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	9.0	21.8	0.0	20.0	19.6
Incr Delay (d2), s/veh	10.6	0.5	3.5	0.0	8.4	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	5.8	4.7	0.0	6.9	9.7
LnGrp Delay(d),s/veh	31.8	9.5	25.3	0.0	28.3	25.3
LnGrp LOS	C	A	C		C	C
Approach Vol, veh/h		888	568		712	
Approach Delay, s/veh		18.4	25.3		27.0	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.0		21.4	18.9	18.2
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				13.5		14.5	13.6	11.2
Green Ext Time (p_c), s				2.1		1.5	0.6	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Notes

* HCM 2010 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)	165	818	141	213	758	18	258	40	147	12	57	141
Future Volume (veh/h)	165	818	141	213	758	18	258	40	147	12	57	141
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	179	889	153	232	824	20	311	0	160	13	62	153
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	222	1247	388	274	1404	34	530	0	237	287	77	190
Arrive On Green	0.13	0.25	0.25	0.16	0.29	0.29	0.16	0.00	0.16	0.17	0.17	0.17
Sat Flow, veh/h	1707	4893	1524	1707	4915	119	3414	0	1524	1707	459	1133
Grp Volume(v), veh/h	179	889	153	232	547	297	311	0	160	13	0	215
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1771	1707	0	1524	1707	0	1592
Q Serve(g_s), s	7.8	12.6	6.3	10.1	10.9	11.0	6.4	0.0	7.5	0.5	0.0	9.9
Cycle Q Clear(g_c), s	7.8	12.6	6.3	10.1	10.9	11.0	6.4	0.0	7.5	0.5	0.0	9.9
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		0.71
Lane Grp Cap(c), veh/h	222	1247	388	274	932	506	530	0	237	287	0	267
V/C Ratio(X)	0.81	0.71	0.39	0.85	0.59	0.59	0.59	0.00	0.68	0.05	0.00	0.80
Avail Cap(c_a), veh/h	388	2044	636	343	1277	693	1749	0	781	987	0	920
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	32.2	25.8	23.5	31.0	23.3	23.3	29.9	0.0	30.3	26.6	0.0	30.5
Incr Delay (d2), s/veh	6.8	0.8	0.6	14.7	0.6	1.1	1.0	0.0	3.4	0.1	0.0	5.6
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	4.1	5.8	2.7	5.8	5.0	5.5	3.1	0.0	3.4	0.2	0.0	4.8
LnGrp Delay(d),s/veh	39.0	26.6	24.1	45.8	23.9	24.4	30.9	0.0	33.7	26.6	0.0	36.1
LnGrp LOS	D	C	C	D	C	C	C		C	C		D
Approach Vol, veh/h		1221			1076			471			228	
Approach Delay, s/veh		28.1			28.8			31.9			35.6	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.5	16.9	25.2		17.5	14.6	27.5
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		9.5	12.1	14.6		11.9	9.8	13.0
Green Ext Time (p_c), s		2.3	0.3	4.8		1.0	0.4	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	24	994	59	241	893	80	101	31	104	57	36	21
Future Volume (veh/h)	24	994	59	241	893	80	101	31	104	57	36	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	26	1080	64	262	971	87	110	34	113	62	39	23
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	42	1622	505	268	2120	190	353	68	225	276	196	116
Arrive On Green	0.02	0.33	0.33	0.16	0.46	0.46	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1707	4893	1524	1707	4574	409	1284	365	1213	1189	1058	624
Grp Volume(v), veh/h	26	1080	64	262	692	366	110	0	147	62	0	62
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1720	1284	0	1578	1189	0	1682
Q Serve(g_s), s	0.7	8.8	1.4	7.1	6.7	6.8	3.7	0.0	3.9	2.3	0.0	1.5
Cycle Q Clear(g_c), s	0.7	8.8	1.4	7.1	6.7	6.8	5.1	0.0	3.9	6.2	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.77	1.00		0.37
Lane Grp Cap(c), veh/h	42	1622	505	268	1512	798	353	0	293	276	0	312
V/C Ratio(X)	0.62	0.67	0.13	0.98	0.46	0.46	0.31	0.00	0.50	0.22	0.00	0.20
Avail Cap(c_a), veh/h	172	2416	752	268	1793	946	1204	0	1339	1066	0	1430
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	22.5	13.4	10.9	19.6	8.5	8.5	18.2	0.0	17.0	19.8	0.0	16.0
Incr Delay (d2), s/veh	14.0	0.5	0.1	49.1	0.2	0.4	0.5	0.0	1.3	0.4	0.0	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	0.5	4.0	0.6	6.9	3.0	3.2	1.3	0.0	1.8	0.8	0.0	0.7
LnGrp Delay(d),s/veh	36.6	13.8	11.0	68.6	8.7	8.9	18.7	0.0	18.4	20.2	0.0	16.3
LnGrp LOS	D	B	B	E	A	A	B		B	C		B
Approach Vol, veh/h		1170			1320			257			124	
Approach Delay, s/veh		14.2			20.7			18.5			18.3	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		13.3	12.0	21.2		13.3	5.8	27.4
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		7.1	9.1	10.8		8.2	2.7	8.8
Green Ext Time (p_c), s		1.1	0.0	4.6		0.5	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1037	1114	70	0	110
Future Vol, veh/h	0	1037	1114	70	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1127	1211	76	0	120

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	644
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	349
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	349
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	349
HCM Lane V/C Ratio	-	-	-	0.343
HCM Control Delay (s)	-	-	-	20.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.5

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1037	1169	4	0	18
Future Vol, veh/h	0	1037	1169	4	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1127	1271	4	0	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	638
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	352
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	352
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	352
HCM Lane V/C Ratio	-	-	-	0.056
HCM Control Delay (s)	-	-	-	15.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	42	505	91	0	482
Future Vol, veh/h	0	42	505	91	0	482
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	46	549	99	0	524

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	599	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	494	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	494	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	494	-
HCM Lane V/C Ratio	-	-	0.092	-
HCM Control Delay (s)	-	-	13	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	160	363	204	166	377	236		
Future Volume (veh/h)	160	363	204	166	377	236		
Number	3	18	2	12	1	6		
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		
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792		
Adj Flow Rate, veh/h	174	395	222	180	410	257		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	6	6	6	6	6	6		
Cap, veh/h	538	480	359	305	477	983		
Arrive On Green	0.32	0.32	0.20	0.20	0.28	0.55		
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792		
Grp Volume(v), veh/h	174	395	222	180	410	257		
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792		
Q Serve(g_s), s	4.5	14.0	6.6	6.3	13.3	4.4		
Cycle Q Clear(g_c), s	4.5	14.0	6.6	6.3	13.3	4.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	538	480	359	305	477	983		
V/C Ratio(X)	0.32	0.82	0.62	0.59	0.86	0.26		
Avail Cap(c_a), veh/h	721	643	772	656	528	1449		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	15.3	18.5	21.4	21.2	20.0	7.0		
Incr Delay (d2), s/veh	0.3	6.4	1.7	1.8	12.4	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.2	6.7	3.4	2.8	7.9	2.2		
LnGrp Delay(d),s/veh	15.6	24.9	23.1	23.0	32.4	7.1		
LnGrp LOS	B	C	C	C	C	A		
Approach Vol, veh/h	569		402			667		
Approach Delay, s/veh	22.1		23.1			22.7		
Approach LOS	C		C			C		
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.4	15.7				36.1		22.4
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.3	8.6				6.4		16.0
Green Ext Time (p_c), s	0.4	1.3				0.9		1.7
Intersection Summary								
HCM 2010 Ctrl Delay			22.6					
HCM 2010 LOS			C					
Notes								

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	152	47	334	205	74	311
Future Volume (veh/h)	152	47	334	205	74	311
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	165	51	363	223	80	338
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	249	77	619	526	145	994
Arrive On Green	0.20	0.18	0.35	0.35	0.09	0.55
Sat Flow, veh/h	1263	390	1792	1524	1707	1792
Grp Volume(v), veh/h	217	0	363	223	80	338
Grp Sat Flow(s),veh/h/ln	1660	0	1792	1524	1707	1792
Q Serve(g_s), s	3.9	0.0	5.4	3.6	1.5	3.3
Cycle Q Clear(g_c), s	3.9	0.0	5.4	3.6	1.5	3.3
Prop In Lane	0.76	0.24		1.00	1.00	
Lane Grp Cap(c), veh/h	328	0	619	526	145	994
V/C Ratio(X)	0.66	0.00	0.59	0.42	0.55	0.34
Avail Cap(c_a), veh/h	1116	0	1321	1123	397	1960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	8.7	8.1	14.2	3.9
Incr Delay (d2), s/veh	2.3	0.0	0.9	0.5	3.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	2.8	1.6	0.8	1.7
LnGrp Delay(d),s/veh	14.3	0.0	9.6	8.6	17.4	4.1
LnGrp LOS	B		A	A	B	A
Approach Vol, veh/h	217		586			418
Approach Delay, s/veh	14.3		9.2			6.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.7	15.2				21.9		10.4
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	3.5	7.4				5.3		5.9
Green Ext Time (p_c), s	0.0	2.0				1.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	183	637	97	210	373	38	111	334	271	138	322	65
Future Volume (veh/h)	183	637	97	210	373	38	111	334	271	138	322	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	199	692	105	228	405	41	121	363	295	150	350	71
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	246	910	407	281	951	425	165	464	394	198	498	423
Arrive On Green	0.14	0.27	0.27	0.16	0.28	0.28	0.10	0.26	0.26	0.12	0.28	0.28
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	199	692	105	228	405	41	121	363	295	150	350	71
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	9.3	15.5	4.5	10.6	8.0	1.6	5.7	15.6	14.7	7.0	14.5	2.9
Cycle Q Clear(g_c), s	9.3	15.5	4.5	10.6	8.0	1.6	5.7	15.6	14.7	7.0	14.5	2.9
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	246	910	407	281	951	425	165	464	394	198	498	423
V/C Ratio(X)	0.81	0.76	0.26	0.81	0.43	0.10	0.73	0.78	0.75	0.76	0.70	0.17
Avail Cap(c_a), veh/h	248	1091	488	372	1339	599	227	791	673	268	835	709
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	34.3	27.9	23.8	33.3	24.4	22.1	36.3	28.5	28.2	35.4	26.8	22.6
Incr Delay (d2), s/veh	17.7	2.6	0.3	9.7	0.3	0.1	7.6	2.9	2.9	8.2	1.8	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	5.6	7.5	1.9	5.8	3.8	0.7	3.0	8.0	6.5	3.8	7.4	1.2
LnGrp Delay(d),s/veh	52.0	30.5	24.2	43.0	24.7	22.2	43.9	31.4	31.0	43.6	28.6	22.8
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		996			674			779			571	
Approach Delay, s/veh		34.1			30.7			33.2			31.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	25.4	17.6	26.1	12.0	27.0	15.9	27.8
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	9.0	17.6	12.6	17.5	7.7	16.5	11.3	10.0
Green Ext Time (p_c), s	0.1	2.4	0.3	2.1	0.1	1.5	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

* HCM 2010 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)	102	18	78	80	27	103	39	476	24	30	527	76
Future Volume (veh/h)	102	18	78	80	27	103	39	476	24	30	527	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	111	20	85	87	29	112	42	517	26	33	573	83
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	201	251	213	178	237	202	86	673	572	75	1258	563
Arrive On Green	0.12	0.14	0.14	0.10	0.13	0.13	0.05	0.38	0.38	0.04	0.37	0.37
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	111	20	85	87	29	112	42	517	26	33	573	83
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	3.0	0.5	2.5	2.3	0.7	3.3	1.2	12.3	0.5	0.9	6.2	1.8
Cycle Q Clear(g_c), s	3.0	0.5	2.5	2.3	0.7	3.3	1.2	12.3	0.5	0.9	6.2	1.8
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	201	251	213	178	237	202	86	673	572	75	1258	563
V/C Ratio(X)	0.55	0.08	0.40	0.49	0.12	0.56	0.49	0.77	0.05	0.44	0.46	0.15
Avail Cap(c_a), veh/h	563	1206	1025	563	1206	1025	239	1642	1396	387	3415	1528
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	20.2	18.1	19.0	20.5	18.5	19.7	22.4	13.3	9.6	22.6	11.6	10.2
Incr Delay (d2), s/veh	2.3	0.1	1.2	2.1	0.2	2.4	4.3	1.9	0.0	4.0	0.3	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	1.5	0.2	1.1	1.2	0.4	1.5	0.7	6.4	0.2	0.5	2.9	0.7
LnGrp Delay(d),s/veh	22.5	18.3	20.2	22.6	18.8	22.1	26.7	15.2	9.6	26.6	11.8	10.3
LnGrp LOS	C	B	C	C	B	C	C	B	A	C	B	B
Approach Vol, veh/h		216			228			585			689	
Approach Delay, s/veh		21.2			21.8			15.8			12.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	22.2	9.1	11.1	6.4	21.9	9.7	10.4
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	2.9	14.3	4.3	4.5	3.2	8.2	5.0	5.3
Green Ext Time (p_c), s	0.0	2.1	0.2	0.4	0.0	2.9	0.2	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	341	650	236	312	346	353
Future Volume (veh/h)	341	650	236	312	346	353
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	371	707	257	0	376	384
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	462	913	542	188	564	504
Arrive On Green	0.27	0.51	0.16	0.00	0.33	0.33
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	371	707	257	0	376	384
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	10.1	16.0	3.4	0.0	9.5	11.3
Cycle Q Clear(g_c), s	10.1	16.0	3.4	0.0	9.5	11.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	462	913	542	188	564	504
V/C Ratio(X)	0.80	0.77	0.47	0.00	0.67	0.76
Avail Cap(c_a), veh/h	648	1462	1212	487	723	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	9.9	19.1	0.0	14.4	15.0
Incr Delay (d2), s/veh	5.0	1.4	0.6	0.0	1.6	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	8.0	1.7	0.0	4.6	9.5
LnGrp Delay(d),s/veh	22.0	11.4	19.8	0.0	15.9	19.0
LnGrp LOS	C	B	B		B	B
Approach Vol, veh/h		1078	257		760	
Approach Delay, s/veh		15.0	19.8		17.5	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.5		20.5	17.5	12.0
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				18.0		13.3	12.1	5.4
Green Ext Time (p_c), s				3.0		1.9	0.8	0.7

Intersection Summary		
HCM 2010 Ctrl Delay		16.5
HCM 2010 LOS		B

Notes

* HCM 2010 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)	124	797	92	93	397	27	79	11	41	13	26	118
Future Volume (veh/h)	124	797	92	93	397	27	79	11	41	13	26	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	135	866	100	101	432	29	95	0	45	14	28	128
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	202	1610	501	155	1414	94	296	0	132	258	42	194
Arrive On Green	0.12	0.33	0.33	0.09	0.30	0.26	0.09	0.00	0.09	0.15	0.15	0.14
Sat Flow, veh/h	1707	4893	1524	1707	4688	312	3414	0	1524	1707	281	1285
Grp Volume(v), veh/h	135	866	100	101	299	162	95	0	45	14	0	156
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1737	1707	0	1524	1707	0	1566
Q Serve(g_s), s	3.5	6.7	2.2	2.7	3.3	3.4	1.2	0.0	1.3	0.3	0.0	4.4
Cycle Q Clear(g_c), s	3.5	6.7	2.2	2.7	3.3	3.4	1.2	0.0	1.3	0.3	0.0	4.4
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.82
Lane Grp Cap(c), veh/h	202	1610	501	155	984	524	296	0	132	258	0	237
V/C Ratio(X)	0.67	0.54	0.20	0.65	0.30	0.31	0.32	0.00	0.34	0.05	0.00	0.66
Avail Cap(c_a), veh/h	657	3515	1094	584	2204	1174	2898	0	1293	1631	0	1496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	12.8	11.3	20.5	12.6	12.7	20.1	0.0	20.1	17.0	0.0	19.0
Incr Delay (d2), s/veh	3.8	0.3	0.2	4.5	0.2	0.3	0.6	0.0	1.5	0.1	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	1.9	3.0	0.9	1.5	1.5	1.6	0.6	0.0	0.6	0.2	0.0	2.1
LnGrp Delay(d),s/veh	23.5	13.1	11.5	25.0	12.7	13.0	20.7	0.0	21.6	17.1	0.0	22.1
LnGrp LOS	C	B	B	C	B	B	C		C	B		C
Approach Vol, veh/h		1101			562			140			170	
Approach Delay, s/veh		14.2			15.0			21.0			21.7	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.1	8.3	19.4		11.1	9.5	18.1
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		3.3	4.7	8.7		6.4	5.5	5.4
Green Ext Time (p_c), s		0.6	0.2	4.8		0.7	0.3	1.9

