TRANSPORTATION ASSESSMENT STUDY
FOR THE
3855 WATSEKA AVENUE OFFICE PROJECT

Prepared for:

TDCP 3855 WATSEKA, LLC

OCTOBER 2021

Submitted by:

RAJU Associates, Inc.

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EXECUTIVE SUMMARY

A detailed transportation assessment study has been prepared by Raju Associates, Inc. to assess the transportation impacts of the proposed office project (the Project) located at 3817, 3835 and 3855 Watseka Avenue (APN 4207-002-015, -016, -017, -018 and -028), Culver City, California 90232.

The Project has been designed to take into consideration the City of Culver City adopted programs, plans, ordinances and policies including the Transportation Element of the City's General Plan and Citywide Design Guidelines that establish the transportation planning framework for all travel modes.

This transportation assessment study has been prepared consistent with the current City of Culver City's *Transportation Study Criteria and Guidelines* (TSCG), July 13, 2020 for both CEQA and non-CEQA evaluations.

The CEQA evaluation consists of analysis of transportation impacts for the following relevant City adopted thresholds for development projects:

- Conflicting with Plans, Programs, Ordinances or Policies
- Causing Substantial Vehicle Miles Traveled (VMT), and
- Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use.

The non-CEQA Transportation Analysis includes site plan review, intersection operations analysis, driveway operations analysis, parking meter assessment, multimodal safety analysis, transit operations analysis, and a construction period evaluation.

The following executive summary highlighting the key findings of this study are presented below.

PROJECT DESCRIPTION

- The Project consists of a four-story building containing 149,518 square feet of office use and a three-level subterranean parking garage. The Project would provide a total of 555 vehicle parking spaces. The Project will also provide a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). The existing site includes two buildings containing 7,633 square feet of office use and a surface parking lot that will be demolished. The Project is anticipated to be completed by the Year 2024.

- The Project is located within walking distance (approximately 220 feet) of Culver City's 'Move Culver City' Pilot Project located along Culver Boulevard and Washington Boulevard. The 'Move Culver City' Pilot Project will provide frequent transit service (15 minutes frequencies) as well as circulator shuttle service along Culver Boulevard adjacent to the Project site. Additionally, the 'Move Culver City' Pilot Project includes enhancements to sidewalks, crosswalks and signage to encourage walking and bicycling.

- The Project is proposing a comprehensive Transportation Demand Management (TDM) Program. The Project's TDM Program will be consistent with the requirements of Culver City's Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management.

- Currently, four driveways located along the west side of Watseka Avenue provide access to the existing uses on the Project site. The Project proposes a single full-access driveway located along Watseka Avenue that would provide access (inbound and outbound) to the Project site.

- The Project would generate a net increase of 907 daily trips, of which a net total of approximately 118 trips would occur during the morning peak hour and 117 trips during the evening peak hour.

CEQA ANALYSIS OF TRANSPORTATION IMPACTS

- Conflicting with Plans, Programs, Ordinances or Policies - This threshold test is conducted to assess whether a project would conflict with an adopted program, policy, plan, or ordinance that is adopted to protect the environment. In general, transportation policies or standards adopted to protect the environment are those that support multimodal transportation options and a reduction in VMT.

    - The Project's design features support multimodal transportation options and would be consistent with policies, plans, ordinances, and programs. The Project design includes features that minimize impacts to the public right-of-way and enhance the user experience by integrating multimodal transportation options.

    - The Project would not conflict with adopted policies, plans, ordinances, and programs, or preclude City action to fulfill or implement projects associated with multimodal networks. Therefore, the Project would have a less than significant impact on the City's transportation-related plans, programs, ordinances, and policies.

- Causing Substantial Vehicle Miles Traveled (VMT) - For land use projects, the intent of this threshold is to assess whether a land use project or plan causes substantial vehicle miles traveled.

    - The Directors of Community Planning, Transportation, and Public Works are in agreement that the portions of Culver Boulevard included in the 'Move Culver City' Pilot Project fall within a High Quality Transit Service Corridor Area (HQTSCA). The Project is located approximately 220 feet, which is within walking distance, from the portions of Culver Boulevard where frequent transit and circulator shuttles would operate and therefore falls within the HQTSCA. Since the proposed Project is located within the Culver Boulevard HQTSCA, the Project is exempt from CEQA VMT analysis, and is not required to assess if it causes substantial vehicle miles traveled.

- Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use - Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the project site, and may include safety, operational, or capacity impacts.
  - Based on a review of the Project's site plan, the project description, and analysis of the factors associated with impact criteria, it was observed that the Project would not substantially increase hazards due to a geometric design feature or incompatible uses. Therefore, the Project would cause a less than significant impact associated with geometric design hazards and incompatible use.

Summarizing, the Project would not cause significant transportation impacts relative to the City-established CEQA thresholds including the following: Conflicting with Plans, Policies or Ordinances; Causing Substantial Vehicle Miles Traveled (VMT); and Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use. Therefore, no project-specific mitigation measures would be required.

NON-CEQA TRANSPORTATION ANALYSIS

- The study area includes key facilities generally bounded by Venice Boulevard on the north, Washington Boulevard/Culver Boulevard on the south, Hughes Avenue/Duquesne Avenue on the west, and Canfield Avenue/Washington Boulevard/Ince Avenue on the east.

- Per the direction of Culver City, the intersection operations analyses include consideration of the 'Move Culver City' Pilot Project involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue. The mobility lanes would be implemented on a pilot program basis along Culver Boulevard from Duquesne Avenue to Washington Boulevard and extend along Washington Boulevard to La Cienega Avenue all within the City of Culver City.

- Site Plan Review - The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue, removing the existing four driveways that currently serve the existing uses on the Project site. The proposed driveway would have a width of 36 feet, providing one inbound lane, one outbound lane and one reversible lane. Access to the subterranean parking garage would be gate controlled.

  Commercial deliveries would utilize a loading dock located within the interior of the southern end of the building, which may be accessed through the Project driveway. A turning movement analysis was performed using the typical truck that would be expected to utilize the loading dock. It was determined that truck turning maneuvers would not conflict with the proposed roadway curbs, and no corrective actions would be required.

- Intersection Operation Analysis and Queuing

  Operational Evaluation. Highway Capacity Manual, 6th Edition (HCM) methodology was utilized to calculate operational analysis and vehicle queuing. Eight intersections were evaluated (non-CEQA) within the study area for this Project.

    Existing Conditions: All the study intersections are currently operating at LOS C or better during both the morning and evening peak hours for Existing (2021) conditions.

    Existing (2021) plus Project conditions analysis indicates that all study locations would continue to operate at LOS C or better under both without and with the Project. The Project's traffic does not change the levels of service at any of the study locations compared to Existing Conditions (without Project) during both the morning and evening peak hours.

    Future Horizon Year (2024) Conditions: All study intersections are projected to operate at LOS D or better during both the morning and evening peak hours under base (without Project) conditions.

    Future Horizon Year (2024) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Horizon Year (2024) Base (without Project) during both the morning and evening peak hours.