Intersection Summary		
HCM 2010 Ctrl Delay		15.6
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	16	826	20	69	468	39	29	7	27	65	13	15
Future Volume (veh/h)	16	826	20	69	468	39	29	7	27	65	13	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	17	898	22	75	509	42	32	8	29	71	14	16
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	68	1927	600	143	2017	165	391	47	169	379	102	117
Arrive On Green	0.04	0.39	0.39	0.08	0.44	0.38	0.14	0.14	0.11	0.13	0.13	0.11
Sat Flow, veh/h	1707	4893	1524	1707	4612	377	1322	340	1234	1314	765	874
Grp Volume(v), veh/h	17	898	22	75	359	192	32	0	37	71	0	30
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1726	1322	0	1575	1314	0	1638
Q Serve(g_s), s	0.3	4.2	0.3	1.3	2.2	2.2	0.7	0.0	0.7	1.6	0.0	0.5
Cycle Q Clear(g_c), s	0.3	4.2	0.3	1.3	2.2	2.2	1.2	0.0	0.7	2.2	0.0	0.5
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.78	1.00		0.53
Lane Grp Cap(c), veh/h	68	1927	600	143	1427	755	391	0	216	379	0	219
V/C Ratio(X)	0.25	0.47	0.04	0.52	0.25	0.25	0.08	0.00	0.17	0.19	0.00	0.14
Avail Cap(c_a), veh/h	296	3899	1214	439	2872	1519	1917	0	2034	1900	0	2116
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	14.5	7.0	5.8	13.7	5.5	5.7	12.3	0.0	12.1	13.0	0.0	12.0
Incr Delay (d2), s/veh	1.9	0.2	0.0	3.0	0.1	0.2	0.1	0.0	0.4	0.2	0.0	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	0.2	1.9	0.1	0.7	1.0	1.1	0.3	0.0	0.3	0.6	0.0	0.2
LnGrp Delay(d),s/veh	16.4	7.2	5.8	16.6	5.6	5.9	12.4	0.0	12.5	13.2	0.0	12.3
LnGrp LOS	B	A	A	B	A	A	B		B	B		B
Approach Vol, veh/h		937			626			69			101	
Approach Delay, s/veh		7.3			7.0			12.5			12.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.3	6.6	16.3		8.3	5.2	17.6
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		3.2	3.3	6.2		4.2	2.3	4.2
Green Ext Time (p_c), s		0.3	0.1	4.2		0.4	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1053	621	0	0	0
Future Vol, veh/h	0	1053	621	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1145	675	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	553
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	553
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1053	621	0	0	2
Future Vol, veh/h	0	1053	621	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1145	675	0	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	553
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	553
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	553
HCM Lane V/C Ratio	-	-	-	0.004
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	552	0	0	524
Future Vol, veh/h	0	0	552	0	0	524
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	600	0	0	570

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	600	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	494	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	494	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	189	318	218	217	369	303
Future Volume (veh/h)	189	318	218	217	369	303
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	205	346	237	236	401	329
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	471	421	366	311	452	982
Arrive On Green	0.28	0.28	0.20	0.20	0.26	0.55
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	205	346	237	236	401	329
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	5.9	12.7	7.2	8.7	13.5	6.1
Cycle Q Clear(g_c), s	5.9	12.7	7.2	8.7	13.5	6.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	471	421	366	311	452	982
V/C Ratio(X)	0.43	0.82	0.65	0.76	0.89	0.34
Avail Cap(c_a), veh/h	687	613	703	598	498	1368
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	17.8	20.2	21.7	22.3	21.1	7.5
Incr Delay (d2), s/veh	0.6	5.8	1.9	3.8	16.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	6.0	3.8	4.0	8.4	3.0
LnGrp Delay(d),s/veh	18.4	26.1	23.7	26.1	37.6	7.7
LnGrp LOS	B	C	C	C	D	A
Approach Vol, veh/h	551		473			730
Approach Delay, s/veh	23.2		24.9			24.1
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.5	18.0				38.5		21.2
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.5	10.7				8.1		14.7
Green Ext Time (p_c), s	0.3	1.5				1.2		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	142	90	345	238	99	398
Future Volume (veh/h)	142	90	345	238	99	398
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	154	98	375	259	108	433
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	205	131	535	454	135	907
Arrive On Green	0.21	0.21	0.30	0.30	0.08	0.51
Sat Flow, veh/h	993	632	1792	1524	1707	1792
Grp Volume(v), veh/h	253	0	375	259	108	433
Grp Sat Flow(s),veh/h/ln	1631	0	1792	1524	1707	1792
Q Serve(g_s), s	5.3	0.0	6.8	5.2	2.3	5.7
Cycle Q Clear(g_c), s	5.3	0.0	6.8	5.2	2.3	5.7
Prop In Lane	0.61	0.39		1.00	1.00	
Lane Grp Cap(c), veh/h	337	0	535	454	135	907
V/C Ratio(X)	0.75	0.00	0.70	0.57	0.80	0.48
Avail Cap(c_a), veh/h	938	0	1080	918	318	1644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	11.4	10.8	16.5	5.9
Incr Delay (d2), s/veh	3.4	0.0	1.7	1.1	10.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	3.6	2.3	1.4	2.9
LnGrp Delay(d),s/veh	17.0	0.0	13.1	12.0	26.9	6.3
LnGrp LOS	B		B	B	C	A
Approach Vol, veh/h	253		634			541
Approach Delay, s/veh	17.0		12.6			10.4
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	16.7				24.3		12.2
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	4.3	8.8				7.7		7.3
Green Ext Time (p_c), s	0.1	2.1				1.6		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		12.5
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	164	587	129	286	823	81	105	334	355	173	326	89
Future Volume (veh/h)	164	587	129	286	823	81	105	334	355	173	326	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	178	638	140	311	895	88	114	363	332	188	354	97
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	208	770	344	320	992	444	140	453	385	198	513	436
Arrive On Green	0.12	0.23	0.23	0.19	0.29	0.29	0.08	0.25	0.25	0.12	0.29	0.29
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	178	638	140	311	895	88	114	363	332	188	354	97
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	10.0	17.4	7.6	17.7	24.7	4.2	6.4	18.5	20.3	10.7	17.2	4.7
Cycle Q Clear(g_c), s	10.0	17.4	7.6	17.7	24.7	4.2	6.4	18.5	20.3	10.7	17.2	4.7
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	208	770	344	320	992	444	140	453	385	198	513	436
V/C Ratio(X)	0.85	0.83	0.41	0.97	0.90	0.20	0.81	0.80	0.86	0.95	0.69	0.22
Avail Cap(c_a), veh/h	219	837	375	320	1064	476	149	644	548	198	696	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	36.0	32.2	39.4	33.3	26.0	44.1	34.2	34.9	42.9	31.0	26.6
Incr Delay (d2), s/veh	25.8	6.6	0.8	42.6	10.2	0.2	26.7	4.8	9.7	50.1	1.8	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	6.2	8.9	3.3	12.1	13.0	1.8	4.1	9.8	9.6	7.8	8.7	2.0
LnGrp Delay(d),s/veh	67.8	42.5	33.0	82.0	43.4	26.2	70.7	39.0	44.5	93.0	32.8	26.8
LnGrp LOS	E	D	C	F	D	C	E	D	D	F	C	C
Approach Vol, veh/h		956			1294			809			639	
Approach Delay, s/veh		45.8			51.5			45.7			49.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	30.1	23.0	28.6	12.7	33.3	16.6	34.9
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 11	35.1	* 18	24.0	* 8.5	37.9	* 13	* 31
Max Q Clear Time (g_c+I1), s	12.7	22.3	19.7	19.4	8.4	19.2	12.0	26.7
Green Ext Time (p_c), s	0.0	2.3	0.0	1.6	0.0	1.6	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D

Notes

* HCM 2010 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)	123	29	39	34	14	72	24	614	49	92	605	66
Future Volume (veh/h)	123	29	39	34	14	72	24	614	49	92	605	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	134	32	42	37	15	78	26	667	53	100	658	72
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	188	236	200	107	150	128	40	753	640	128	1608	719
Arrive On Green	0.11	0.13	0.13	0.06	0.08	0.08	0.02	0.42	0.42	0.08	0.47	0.47
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	134	32	42	37	15	78	26	667	53	100	658	72
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	4.8	1.0	1.6	1.3	0.5	3.1	1.0	21.8	1.3	3.6	8.0	1.7
Cycle Q Clear(g_c), s	4.8	1.0	1.6	1.3	0.5	3.1	1.0	21.8	1.3	3.6	8.0	1.7
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	188	236	200	107	150	128	40	753	640	128	1608	719
V/C Ratio(X)	0.71	0.14	0.21	0.35	0.10	0.61	0.66	0.89	0.08	0.78	0.41	0.10
Avail Cap(c_a), veh/h	415	913	776	415	905	769	164	1205	1024	277	2514	1125
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	27.2	24.3	24.6	28.5	26.8	28.0	30.7	17.0	11.0	28.8	10.9	9.3
Incr Delay (d2), s/veh	5.0	0.3	0.5	1.9	0.3	4.6	17.0	5.0	0.1	9.8	0.2	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	0.5	0.7	0.7	0.3	1.5	0.6	11.8	0.6	2.1	3.8	0.7
LnGrp Delay(d),s/veh	32.2	24.6	25.1	30.4	27.1	32.7	47.7	22.0	11.1	38.6	11.1	9.3
LnGrp LOS	C	C	C	C	C	C	D	C	B	D	B	A
Approach Vol, veh/h		208			130			746			830	
Approach Delay, s/veh		29.6			31.4			22.1			14.3	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	32.4	8.6	12.9	6.2	35.7	11.6	9.9
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	5.6	23.8	3.3	3.6	3.0	10.0	6.8	5.1
Green Ext Time (p_c), s	0.1	2.9	0.0	0.2	0.0	3.3	0.3	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	331	490	523	418	362	301
Future Volume (veh/h)	331	490	523	418	362	301
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	360	533	568	0	393	327
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	418	959	718	321	470	419
Arrive On Green	0.24	0.54	0.21	0.00	0.28	0.28
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	360	533	568	0	393	327
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	11.9	11.6	9.3	0.0	12.8	11.7
Cycle Q Clear(g_c), s	11.9	11.6	9.3	0.0	12.8	11.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	418	959	718	321	470	419
V/C Ratio(X)	0.86	0.56	0.79	0.00	0.84	0.78
Avail Cap(c_a), veh/h	529	1184	923	413	572	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	9.1	22.1	0.0	20.2	19.8
Incr Delay (d2), s/veh	11.3	0.5	3.6	0.0	8.9	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	5.8	4.7	0.0	7.2	10.0
LnGrp Delay(d),s/veh	32.7	9.6	25.7	0.0	29.1	26.0
LnGrp LOS	C	A	C		C	C
Approach Vol, veh/h		893	568		720	
Approach Delay, s/veh		18.9	25.7		27.7	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.4		21.7	19.2	18.3
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				13.6		14.8	13.9	11.3
Green Ext Time (p_c), s				2.1		1.4	0.6	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

* HCM 2010 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)	173	835	145	213	759	18	262	40	147	12	57	149
Future Volume (veh/h)	173	835	145	213	759	18	262	40	147	12	57	149
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	188	908	158	232	825	20	316	0	160	13	62	162
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	230	1259	392	273	1387	34	527	0	235	296	76	199
Arrive On Green	0.13	0.26	0.26	0.16	0.28	0.28	0.15	0.00	0.15	0.17	0.17	0.17
Sat Flow, veh/h	1707	4893	1524	1707	4915	119	3414	0	1524	1707	440	1150
Grp Volume(v), veh/h	188	908	158	232	547	298	316	0	160	13	0	224
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1771	1707	0	1524	1707	0	1590
Q Serve(g_s), s	8.4	13.2	6.7	10.3	11.3	11.3	6.7	0.0	7.7	0.5	0.0	10.6
Cycle Q Clear(g_c), s	8.4	13.2	6.7	10.3	11.3	11.3	6.7	0.0	7.7	0.5	0.0	10.6
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		0.72
Lane Grp Cap(c), veh/h	230	1259	392	273	921	500	527	0	235	296	0	276
V/C Ratio(X)	0.82	0.72	0.40	0.85	0.59	0.60	0.60	0.00	0.68	0.04	0.00	0.81
Avail Cap(c_a), veh/h	378	1994	621	335	1246	677	1707	0	762	963	0	896
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	32.8	26.4	24.0	31.9	24.2	24.2	30.7	0.0	31.2	26.9	0.0	31.0
Incr Delay (d2), s/veh	6.9	0.8	0.7	15.8	0.6	1.1	1.1	0.0	3.4	0.1	0.0	5.7
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	4.4	6.0	2.9	6.0	5.2	5.7	3.2	0.0	3.5	0.2	0.0	5.0
LnGrp Delay(d),s/veh	39.7	27.2	24.7	47.6	24.8	25.3	31.8	0.0	34.6	26.9	0.0	36.7
LnGrp LOS	D	C	C	D	C	C	C		C	C		D
Approach Vol, veh/h		1254			1077			476			237	
Approach Delay, s/veh		28.8			29.8			32.8			36.2	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.7	17.2	25.9		18.2	15.2	27.8
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		9.7	12.3	15.2		12.6	10.4	13.3
Green Ext Time (p_c), s		2.3	0.2	4.9		1.0	0.4	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	28	1003	63	241	886	80	105	31	104	57	36	25
Future Volume (veh/h)	28	1003	63	241	886	80	105	31	104	57	36	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	30	1090	68	262	963	87	114	34	113	62	39	27
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	47	1631	508	266	2110	190	349	68	225	275	184	127
Arrive On Green	0.03	0.33	0.33	0.16	0.46	0.46	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1707	4893	1524	1707	4570	412	1280	365	1213	1189	988	684
Grp Volume(v), veh/h	30	1090	68	262	687	363	114	0	147	62	0	66
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1720	1280	0	1578	1189	0	1672
Q Serve(g_s), s	0.8	8.9	1.5	7.2	6.7	6.7	3.9	0.0	3.9	2.3	0.0	1.6
Cycle Q Clear(g_c), s	0.8	8.9	1.5	7.2	6.7	6.7	5.4	0.0	3.9	6.2	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.77	1.00		0.41
Lane Grp Cap(c), veh/h	47	1631	508	266	1506	794	349	0	293	275	0	311
V/C Ratio(X)	0.64	0.67	0.13	0.98	0.46	0.46	0.33	0.00	0.50	0.23	0.00	0.21
Avail Cap(c_a), veh/h	172	2406	749	266	1785	941	1192	0	1333	1061	0	1415
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	22.5	13.4	10.9	19.7	8.6	8.6	18.5	0.0	17.1	19.9	0.0	16.1
Incr Delay (d2), s/veh	13.4	0.5	0.1	50.4	0.2	0.4	0.5	0.0	1.3	0.4	0.0	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	0.5	4.0	0.6	7.0	3.0	3.2	1.4	0.0	1.8	0.8	0.0	0.7
LnGrp Delay(d),s/veh	35.9	13.9	11.0	70.1	8.8	9.0	19.0	0.0	18.4	20.3	0.0	16.5
LnGrp LOS	D	B	B	E	A	A	B		B	C		B
Approach Vol, veh/h		1188			1312			261			128	
Approach Delay, s/veh		14.3			21.1			18.7			18.3	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		13.4	12.0	21.4		13.4	6.0	27.4
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		7.4	9.2	10.9		8.2	2.8	8.7
Green Ext Time (p_c), s		1.2	0.0	4.6		0.5	0.0	4.6

Intersection Summary			
HCM 2010 Ctrl Delay			17.9
HCM 2010 LOS			B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1117	1190	0	0	0
Future Vol, veh/h	0	1117	1190	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1214	1293	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	647
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	347
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	347
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1117	1184	2	0	8
Future Vol, veh/h	0	1117	1184	2	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1214	1287	2	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	645
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	348
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	348
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	348
HCM Lane V/C Ratio	-	-	-	0.025
HCM Control Delay (s)	-	-	-	15.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	554	0	0	586
Future Vol, veh/h	0	0	554	0	0	586
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	602	0	0	637

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	602	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	492	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	492	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	160	363	204	173	377	236		
Future Volume (veh/h)	160	363	204	173	377	236		
Number	3	18	2	12	1	6		
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		
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792		
Adj Flow Rate, veh/h	174	395	222	188	410	257		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	6	6	6	6	6	6		
Cap, veh/h	538	480	359	306	477	983		
Arrive On Green	0.32	0.32	0.20	0.20	0.28	0.55		
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792		
Grp Volume(v), veh/h	174	395	222	188	410	257		
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792		
Q Serve(g_s), s	4.6	14.0	6.6	6.6	13.3	4.4		
Cycle Q Clear(g_c), s	4.6	14.0	6.6	6.6	13.3	4.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	538	480	359	306	477	983		
V/C Ratio(X)	0.32	0.82	0.62	0.62	0.86	0.26		
Avail Cap(c_a), veh/h	720	642	771	655	527	1447		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	15.3	18.6	21.4	21.4	20.0	7.0		
Incr Delay (d2), s/veh	0.3	6.4	1.7	2.0	12.5	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.2	6.7	3.4	2.9	7.9	2.2		
LnGrp Delay(d),s/veh	15.6	24.9	23.1	23.4	32.5	7.1		
LnGrp LOS	B	C	C	C	C	A		
Approach Vol, veh/h	569		410			667		
Approach Delay, s/veh	22.1		23.2			22.7		
Approach LOS	C		C			C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.4	15.7				36.1		22.5
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.3	8.6				6.4		16.0
Green Ext Time (p_c), s	0.4	1.3				0.9		1.7
Intersection Summary								
HCM 2010 Ctrl Delay			22.6					
HCM 2010 LOS			C					
Notes								

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	152	47	341	211	74	311
Future Volume (veh/h)	152	47	341	211	74	311
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	165	51	371	229	80	338
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	249	77	626	532	145	998
Arrive On Green	0.20	0.18	0.35	0.35	0.08	0.56
Sat Flow, veh/h	1263	390	1792	1524	1707	1792
Grp Volume(v), veh/h	217	0	371	229	80	338
Grp Sat Flow(s),veh/h/ln	1660	0	1792	1524	1707	1792
Q Serve(g_s), s	3.9	0.0	5.5	3.7	1.5	3.4
Cycle Q Clear(g_c), s	3.9	0.0	5.5	3.7	1.5	3.4
Prop In Lane	0.76	0.24		1.00	1.00	
Lane Grp Cap(c), veh/h	328	0	626	532	145	998
V/C Ratio(X)	0.66	0.00	0.59	0.43	0.55	0.34
Avail Cap(c_a), veh/h	1107	0	1311	1114	393	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	8.7	8.1	14.3	3.9
Incr Delay (d2), s/veh	2.3	0.0	0.9	0.6	3.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	2.8	1.6	0.8	1.7
LnGrp Delay(d),s/veh	14.4	0.0	9.6	8.7	17.6	4.1
LnGrp LOS	B		A	A	B	A
Approach Vol, veh/h	217		600			418
Approach Delay, s/veh	14.4		9.2			6.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.8	15.4				22.1		10.4
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	3.5	7.5				5.4		5.9
Green Ext Time (p_c), s	0.0	2.0				1.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	194	637	97	252	383	66	111	349	271	138	322	65
Future Volume (veh/h)	194	637	97	252	383	66	111	349	271	138	322	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	211	692	105	274	416	72	121	379	295	150	350	71
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	228	881	394	319	1037	464	163	470	400	195	504	428
Arrive On Green	0.13	0.26	0.26	0.19	0.30	0.30	0.10	0.26	0.26	0.11	0.28	0.28
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	211	692	105	274	416	72	121	379	295	150	350	71
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	11.0	17.0	4.9	14.0	8.7	3.1	6.2	17.8	15.9	7.7	15.7	3.2
Cycle Q Clear(g_c), s	11.0	17.0	4.9	14.0	8.7	3.1	6.2	17.8	15.9	7.7	15.7	3.2
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	228	881	394	319	1037	464	163	470	400	195	504	428
V/C Ratio(X)	0.93	0.79	0.27	0.86	0.40	0.16	0.74	0.81	0.74	0.77	0.69	0.17
Avail Cap(c_a), veh/h	228	1004	449	342	1231	551	209	728	619	247	768	653
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	38.5	31.0	26.5	35.4	24.8	22.8	39.6	31.0	30.3	38.7	28.9	24.4
Incr Delay (d2), s/veh	39.8	3.7	0.4	18.3	0.3	0.2	10.1	3.8	2.7	10.8	1.7	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	7.7	8.4	2.1	8.2	4.1	1.3	3.4	9.2	7.0	4.2	8.0	1.4
LnGrp Delay(d),s/veh	78.3	34.7	26.9	53.7	25.0	23.0	49.7	34.8	33.0	49.5	30.6	24.5
LnGrp LOS	E	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1008			762			795			571	
Approach Delay, s/veh		43.0			35.1			36.4			34.8	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	27.6	20.8	27.3	12.6	29.3	16.0	32.1
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	9.7	19.8	16.0	19.0	8.2	17.7	13.0	10.7
Green Ext Time (p_c), s	0.1	2.4	0.1	1.8	0.1	1.5	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	37.9
HCM 2010 LOS	D

Notes

* HCM 2010 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)	106	18	78	80	27	107	39	483	24	33	534	79
Future Volume (veh/h)	106	18	78	80	27	107	39	483	24	33	534	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	115	20	85	87	29	116	42	525	26	36	580	86
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	204	258	220	176	240	204	85	678	576	78	1274	570
Arrive On Green	0.12	0.14	0.14	0.10	0.13	0.13	0.05	0.38	0.38	0.05	0.37	0.37
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	115	20	85	87	29	116	42	525	26	36	580	86
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	3.2	0.5	2.5	2.4	0.7	3.5	1.2	12.8	0.5	1.0	6.4	1.9
Cycle Q Clear(g_c), s	3.2	0.5	2.5	2.4	0.7	3.5	1.2	12.8	0.5	1.0	6.4	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	204	258	220	176	240	204	85	678	576	78	1274	570
V/C Ratio(X)	0.56	0.08	0.39	0.49	0.12	0.57	0.50	0.77	0.05	0.46	0.46	0.15
Avail Cap(c_a), veh/h	551	1179	1002	551	1179	1002	234	1606	1365	379	3340	1494
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	20.6	18.4	19.2	21.0	18.9	20.1	22.9	13.6	9.8	23.1	11.7	10.3
Incr Delay (d2), s/veh	2.4	0.1	1.1	2.1	0.2	2.5	4.4	1.9	0.0	4.2	0.3	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	1.6	0.2	1.1	1.2	0.4	1.6	0.7	6.6	0.2	0.6	3.0	0.8
LnGrp Delay(d),s/veh	23.0	18.5	20.3	23.1	19.1	22.6	27.4	15.5	9.8	27.3	12.0	10.4
LnGrp LOS	C	B	C	C	B	C	C	B	A	C	B	B
Approach Vol, veh/h		220			232			593			702	
Approach Delay, s/veh		21.6			22.3			16.1			12.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	22.7	9.1	11.4	6.5	22.5	9.9	10.6
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	3.0	14.8	4.4	4.5	3.2	8.4	5.2	5.5
Green Ext Time (p_c), s	0.0	2.2	0.2	0.4	0.0	3.0	0.2	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	345	650	236	316	349	356
Future Volume (veh/h)	345	650	236	316	349	356
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	375	707	257	0	379	387
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	465	914	539	187	566	505
Arrive On Green	0.27	0.51	0.16	0.00	0.33	0.33
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	375	707	257	0	379	387
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	10.3	16.1	3.5	0.0	9.6	11.5
Cycle Q Clear(g_c), s	10.3	16.1	3.5	0.0	9.6	11.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	465	914	539	187	566	505
V/C Ratio(X)	0.81	0.77	0.48	0.00	0.67	0.77
Avail Cap(c_a), veh/h	643	1450	1202	483	718	640
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	10.0	19.3	0.0	14.5	15.1
Incr Delay (d2), s/veh	5.3	1.4	0.7	0.0	1.7	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	8.2	1.7	0.0	4.8	9.6
LnGrp Delay(d),s/veh	22.4	11.4	20.0	0.0	16.1	19.4
LnGrp LOS	C	B	B		B	B
Approach Vol, veh/h		1082	257		766	
Approach Delay, s/veh		15.2	20.0		17.8	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.7		20.7	17.7	12.0
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				18.1		13.5	12.3	5.5
Green Ext Time (p_c), s				3.0		1.8	0.8	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 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)	131	817	95	93	434	27	83	11	41	13	26	125
Future Volume (veh/h)	131	817	95	93	434	27	83	11	41	13	26	125
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	142	888	103	101	472	29	99	0	45	14	28	136
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	211	1623	505	155	1410	86	293	0	131	268	42	204
Arrive On Green	0.12	0.33	0.33	0.09	0.30	0.26	0.09	0.00	0.09	0.16	0.16	0.14
Sat Flow, veh/h	1707	4893	1524	1707	4717	287	3414	0	1524	1707	267	1297
Grp Volume(v), veh/h	142	888	103	101	325	176	99	0	45	14	0	164
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1742	1707	0	1524	1707	0	1564
Q Serve(g_s), s	3.8	7.1	2.3	2.7	3.7	3.8	1.3	0.0	1.3	0.3	0.0	4.7
Cycle Q Clear(g_c), s	3.8	7.1	2.3	2.7	3.7	3.8	1.3	0.0	1.3	0.3	0.0	4.7
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.83
Lane Grp Cap(c), veh/h	211	1623	505	155	975	521	293	0	131	268	0	246
V/C Ratio(X)	0.67	0.55	0.20	0.65	0.33	0.34	0.34	0.00	0.34	0.05	0.00	0.67
Avail Cap(c_a), veh/h	642	3437	1070	571	2155	1151	2833	0	1264	1595	0	1461
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	20.0	13.1	11.5	21.0	13.1	13.2	20.6	0.0	20.6	17.1	0.0	19.3
Incr Delay (d2), s/veh	3.7	0.3	0.2	4.6	0.2	0.4	0.7	0.0	1.5	0.1	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	2.0	3.2	1.0	1.5	1.7	1.9	0.6	0.0	0.6	0.2	0.0	2.3
LnGrp Delay(d),s/veh	23.7	13.3	11.7	25.6	13.3	13.6	21.3	0.0	22.1	17.2	0.0	22.4
LnGrp LOS	C	B	B	C	B	B	C		C	B		C
Approach Vol, veh/h		1133			602			144			178	
Approach Delay, s/veh		14.5			15.4			21.5			22.0	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.1	8.3	19.9		11.5	9.9	18.3
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		3.3	4.7	9.1		6.7	5.8	5.8
Green Ext Time (p_c), s		0.6	0.2	5.0		0.8	0.3	2.1

Intersection Summary		
HCM 2010 Ctrl Delay		15.9
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	19	839	23	69	498	39	33	7	27	65	13	19
Future Volume (veh/h)	19	839	23	69	498	39	33	7	27	65	13	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	21	912	25	75	541	42	36	8	29	71	14	21
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	74	1936	603	142	2018	155	387	48	172	380	88	133
Arrive On Green	0.04	0.40	0.40	0.08	0.44	0.38	0.14	0.14	0.12	0.14	0.14	0.12
Sat Flow, veh/h	1707	4893	1524	1707	4635	357	1316	340	1234	1314	648	973
Grp Volume(v), veh/h	21	912	25	75	379	204	36	0	37	71	0	35
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1730	1316	0	1575	1314	0	1621
Q Serve(g_s), s	0.4	4.4	0.3	1.3	2.3	2.4	0.8	0.0	0.7	1.6	0.0	0.6
Cycle Q Clear(g_c), s	0.4	4.4	0.3	1.3	2.3	2.4	1.4	0.0	0.7	2.3	0.0	0.6
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.78	1.00		0.60
Lane Grp Cap(c), veh/h	74	1936	603	142	1420	753	387	0	220	380	0	221
V/C Ratio(X)	0.28	0.47	0.04	0.53	0.27	0.27	0.09	0.00	0.17	0.19	0.00	0.16
Avail Cap(c_a), veh/h	293	3858	1201	434	2841	1506	1885	0	2012	1880	0	2071
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	14.6	7.1	5.8	13.8	5.7	5.8	12.5	0.0	12.2	13.0	0.0	12.2
Incr Delay (d2), s/veh	2.0	0.2	0.0	3.0	0.1	0.2	0.1	0.0	0.4	0.2	0.0	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	0.2	2.0	0.1	0.7	1.1	1.2	0.3	0.0	0.3	0.6	0.0	0.3
LnGrp Delay(d),s/veh	16.6	7.2	5.9	16.8	5.8	6.0	12.6	0.0	12.5	13.2	0.0	12.5
LnGrp LOS	B	A	A	B	A	A	B		B	B		B
Approach Vol, veh/h		958			658			73			106	
Approach Delay, s/veh		7.4			7.1			12.6			13.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.4	6.6	16.4		8.4	5.4	17.7
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		3.4	3.3	6.4		4.3	2.4	4.4
Green Ext Time (p_c), s		0.3	0.1	4.3		0.4	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1053	594	74	0	106
Future Vol, veh/h	0	1053	594	74	0	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1145	646	80	0	115

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	363
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	532
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	532
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	532
HCM Lane V/C Ratio	-	-	-	0.217
HCM Control Delay (s)	-	-	-	13.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.8

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↱			↱
Traffic Vol, veh/h	0	1053	665	7	0	4
Future Vol, veh/h	0	1053	665	7	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1145	723	8	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	366
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	530
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	530
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	530
HCM Lane V/C Ratio	-	-	-	0.008
HCM Control Delay (s)	-	-	-	11.8
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	523	82	0	334
Future Vol, veh/h	0	41	523	82	0	334
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	45	568	89	0	363

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	613	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	485	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	485	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	485	-
HCM Lane V/C Ratio	-	-	0.092	-
HCM Control Delay (s)	-	-	13.2	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	189	318	218	225	369	303
Future Volume (veh/h)	189	318	218	225	369	303
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	205	346	237	245	401	329
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	470	419	375	319	450	988
Arrive On Green	0.28	0.28	0.21	0.21	0.26	0.55
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	205	346	237	245	401	329
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	6.0	12.9	7.3	9.2	13.7	6.1
Cycle Q Clear(g_c), s	6.0	12.9	7.3	9.2	13.7	6.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	470	419	375	319	450	988
V/C Ratio(X)	0.44	0.83	0.63	0.77	0.89	0.33
Avail Cap(c_a), veh/h	678	605	694	590	492	1350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	20.5	21.8	22.5	21.4	7.5
Incr Delay (d2), s/veh	0.6	6.2	1.8	3.9	17.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	6.1	3.7	4.2	8.5	3.1
LnGrp Delay(d),s/veh	18.7	26.7	23.5	26.4	38.5	7.7
LnGrp LOS	B	C	C	C	D	A
Approach Vol, veh/h	551		482			730
Approach Delay, s/veh	23.7		25.0			24.6
Approach LOS	C		C			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.6	18.5				39.1		21.3
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	15.7	11.2				8.1		14.9
Green Ext Time (p_c), s	0.3	1.5				1.2		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	142	90	353	246	99	398
Future Volume (veh/h)	142	90	353	246	99	398
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	154	98	384	267	108	433
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	205	130	543	461	135	913
Arrive On Green	0.21	0.21	0.30	0.30	0.08	0.51
Sat Flow, veh/h	993	632	1792	1524	1707	1792
Grp Volume(v), veh/h	253	0	384	267	108	433
Grp Sat Flow(s),veh/h/ln	1631	0	1792	1524	1707	1792
Q Serve(g_s), s	5.4	0.0	7.0	5.5	2.3	5.8
Cycle Q Clear(g_c), s	5.4	0.0	7.0	5.5	2.3	5.8
Prop In Lane	0.61	0.39		1.00	1.00	
Lane Grp Cap(c), veh/h	336	0	543	461	135	913
V/C Ratio(X)	0.75	0.00	0.71	0.58	0.80	0.47
Avail Cap(c_a), veh/h	928	0	1068	908	314	1627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	11.4	10.9	16.7	5.9
Incr Delay (d2), s/veh	3.4	0.0	1.7	1.2	10.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	3.7	2.4	1.5	2.9
LnGrp Delay(d),s/veh	17.2	0.0	13.1	12.0	27.1	6.2
LnGrp LOS	B		B	B	C	A
Approach Vol, veh/h	253		651			541
Approach Delay, s/veh	17.2		12.7			10.4
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	17.0				24.6		12.3
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	4.3	9.0				7.8		7.4
Green Ext Time (p_c), s	0.1	2.2				1.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	176	587	129	336	835	118	105	350	355	173	326	89
Future Volume (veh/h)	176	587	129	336	835	118	105	350	355	173	326	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	191	638	140	365	908	128	114	380	332	188	354	97
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	221	775	347	336	1004	449	140	454	386	179	495	420
Arrive On Green	0.13	0.23	0.23	0.20	0.29	0.29	0.08	0.25	0.25	0.11	0.28	0.28
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	1792	1524	1707	1792	1524
Grp Volume(v), veh/h	191	638	140	365	908	128	114	380	332	188	354	97
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1792	1524	1707	1792	1524
Q Serve(g_s), s	10.7	17.4	7.7	19.3	25.1	6.3	6.4	19.7	20.4	10.3	17.5	4.8
Cycle Q Clear(g_c), s	10.7	17.4	7.7	19.3	25.1	6.3	6.4	19.7	20.4	10.3	17.5	4.8
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	221	775	347	336	1004	449	140	454	386	179	495	420
V/C Ratio(X)	0.86	0.82	0.40	1.09	0.90	0.28	0.81	0.84	0.86	1.05	0.72	0.23
Avail Cap(c_a), veh/h	232	834	373	336	1067	477	146	642	546	179	677	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	36.0	32.2	39.3	33.2	26.6	44.2	34.7	35.0	43.8	32.0	27.4
Incr Delay (d2), s/veh	26.0	6.3	0.8	73.9	10.5	0.3	27.4	6.8	9.7	80.3	2.3	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	6.6	8.8	3.3	16.0	13.2	2.7	4.1	10.6	9.6	8.8	9.0	2.1
LnGrp Delay(d),s/veh	67.8	42.3	33.0	113.3	43.7	26.9	71.6	41.5	44.6	124.2	34.3	27.7
LnGrp LOS	E	D	C	F	D	C	E	D	D	F	C	C
Approach Vol, veh/h		969			1401			826			639	
Approach Delay, s/veh		46.0			60.3			46.9			59.7	
Approach LOS		D			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	30.2	24.0	28.8	12.8	32.4	17.4	35.4
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 10	35.1	* 19	24.0	* 8.4	37.0	* 13	* 31
Max Q Clear Time (g_c+I1), s	12.3	22.4	21.3	19.4	8.4	19.5	12.7	27.1
Green Ext Time (p_c), s	0.0	2.4	0.0	1.6	0.0	1.5	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	53.7
HCM 2010 LOS	D