    Future Buildout Year (2045) Conditions: All eight study intersections are projected to operate at LOS D or better during the morning peak hour under base conditions. During the evening peak hour, seven of the eight study intersections are projected to operate at LOS D or better. The remaining intersection is projected to operate at LOS E and includes:

      - Bagley Avenue/Main Street and Venice Boulevard – LOS E during the PM peak hour

    Future Buildout Year (2045) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Buildout Year (2045) Base (without Project) during both the morning and evening peak hours.

  Queuing Analysis. The queuing analysis indicates that the Project's weekday AM and PM peak hour traffic volumes would have minimal effect on vehicle queuing at the study intersections under existing and future conditions with the Project. Therefore, no project-related corrective measures would be required at the analysis locations.

- Driveway Operations Analysis - The purpose of the driveway LOS and queuing analysis is to determinate whether or not the Project's driveways would adversely affect queues at nearby intersections and side streets. The driveway would operate at LOS B or better under all scenarios (Existing plus Project, Future Horizon Year (2024) plus Project, and Future Buildout Year (2045) plus Project conditions) during both the morning and evening peak hours.

The proposed driveway on Watseka Avenue would be located approximately 190 feet north of the intersection of Watseka Avenue and Washington Boulevard and approximately 375 feet south of the intersection of Watseka Avenue and Venice Boulevard, which would provide adequate storage length to accommodate vehicle queuing along Watseka Avenue at the Project driveway. Therefore, the Project driveway would not adversely affect queues at nearby intersections and side streets.

- Parking Meter Assessment - Per the City's TSCG, the applicant shall work with Culver City's Public Works Department to determine the parking revenue loss associated with the removal of any parking meters due to implementation of the Project. Based on the location of the Project driveway and the line of sight evaluation, approximately three on-street parking spaces would need to be removed in order to achieve the required sight distance at the Project's driveway. However, these spaces can be replaced utilizing the available on-street space resulting from the removal of the existing driveways. Therefore, there would not be any loss of on-street parking spaces, but rather a re-arrangement of existing parking spaces, and consequently, no loss in parking revenues due to the proposed Project is estimated to occur due to the proposed Project's changes to on-street parking spaces.

  Currently, there are eight on-street metered parking spaces located along the Project's Watseka Avenue frontage. Certain Project construction activities (i.e., concrete pours) would potentially result in the temporary closure of these metered spaces. The Project would coordinate with Culver City's Public Works Department to assess the loss of parking revenue during the period of construction when use of these spaces would not be available.

  The Project is not proposing any on-street valet parking operations.

- Multimodal Safety Analysis - The proposed Project design would not impact any of the priority corridors nor prevent future implementation of safety treatments as identified in the Culver City's Local Road Safety Plan, City of Los Angeles's Vision Zero Program or any other adopted or draft planning documents.

- Transit Operations Analysis - The Project would generate approximately 56 new transit trips in the morning and evening peak hours. The Project is estimated to utilize approximately 2.18% of the total existing transit capacity along bus routes that serve the Project site. The Project would not worsen or cause any hazardous conditions to transit operations.

- Construction Period Evaluation – A final Construction Management Plan (CMP) shall be prepared by the Project contractor in consultation with the Project's traffic and/or civil engineer. The CMP would define the scope and scheduling of construction activities as well as the proposed Project's construction site management responsibilities in order to ensure that disturbance of nearby land uses or interruption of pedestrian, vehicle, bicycle, and public transit are minimized to the extent feasible.

I. INTRODUCTION

This report documents the assumptions, methodologies and findings of a transportation assessment study conducted by Raju Associates, Inc., to evaluate the potential transportation impacts of the proposed office project located at 3817, 3835 and 3855 Watseka Avenue (APN 4207-002-015, -016, -017, -018 and -028), Culver City, California 90232.

PROJECT DESCRIPTION

The Project is located on the west side of Watseka Avenue between Venice Boulevard and Washington Boulevard. Figure 1 illustrates the location of the Project in relation to the surrounding street system.

The proposed Project consists of a four-story building containing 149,518 square feet of office use and a three-level subterranean parking garage. The Project would provide a total of 555 parking spaces that would be accommodated through a combination of standard, ADA accessible, and mechanically-stacked spaces. The Project site would include valet-assist parking in order to maintain safe and efficient use of the mechanically-stacked spaces. The Project will also provide a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). The existing site includes two buildings containing 7,633 square feet of office use and a surface parking lot that will be demolished. The Project is anticipated to be completed by the Year 2024. The Project site plan is presented in Figure 2.

The Project has been designed to be consistent with the City of Culver City adopted programs, plans, ordinances and policies that establish the transportation planning framework for all travel modes including the Circulation Element of the City’s General Plan, Short Range Transit Plan, Bicycle and Pedestrian Action Plan, and Complete Streets Policy. The Project site has also been designed with consideration of the General Plan specifications for Watseka Avenue.