Notes

* HCM 2010 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)	127	29	39	34	14	76	24	622	49	96	613	70
Future Volume (veh/h)	127	29	39	34	14	76	24	622	49	96	613	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	138	32	42	37	15	83	26	676	53	104	666	76
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	190	247	210	103	155	132	39	759	645	133	1629	729
Arrive On Green	0.11	0.14	0.14	0.06	0.09	0.09	0.02	0.42	0.42	0.08	0.48	0.48
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	3406	1524
Grp Volume(v), veh/h	138	32	42	37	15	83	26	676	53	104	666	76
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1792	1524	1707	1703	1524
Q Serve(g_s), s	5.1	1.0	1.6	1.4	0.5	3.4	1.0	22.9	1.4	3.9	8.3	1.8
Cycle Q Clear(g_c), s	5.1	1.0	1.6	1.4	0.5	3.4	1.0	22.9	1.4	3.9	8.3	1.8
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	190	247	210	103	155	132	39	759	645	133	1629	729
V/C Ratio(X)	0.72	0.13	0.20	0.36	0.10	0.63	0.66	0.89	0.08	0.78	0.41	0.10
Avail Cap(c_a), veh/h	401	883	751	401	875	744	159	1165	990	268	2432	1088
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	28.1	24.8	25.1	29.6	27.6	28.9	31.8	17.5	11.3	29.7	11.1	9.4
Incr Delay (d2), s/veh	5.2	0.2	0.5	2.1	0.3	4.9	17.4	5.9	0.1	9.5	0.2	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	2.7	0.5	0.7	0.7	0.3	1.6	0.7	12.5	0.6	2.2	3.9	0.8
LnGrp Delay(d),s/veh	33.3	25.1	25.5	31.6	27.8	33.8	49.2	23.4	11.3	39.2	11.3	9.4
LnGrp LOS	C	C	C	C	C	C	D	C	B	D	B	A
Approach Vol, veh/h		212			135			755			846	
Approach Delay, s/veh		30.5			32.5			23.4			14.5	
Approach LOS		C			C			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	33.6	8.6	13.6	6.2	37.2	11.9	10.3				
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6				
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0				
Max Q Clear Time (g_c+I1), s	5.9	24.9	3.4	3.6	3.0	10.3	7.1	5.4				
Green Ext Time (p_c), s	0.1	2.9	0.0	0.2	0.0	3.4	0.3	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			21.0									
HCM 2010 LOS			C									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	335	490	523	422	366	305
Future Volume (veh/h)	335	490	523	422	366	305
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	364	533	568	0	398	332
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	421	960	716	320	473	422
Arrive On Green	0.25	0.54	0.21	0.00	0.28	0.28
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	364	533	568	0	398	332
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	12.2	11.7	9.4	0.0	13.1	12.0
Cycle Q Clear(g_c), s	12.2	11.7	9.4	0.0	13.1	12.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	421	960	716	320	473	422
V/C Ratio(X)	0.86	0.56	0.79	0.00	0.84	0.79
Avail Cap(c_a), veh/h	524	1172	913	409	566	506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	9.2	22.3	0.0	20.3	19.9
Incr Delay (d2), s/veh	12.0	0.5	3.8	0.0	9.6	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	5.9	4.8	0.0	7.4	10.2
LnGrp Delay(d),s/veh	33.5	9.7	26.1	0.0	29.9	26.7
LnGrp LOS	C	A	C		C	C
Approach Vol, veh/h		897	568		730	
Approach Delay, s/veh		19.3	26.1		28.5	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.7		21.9	19.4	18.3
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				13.7		15.1	14.2	11.4
Green Ext Time (p_c), s				2.1		1.4	0.6	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

Notes

* HCM 2010 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)	181	858	149	213	798	18	266	40	147	12	57	157
Future Volume (veh/h)	181	858	149	213	798	18	266	40	147	12	57	157
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	197	933	162	232	867	20	320	0	160	13	62	171
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	239	1275	397	272	1377	32	523	0	234	305	76	208
Arrive On Green	0.14	0.26	0.26	0.16	0.28	0.28	0.15	0.00	0.15	0.18	0.18	0.18
Sat Flow, veh/h	1707	4893	1524	1707	4921	113	3414	0	1524	1707	422	1165
Grp Volume(v), veh/h	197	933	162	232	574	313	320	0	160	13	0	233
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1772	1707	0	1524	1707	0	1587
Q Serve(g_s), s	9.0	14.0	7.1	10.6	12.3	12.4	7.0	0.0	8.0	0.5	0.0	11.3
Cycle Q Clear(g_c), s	9.0	14.0	7.1	10.6	12.3	12.4	7.0	0.0	8.0	0.5	0.0	11.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	239	1275	397	272	913	496	523	0	234	305	0	284
V/C Ratio(X)	0.83	0.73	0.41	0.85	0.63	0.63	0.61	0.00	0.69	0.04	0.00	0.82
Avail Cap(c_a), veh/h	368	1941	604	326	1212	659	1660	0	741	937	0	871
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	33.5	27.1	24.5	32.8	25.2	25.2	31.7	0.0	32.1	27.2	0.0	31.7
Incr Delay (d2), s/veh	8.7	0.8	0.7	17.0	0.7	1.3	1.2	0.0	3.5	0.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	6.4	3.0	6.2	5.6	6.2	3.4	0.0	3.6	0.2	0.0	5.4
LnGrp Delay(d),s/veh	42.2	27.9	25.2	49.8	26.0	26.6	32.9	0.0	35.7	27.3	0.0	37.5
LnGrp LOS	D	C	C	D	C	C	C		D	C		D
Approach Vol, veh/h		1292			1119			480			246	
Approach Delay, s/veh		29.8			31.1			33.8			37.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.0	17.5	26.7		19.1	15.9	28.2
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		10.0	12.6	16.0		13.3	11.0	14.4
Green Ext Time (p_c), s		2.3	0.2	4.9		1.1	0.4	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	32	1018	67	241	917	80	109	31	104	57	36	29
Future Volume (veh/h)	32	1018	67	241	917	80	109	31	104	57	36	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	35	1107	73	262	997	87	118	34	113	62	39	32
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	53	1642	511	263	2103	183	347	69	229	278	172	141
Arrive On Green	0.03	0.34	0.34	0.15	0.46	0.46	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1707	4893	1524	1707	4585	399	1274	365	1213	1189	912	748
Grp Volume(v), veh/h	35	1107	73	262	709	375	118	0	147	62	0	71
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1722	1274	0	1578	1189	0	1660
Q Serve(g_s), s	1.0	9.2	1.6	7.3	7.1	7.1	4.1	0.0	3.9	2.3	0.0	1.7
Cycle Q Clear(g_c), s	1.0	9.2	1.6	7.3	7.1	7.1	5.8	0.0	3.9	6.3	0.0	1.7
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.77	1.00		0.45
Lane Grp Cap(c), veh/h	53	1642	511	263	1497	790	347	0	298	278	0	313
V/C Ratio(X)	0.66	0.67	0.14	0.99	0.47	0.47	0.34	0.00	0.49	0.22	0.00	0.23
Avail Cap(c_a), veh/h	170	2379	741	263	1765	932	1170	0	1318	1049	0	1390
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	22.7	13.5	11.0	20.0	8.9	8.9	18.7	0.0	17.2	20.0	0.0	16.3
Incr Delay (d2), s/veh	13.0	0.5	0.1	53.9	0.2	0.4	0.6	0.0	1.3	0.4	0.0	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	0.6	4.2	0.7	7.3	3.2	3.4	1.5	0.0	1.8	0.8	0.0	0.8
LnGrp Delay(d),s/veh	35.6	14.0	11.1	73.8	9.1	9.3	19.3	0.0	18.4	20.4	0.0	16.6
LnGrp LOS	D	B	B	E	A	A	B		B	C		B
Approach Vol, veh/h		1215			1346			265			133	
Approach Delay, s/veh		14.4			21.8			18.8			18.4	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		13.6	12.0	21.7		13.6	6.2	27.5
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		7.8	9.3	11.2		8.3	3.0	9.1
Green Ext Time (p_c), s		1.2	0.0	4.7		0.5	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1113	1178	70	0	110
Future Vol, veh/h	0	1113	1178	70	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1210	1280	76	0	120

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	678
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	331
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	331
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	331
HCM Lane V/C Ratio	-	-	-	0.361
HCM Control Delay (s)	-	-	-	21.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑→			↱
Traffic Vol, veh/h	0	1117	1233	4	0	18
Future Vol, veh/h	0	1117	1233	4	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1214	1340	4	0	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	672
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	334
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	334
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	334
HCM Lane V/C Ratio	-	-	-	0.059
HCM Control Delay (s)	-	-	-	16.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	42	528	91	0	473
Future Vol, veh/h	0	42	528	91	0	473
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	46	574	99	0	514

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	624	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.26	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.354	-	-	-	-
Pot Cap-1 Maneuver	0	478	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	478	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	478	-
HCM Lane V/C Ratio	-	-	0.096	-
HCM Control Delay (s)	-	-	13.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	100	175	650	120	180	710
Future Volume (veh/h)	100	175	650	120	180	710
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	109	190	707	130	196	772
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	313	279	792	673	270	1205
Arrive On Green	0.18	0.18	0.44	0.44	0.16	0.67
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	109	190	707	130	196	772
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	3.1	6.4	20.1	2.9	6.0	13.7
Cycle Q Clear(g_c), s	3.1	6.4	20.1	2.9	6.0	13.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	313	279	792	673	270	1205
V/C Ratio(X)	0.35	0.68	0.89	0.19	0.73	0.64
Avail Cap(c_a), veh/h	762	680	816	694	558	1531
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	19.7	21.1	14.2	9.4	22.2	5.2
Incr Delay (d2), s/veh	0.7	2.9	12.0	0.1	3.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.9	12.5	1.2	3.1	6.8
LnGrp Delay(d),s/veh	20.4	24.0	26.2	9.6	25.9	5.8
LnGrp LOS	C	C	C	A	C	A
Approach Vol, veh/h	299		837			968
Approach Delay, s/veh	22.7		23.6			9.9
Approach LOS	C		C			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.8	28.5				41.2		14.1
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	8.0	22.1				15.7		8.4
Green Ext Time (p_c), s	0.4	0.5				3.5		1.1

Intersection Summary		
HCM 2010 Ctrl Delay		17.2
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	140	40	730	195	165	615
Future Volume (veh/h)	140	40	730	195	165	615
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	152	43	793	212	179	668
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	214	60	825	701	243	1218
Arrive On Green	0.17	0.15	0.46	0.46	0.14	0.68
Sat Flow, veh/h	1290	365	1792	1524	1707	1792
Grp Volume(v), veh/h	196	0	793	212	179	668
Grp Sat Flow(s),veh/h/ln	1664	0	1792	1524	1707	1792
Q Serve(g_s), s	5.8	0.0	22.1	4.5	5.2	9.8
Cycle Q Clear(g_c), s	5.8	0.0	22.1	4.5	5.2	9.8
Prop In Lane	0.78	0.22		1.00	1.00	
Lane Grp Cap(c), veh/h	275	0	825	701	243	1218
V/C Ratio(X)	0.71	0.00	0.96	0.30	0.74	0.55
Avail Cap(c_a), veh/h	698	0	825	701	248	1224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	0.0	13.5	8.7	21.3	4.2
Incr Delay (d2), s/veh	3.4	0.0	22.3	0.2	10.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	15.9	1.9	3.2	4.8
LnGrp Delay(d),s/veh	23.9	0.0	35.8	9.0	32.1	4.7
LnGrp LOS	C		D	A	C	A
Approach Vol, veh/h	196		1005			847
Approach Delay, s/veh	23.9		30.1			10.5
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.3	27.8				39.1		12.6
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	7.2	24.1				11.8		7.8
Green Ext Time (p_c), s	0.0	0.0				2.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	206	842	233	430	370	75	190	680	565	146	597	97
Future Volume (veh/h)	206	842	233	430	370	75	190	680	565	146	597	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	224	915	253	467	402	82	207	739	614	159	649	105
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	187	824	368	280	988	442	171	1134	507	196	1184	529
Arrive On Green	0.11	0.24	0.24	0.16	0.29	0.29	0.10	0.33	0.33	0.11	0.35	0.35
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	224	915	253	467	402	82	207	739	614	159	649	105
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	12.0	26.5	16.5	18.0	10.4	4.4	11.0	20.3	36.5	10.0	16.8	5.3
Cycle Q Clear(g_c), s	12.0	26.5	16.5	18.0	10.4	4.4	11.0	20.3	36.5	10.0	16.8	5.3
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	187	824	368	280	988	442	171	1134	507	196	1184	529
V/C Ratio(X)	1.20	1.11	0.69	1.67	0.41	0.19	1.21	0.65	1.21	0.81	0.55	0.20
Avail Cap(c_a), veh/h	187	824	368	280	1010	452	171	1134	507	203	1197	535
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	48.8	41.5	37.8	45.8	31.3	29.2	49.3	31.1	36.5	47.3	28.8	25.1
Incr Delay (d2), s/veh	129.4	66.4	5.3	314.7	0.3	0.2	135.7	1.3	111.7	21.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	19.9	7.5	32.9	5.0	1.9	11.6	9.8	31.1	5.8	8.0	2.3
LnGrp Delay(d),s/veh	178.2	108.0	43.0	360.5	31.6	29.4	185.0	32.5	148.3	68.3	29.3	25.2
LnGrp LOS	F	F	D	F	C	C	F	C	F	E	C	C
Approach Vol, veh/h		1392			951			1560			913	
Approach Delay, s/veh		107.4			192.9			98.3			35.7	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.6	40.5	22.0	30.5	15.0	42.1	16.0	36.5
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	12.0	38.5	20.0	28.5	13.0	18.8	14.0	12.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.1	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	107.7
HCM 2010 LOS	F

Notes

* HCM 2010 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)	160	15	95	80	25	135	50	1140	25	90	1125	45
Future Volume (veh/h)	160	15	95	80	25	135	50	1140	25	90	1125	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	174	16	103	87	27	147	54	1239	27	98	1223	49
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	231	325	277	145	242	205	82	1503	672	140	1617	723
Arrive On Green	0.14	0.18	0.18	0.08	0.13	0.13	0.05	0.44	0.44	0.08	0.47	0.47
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	174	16	103	87	27	147	54	1239	27	98	1223	49
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	7.6	0.6	4.6	3.8	1.0	7.1	2.4	24.7	0.8	4.3	22.8	1.4
Cycle Q Clear(g_c), s	7.6	0.6	4.6	3.8	1.0	7.1	2.4	24.7	0.8	4.3	22.8	1.4
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	231	325	277	145	242	205	82	1503	672	140	1617	723
V/C Ratio(X)	0.75	0.05	0.37	0.60	0.11	0.72	0.66	0.82	0.04	0.70	0.76	0.07
Avail Cap(c_a), veh/h	353	755	642	353	755	642	150	1954	874	243	2139	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	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	32.2	26.2	27.8	34.2	29.4	32.1	36.2	19.0	12.3	34.6	16.7	11.0
Incr Delay (d2), s/veh	4.9	0.1	0.8	4.0	0.2	4.6	8.5	2.3	0.0	6.3	1.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.3	2.0	1.9	0.5	3.3	1.3	12.0	0.3	2.3	10.8	0.6
LnGrp Delay(d),s/veh	37.1	26.2	28.6	38.1	29.6	36.7	44.7	21.3	12.3	40.9	17.8	11.1
LnGrp LOS	D	C	C	D	C	D	D	C	B	D	B	B
Approach Vol, veh/h		293			261			1320			1370	
Approach Delay, s/veh		33.5			36.4			22.1			19.2	
Approach LOS		C			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	38.1	10.6	18.3	7.7	40.7	14.5	14.4				
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6				
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0				
Max Q Clear Time (g_c+I1), s	6.3	26.7	5.8	6.6	4.4	24.8	9.6	9.1				
Green Ext Time (p_c), s	0.1	5.6	0.2	0.4	0.0	6.4	0.3	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	660	360	175	780	1125	500
Future Volume (veh/h)	660	360	175	780	1125	500
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	717	391	190	0	1223	543
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	544	914	422	143	607	542
Arrive On Green	0.32	0.51	0.12	0.00	0.36	0.36
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	717	391	190	0	1223	543
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	19.0	8.1	3.1	0.0	21.2	21.2
Cycle Q Clear(g_c), s	19.0	8.1	3.1	0.0	21.2	21.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	544	914	422	143	607	542
V/C Ratio(X)	1.32	0.43	0.45	0.00	2.01	1.00
Avail Cap(c_a), veh/h	544	1227	1017	409	607	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	9.2	24.2	0.0	19.2	19.2
Incr Delay (d2), s/veh	155.3	0.3	0.8	0.0	461.9	39.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.3	4.1	1.5	0.0	87.7	20.5
LnGrp Delay(d),s/veh	175.6	9.5	25.0	0.0	481.1	58.3
LnGrp LOS	F	A	C		F	F
Approach Vol, veh/h		1108	190		1766	
Approach Delay, s/veh		117.0	25.0		351.1	
Approach LOS		F	C		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				34.4		25.2	23.0	11.4
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				10.1		23.2	21.0	5.1
Green Ext Time (p_c), s				1.5		0.0	0.0	0.5

Intersection Summary		
HCM 2010 Ctrl Delay		246.2
HCM 2010 LOS		F

Notes

* HCM 2010 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)	115	1110	125	125	535	30	105	15	55	15	25	110
Future Volume (veh/h)	115	1110	125	125	535	30	105	15	55	15	25	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	125	1207	136	136	582	33	125	0	60	16	27	120
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	183	1861	580	196	1839	104	319	0	142	236	40	177
Arrive On Green	0.11	0.38	0.38	0.11	0.39	0.36	0.09	0.00	0.09	0.14	0.14	0.13
Sat Flow, veh/h	1707	4893	1524	1707	4740	267	3414	0	1524	1707	288	1279
Grp Volume(v), veh/h	125	1207	136	136	399	216	125	0	60	16	0	147
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1745	1707	0	1524	1707	0	1567
Q Serve(g_s), s	4.1	11.9	3.6	4.5	5.0	5.1	2.0	0.0	2.2	0.5	0.0	5.2
Cycle Q Clear(g_c), s	4.1	11.9	3.6	4.5	5.0	5.1	2.0	0.0	2.2	0.5	0.0	5.2
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		0.82
Lane Grp Cap(c), veh/h	183	1861	580	196	1266	677	319	0	142	236	0	216
V/C Ratio(X)	0.68	0.65	0.23	0.69	0.32	0.32	0.39	0.00	0.42	0.07	0.00	0.68
Avail Cap(c_a), veh/h	525	2810	875	467	1762	942	2316	0	1034	1304	0	1197
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	25.2	14.9	12.3	24.9	12.5	12.6	25.0	0.0	25.0	21.9	0.0	24.3
Incr Delay (d2), s/veh	4.5	0.4	0.2	4.4	0.1	0.3	0.8	0.0	2.0	0.1	0.0	3.7
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	2.2	5.3	1.5	2.4	2.2	2.5	1.0	0.0	1.0	0.2	0.0	2.5
LnGrp Delay(d),s/veh	29.6	15.3	12.5	29.3	12.6	12.9	25.7	0.0	27.0	22.1	0.0	28.0
LnGrp LOS	C	B	B	C	B	B	C		C	C		C
Approach Vol, veh/h		1468			751			185			163	
Approach Delay, s/veh		16.3			15.7			26.2			27.4	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.5	10.7	26.3		12.1	10.3	26.7				
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8				
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8				
Max Q Clear Time (g_c+I1), s		4.2	6.5	13.9		7.2	6.1	7.1				
Green Ext Time (p_c), s		0.8	0.3	6.6		0.7	0.3	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			17.5									
HCM 2010 LOS			B									
Notes												

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	25	1115	20	80	615	55	40	15	30	85	30	20
Future Volume (veh/h)	25	1115	20	80	615	55	40	15	30	85	30	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	27	1212	22	87	668	60	43	16	33	92	33	22
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	76	2114	658	140	2147	191	370	87	180	370	165	110
Arrive On Green	0.04	0.43	0.43	0.08	0.47	0.42	0.17	0.17	0.15	0.16	0.16	0.15
Sat Flow, veh/h	1707	4893	1524	1707	4575	408	1293	523	1079	1300	1005	670
Grp Volume(v), veh/h	27	1212	22	87	475	253	43	0	49	92	0	55
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1720	1293	0	1602	1300	0	1674
Q Serve(g_s), s	0.6	7.0	0.3	1.9	3.4	3.5	1.1	0.0	1.0	2.5	0.0	1.1
Cycle Q Clear(g_c), s	0.6	7.0	0.3	1.9	3.4	3.5	2.2	0.0	1.0	3.5	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.67	1.00		0.40
Lane Grp Cap(c), veh/h	76	2114	658	140	1531	808	370	0	267	370	0	275
V/C Ratio(X)	0.35	0.57	0.03	0.62	0.31	0.31	0.12	0.00	0.18	0.25	0.00	0.20
Avail Cap(c_a), veh/h	245	3227	1005	363	2377	1254	1536	0	1713	1546	0	1790
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	17.4	8.1	6.2	16.7	6.2	6.4	14.4	0.0	13.7	15.1	0.0	13.7
Incr Delay (d2), s/veh	2.8	0.2	0.0	4.4	0.1	0.2	0.1	0.0	0.3	0.3	0.0	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	0.3	3.2	0.1	1.0	1.5	1.7	0.4	0.0	0.5	0.9	0.0	0.5
LnGrp Delay(d),s/veh	20.2	8.3	6.2	21.1	6.3	6.6	14.6	0.0	14.0	15.4	0.0	14.0
LnGrp LOS	C	A	A	C	A	A	B		B	B		B
Approach Vol, veh/h		1261			815			92			147	
Approach Delay, s/veh		8.5			8.0			14.3			14.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		10.3	7.1	20.2		10.3	5.7	21.7
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		4.2	3.9	9.0		5.5	2.6	5.5
Green Ext Time (p_c), s		0.4	0.1	5.4		0.6	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↱			↱
Traffic Vol, veh/h	0	1528	875	0	0	0
Future Vol, veh/h	0	1528	875	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1661	951	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	476
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	450
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	450
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1528	875	2	0	0
Future Vol, veh/h	0	1528	875	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1661	951	2	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	477
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	449
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	449
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	0					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	961	0	0	840
Future Vol, veh/h	0	0	961	0	0	840
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	1045	0	0	913

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	523	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	488	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	488	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	165	95	675	205	110	850		
Future Volume (veh/h)	165	95	675	205	110	850		
Number	3	18	2	12	1	6		
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		
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792		
Adj Flow Rate, veh/h	179	103	734	223	120	924		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	6	6	6	6	6	6		
Cap, veh/h	267	238	799	679	157	1133		
Arrive On Green	0.16	0.16	0.45	0.45	0.09	0.63		
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792		
Grp Volume(v), veh/h	179	103	734	223	120	924		
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792		
Q Serve(g_s), s	4.9	3.0	19.1	4.7	3.4	19.5		
Cycle Q Clear(g_c), s	4.9	3.0	19.1	4.7	3.4	19.5		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	267	238	799	679	157	1133		
V/C Ratio(X)	0.67	0.43	0.92	0.33	0.76	0.82		
Avail Cap(c_a), veh/h	824	735	843	717	597	1640		
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	19.8	19.0	12.9	9.0	22.0	6.9		
Incr Delay (d2), s/veh	2.9	1.2	14.5	0.3	7.4	2.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.5	1.3	12.6	2.0	1.9	9.9		
LnGrp Delay(d),s/veh	22.7	20.2	27.5	9.2	29.5	9.1		
LnGrp LOS	C	C	C	A	C	A		
Approach Vol, veh/h	282		957			1044		
Approach Delay, s/veh	21.8		23.2			11.4		
Approach LOS	C		C			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.3	28.0				37.2		12.5
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	5.4	21.1				21.5		6.9
Green Ext Time (p_c), s	0.3	1.0				4.6		1.0
Intersection Summary								
HCM 2010 Ctrl Delay			17.7					
HCM 2010 LOS			B					
Notes								

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	105	95	785	205	130	885		
Future Volume (veh/h)	105	95	785	205	130	885		
Number	3	18	2	12	1	6		
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		
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792		
Adj Flow Rate, veh/h	114	103	853	223	141	962		
Adj No. of Lanes	0	0	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	6	6	6	6	6	6		
Cap, veh/h	146	132	766	651	178	1117		
Arrive On Green	0.17	0.17	0.43	0.43	0.10	0.62		
Sat Flow, veh/h	845	763	1792	1524	1707	1792		
Grp Volume(v), veh/h	218	0	853	223	141	962		
Grp Sat Flow(s),veh/h/ln	1616	0	1792	1524	1707	1792		
Q Serve(g_s), s	6.6	0.0	22.0	5.1	4.2	22.5		
Cycle Q Clear(g_c), s	6.6	0.0	22.0	5.1	4.2	22.5		
Prop In Lane	0.52	0.47		1.00	1.00			
Lane Grp Cap(c), veh/h	279	0	766	651	178	1117		
V/C Ratio(X)	0.78	0.00	1.11	0.34	0.79	0.86		
Avail Cap(c_a), veh/h	659	0	766	651	226	1167		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	20.3	0.0	14.7	9.9	22.5	7.9		
Incr Delay (d2), s/veh	4.7	0.0	68.1	0.3	14.0	6.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.3	0.0	25.1	2.2	2.6	12.7		
LnGrp Delay(d),s/veh	25.1	0.0	82.8	10.2	36.5	14.5		
LnGrp LOS	C		F	B	D	B		
Approach Vol, veh/h	218		1076			1103		
Approach Delay, s/veh	25.1		67.8			17.3		
Approach LOS	C		E			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.1	27.8				37.9		13.6
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	6.2	24.0				24.5		8.6
Green Ext Time (p_c), s	0.0	0.0				3.3		0.7
Intersection Summary								
HCM 2010 Ctrl Delay			40.7					
HCM 2010 LOS			D					
Notes								

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	205	739	269	585	995	95	175	730	720	182	756	117
Future Volume (veh/h)	205	739	269	585	995	95	175	730	720	182	756	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	223	803	292	636	1082	103	190	793	729	198	822	127
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	205	760	340	298	944	423	130	1080	483	159	1138	509
Arrive On Green	0.12	0.22	0.22	0.17	0.28	0.28	0.08	0.32	0.32	0.09	0.33	0.33
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	223	803	292	636	1082	103	190	793	729	198	822	127
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	13.3	24.7	20.4	19.3	30.7	5.8	8.4	22.9	35.1	10.3	23.4	6.7
Cycle Q Clear(g_c), s	13.3	24.7	20.4	19.3	30.7	5.8	8.4	22.9	35.1	10.3	23.4	6.7
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	205	760	340	298	944	423	130	1080	483	159	1138	509
V/C Ratio(X)	1.09	1.06	0.86	2.14	1.15	0.24	1.47	0.73	1.51	1.25	0.72	0.25
Avail Cap(c_a), veh/h	205	760	340	298	944	423	130	1080	483	159	1138	509
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	48.7	43.0	41.3	45.7	40.0	31.0	51.1	33.6	37.8	50.2	32.3	26.8
Incr Delay (d2), s/veh	88.0	48.7	19.3	522.7	78.1	0.3	247.2	2.6	239.6	152.6	2.3	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	11.2	16.6	10.4	52.2	24.5	2.5	12.8	11.2	46.9	11.5	11.3	2.8
LnGrp Delay(d),s/veh	136.7	91.7	60.6	568.4	118.1	31.3	298.3	36.3	277.4	202.8	34.6	27.0
LnGrp LOS	F	F	E	F	F	C	F	D	F	F	C	C
Approach Vol, veh/h		1318			1821			1712			1147	
Approach Delay, s/veh		92.4			270.5			168.0			62.8	
Approach LOS		F			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	40.5	24.0	31.2	13.1	42.4	18.0	37.2				
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5				
Max Green Setting (Gmax), s	* 10	35.1	* 19	24.0	* 8.4	37.0	* 13	* 31				
Max Q Clear Time (g_c+I1), s	12.3	37.1	21.3	26.7	10.4	25.4	15.3	32.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			162.4									
HCM 2010 LOS			F									
Notes												

* HCM 2010 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)	195	15	30	25	10	95	20	1335	35	130	1380	100
Future Volume (veh/h)	195	15	30	25	10	95	20	1335	35	130	1380	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	212	16	33	27	11	103	22	1451	38	141	1500	109
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	247	345	294	74	164	139	32	1535	687	171	1813	811
Arrive On Green	0.14	0.19	0.19	0.04	0.09	0.09	0.02	0.45	0.45	0.10	0.53	0.53
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	212	16	33	27	11	103	22	1451	38	141	1500	109
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	11.2	0.7	1.7	1.4	0.5	6.1	1.2	37.7	1.3	7.5	34.0	3.3
Cycle Q Clear(g_c), s	11.2	0.7	1.7	1.4	0.5	6.1	1.2	37.7	1.3	7.5	34.0	3.3
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	247	345	294	74	164	139	32	1535	687	171	1813	811
V/C Ratio(X)	0.86	0.05	0.11	0.37	0.07	0.74	0.69	0.95	0.06	0.82	0.83	0.13
Avail Cap(c_a), veh/h	284	626	532	284	621	528	113	1570	702	190	1813	811
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	38.6	30.4	30.8	43.0	38.4	40.9	45.1	24.3	14.3	40.8	18.1	10.9
Incr Delay (d2), s/veh	20.2	0.1	0.2	3.0	0.2	7.5	23.3	12.0	0.0	22.7	3.3	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	6.7	0.3	0.7	0.7	0.3	2.9	0.8	20.1	0.6	4.6	16.7	1.4
LnGrp Delay(d),s/veh	58.8	30.4	31.0	46.0	38.6	48.4	68.4	36.3	14.3	63.5	21.4	11.0
LnGrp LOS	E	C	C	D	D	D	E	D	B	E	C	B
Approach Vol, veh/h		261			141			1511			1750	
Approach Delay, s/veh		53.5			47.2			36.2			24.2	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	47.5	8.6	22.4	6.4	55.0	18.0	13.0
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	9.5	39.7	3.4	3.7	3.2	36.0	13.2	8.1
Green Ext Time (p_c), s	0.0	2.0	0.0	0.1	0.0	5.9	0.2	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	535	285	310	1120	985	300
Future Volume (veh/h)	535	285	310	1120	985	300
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	582	310	337	0	1071	326
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	497	908	477	213	538	480
Arrive On Green	0.29	0.51	0.14	0.00	0.32	0.32
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	582	310	337	0	1071	326
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	18.3	6.5	5.9	0.0	19.8	11.7
Cycle Q Clear(g_c), s	18.3	6.5	5.9	0.0	19.8	11.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	497	908	477	213	538	480
V/C Ratio(X)	1.17	0.34	0.71	0.00	1.99	0.68
Avail Cap(c_a), veh/h	497	1113	868	388	538	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	9.3	25.8	0.0	21.5	18.7
Incr Delay (d2), s/veh	96.3	0.2	1.9	0.0	452.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.7	3.2	2.9	0.0	76.7	10.0
LnGrp Delay(d),s/veh	118.5	9.5	27.7	0.0	473.5	22.6
LnGrp LOS	F	A	C		F	C
Approach Vol, veh/h		892	337		1397	
Approach Delay, s/veh		80.6	27.7		368.3	
Approach LOS		F	C		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.6		25.2	23.0	14.6
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				8.5		21.8	20.3	7.9
Green Ext Time (p_c), s				1.1		0.0	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	226.9
HCM 2010 LOS	F