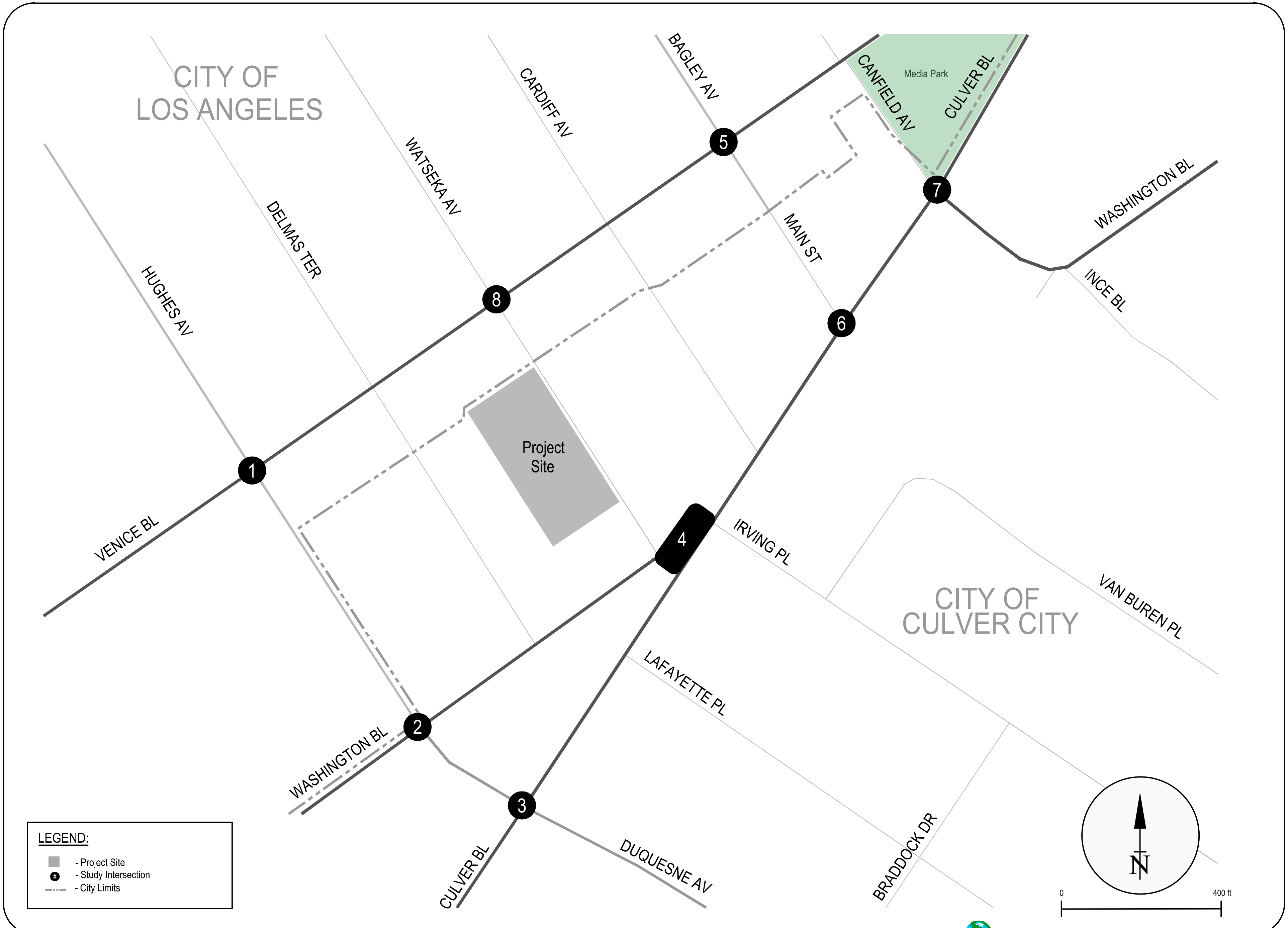

FIGURE 1
LOCATION OF PROJECT SITE AND NON-CEQA STUDY INTERSECTIONS

RAJU Associates, Inc.

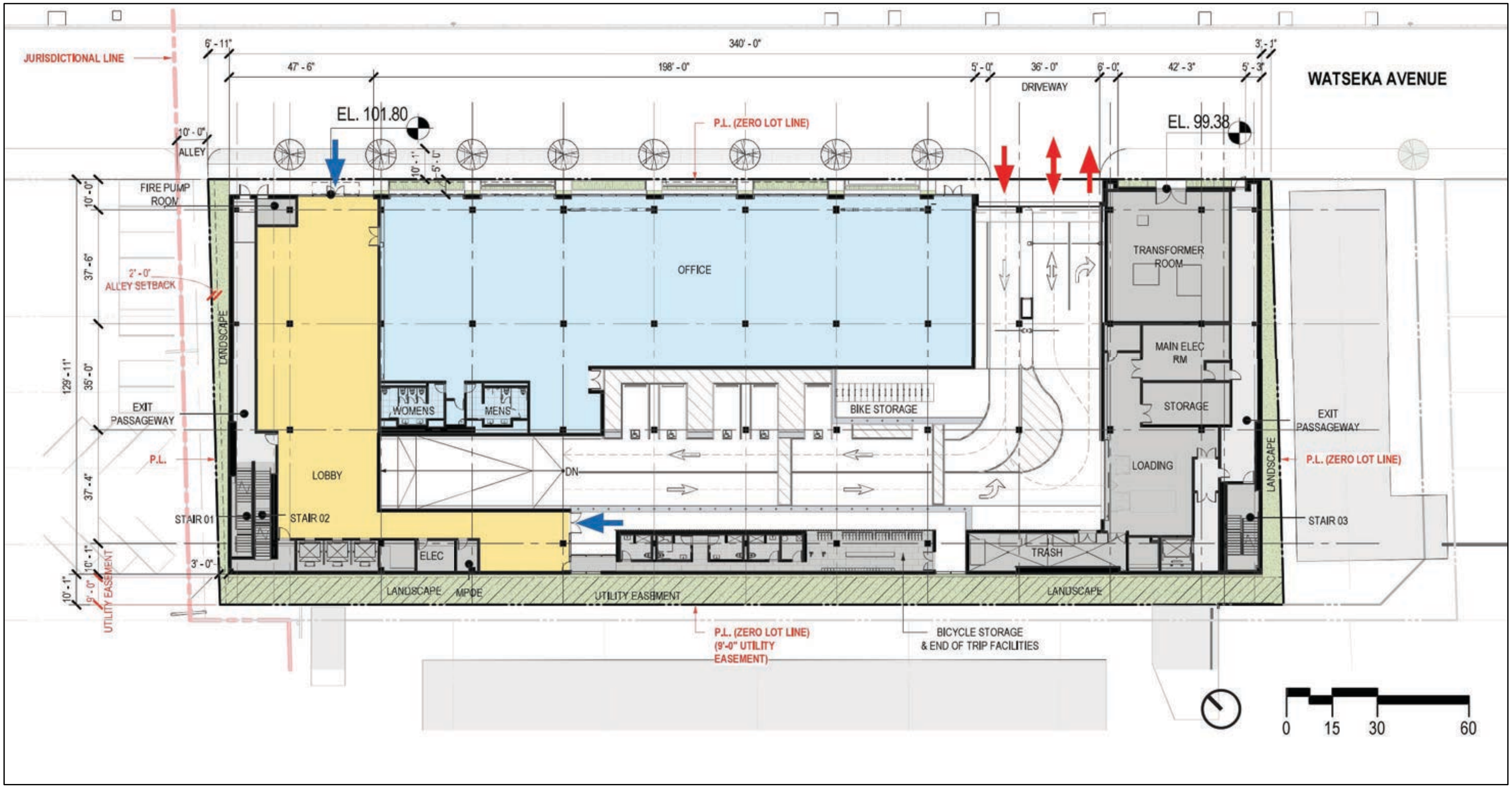

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FIGURE 2
PROJECT SITE PLAN - GROUND FLOOR LEVEL

RAJU Associates, Inc.

PROJECT VEHICULAR ACCESS AND CIRCULATION

Currently, vehicular access to the Project site is provided by four driveways located along the west side of Watseka Avenue. The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue. The Project is proposing a driveway width of 36 feet, providing one inbound lane, one outbound lane and one reversible lane. Alternatively, the driveway could be striped to provide one inbound lane and two outbound lanes. The driveway would be controlled by a stop sign at the driveway's outbound movements (eastbound). Access to the subterranean parking garage would be gate-controlled.

PROJECT PEDESTRIAN ACCESS AND CIRCULATION

Sidewalks located along Watseka Avenue would provide pedestrian access to the Project site. Watseka Avenue currently provides a curb-to-curb roadway width of 40 feet and a 10-foot sidewalk along the Project's frontage and on the opposite side of the street. Per the City of Culver City's General Plan, a designated right-of-way width of 60 feet (half right-of-way of 30 feet) is identified for Watseka Avenue. No right-of-way would be required from the Project. Pedestrian and bicycle access would be provided via internal walkways through the Project site, connecting existing sidewalks to the proposed Project.

All of the streets immediately bordering the Project site and all other public streets in the vicinity include sidewalks on both sides of the street, facilitating pedestrian movement. Marked crosswalks are present at all signalized intersections in the study area. Pedestrian-walk signal-phases are either automatically provided at the intersections or actuated by pedestrian push-buttons.

PROJECT TRANSPORTATION DEMAND MANAGEMENT PROGRAM

The Project is proposing a comprehensive Transportation Demand Management (TDM) Program. The TDM Program includes strategies and action plans that consist of a transportation coordinator, bicycle hub/share, transit subsidies, telecommuting, marketing program, carpool/vanpool incentives, and bicycling/walking incentives. The Project's TDM Program will be consistent with the requirements of Culver City's Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management.