Notes

* HCM 2010 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)	165	1165	200	290	1055	20	360	40	195	15	55	140
Future Volume (veh/h)	165	1165	200	290	1055	20	360	40	195	15	55	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	179	1266	217	315	1147	22	422	0	212	16	60	152
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	213	1468	457	265	1635	31	627	0	280	272	72	182
Arrive On Green	0.12	0.30	0.30	0.16	0.33	0.33	0.18	0.00	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1707	4893	1524	1707	4943	95	3414	0	1524	1707	450	1141
Grp Volume(v), veh/h	179	1266	217	315	757	412	422	0	212	16	0	212
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1776	1707	0	1524	1707	0	1591
Q Serve(g_s), s	10.1	24.1	11.5	15.3	19.9	19.9	11.3	0.0	13.0	0.8	0.0	12.7
Cycle Q Clear(g_c), s	10.1	24.1	11.5	15.3	19.9	19.9	11.3	0.0	13.0	0.8	0.0	12.7
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.72
Lane Grp Cap(c), veh/h	213	1468	457	265	1079	587	627	0	280	272	0	253
V/C Ratio(X)	0.84	0.86	0.47	1.19	0.70	0.70	0.67	0.00	0.76	0.06	0.00	0.84
Avail Cap(c_a), veh/h	300	1579	492	265	1079	587	1351	0	603	762	0	710
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	42.2	32.6	28.1	41.6	28.7	28.7	37.5	0.0	38.1	35.2	0.0	40.2
Incr Delay (d2), s/veh	13.9	4.9	0.8	116.1	2.1	3.7	1.3	0.0	4.2	0.1	0.0	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	11.5	4.9	15.7	9.2	10.3	5.4	0.0	5.8	0.4	0.0	6.1
LnGrp Delay(d),s/veh	56.1	37.5	28.9	157.7	30.8	32.5	38.7	0.0	42.3	35.3	0.0	47.4
LnGrp LOS	E	D	C	F	C	C	D		D	D		D
Approach Vol, veh/h		1662			1484			634			228	
Approach Delay, s/veh		38.3			58.2			39.9			46.5	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.8	20.0	35.4		20.4	17.0	38.4
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		15.0	17.3	26.1		14.7	12.1	21.9
Green Ext Time (p_c), s		3.1	0.0	3.5		1.0	0.3	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	40	1365	90	300	1205	115	150	50	120	75	60	30
Future Volume (veh/h)	40	1365	90	300	1205	115	150	50	120	75	60	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	43	1484	98	326	1310	125	163	54	130	82	65	33
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	59	1818	566	219	2114	202	357	109	262	279	261	133
Arrive On Green	0.03	0.37	0.37	0.13	0.47	0.47	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1707	4893	1524	1707	4545	434	1243	468	1126	1150	1122	570
Grp Volume(v), veh/h	43	1484	98	326	940	495	163	0	184	82	0	98
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1716	1243	0	1594	1150	0	1692
Q Serve(g_s), s	1.4	15.6	2.5	7.3	12.3	12.3	7.0	0.0	5.7	3.8	0.0	2.7
Cycle Q Clear(g_c), s	1.4	15.6	2.5	7.3	12.3	12.3	9.7	0.0	5.7	9.5	0.0	2.7
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.71	1.00		0.34
Lane Grp Cap(c), veh/h	59	1818	566	219	1517	798	357	0	371	279	0	394
V/C Ratio(X)	0.73	0.82	0.17	1.49	0.62	0.62	0.46	0.00	0.50	0.29	0.00	0.25
Avail Cap(c_a), veh/h	141	1980	616	219	1517	798	932	0	1107	812	0	1179
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	27.2	16.1	12.0	24.8	11.4	11.4	21.7	0.0	18.9	23.0	0.0	17.8
Incr Delay (d2), s/veh	15.5	2.6	0.1	242.0	0.8	1.5	0.9	0.0	1.0	0.6	0.0	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	0.9	7.3	1.1	18.1	5.6	6.1	2.5	0.0	2.6	1.3	0.0	1.3
LnGrp Delay(d),s/veh	42.7	18.7	12.1	266.7	12.2	12.9	22.6	0.0	19.9	23.6	0.0	18.1
LnGrp LOS	D	B	B	F	B	B	C		B	C		B
Approach Vol, veh/h		1625			1761			347			180	
Approach Delay, s/veh		19.0			59.5			21.2			20.6	
Approach LOS		B			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.9	12.0	26.9		17.9	6.7	32.2
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		11.7	9.3	17.6		11.5	3.4	14.3
Green Ext Time (p_c), s		1.6	0.0	3.6		0.8	0.0	5.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1641	1675	0	0	0
Future Vol, veh/h	0	1641	1675	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1784	1821	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	911
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	232
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	232
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1641	1675	2	0	8
Future Vol, veh/h	0	1641	1675	2	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1784	1821	2	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	912
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	231
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	231
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	231
HCM Lane V/C Ratio	-	-	-	0.038
HCM Control Delay (s)	-	-	-	21.2
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1010	0	0	1062
Future Vol, veh/h	0	0	1010	0	0	1062
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	0	1098	0	0	1154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	549	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	469	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	469	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	100	175	650	127	180	710
Future Volume (veh/h)	100	175	650	127	180	710
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	109	190	707	138	196	772
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	313	279	792	673	270	1205
Arrive On Green	0.18	0.18	0.44	0.44	0.16	0.67
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792
Grp Volume(v), veh/h	109	190	707	138	196	772
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792
Q Serve(g_s), s	3.1	6.4	20.1	3.1	6.0	13.7
Cycle Q Clear(g_c), s	3.1	6.4	20.1	3.1	6.0	13.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	313	279	792	673	270	1205
V/C Ratio(X)	0.35	0.68	0.89	0.20	0.73	0.64
Avail Cap(c_a), veh/h	762	680	816	693	558	1531
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	19.7	21.1	14.2	9.5	22.2	5.2
Incr Delay (d2), s/veh	0.7	2.9	12.0	0.1	3.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.9	12.5	1.3	3.1	6.8
LnGrp Delay(d),s/veh	20.4	24.0	26.2	9.6	25.9	5.8
LnGrp LOS	C	C	C	A	C	A
Approach Vol, veh/h	299		845			968
Approach Delay, s/veh	22.7		23.5			9.9
Approach LOS	C		C			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.8	28.5				41.2		14.1
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	8.0	22.1				15.7		8.4
Green Ext Time (p_c), s	0.4	0.5				3.5		1.1

Intersection Summary		
HCM 2010 Ctrl Delay		17.1
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	140	40	737	201	165	615
Future Volume (veh/h)	140	40	737	201	165	615
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	152	43	801	218	179	668
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	214	60	825	701	243	1218
Arrive On Green	0.17	0.15	0.46	0.46	0.14	0.68
Sat Flow, veh/h	1290	365	1792	1524	1707	1792
Grp Volume(v), veh/h	196	0	801	218	179	668
Grp Sat Flow(s),veh/h/ln	1664	0	1792	1524	1707	1792
Q Serve(g_s), s	5.8	0.0	22.5	4.7	5.2	9.8
Cycle Q Clear(g_c), s	5.8	0.0	22.5	4.7	5.2	9.8
Prop In Lane	0.78	0.22		1.00	1.00	
Lane Grp Cap(c), veh/h	275	0	825	701	243	1218
V/C Ratio(X)	0.71	0.00	0.97	0.31	0.74	0.55
Avail Cap(c_a), veh/h	698	0	825	701	248	1224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	0.0	13.6	8.8	21.3	4.2
Incr Delay (d2), s/veh	3.4	0.0	24.3	0.2	10.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	16.5	2.0	3.2	4.8
LnGrp Delay(d),s/veh	23.9	0.0	37.9	9.0	32.1	4.7
LnGrp LOS	C		D	A	C	A
Approach Vol, veh/h	196		1019			847
Approach Delay, s/veh	23.9		31.7			10.5
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.3	27.8				39.1		12.6
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	7.2	24.5				11.8		7.8
Green Ext Time (p_c), s	0.0	0.0				2.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	217	842	233	472	380	103	190	695	565	146	597	97
Future Volume (veh/h)	217	842	233	472	380	103	190	695	565	146	597	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	236	915	253	513	413	112	207	755	614	159	649	105
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	187	824	368	280	988	442	171	1134	507	196	1184	529
Arrive On Green	0.11	0.24	0.24	0.16	0.29	0.29	0.10	0.33	0.33	0.11	0.35	0.35
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	236	915	253	513	413	112	207	755	614	159	649	105
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	12.0	26.5	16.5	18.0	10.7	6.2	11.0	20.8	36.5	10.0	16.8	5.3
Cycle Q Clear(g_c), s	12.0	26.5	16.5	18.0	10.7	6.2	11.0	20.8	36.5	10.0	16.8	5.3
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	187	824	368	280	988	442	171	1134	507	196	1184	529
V/C Ratio(X)	1.26	1.11	0.69	1.83	0.42	0.25	1.21	0.67	1.21	0.81	0.55	0.20
Avail Cap(c_a), veh/h	187	824	368	280	1010	452	171	1134	507	203	1197	535
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	48.8	41.5	37.8	45.8	31.4	29.8	49.3	31.3	36.5	47.3	28.8	25.1
Incr Delay (d2), s/veh	153.7	66.4	5.3	386.9	0.3	0.3	135.7	1.5	111.7	21.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.6	19.9	7.5	38.6	5.1	2.6	11.6	10.0	31.1	5.8	8.0	2.3
LnGrp Delay(d),s/veh	202.5	108.0	43.0	432.7	31.7	30.1	185.0	32.8	148.3	68.3	29.3	25.2
LnGrp LOS	F	F	D	F	C	C	F	C	F	E	C	C
Approach Vol, veh/h		1404			1038			1576			913	
Approach Delay, s/veh		112.1			229.7			97.8			35.7	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.6	40.5	22.0	30.5	15.0	42.1	16.0	36.5
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 12	35.1	* 17	24.0	* 10	37.1	* 11	* 31
Max Q Clear Time (g_c+I1), s	12.0	38.5	20.0	28.5	13.0	18.8	14.0	12.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.1	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	118.1
HCM 2010 LOS	F

Notes

* HCM 2010 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)	164	15	95	80	25	139	50	1147	25	93	1132	48
Future Volume (veh/h)	164	15	95	80	25	139	50	1147	25	93	1132	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	178	16	103	87	27	151	54	1247	27	101	1230	52
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	234	333	283	143	245	208	82	1501	672	143	1622	726
Arrive On Green	0.14	0.19	0.19	0.08	0.14	0.14	0.05	0.44	0.44	0.08	0.48	0.48
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	178	16	103	87	27	151	54	1247	27	101	1230	52
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	8.0	0.6	4.7	3.9	1.0	7.5	2.5	25.6	0.8	4.6	23.4	1.5
Cycle Q Clear(g_c), s	8.0	0.6	4.7	3.9	1.0	7.5	2.5	25.6	0.8	4.6	23.4	1.5
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	234	333	283	143	245	208	82	1501	672	143	1622	726
V/C Ratio(X)	0.76	0.05	0.36	0.61	0.11	0.73	0.66	0.83	0.04	0.71	0.76	0.07
Avail Cap(c_a), veh/h	345	738	627	345	738	627	147	1910	854	237	2091	935
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	32.9	26.5	28.2	35.0	30.0	32.8	37.0	19.5	12.6	35.3	17.0	11.2
Incr Delay (d2), s/veh	5.6	0.1	0.8	4.1	0.2	4.8	8.6	2.6	0.0	6.3	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.3	2.0	2.0	0.5	3.4	1.4	12.5	0.3	2.4	11.2	0.6
LnGrp Delay(d),s/veh	38.6	26.5	28.9	39.1	30.2	37.5	45.6	22.1	12.6	41.6	18.2	11.3
LnGrp LOS	D	C	C	D	C	D	D	C	B	D	B	B
Approach Vol, veh/h		297			265			1328			1383	
Approach Delay, s/veh		34.6			37.3			22.9			19.7	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	38.9	10.6	19.0	7.8	41.7	14.8	14.8
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	6.6	27.6	5.9	6.7	4.5	25.4	10.0	9.5
Green Ext Time (p_c), s	0.1	5.5	0.2	0.4	0.0	6.4	0.3	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	664	360	175	784	1128	503
Future Volume (veh/h)	664	360	175	784	1128	503
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	722	391	190	0	1226	547
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	544	914	422	143	607	542
Arrive On Green	0.32	0.51	0.12	0.00	0.36	0.36
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	722	391	190	0	1226	547
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	19.0	8.1	3.1	0.0	21.2	21.2
Cycle Q Clear(g_c), s	19.0	8.1	3.1	0.0	21.2	21.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	544	914	422	143	607	542
V/C Ratio(X)	1.33	0.43	0.45	0.00	2.02	1.01
Avail Cap(c_a), veh/h	544	1227	1017	409	607	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	9.2	24.2	0.0	19.2	19.2
Incr Delay (d2), s/veh	159.3	0.3	0.8	0.0	464.1	40.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.9	4.1	1.5	0.0	88.1	20.8
LnGrp Delay(d),s/veh	179.5	9.5	25.0	0.0	483.3	60.1
LnGrp LOS	F	A	C		F	F
Approach Vol, veh/h		1113	190		1773	
Approach Delay, s/veh		119.8	25.0		352.8	
Approach LOS		F	C		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				34.4		25.2	23.0	11.4
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				10.1		23.2	21.0	5.1
Green Ext Time (p_c), s				1.5		0.0	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	248.2
HCM 2010 LOS	F

Notes

* HCM 2010 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)	122	1130	128	125	572	30	109	15	55	15	25	117
Future Volume (veh/h)	122	1130	128	125	572	30	109	15	55	15	25	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	133	1228	139	136	622	33	129	0	60	16	27	127
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	192	1868	582	195	1825	96	318	0	142	244	39	185
Arrive On Green	0.11	0.38	0.38	0.11	0.38	0.35	0.09	0.00	0.09	0.14	0.14	0.13
Sat Flow, veh/h	1707	4893	1524	1707	4759	251	3414	0	1524	1707	274	1290
Grp Volume(v), veh/h	133	1228	139	136	425	230	129	0	60	16	0	154
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1748	1707	0	1524	1707	0	1565
Q Serve(g_s), s	4.5	12.4	3.7	4.6	5.5	5.6	2.1	0.0	2.2	0.5	0.0	5.6
Cycle Q Clear(g_c), s	4.5	12.4	3.7	4.6	5.5	5.6	2.1	0.0	2.2	0.5	0.0	5.6
Prop In Lane	1.00		1.00	1.00		0.14	1.00		1.00	1.00		0.82
Lane Grp Cap(c), veh/h	192	1868	582	195	1251	670	318	0	142	244	0	224
V/C Ratio(X)	0.69	0.66	0.24	0.70	0.34	0.34	0.41	0.00	0.42	0.07	0.00	0.69
Avail Cap(c_a), veh/h	514	2752	857	457	1725	924	2268	0	1012	1277	0	1171
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	25.5	15.2	12.6	25.5	13.1	13.2	25.5	0.0	25.6	22.1	0.0	24.6
Incr Delay (d2), s/veh	4.4	0.4	0.2	4.4	0.2	0.3	0.8	0.0	2.0	0.1	0.0	3.7
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	2.3	5.6	1.6	2.4	2.5	2.7	1.0	0.0	1.0	0.2	0.0	2.6
LnGrp Delay(d),s/veh	29.9	15.6	12.8	29.9	13.2	13.5	26.4	0.0	27.6	22.3	0.0	28.3
LnGrp LOS	C	B	B	C	B	B	C		C	C		C
Approach Vol, veh/h		1500			791			189			170	
Approach Delay, s/veh		16.6			16.2			26.8			27.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.6	10.8	26.8		12.5	10.7	26.9
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		4.2	6.6	14.4		7.6	6.5	7.6
Green Ext Time (p_c), s		0.9	0.3	6.6		0.7	0.3	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	28	1128	23	80	645	55	44	15	30	85	30	24
Future Volume (veh/h)	28	1128	23	80	645	55	44	15	30	85	30	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	30	1226	25	87	701	60	48	16	33	92	33	26
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	80	2123	661	140	2153	183	366	88	181	370	154	121
Arrive On Green	0.05	0.43	0.43	0.08	0.47	0.42	0.17	0.17	0.15	0.17	0.17	0.15
Sat Flow, veh/h	1707	4893	1524	1707	4595	391	1288	523	1079	1300	930	733
Grp Volume(v), veh/h	30	1226	25	87	496	265	48	0	49	92	0	59
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1723	1288	0	1602	1300	0	1663
Q Serve(g_s), s	0.6	7.2	0.4	1.9	3.6	3.7	1.3	0.0	1.0	2.5	0.0	1.2
Cycle Q Clear(g_c), s	0.6	7.2	0.4	1.9	3.6	3.7	2.4	0.0	1.0	3.5	0.0	1.2
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.67	1.00		0.44
Lane Grp Cap(c), veh/h	80	2123	661	140	1528	807	366	0	269	370	0	275
V/C Ratio(X)	0.37	0.58	0.04	0.62	0.32	0.33	0.13	0.00	0.18	0.25	0.00	0.21
Avail Cap(c_a), veh/h	243	3202	997	360	2358	1246	1516	0	1699	1534	0	1764
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	17.5	8.1	6.2	16.8	6.3	6.5	14.7	0.0	13.7	15.1	0.0	13.8
Incr Delay (d2), s/veh	2.9	0.3	0.0	4.5	0.1	0.2	0.2	0.0	0.3	0.3	0.0	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	0.4	3.2	0.2	1.0	1.6	1.8	0.5	0.0	0.5	0.9	0.0	0.6
LnGrp Delay(d),s/veh	20.4	8.4	6.2	21.3	6.4	6.7	14.8	0.0	14.1	15.5	0.0	14.2
LnGrp LOS	C	A	A	C	A	A	B		B	B		B
Approach Vol, veh/h		1281			848			97			151	
Approach Delay, s/veh		8.6			8.0			14.4			15.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		10.4	7.1	20.4		10.4	5.8	21.8
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		4.4	3.9	9.2		5.5	2.6	5.7
Green Ext Time (p_c), s		0.4	0.1	5.5		0.6	0.0	3.3

Intersection Summary		
HCM 2010 Ctrl Delay		9.0
HCM 2010 LOS		A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑→			↱
Traffic Vol, veh/h	0	1528	848	74	0	106
Future Vol, veh/h	0	1528	848	74	0	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1661	922	80	0	115

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	501
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	433
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	433
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	433
HCM Lane V/C Ratio	-	-	-	0.266
HCM Control Delay (s)	-	-	-	16.3
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1528	919	7	0	4
Future Vol, veh/h	0	1528	919	7	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1661	999	8	0	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	504
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	431
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	431
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	431
HCM Lane V/C Ratio	-	-	-	0.01
HCM Control Delay (s)	-	-	-	13.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	932	82	0	840
Future Vol, veh/h	0	41	932	82	0	840
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	45	1013	89	0	913

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	507	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	500	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	500	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	500	-
HCM Lane V/C Ratio	-	-	0.089	-
HCM Control Delay (s)	-	-	12.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	165	95	675	213	110	850		
Future Volume (veh/h)	165	95	675	213	110	850		
Number	3	18	2	12	1	6		
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		
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792		
Adj Flow Rate, veh/h	179	103	734	232	120	924		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	6	6	6	6	6	6		
Cap, veh/h	267	238	799	679	157	1134		
Arrive On Green	0.16	0.16	0.45	0.45	0.09	0.63		
Sat Flow, veh/h	1707	1524	1792	1524	1707	1792		
Grp Volume(v), veh/h	179	103	734	232	120	924		
Grp Sat Flow(s),veh/h/ln	1707	1524	1792	1524	1707	1792		
Q Serve(g_s), s	4.9	3.0	19.1	5.0	3.4	19.5		
Cycle Q Clear(g_c), s	4.9	3.0	19.1	5.0	3.4	19.5		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	267	238	799	679	157	1134		
V/C Ratio(X)	0.67	0.43	0.92	0.34	0.76	0.82		
Avail Cap(c_a), veh/h	824	735	843	717	597	1640		
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	19.8	19.0	12.9	9.0	22.0	6.9		
Incr Delay (d2), s/veh	2.9	1.2	14.5	0.3	7.4	2.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.5	1.3	12.6	2.1	1.9	9.9		
LnGrp Delay(d),s/veh	22.7	20.2	27.5	9.3	29.5	9.1		
LnGrp LOS	C	C	C	A	C	A		
Approach Vol, veh/h	282		966			1044		
Approach Delay, s/veh	21.8		23.1			11.4		
Approach LOS	C		C			B		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	9.3	28.0				37.3		12.5
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 17	23.4				45.5		24.0
Max Q Clear Time (g_c+I1), s	5.4	21.1				21.5		6.9
Green Ext Time (p_c), s	0.3	1.1				4.6		1.0
Intersection Summary								
HCM 2010 Ctrl Delay			17.6					
HCM 2010 LOS			B					
Notes								

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	95	793	213	130	885
Future Volume (veh/h)	105	95	793	213	130	885
Number	3	18	2	12	1	6
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
Adj Sat Flow, veh/h/ln	1792	1900	1792	1792	1792	1792
Adj Flow Rate, veh/h	114	103	862	232	141	962
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	146	132	766	651	178	1117
Arrive On Green	0.17	0.17	0.43	0.43	0.10	0.62
Sat Flow, veh/h	845	763	1792	1524	1707	1792
Grp Volume(v), veh/h	218	0	862	232	141	962
Grp Sat Flow(s),veh/h/ln	1616	0	1792	1524	1707	1792
Q Serve(g_s), s	6.6	0.0	22.0	5.3	4.2	22.5
Cycle Q Clear(g_c), s	6.6	0.0	22.0	5.3	4.2	22.5
Prop In Lane	0.52	0.47		1.00	1.00	
Lane Grp Cap(c), veh/h	279	0	766	651	178	1117
V/C Ratio(X)	0.78	0.00	1.12	0.36	0.79	0.86
Avail Cap(c_a), veh/h	659	0	766	651	226	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	14.7	9.9	22.5	7.9
Incr Delay (d2), s/veh	4.7	0.0	72.5	0.3	14.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	26.1	2.3	2.6	12.7
LnGrp Delay(d),s/veh	25.1	0.0	87.2	10.3	36.5	14.5
LnGrp LOS	C		F	B	D	B
Approach Vol, veh/h	218		1094			1103
Approach Delay, s/veh	25.1		70.9			17.3
Approach LOS	C		E			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.1	27.8				37.9		13.6
Change Period (Y+Rc), s	* 4.7	5.8				5.8		4.7
Max Green Setting (Gmax), s	* 6.8	22.0				33.5		21.0
Max Q Clear Time (g_c+I1), s	6.2	24.0				24.5		8.6
Green Ext Time (p_c), s	0.0	0.0				3.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	42.3
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 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)	217	739	269	635	1007	132	175	746	720	182	756	117
Future Volume (veh/h)	217	739	269	635	1007	132	175	746	720	182	756	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	236	803	292	690	1095	143	190	811	729	198	822	127
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	205	760	340	298	944	423	130	1080	483	159	1138	509
Arrive On Green	0.12	0.22	0.22	0.17	0.28	0.28	0.08	0.32	0.32	0.09	0.33	0.33
Sat Flow, veh/h	1707	3406	1524	1707	3406	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	236	803	292	690	1095	143	190	811	729	198	822	127
Grp Sat Flow(s),veh/h/ln	1707	1703	1524	1707	1703	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	13.3	24.7	20.4	19.3	30.7	8.3	8.4	23.6	35.1	10.3	23.4	6.7
Cycle Q Clear(g_c), s	13.3	24.7	20.4	19.3	30.7	8.3	8.4	23.6	35.1	10.3	23.4	6.7
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	205	760	340	298	944	423	130	1080	483	159	1138	509
V/C Ratio(X)	1.15	1.06	0.86	2.32	1.16	0.34	1.47	0.75	1.51	1.25	0.72	0.25
Avail Cap(c_a), veh/h	205	760	340	298	944	423	130	1080	483	159	1138	509
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	48.7	43.0	41.3	45.7	40.0	31.9	51.1	33.9	37.8	50.2	32.3	26.8
Incr Delay (d2), s/veh	109.4	48.7	19.3	603.7	83.6	0.5	247.2	3.0	239.6	152.6	2.3	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	12.4	16.6	10.4	58.9	25.3	3.6	12.8	11.5	46.9	11.5	11.3	2.8
LnGrp Delay(d),s/veh	158.1	91.7	60.6	649.4	123.6	32.4	298.3	36.9	277.4	202.8	34.6	27.0
LnGrp LOS	F	F	E	F	F	C	F	D	F	F	C	C
Approach Vol, veh/h		1331			1928			1730			1147	
Approach Delay, s/veh		96.6			305.0			167.0			62.8	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	40.5	24.0	31.2	13.1	42.4	18.0	37.2
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 10	35.1	* 19	24.0	* 8.4	37.0	* 13	* 31
Max Q Clear Time (g_c+I1), s	12.3	37.1	21.3	26.7	10.4	25.4	15.3	32.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	175.6
HCM 2010 LOS	F

Notes

* HCM 2010 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)	199	15	30	25	10	99	20	1343	35	134	1388	104
Future Volume (veh/h)	199	15	30	25	10	99	20	1343	35	134	1388	104
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	216	16	33	27	11	108	22	1460	38	146	1509	113
Adj No. of Lanes	1	1	1	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	250	355	302	72	169	144	32	1524	682	176	1811	810
Arrive On Green	0.15	0.20	0.20	0.04	0.09	0.09	0.02	0.45	0.45	0.10	0.53	0.53
Sat Flow, veh/h	1707	1792	1524	1707	1792	1524	1707	3406	1524	1707	3406	1524
Grp Volume(v), veh/h	216	16	33	27	11	108	22	1460	38	146	1509	113
Grp Sat Flow(s),veh/h/ln	1707	1792	1524	1707	1792	1524	1707	1703	1524	1707	1703	1524
Q Serve(g_s), s	11.7	0.7	1.7	1.5	0.5	6.5	1.2	39.1	1.3	7.9	35.1	3.5
Cycle Q Clear(g_c), s	11.7	0.7	1.7	1.5	0.5	6.5	1.2	39.1	1.3	7.9	35.1	3.5
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	250	355	302	72	169	144	32	1524	682	176	1811	810
V/C Ratio(X)	0.86	0.05	0.11	0.37	0.07	0.75	0.69	0.96	0.06	0.83	0.83	0.14
Avail Cap(c_a), veh/h	279	614	522	279	609	517	110	1539	689	187	1811	810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	30.6	31.0	43.9	38.9	41.6	46.0	25.2	14.8	41.5	18.6	11.2
Incr Delay (d2), s/veh	21.9	0.1	0.2	3.2	0.2	7.6	23.7	14.2	0.0	24.9	3.5	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	7.0	0.3	0.7	0.7	0.3	3.0	0.8	21.3	0.6	4.9	17.2	1.5
LnGrp Delay(d),s/veh	61.2	30.6	31.1	47.1	39.1	49.2	69.7	39.4	14.8	66.4	22.1	11.2
LnGrp LOS	E	C	C	D	D	D	E	D	B	E	C	B
Approach Vol, veh/h		265			146			1520			1768	
Approach Delay, s/veh		55.6			48.1			39.2			25.0	
Approach LOS		E			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	48.0	8.6	23.3	6.5	55.9	18.4	13.5
Change Period (Y+Rc), s	* 4.7	5.8	4.6	* 4.6	* 4.7	5.8	4.6	4.6
Max Green Setting (Gmax), s	* 10	42.6	15.4	* 32	* 6.1	46.8	15.4	32.0
Max Q Clear Time (g_c+I1), s	9.9	41.1	3.5	3.7	3.2	37.1	13.7	8.5
Green Ext Time (p_c), s	0.0	1.1	0.0	0.1	0.0	5.5	0.1	0.4

Intersection Summary		
HCM 2010 Ctrl Delay		34.0
HCM 2010 LOS		C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	539	285	310	1124	989	304
Future Volume (veh/h)	539	285	310	1124	989	304
Number	7	4	8	18	1	16
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
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1792
Adj Flow Rate, veh/h	586	310	337	0	1075	330
Adj No. of Lanes	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	6	6	6	6	6
Cap, veh/h	497	908	477	213	538	480
Arrive On Green	0.29	0.51	0.14	0.00	0.32	0.32
Sat Flow, veh/h	1707	1792	3495	1524	1707	1524
Grp Volume(v), veh/h	586	310	337	0	1075	330
Grp Sat Flow(s),veh/h/ln	1707	1792	1703	1524	1707	1524
Q Serve(g_s), s	18.3	6.5	5.9	0.0	19.8	11.9
Cycle Q Clear(g_c), s	18.3	6.5	5.9	0.0	19.8	11.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	497	908	477	213	538	480
V/C Ratio(X)	1.18	0.34	0.71	0.00	2.00	0.69
Avail Cap(c_a), veh/h	497	1113	868	388	538	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	9.3	25.8	0.0	21.5	18.8
Incr Delay (d2), s/veh	99.4	0.2	1.9	0.0	455.3	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.2	3.2	2.9	0.0	77.2	10.2
LnGrp Delay(d),s/veh	121.6	9.5	27.7	0.0	476.8	22.9
LnGrp LOS	F	A	C		F	C
Approach Vol, veh/h		896	337		1405	
Approach Delay, s/veh		82.8	27.7		370.2	
Approach LOS		F	C		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				37.6		25.2	23.0	14.6
Change Period (Y+Rc), s				5.8		5.4	* 4.7	5.8
Max Green Setting (Gmax), s				39.0		19.8	* 18	16.0
Max Q Clear Time (g_c+I1), s				8.5		21.8	20.3	7.9
Green Ext Time (p_c), s				1.1		0.0	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	228.8
HCM 2010 LOS	F

Notes

* HCM 2010 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)	173	1188	204	290	1094	20	364	40	195	15	55	148
Future Volume (veh/h)	173	1188	204	290	1094	20	364	40	195	15	55	148
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1792	1792	1792	1900
Adj Flow Rate, veh/h	188	1291	222	315	1189	22	427	0	212	16	60	161
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	221	1471	458	261	1602	30	625	0	279	281	71	191
Arrive On Green	0.13	0.30	0.30	0.15	0.32	0.32	0.18	0.00	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1707	4893	1524	1707	4947	92	3414	0	1524	1707	431	1157
Grp Volume(v), veh/h	188	1291	222	315	784	427	427	0	212	16	0	221
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1776	1707	0	1524	1707	0	1588
Q Serve(g_s), s	10.8	25.1	11.9	15.3	21.4	21.4	11.7	0.0	13.2	0.8	0.0	13.5
Cycle Q Clear(g_c), s	10.8	25.1	11.9	15.3	21.4	21.4	11.7	0.0	13.2	0.8	0.0	13.5
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	221	1471	458	261	1057	575	625	0	279	281	0	262
V/C Ratio(X)	0.85	0.88	0.48	1.21	0.74	0.74	0.68	0.00	0.76	0.06	0.00	0.84
Avail Cap(c_a), veh/h	295	1553	484	261	1057	575	1329	0	593	750	0	698
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	42.7	33.3	28.7	42.4	30.1	30.1	38.2	0.0	38.8	35.3	0.0	40.6
Incr Delay (d2), s/veh	16.1	5.8	0.8	124.0	2.8	5.1	1.3	0.0	4.3	0.1	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	12.0	5.1	16.1	10.0	11.3	5.6	0.0	5.9	0.4	0.0	6.5
LnGrp Delay(d),s/veh	58.8	39.1	29.5	166.4	33.0	35.3	39.5	0.0	43.1	35.3	0.0	47.9
LnGrp LOS	E	D	C	F	C	D	D		D	D		D
Approach Vol, veh/h		1701			1526			639			237	
Approach Delay, s/veh		40.0			61.2			40.7			47.0	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.0	20.0	35.9		21.2	17.7	38.2
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 39	* 15	31.8		44.0	* 17	29.8
Max Q Clear Time (g_c+I1), s		15.2	17.3	27.1		15.5	12.8	23.4
Green Ext Time (p_c), s		3.1	0.0	3.0		1.0	0.3	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 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)	40	1365	90	300	1205	115	150	50	120	75	60	30
Future Volume (veh/h)	40	1365	90	300	1205	115	150	50	120	75	60	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1792	1792	1900	1792	1792	1900	1792	1792	1900
Adj Flow Rate, veh/h	43	1484	98	326	1310	125	163	54	130	82	65	33
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	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, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	59	1818	566	219	2114	202	357	109	262	279	261	133
Arrive On Green	0.03	0.37	0.37	0.13	0.47	0.47	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1707	4893	1524	1707	4545	434	1243	468	1126	1150	1122	570
Grp Volume(v), veh/h	43	1484	98	326	940	495	163	0	184	82	0	98
Grp Sat Flow(s),veh/h/ln	1707	1631	1524	1707	1631	1716	1243	0	1594	1150	0	1692
Q Serve(g_s), s	1.4	15.6	2.5	7.3	12.3	12.3	7.0	0.0	5.7	3.8	0.0	2.7
Cycle Q Clear(g_c), s	1.4	15.6	2.5	7.3	12.3	12.3	9.7	0.0	5.7	9.5	0.0	2.7
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.71	1.00		0.34
Lane Grp Cap(c), veh/h	59	1818	566	219	1517	798	357	0	371	279	0	394
V/C Ratio(X)	0.73	0.82	0.17	1.49	0.62	0.62	0.46	0.00	0.50	0.29	0.00	0.25
Avail Cap(c_a), veh/h	141	1980	616	219	1517	798	932	0	1107	812	0	1179
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	27.2	16.1	12.0	24.8	11.4	11.4	21.7	0.0	18.9	23.0	0.0	17.8
Incr Delay (d2), s/veh	15.5	2.6	0.1	242.0	0.8	1.5	0.9	0.0	1.0	0.6	0.0	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	0.9	7.3	1.1	18.1	5.6	6.1	2.5	0.0	2.6	1.3	0.0	1.3
LnGrp Delay(d),s/veh	42.7	18.7	12.1	266.7	12.2	12.9	22.6	0.0	19.9	23.6	0.0	18.1
LnGrp LOS	D	B	B	F	B	B	C		B	C		B
Approach Vol, veh/h		1625			1761			347			180	
Approach Delay, s/veh		19.0			59.5			21.2			20.6	
Approach LOS		B			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.9	12.0	26.9		17.9	6.7	32.2
Change Period (Y+Rc), s		* 4.7	* 4.7	5.8		* 4.7	* 4.7	5.8
Max Green Setting (Gmax), s		* 40	* 7.3	23.0		* 40	* 4.7	25.6
Max Q Clear Time (g_c+I1), s		11.7	9.3	17.6		11.5	3.4	14.3
Green Ext Time (p_c), s		1.6	0.0	3.6		0.8	0.0	5.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1641	1663	70	0	110
Future Vol, veh/h	0	1641	1663	70	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1784	1808	76	0	120

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	942
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	221
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	221
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	39
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	221
HCM Lane V/C Ratio	-	-	-	0.541
HCM Control Delay (s)	-	-	-	39
HCM Lane LOS	-	-	-	E
HCM 95th %tile Q(veh)	-	-	-	2.9

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1641	1724	4	0	18
Future Vol, veh/h	0	1641	1724	4	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	1784	1874	4	0	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	939
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.96
Pot Cap-1 Maneuver	0	-	-	-	0	222
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	222
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	222
HCM Lane V/C Ratio	-	-	-	0.088
HCM Control Delay (s)	-	-	-	22.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	42	984	91	0	1062
Future Vol, veh/h	0	42	984	91	0	1062
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	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	0	46	1070	99	0	1154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	535	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	480	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	480	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	480	-
HCM Lane V/C Ratio	-	-	0.095	-
HCM Control Delay (s)	-	-	13.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.3	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	842	233	430	370	75	190	680	565	146	597	97
Future Volume (veh/h)	206	842	233	430	370	75	190	680	565	146	597	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	224	915	253	467	402	82	207	739	0	159	649	102
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	937	419	565	1458	289	238	885	396	192	793	355
Arrive On Green	0.09	0.26	0.26	0.16	0.34	0.34	0.13	0.25	0.00	0.11	0.22	0.22
Sat Flow, veh/h	3442	3539	1583	3442	4260	844	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	224	915	253	467	318	166	207	739	0	159	649	102
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1714	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.4	25.6	14.0	13.1	6.8	7.1	11.4	19.8	0.0	8.8	17.4	5.3
Cycle Q Clear(g_c), s	6.4	25.6	14.0	13.1	6.8	7.1	11.4	19.8	0.0	8.8	17.4	5.3
Prop In Lane	1.00		1.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	937	419	565	1160	587	238	885	396	192	793	355
V/C Ratio(X)	0.75	0.98	0.60	0.83	0.27	0.28	0.87	0.84	0.00	0.83	0.82	0.29
Avail Cap(c_a), veh/h	426	937	419	767	1257	635	239	1241	555	262	1287	576
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	36.5	32.2	40.4	23.9	24.0	42.5	35.6	0.0	43.7	36.9	32.2
Incr Delay (d2), s/veh	4.5	23.6	2.4	5.5	0.1	0.3	27.4	3.6	0.0	14.6	2.2	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	3.2	15.5	6.4	6.7	3.2	3.4	7.4	10.1	0.0	5.1	8.7	2.4
LnGrp Delay(d),s/veh	49.1	60.1	34.6	45.9	24.0	24.2	69.8	39.2	0.0	58.3	39.1	32.6
LnGrp LOS	D	E	C	D	C	C	E	D		E	D	C
Approach Vol, veh/h		1392			951			946			910	
Approach Delay, s/veh		53.7			34.8			45.9			41.7	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	30.4	21.1	33.0	18.1	27.8	13.4	40.8
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 15	35.1	* 22	26.5	* 14	36.4	* 12	* 37
Max Q Clear Time (g_c+I1), s	10.8	21.8	15.1	27.6	13.4	19.4	8.4	9.1
Green Ext Time (p_c), s	0.2	2.8	1.3	0.0	0.0	3.0	0.3	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	45.1
HCM 2010 LOS	D