The TDM program measures are described below:

- **Transportation Coordinator:** The Project will provide a Transportation Coordinator responsible for coordinating the various elements of the TDM Program with the tenants and provide coordination with the City. The Transportation Coordinator will be responsible for implementing, coordinating and maintaining the elements of the TDM Plan, including the following activities:

    - Marketing and promoting the commuter program;

    - The Transportation Coordinator will encourage employers to implement flexible work schedules, telecommuting programs and alternative work schedules;

    - Developing a Rideshare Registration Form and providing ridematching services;

    - Managing Guarantee Ride Home Program;

    - Administering incentive programs for carpool, vanpool, transit use, bicycling and walking;

    - Monitoring program status. Provide annual monitoring program results. The monitoring program may include conducting employee surveys or traffic counts and providing comparisons to project trip generation in the study to report the effectiveness of the TDM Program. The trip monitoring studies will be conducted annually for a period of 5 years after 85% occupancy of the Project.

    - Further, the Transportation Coordinator will be charged with developing additional incentives as needed to encourage ridesharing and transit use.

- **Bicycle Hub/Share**: Project will provide bicycle parking on-site as part of the TDM Program. Additionally, the project will contribute towards provision of a **Bike Share station off-site** in the vicinity of the Project site consistent with the Draft overall Bike Share Program for the City of Culver City.

- **Transit Subsidies:** The Project will contribute transit subsidies for up to 15% of employees working at the Project (up to a maximum of 60 employees). The transit subsidies shall be in the form of a 'TAP' card and equivalent to the cost of a 2-way transit fare for the entire year. This shall be provided in lieu of a parking space on-site. These subsidies shall be provided for a period of five (5) years after the Project is occupied.

- **Telecommuting:** The Project shall request its tenants to allow continuing their employees to work from home as was prevalent during the COVID-19 pandemic.

- **Marketing and Educational Program**: The Project will provide a marketing and educational program addressing information on all the various elements of the TDM Program including transit provisions, bike share, telecommuting, rideshare matching and others. The on-site Transportation Coordinator will provide regular and effective program marketing. This is key to the success of the commuter program. In a well-marketed program, services would be visible, and associates would be well informed regarding all commute options and incentives. The program will be marketed using the following methods:

- o A bulletin board, display case, or kiosk displaying transportation information in a prominent area accessible to the greatest number of employees shall be installed. Such required information shall include, but is not limited to, the following:

  - ▪ Current maps, routes and schedules for public transit routes serving the site;
  - ▪ The Transportation Coordinator's name and work telephone number
  - ▪ Telephone numbers for referrals on transportation information including numbers for the regional ridesharing agency, transportation management associations, and local transit operators;
  - ▪ Ridesharing promotional material supplied by commuter-oriented organizations;
  - ▪ Bicycle route and facility information, including regional/local bicycle maps and bicycle safety information; and
  - ▪ A listing of any other facilities and resources that may be available for carpoolers, vanpoolers, bicyclists, transit riders and pedestrians at the site including the 'Move Culver City' Pilot Project. The 'Move Culver City' Pilot Project includes provision of a circulator shuttle service, frequent bus service (approximately 15-minute headways) and enhancements to sidewalks, crosswalks and signage to encourage walking and bicycling.
  - ▪ All information required by this Section shall be regularly stocked on a periodic basis.

- o The Transportation Coordinator will post promotional materials such as posters, info boards, or provide a website with information that travelers could choose to read at their own leisure;

- o Quarterly Paycheck Stuffers/Flyers for employees - The employee flyers would include information on transportation choices available to its employees. This information would include details of current local and regional transit routes (updated periodically), schedules and maps serving the Project site; bicycle routes and bicycle facility information; flex car locations and bicycle hub locations; and special event transportation.

- o Transportation information packet for new employees – Each new employee would receive an information packet summarizing the transit and transportation alternatives available to them. The packet would emphasize the location of the Transportation Information Center and include the contact information of the Transportation Coordinator as well as all transit bus and bicycle facilities information. All new employees would be informed of the TDM Program and all of the incentives and options available to them.

- **Carpool/Vanpool Incentives:** Not less than ten percent (10%) of the employee parking spaces shall be reserved for use by potential carpool or vanpool vehicles. These spaces shall be located as close as is practical to the employee entrance(s) without displacing accessible parking spaces and other parking facilities that may be required by the Building Code. This preferential parking shall be identified on the site plan accompanying the application for a building permit. Spaces shall have signs that designate them for employee carpool and vanpool vehicles.

Preferential parking spaces reserved for employee vanpool shall be accessible to vanpool vehicles. When located within a parking structure, a minimum interior vertical clearance of eight (8) feet two (2) inches shall be provided for those spaces and accessways to be used by vanpool vehicles. Adequate turning radii and a minimum parking space dimension of nine (9) feet wide by eighteen (18) feet in length shall be provided for vanpool parking areas.

Provide a safe and convenient zone in which vanpool and carpool vehicles may board or alight their passengers.

- **On-Site Bicycle Parking:** Twenty-eight (28) short-term and twenty-eight (28) secured long-term bicycle parking spaces would be provided. Short-term bicycle parking consists of bicycle racks located outside buildings or on public sidewalks that are free to the user. Secure bicycle parking would consist of a fully enclosed space or a locker accessible only to the owner or operator of the bicycle which protects the bicycle from inclement weather. Shower facilities would also be provided on-site. Specific facilities and their location (e.g., provision of racks, bicycle storage lockers or locked room) will be coordinated to the satisfaction of the City Planner and Director of Public Works or designee.

- The new development shall include sidewalks or other designated pedestrian pathways following direct and safe routes from the existing pedestrian circulation system, vehicle and bicycle parking areas and transit facilities.

The above proposed TDM measures are consistent with the Culver City's Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management.

STUDY SCOPE

The scope of work for this study was developed based on the latest City of Culver City's *Transportation Study Criteria and Guidelines* (TSCG) adopted in July 2020, in conjunction with the City of Culver City staff. The base assumptions, technical methodologies and geographic coverage of the study were all identified as part of the study approach. The study is directed at both the CEQA analysis of transportation impacts and non-CEQA transportation analysis of the proposed Project.

A brief description of the required analyses is provided below.

CEQA Analysis of Transportation Impacts

- Conflicting with Plans, Programs, Ordinances or Policies - The threshold test is to assess whether a project would conflict with an adopted program, policy, plan, or ordinance that is adopted to protect the environment. In general, transportation policies or standards adopted to protect the environment are those that support multimodal transportation options and a reduction in VMT. Conversely, a project would not be shown to result in an impact merely based on whether a project would not implement a particular program, plan, policy, or ordinance. Many of these programs must be implemented by the City itself over time, and over a broad area, and it is the intention of this threshold test to ensure that proposed development projects and plans do not preclude the City from implementing adopted programs, plans and policies.

- Causing Substantial Vehicle Miles Traveled (VMT) - For land use projects, the intent of this threshold is to assess whether a land use project or plan causes substantial vehicle miles traveled.

- Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use - Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the project site, and may include safety, operational, or capacity impacts. Impacts can be related to vehicle/vehicle, vehicle/bicycle, or vehicle/pedestrian conflicts as well as to operational delays caused by vehicles slowing and/or queuing to access a project site. These conflicts may be created by the driveway configuration or through the placement of project driveway(s) in areas of inadequate visibility, adjacent to bicycle or pedestrian facilities, or too close to busy or congested intersections. Evaluation of access impacts require details relative to project land use, size, design, location of access points, etc. These impacts are typically evaluated for permanent conditions after project completion.

Non-CEQA Transportation Analysis

The non-CEQA Transportation Analysis includes site plan review, intersection operations analysis, driveway operations analysis, parking assessment, multimodal safety analysis, transit operations analysis, and a construction period analysis.

For this Non-CEQA transportation analysis, eight locations were chosen as study intersections and are shown in Figure 1. Seven of the eight study intersections are controlled by traffic signals and include the following locations (and jurisdictions):

1. Hughes Avenue and Venice Boulevard (City of Los Angeles/Caltrans)
2. Hughes Avenue/Duquesne Avenue and Washington Boulevard (Culver City)

3. Duquesne Avenue and Culver Boulevard (Culver City)
4. Watseka Avenue/Irving Place & Washington Boulevard/Culver Boulevard (Culver City)
5. Bagley Avenue/Main Street and Venice Boulevard (City of Los Angeles/Caltrans)
6. Main Street and Culver Boulevard (Culver City)
7. Canfield Avenue/Washington Boulevard and Culver Boulevard (Culver City)
8. Watseka Avenue and Venice Boulevard (unsignalized – Culver City)

Per the direction of Culver City, the intersection operations analyses include the ‘Move Culver City’ Pilot Project involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue. The mobility lanes would be implemented along Culver Boulevard from Duquesne Avenue to Washington Boulevard and along Washington Boulevard to La Cienega Avenue, all within the City of Culver City. Therefore, existing and future analysis conditions were performed assuming the following scenario:

- One bus/bike lane (mobility lane) and one general traffic lane in the westbound and eastbound directions along Washington Boulevard/Culver Boulevard between Duquesne Avenue and La Cienega Avenue.

A detailed Memorandum of Understanding (MOU) was prepared working closely with the City of Culver City Department of Transportation. The base assumptions and technical methodologies were discussed as part of a detailed Memorandum of Understanding (MOU) with the City and approved in June 2021. A copy of the City-approved MOU is attached in Appendix A of this report.

This transportation assessment report has been prepared in accordance with the latest City of Culver City’s TSCG.

ORGANIZATION OF REPORT

An executive summary presenting key details of the study is provided at the beginning of this report. The rest of the report is divided into five chapters. Chapter I presents an introduction including the Project description and provides details of the various elements of the study. Chapter II describes the existing conditions including the circulation system, pedestrian network, bicycle network and transit system within the study area. Chapter III presents the CEQA Analysis of Transportation Impacts due to the Project. Chapter IV describes the development of the Project’s traffic projections including Existing conditions without and with the Project, Future

Horizon Year (2024) conditions without and with the Project, and Future Buildout Year (2045) conditions without and with the Project used for non-CEQA evaluation. The results of the Non-CEQA Transportation Analyses are provided in Chapter IV including site plan review, intersection operation analysis and queuing analysis, driveway evaluation, transit operation analysis, multimodal safety analysis and construction period evaluation. A summary of the analysis and study conclusions is included in Chapter V. Appendices to this report include details of the technical analyses.

II. EXISTING CONDITIONS

A comprehensive data collection effort was undertaken to develop a detailed description of existing conditions within the study area. The assessment of conditions relevant to this study includes an inventory of the street system, pedestrian network, bicycle network and transit system; and vehicular traffic volumes and operating conditions. A detailed description of these elements is presented in this chapter.

STUDY AREA

The Project is located at 3817, 3835 and 3855 Watseka Avenue, Culver City, California 90232, as shown in Figure 1. It is located on the west side of Watseka Avenue between Venice Boulevard and Washington Boulevard.

The study area includes key facilities generally bounded by Venice Boulevard on the north, Washington Boulevard/Culver Boulevard on the south, Hughes Avenue/Duquesne Avenue on the west, and Canfield Avenue/Washington Boulevard on the east.

EXISTING STREET SYSTEM

The existing street system within the study area consists of a regional roadway system including major and secondary arterials and a local street system including collectors and local streets. A description of the regional and local access and circulation offered by the various roadways follows.

Two freeways provide regional access to the Project site and are located within two miles of the Project site. The Santa Monica Freeway (I-10) is located approximately 0.4 miles north of the Project site, and the San Diego Freeway (I-405) is located approximately 1.7 miles west of the Project site. The major/primary and secondary arterial streets that provide the main access to the study area include Venice Boulevard, Washington Boulevard, Culver Boulevard, and Duquesne Avenue. The collector and local streets providing access and circulation possibilities include Hughes Avenue, Bagley Avenue, Main Street, Canfield Avenue, Irving Place and Watseka Avenue.

Figure 3 illustrates a street map of the existing street system including street names, speed limits and street classifications as described in the City of Culver City's Circulation Element of the General Plan (*Culver City General Plan, Circulation Element*; 1995) and in the City of Los Angeles' *2035 Mobility Plan*. Modal priorities along street within the City of Los Angeles have also been identified. A brief description of the modal priorities follows:

- Pedestrian Enhanced Districts are an analysis of a snapshot in time of areas where pedestrian improvements are prioritized relative to other modes. These areas may be located near schools, transit stations, areas of high pedestrian activity, areas with high collision frequency, or other placemaking opportunity areas.

- The Transit Enhanced Network will improve existing and future bus service on arterial streets by prioritizing improvements for transit riders. Enhancements may range from streetscape improvements to make walking safer and easier, to transit shelters, or bus lanes.

- The Neighborhood Enhanced Network is a selection of streets that provide comfortable and safe routes for localized travel of slower-moving modes such as walking, bicycling, or other slow speed motorized means of travel. This network complements the Pedestrian Enhanced Districts and the Bicycle Enhanced Network by identifying non-arterial streets important to the movement of people who walk and bike.

Brief descriptions of the roadway facilities serving the study area including number of lanes, speed limits, parking availability, functional classes and modal priorities are presented in the following section. The existing lane configurations is included in Appendix B.

- <u>Santa Monica (I-10) Freeway</u> – The I-10 Freeway is an east-west freeway that transverses the Southern California region from its western terminus at Pacific Coast Highway in the City of Santa Monica into San Bernardino County and points east. In the vicinity of the study area, this freeway generally provides five lanes in the eastbound direction and four lanes in the westbound direction. There are on/off-ramps at Overland Avenue, Robertson Boulevard, and National Boulevard in the vicinity of the study area. This freeway provides access to the regional interstate system.

- <u>San Diego (I-405) Freeway</u> – The I-405 Freeway is a north-south freeway that transverses the Southern California region from its northern terminus at the I-5 Freeway near Sylmar to its southern terminus at the I-5 Freeway in Irvine. In the vicinity of the study area, this freeway provides six lanes in each direction (including one HOV lane). There are on/off-ramps at National Boulevard, Sawtelle Boulevard, Sepulveda Boulevard, and Culver Boulevard in the vicinity of the study area. This freeway provides access to the regional interstate system.

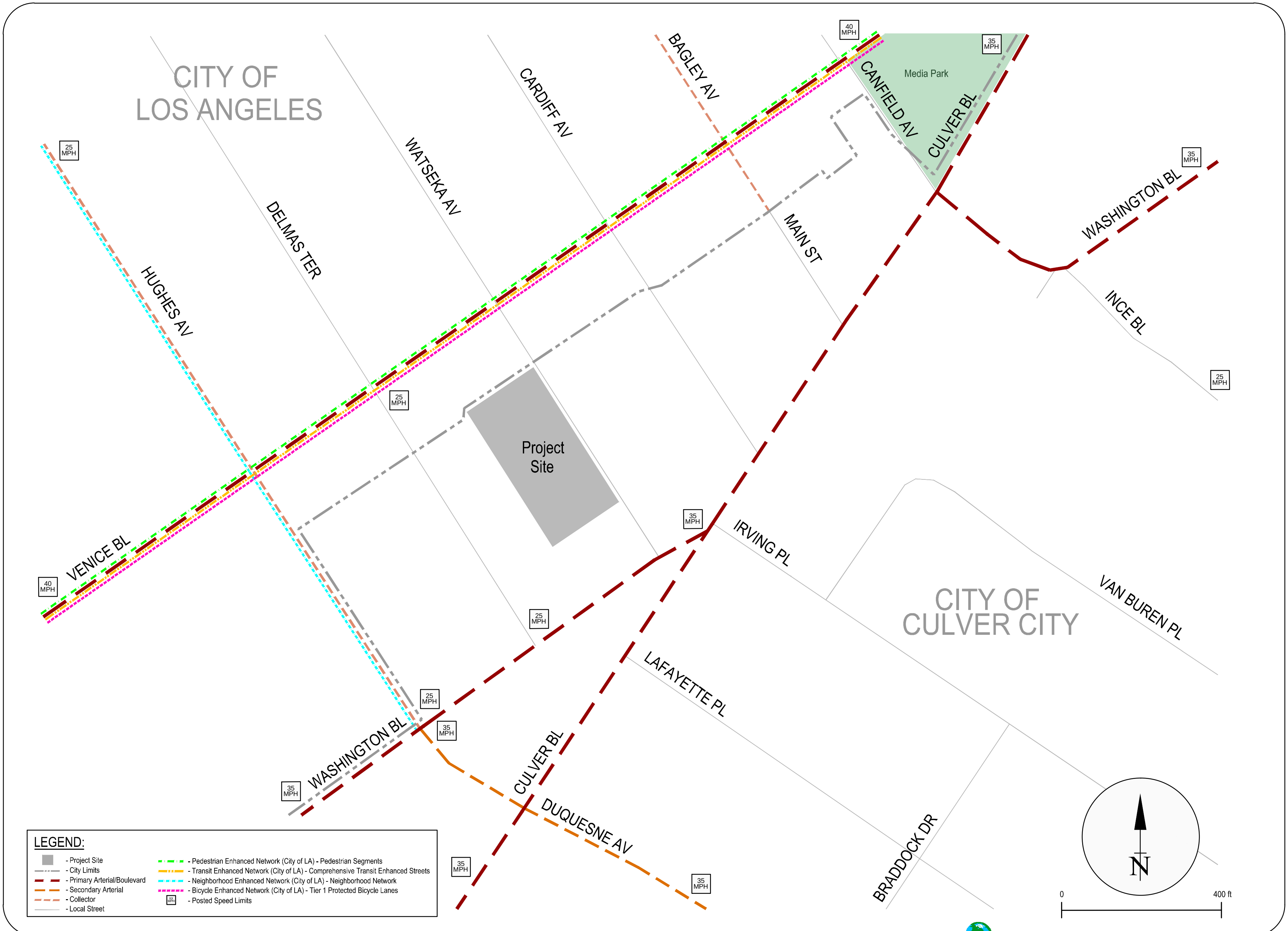

FIGURE 3
EXISTING STREET SYSTEM

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- Venice Boulevard – Venice Boulevard runs in an east-west direction across several jurisdictions between Ocean Front Walk in Santa Monica and Main Street in Downtown Los Angeles. Venice Boulevard is classified as a Primary Arterial roadway within the City of Culver City and as a Boulevard II roadway within the City of Los Angeles. Within the study area, Venice Boulevard provides six travel lanes, three travel lanes in each direction with left-turn lanes at key intersections and a raised median island. Bike lanes are provided on both sides of the street. On-street metered/unmetered parking is provided on both sides of the street throughout the study area. The posted speed limit within the study area is 40 miles per hour. Per the City of Los Angeles' *2035 Mobility Plan,* Venice Boulevard is identified as a Comprehensive Transit Enhanced Street within the Transit Enhanced Network and is designated as a pedestrian segment within the Pedestrian Enhanced District.

- Washington Boulevard – Washington Boulevard is classified as a Primary Arterial roadway within the City of Culver City and runs in an east-west direction across several jurisdictions. Within the study area, Washington Boulevard provides four travel lanes, two travel lanes in each direction with left-turn lanes at key intersections. On-street metered/unmetered parking is available along many stretches of the roadway. The posted speed limit is 35 miles per hour.

- Culver Boulevard – Culver Boulevard is classified as a Primary Arterial roadway within the City of Culver City. It traverses the study area diagonally in a northeast-southwest direction starting from Pacific Avenue in Playa del Rey and terminating at Venice Boulevard in Culver City. Within the study area, Culver Boulevard provides two to three travel lanes in each direction and left-turn lanes at key intersections. On-street metered/unmetered parking is available along many stretches of the roadway. The posted speed limit is 35 miles per hour.

- Hughes Avenue – Hughes Avenue is classified as a collector roadway within the City of Los Angeles. It runs in a north-south direction between Washington Boulevard and Exposition Boulevard. This roadway provides one travel lane in each direction. Within the study area, on-street parking is allowed only on the west side of the street between Venice Boulevard and Exposition Boulevard. Parking is not allowed on either side of the street between Venice Boulevard and Washington Boulevard. The posted speed limit is 25 miles per hour. Per the City of Los Angeles' *2035 Mobility Plan,* Hughes Avenue is included in the Neighborhood Enhanced Network.

- Duquesne Avenue - Duquesne Avenue is classified as a secondary arterial roadway that runs in a north-south direction within the City of Culver City. This roadway generally provides two travel lanes, one lane in each direction. On-street unmetered parking is available along many stretches of the roadway. Bike lanes are provided on both sides of street south of Washington Boulevard within the study area. The posted speed limit on Duquesne Avenue is 35 miles per hour.

- Watseka Avenue – Watseka Avenue is a local roadway that runs in a north-south direction and defines the eastern frontage of the Project site. This roadway provides one travel lane in each direction. Within the study area, on-street metered/unmetered parking is provided on the east side of the street and metered parking is provided on the west side of the street. The prima facie speed limit is 25 miles per hour.