Notes

* HCM 2010 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)	205	739	269	585	995	95	175	730	720	182	756	117
Future Volume (veh/h)	205	739	269	585	995	95	175	730	720	182	756	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	223	803	292	636	1082	103	190	793	0	198	822	123
Adj No. of Lanes	2	2	1	2	3	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	824	369	674	1631	155	210	910	407	226	940	421
Arrive On Green	0.08	0.23	0.23	0.20	0.35	0.35	0.12	0.26	0.00	0.13	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	4724	449	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	223	803	292	636	776	409	190	793	0	198	822	123
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1783	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.2	25.6	19.8	20.8	22.1	22.2	12.0	24.4	0.0	12.5	25.3	7.0
Cycle Q Clear(g_c), s	7.2	25.6	19.8	20.8	22.1	22.2	12.0	24.4	0.0	12.5	25.3	7.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	287	824	369	674	1171	616	210	910	407	226	940	421
V/C Ratio(X)	0.78	0.97	0.79	0.94	0.66	0.66	0.90	0.87	0.00	0.88	0.87	0.29
Avail Cap(c_a), veh/h	375	824	369	674	1171	616	210	1091	488	231	1132	506
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	43.3	41.1	45.2	31.6	31.7	49.5	40.5	0.0	48.8	40.0	33.3
Incr Delay (d2), s/veh	7.4	25.2	11.2	21.8	1.4	2.7	36.7	6.9	0.0	29.1	6.8	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	3.7	15.4	9.8	11.9	10.6	11.4	8.1	12.8	0.0	7.9	13.2	3.1
LnGrp Delay(d),s/veh	58.6	68.5	52.3	67.0	33.1	34.3	86.3	47.3	0.0	77.9	46.8	33.7
LnGrp LOS	E	E	D	E	C	C	F	D		E	D	C
Approach Vol, veh/h		1318			1821			983			1143	
Approach Delay, s/veh		63.2			45.2			54.9			50.8	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	34.7	27.0	33.0	18.2	35.6	14.2	45.8
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 15	35.1	* 22	26.5	* 14	36.4	* 12	* 37
Max Q Clear Time (g_c+I1), s	14.5	26.4	22.8	27.6	14.0	27.3	9.2	24.2
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.0	3.0	0.3	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Notes

* HCM 2010 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)	217	842	233	472	380	103	190	695	565	146	597	97
Future Volume (veh/h)	217	842	233	472	380	103	190	695	565	146	597	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	915	253	513	413	112	207	755	0	159	649	102
Adj No. of Lanes	2	2	1	2	3	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	916	410	605	1754	546	234	884	395	191	798	357
Arrive On Green	0.09	0.26	0.26	0.18	0.34	0.34	0.13	0.25	0.00	0.11	0.23	0.23
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	236	915	253	513	413	112	207	755	0	159	649	102
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.9	26.5	14.4	14.8	5.9	5.1	11.7	20.8	0.0	9.0	17.8	5.5
Cycle Q Clear(g_c), s	6.9	26.5	14.4	14.8	5.9	5.1	11.7	20.8	0.0	9.0	17.8	5.5
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	308	916	410	605	1754	546	234	884	395	191	798	357
V/C Ratio(X)	0.77	1.00	0.62	0.85	0.24	0.21	0.88	0.85	0.00	0.83	0.81	0.29
Avail Cap(c_a), veh/h	417	916	410	750	1843	574	234	1213	543	256	1258	563
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	37.9	33.5	40.9	23.9	23.6	43.7	36.6	0.0	44.8	37.6	32.8
Incr Delay (d2), s/veh	5.8	29.4	2.8	7.6	0.1	0.2	30.5	4.6	0.0	15.6	2.3	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	3.5	16.6	6.6	7.7	2.8	2.3	7.7	10.7	0.0	5.2	8.9	2.4
LnGrp Delay(d),s/veh	51.3	67.4	36.3	48.4	24.0	23.8	74.2	41.2	0.0	60.4	39.9	33.3
LnGrp LOS	D	E	D	D	C	C	E	D		E	D	C
Approach Vol, veh/h		1404			1038			962			910	
Approach Delay, s/veh		59.1			36.0			48.3			42.7	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	31.0	22.7	33.0	18.2	28.5	13.9	41.8
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 15	35.1	* 22	26.5	* 14	36.4	* 12	* 37
Max Q Clear Time (g_c+I1), s	11.0	22.8	16.8	28.5	13.7	19.8	8.9	7.9
Green Ext Time (p_c), s	0.2	2.7	1.2	0.0	0.0	3.0	0.3	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	47.7
HCM 2010 LOS	D

Notes

* HCM 2010 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)	217	739	269	635	1007	132	175	746	720	182	756	117
Future Volume (veh/h)	217	739	269	635	1007	132	175	746	720	182	756	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	236	803	292	690	1095	143	190	811	0	198	822	123
Adj No. of Lanes	2	2	1	2	3	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	819	367	685	1749	544	209	914	409	222	939	420
Arrive On Green	0.09	0.23	0.23	0.20	0.34	0.34	0.12	0.26	0.00	0.12	0.27	0.27
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	236	803	292	690	1095	143	190	811	0	198	822	123
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.7	25.8	19.9	22.8	20.6	7.5	12.1	25.2	0.0	12.6	25.4	7.1
Cycle Q Clear(g_c), s	7.7	25.8	19.9	22.8	20.6	7.5	12.1	25.2	0.0	12.6	25.4	7.1
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	299	819	367	685	1749	544	209	914	409	222	939	420
V/C Ratio(X)	0.79	0.98	0.80	1.01	0.63	0.26	0.91	0.89	0.00	0.89	0.88	0.29
Avail Cap(c_a), veh/h	373	819	367	685	1749	544	209	1085	485	222	1125	503
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	43.7	41.5	45.8	31.4	27.1	49.9	40.8	0.0	49.3	40.2	33.5
Incr Delay (d2), s/veh	8.8	26.5	11.6	36.0	0.7	0.3	38.0	8.0	0.0	33.4	6.9	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	4.0	15.6	9.9	14.2	9.7	3.3	8.1	13.3	0.0	8.2	13.3	3.1
LnGrp Delay(d),s/veh	60.1	70.2	53.1	81.9	32.1	27.3	87.8	48.9	0.0	82.8	47.1	33.9
LnGrp LOS	E	E	D	F	C	C	F	D		F	D	C
Approach Vol, veh/h		1331			1928			1001			1143	
Approach Delay, s/veh		64.7			49.6			56.3			51.9	
Approach LOS		E			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	35.0	27.5	33.0	18.2	35.8	14.6	45.9
Change Period (Y+Rc), s	* 4.7	5.4	* 4.7	6.5	* 4.7	5.4	* 4.7	* 6.5
Max Green Setting (Gmax), s	* 14	35.1	* 23	26.5	* 14	36.4	* 12	* 37
Max Q Clear Time (g_c+I1), s	14.6	27.2	24.8	27.8	14.1	27.4	9.7	22.6
Green Ext Time (p_c), s	0.0	2.3	0.0	0.0	0.0	2.9	0.2	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	55.0
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	143	735	101	228	336	41	86	363	295	35	326	67
v/c Ratio	0.64	0.76	0.18	0.72	0.29	0.07	0.46	0.65	0.44	0.22	0.67	0.12
Control Delay	56.5	38.1	1.5	52.1	25.0	0.2	51.1	34.5	5.4	46.3	37.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	38.1	1.5	52.1	25.0	0.2	51.1	34.5	5.4	46.3	37.8	0.5
Queue Length 50th (ft)	83	214	0	130	76	0	49	198	0	20	181	0
Queue Length 95th (ft)	#197	#361	6	#278	134	0	109	307	58	54	271	0
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	239	1057	586	359	1296	652	219	766	820	259	808	783
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.70	0.17	0.64	0.26	0.06	0.39	0.47	0.36	0.14	0.40	0.09

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	645	126	311	825	88	79	363	386	97	335	92
v/c Ratio	0.65	0.81	0.26	0.95	0.76	0.16	0.48	0.77	0.57	0.53	0.68	0.17
Control Delay	60.9	45.2	3.9	80.3	36.5	3.4	55.3	44.6	6.8	54.5	38.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	45.2	3.9	80.3	36.5	3.4	55.3	44.6	6.8	54.5	38.6	0.7
Queue Length 50th (ft)	78	202	0	~216	250	0	48	214	2	59	190	0
Queue Length 95th (ft)	#179	#328	26	#435	#395	21	105	321	72	121	284	0
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	215	914	528	329	1169	599	196	703	829	234	743	734
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.71	0.24	0.95	0.71	0.15	0.40	0.52	0.47	0.41	0.45	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	735	101	274	347	72	86	379	295	35	326	67
v/c Ratio	0.70	0.78	0.19	0.80	0.29	0.12	0.48	0.68	0.44	0.23	0.67	0.12
Control Delay	60.8	39.8	1.5	57.5	25.1	1.8	52.3	35.9	5.3	47.0	38.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	39.8	1.5	57.5	25.1	1.8	52.3	35.9	5.3	47.0	38.1	0.5
Queue Length 50th (ft)	92	217	0	163	81	0	50	209	0	20	181	0
Queue Length 95th (ft)	#219	#361	6	#356	138	10	109	323	58	54	271	0
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	228	1011	567	343	1240	629	209	732	797	247	772	756
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.73	0.18	0.80	0.28	0.11	0.41	0.52	0.37	0.14	0.42	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	645	126	365	838	128	79	380	386	97	335	92
v/c Ratio	0.70	0.82	0.26	1.12	0.78	0.23	0.49	0.79	0.56	0.53	0.67	0.17
Control Delay	64.5	46.0	3.9	126.4	38.2	6.6	56.0	45.4	6.6	55.3	37.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	46.0	3.9	126.4	38.2	6.6	56.0	45.4	6.6	55.3	37.7	0.6
Queue Length 50th (ft)	88	205	0	~294	260	0	49	227	2	60	190	0
Queue Length 95th (ft)	#203	#328	26	#526	#405	45	105	339	72	121	284	0
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	212	904	525	325	1157	602	194	695	824	231	736	728
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.71	0.24	1.12	0.72	0.21	0.41	0.55	0.47	0.42	0.46	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	692	105	228	405	41	121	363	295	150	350	71
v/c Ratio	0.93	0.79	0.20	0.77	0.39	0.07	0.65	0.75	0.47	0.69	0.67	0.13
Control Delay	91.6	42.2	1.9	59.0	28.7	0.3	62.1	42.8	5.9	60.8	37.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.6	42.2	1.9	59.0	28.7	0.3	62.1	42.8	5.9	60.8	37.6	0.5
Queue Length 50th (ft)	128	214	0	139	103	0	75	213	0	93	198	0
Queue Length 95th (ft)	#304	#337	9	#285	165	0	#174	315	59	#204	293	0
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	214	949	542	322	1163	597	196	687	766	232	725	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.73	0.19	0.71	0.35	0.07	0.62	0.53	0.39	0.65	0.48	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	178	638	140	311	895	88	114	363	386	188	354	97
v/c Ratio	0.83	0.81	0.29	0.99	0.89	0.17	0.78	0.79	0.59	0.97	0.70	0.17
Control Delay	75.3	46.6	5.3	91.6	46.3	3.4	81.5	48.0	8.8	104.5	39.7	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	46.6	5.3	91.6	46.3	3.4	81.5	48.0	8.8	104.5	39.7	0.7
Queue Length 50th (ft)	114	203	0	~205	286	0	73	218	18	123	202	0
Queue Length 95th (ft)	#261	#322	36	#423	#454	22	#187	321	97	#291	300	0
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	214	825	493	314	1049	550	146	635	766	194	685	691
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.77	0.28	0.99	0.85	0.16	0.78	0.57	0.50	0.97	0.52	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	211	692	105	274	416	72	121	379	295	150	350	71
v/c Ratio	1.02	0.80	0.21	0.88	0.39	0.13	0.67	0.77	0.47	0.71	0.66	0.12
Control Delay	113.8	43.9	1.9	70.9	29.0	1.8	64.3	44.1	5.8	63.3	37.3	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.8	43.9	1.9	70.9	29.0	1.8	64.3	44.1	5.8	63.3	37.3	0.4
Queue Length 50th (ft)	~151	221	0	177	110	0	77	225	0	95	198	0
Queue Length 95th (ft)	#324	#337	9	#365	170	10	#174	331	59	#204	293	0
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	207	917	530	311	1125	581	190	665	750	225	701	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.75	0.20	0.88	0.37	0.12	0.64	0.57	0.39	0.67	0.50	0.10

Intersection Summary

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Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	191	638	140	365	908	128	114	380	386	188	354	97
v/c Ratio	0.85	0.81	0.29	1.11	0.90	0.24	0.80	0.81	0.58	1.07	0.71	0.18
Control Delay	76.2	47.2	5.4	123.7	47.7	6.6	85.0	49.1	7.8	135.4	40.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	47.2	5.4	123.7	47.7	6.6	85.0	49.1	7.8	135.4	40.6	0.7
Queue Length 50th (ft)	124	207	0	~279	296	0	75	231	11	~139	205	0
Queue Length 95th (ft)	#274	#322	36	#503	#463	45	#188	339	86	#302	304	0
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	226	816	489	328	1044	556	142	628	770	175	662	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.78	0.29	1.11	0.87	0.23	0.80	0.61	0.50	1.07	0.53	0.14

Intersection Summary

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Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	224	915	253	467	402	82	207	739	614	159	649	105
v/c Ratio	1.15	1.06	0.44	1.60	0.38	0.15	1.16	0.71	0.88	0.78	0.60	0.17
Control Delay	155.3	87.9	7.0	316.3	30.6	2.7	160.6	36.8	30.8	72.7	32.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.3	87.9	7.0	316.3	30.6	2.7	160.6	36.8	30.8	72.7	32.5	0.9
Queue Length 50th (ft)	~193	~390	0	~482	118	0	~179	233	194	111	192	0
Queue Length 95th (ft)	#348	#518	64	#683	164	17	#328	300	#413	#220	250	3
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	194	861	574	292	1056	553	178	1186	750	211	1251	670
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	1.06	0.44	1.60	0.38	0.15	1.16	0.62	0.82	0.75	0.52	0.16

Intersection Summary

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Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	223	803	292	636	1082	103	190	793	783	198	822	127
v/c Ratio	1.09	1.08	0.61	2.13	1.14	0.20	1.46	0.73	1.08	1.25	0.72	0.20
Control Delay	134.3	98.2	20.5	546.4	112.5	5.3	281.8	38.0	77.1	194.1	36.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.3	98.2	20.5	546.4	112.5	5.3	281.8	38.0	77.1	194.1	36.2	2.1
Queue Length 50th (ft)	~177	~334	65	~717	~470	0	~184	260	~435	~174	265	0
Queue Length 95th (ft)	#332	#458	159	#938	#603	33	#328	332	#672	#320	338	17
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	205	743	476	298	950	509	130	1086	727	159	1145	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.08	0.61	2.13	1.14	0.20	1.46	0.73	1.08	1.25	0.72	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	236	915	253	513	413	112	207	755	614	159	649	105
v/c Ratio	1.22	1.07	0.44	1.76	0.39	0.20	1.16	0.73	0.88	0.78	0.60	0.17
Control Delay	176.8	88.7	7.0	385.2	30.9	6.0	162.0	37.1	30.5	72.8	32.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.8	88.7	7.0	385.2	30.9	6.0	162.0	37.1	30.5	72.8	32.4	0.8
Queue Length 50th (ft)	~211	~390	0	~550	122	0	~179	239	194	111	192	0
Queue Length 95th (ft)	#368	#518	64	#757	169	39	#328	307	#413	#220	250	3
Internal Link Dist (ft)		551			182			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		70
Base Capacity (vph)	194	859	573	291	1053	552	178	1183	749	210	1248	669
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	1.07	0.44	1.76	0.39	0.20	1.16	0.64	0.82	0.76	0.52	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	236	803	292	690	1095	143	190	811	783	198	822	127
v/c Ratio	1.15	1.08	0.61	2.32	1.15	0.28	1.46	0.75	1.08	1.25	0.72	0.20
Control Delay	153.4	98.2	20.7	625.6	117.7	9.0	281.8	38.6	77.1	194.1	36.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.4	98.2	20.7	625.6	117.7	9.0	281.8	38.6	77.1	194.1	36.2	2.1
Queue Length 50th (ft)	~196	~334	66	~796	~480	10	~184	268	~435	~174	265	0
Queue Length 95th (ft)	#354	#458	160	#1022	#612	58	#328	342	#672	#320	338	17
Internal Link Dist (ft)		551			189			513			371	
Turn Bay Length (ft)	480		350	180			80		170	100		250
Base Capacity (vph)	205	743	475	298	950	514	130	1086	727	159	1145	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	1.08	0.61	2.32	1.15	0.28	1.46	0.75	1.08	1.25	0.72	0.20

Intersection Summary

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