- Irving Place – Irving Place is a local north-south roadway within the City of Culver City. This roadway provides two travel lanes, one lane in each direction. Metered/unmetered on-street parking is generally allowed on both sides of the street. Bike sharrows are provided on both sides of the street within the study area. The prima facie speed limit is 25 miles per hour.

- Bagley Avenue - Bagley Avenue is collector roadway that runs in a north-south direction within the City of Los Angeles. This roadway provides two travel lanes, one lane in each direction. On-street parking is generally allowed on the east side of the street and is prohibited on the west side of the street. The prima facie speed limit is 25 miles per hour.

- Main Street - Main Street is a local north-south roadway within the City of Culver City. It provides one travel lane in each direction. On-street metered parking is allowed in both directions of the street. The prima facie speed limit is 25 miles per hour.

- Canfield Avenue – Canfield Avenue is classified as a local street and runs in a north-south direction. This roadway provides two travel lanes, one lane in each direction. On-street parking generally available on both sides of the street. The prima facie speed limit is 25 miles per hour along this roadway.

EXISTING PEDESTRIAN CIRCULATION SYSTEM CONDITIONS

The pedestrian circulation system includes crosswalks, intersection traffic control, and sidewalks available to serve pedestrians. Figure 4 illustrates the pedestrian facilities within the study area. As shown in Figure 4, sidewalks are generally available on both sides for all the roadways within the study area. Per *Culver City Bicycle & Pedestrian Action Plan,* Public Works Department, 2020, most streets in Culver City have existing sidewalks in good condition.

Watseka Avenue offers pedestrian access and circulation possibilities to the Project site. Sidewalks are available on both sides of Watseka Avenue adjacent to and in the vicinity of the Project site. The existing sidewalk along Watseka Avenue adjacent to the Project site is approximately 10 feet wide.

An inventory of pedestrian crosswalk locations and amenities is provided in Figure 4. As shown in the figure, the intersections within the study area include both unsignalized and signalized pedestrian crosswalk locations. At these locations, crosswalks are generally provided at each leg of the intersection with curb ramps.

Pedestrian crosswalks adjacent to the Project site are available at nearby intersections of Watseka Avenue/Irving Place & Washington Boulevard/Culver Boulevard, Hughes Avenue &

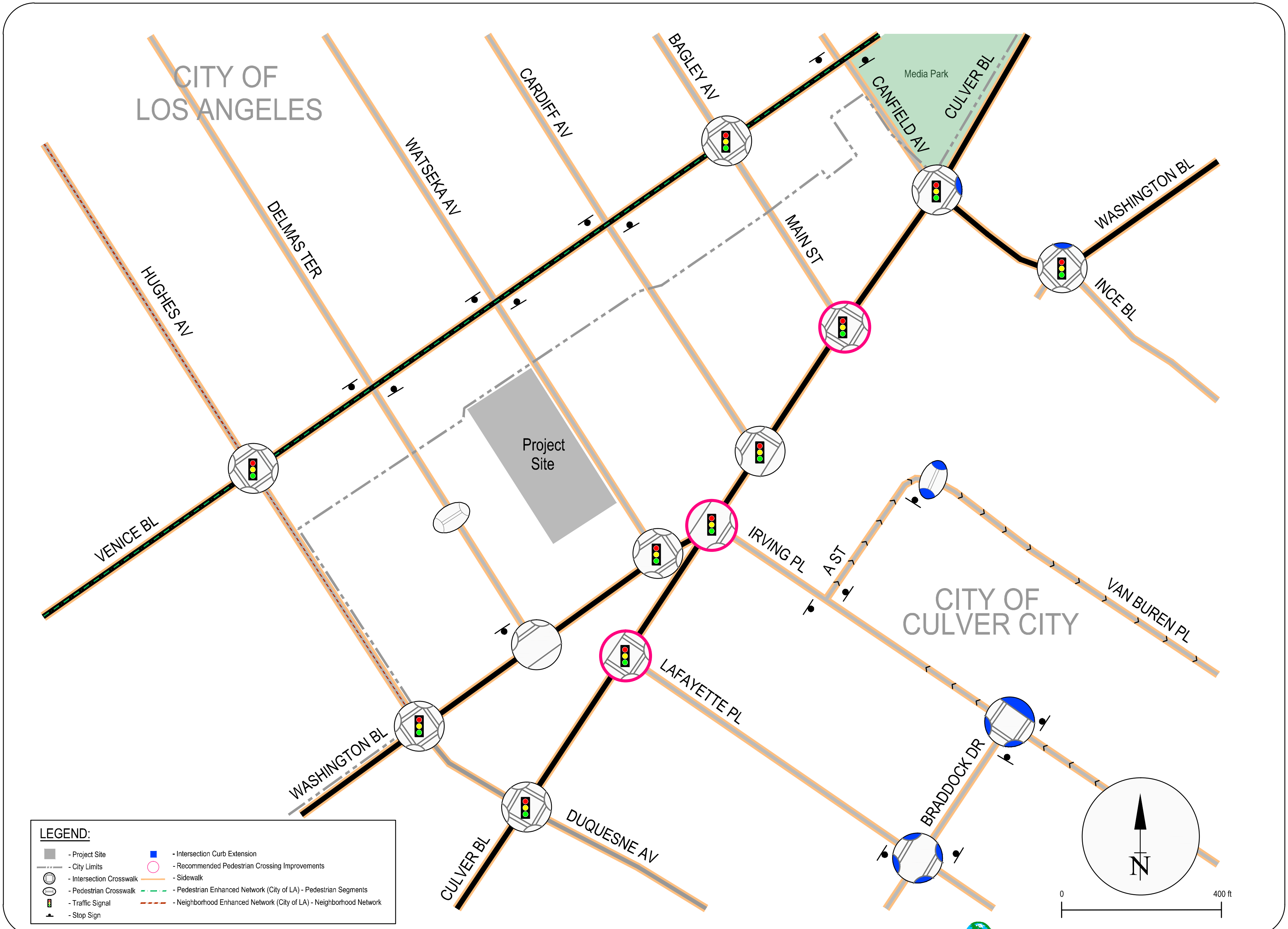

FIGURE 4
INVENTORY OF EXISTING PEDESTRIAN FACILITIES

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Venice Boulevard, Hughes Avenue/Duquesne Avenue & Washington Boulevard and Cardiff Avenue & Culver Boulevard. A brief description of these pedestrian crossing locations including traffic signals and intersection crosswalks within the study area follows:

- **Pedestrian Crosswalks Along Venice Boulevard**

    - Intersection of Hughes Avenue / Venice Boulevard: The intersection is signalized with traffic control devices. Continental crosswalks are available on all four approaches. Pedestrian call pushbuttons are provided on the east and west legs of the intersection. Pedestrian signal calls are actuated/automated on the north and south legs of the intersection. Curb ramps are provided on all four corners of the intersection.

    - Intersection of Bagley Avenue / Venice Boulevard: The intersection is signalized with traffic control devices. Continental crosswalks are available on all four approaches. Pedestrian call pushbuttons are provided on the east and west legs of the intersection. Pedestrian signal calls are actuated/automated on the north and south legs of the intersection. Curb ramps are provided on all four corners of the intersection.

- **Pedestrian Crosswalks Along Washington Boulevard**

    - Intersection of Hughes Avenue-Duquesne Avenue / Washington Boulevard: The intersection is signalized with traffic control devices. Continental crosswalks with pedestrian call pushbuttons are provided on all four approaches. Curb ramps are provided on all four corners of the intersection.

    - Intersection of Watseka Avenue / Washington Boulevard: The intersection is signalized with traffic control devices. Crosswalks with pedestrian call pushbuttons are provided on the north and east leg of the intersection. Curb ramps are provided on the north and east leg of the intersection. No crosswalk is provided on the west leg of the intersection

- **Pedestrian Crosswalks Along Culver Boulevard**

    - Intersection of Duquesne Avenue / Culver Boulevard – The intersection is signalized with traffic control devices. Continental crosswalks with pedestrian call pushbuttons are provided on all four approaches. Curb ramps are provided on all four corners of the intersection.

    - Intersection of Lafayette Avenue / Culver Boulevard – This ‘T’-intersection is signalized with traffic control devices. Crosswalks with pedestrian call pushbuttons are provided on the east, west and south legs of the intersection. Curb ramps are provided on all corners of the intersection.

- Intersection of Washington Boulevard / Culver Boulevard – This ‘T’-intersection is signalized with traffic control devices. Crosswalks with pedestrian call pushbuttons are provided on the north and east legs of the intersection. Curb ramps are provided on the north and east legs of the intersection.

- Intersection of Irving Place / Culver Boulevard – This ‘T’-intersection is signalized with traffic control devices. A crosswalk with pedestrian call pushbuttons is provided on the south leg of the intersection. Curb ramps are provided on the south leg of the intersection.

- Intersection of Cardiff Avenue / Culver Boulevard – This ‘T’-intersection is signalized with traffic control devices. A standard crosswalk with pedestrian call pushbuttons is provided on the north leg of the intersection, while a continental crosswalk with pedestrian call pushbuttons is provided on the east leg of the intersection. Curb ramps are provided on the north and east legs of the intersection.

- Intersection of Main Street / Culver Boulevard – The intersection is signalized with traffic control devices. Continental crosswalks with pedestrian call pushbuttons are available on all four approaches. Curb ramps are provided on all four corners of the intersection.

Future Pedestrian Circulation System

Future planned/recommended pedestrian facilities are included in the City of Culver City’s *Bicycle & Pedestrian Action Plan* and the City of Los Angeles’ *2035 Mobility Plan*.

As shown in Figure 4, Venice Boulevard within the study area is designated as Pedestrian Enhanced District street segment and Hughes Avenue is included in the Neighborhood Enhanced Network in the City of Los Angeles’s *2035 Mobility Plan*. Pedestrian Enhanced Districts are an analysis of a snapshot in time of areas where pedestrian improvements are prioritized relative to other modes. These areas may be located near schools, transit stations, areas of high pedestrian activity, areas with high collision frequency, or other placemaking opportunity areas. The Neighborhood Enhanced Network is a selection of streets that provide comfortable routes for localized travel of slower-moving modes such as walking, bicycling, or other slow speed motorized means of travel. This network complements the Pedestrian Enhanced Districts and the Bicycle Enhanced Network by identifying non-arterial streets important to the movement of people who walk and bike.

In Culver City, recommended pedestrian facility improvements have been identified as part of the *Culver City Bicycle & Pedestrian Action Plan, June 2020.* Within the study area, pedestrian facility improvements are recommended at the following locations (shown in Figure 4):

- Intersection of Irving Place & Culver Boulevard – Restripe the existing crosswalk as continental crosswalk. Provide curb extension on southeast corner of the intersection.

- Intersection of Lafayette Place & Culver Boulevard – Restripe the existing crosswalk as continental crosswalk. Provide curb extensions on southwest corner of the intersection, and northwest-northeast midblock.

- Intersection of Main Street & Culver Boulevard – Test the feasibility of a pedestrian scramble crossing.

Adequate pedestrian infrastructure would be available in the vicinity of the Project. Pedestrian access and circulation possibilities to the Project site will continue to be available similar to existing conditions.

BICYCLE FACILITIES

This section presents a review of the City of Culver City's *Bicycle & Pedestrian Action Plan* and *City of Los Angeles' 2010 Bicycle Plan: A Component of the City of Los Angeles Transportation Element* (2010 Bicycle Plan), and an evaluation of the existing and future bicycle network within the study area for the Project.

City of Culver City's Bicycle and Pedestrian Action Plan

The City of Culver City's *Bicycle & Pedestrian Action Plan*, June 2020, introduces existing and future development plans for bicycling and walking for achieving the concept of complete streets in the City of Culver City. The Bicycle & Pedestrian Plan states the following:

"*Culver City will be a community where bicycling and walking provide affordable, safe, and healthy mobility options for all residents. New projects and programs will work to enhance multi-modal mobility.*"

This action plan expands upon the 2010 Bicycle and Pedestrian Master Plan by providing new and updated infrastructure, program, and policy recommendations. In addition to updating the 2010 plan, this Plan takes advantage of new, innovative solutions to guide City staff in prioritizing resources when implementing future projects and programs, and finally, helps make the City eligible for more grants and other outside funding for these pursuits. This document includes an inventory of the City's current bicycle and pedestrian network and recommends specific infrastructure, program, and policy changes to encourage bicycling and walking.

City of Los Angeles' 2010 Bicycle Plan

The 2010 Bicycle Plan introduces new goals, objectives, policies and programs as well as updated policies and programs in comparison to the 1996 Plan. The 2010 Bicycle Plan states the following:

"The overarching commitment of the 2010 Plan is to increase, improve and enhance bicycling in the City as a safe, healthy and enjoyable means of transportation and recreation. The 2010 Plan establishes three goals – Increase the number and types of bicyclists who bicycle in the City; Make every street a safe place to ride a bicycle; and Make the City of Los Angeles a bicycle-friendly community."

These goals each have three to four objectives that include a variety of policies and programs intended to increase bicycle ridership, increase awareness, implementation, and use of the bicycle networks, expand bicycle parking options, integrate bicycling with the transit system, introduce and identify locations for the Clean Mobility and Multi-Modal Hubs, expand motorist and bicycle education, provide guidance to City departments regarding funding and the development, maintenance, and implementation of bikeways and support facilities.

A detailed description of the existing bicycle facilities within the study area and an evaluation of the future bicycle network planned is presented in the following sections.

Existing Bicycle Facilities

The City of Culver City's *Bicycle & Pedestrian Action Plan* and City of Los Angeles' *2010 Bicycle Plan* document the existing bicycle facilities within each respective jurisdiction. These facilities are classified as Shared-use Paths (Class I), Bicycle Lanes (Class II), Bicycle Routes/Bicycle Boulevards (Class III), and Separated Bikeways (Class IV). A brief description of these facilities follows:

- Shared-use Paths (Class I) – Shared-use Paths are exclusive car free facilities that provide a completed separated right-of-way for shared-use by cyclists and pedestrians. There are few potential conflicts between people riding and people driving.

- Bicycle Lanes (Class II) – Bicycle Lanes are part of the street design that is dedicated only for bicycles and identified by a striped one-way bike lane separated from vehicle lanes. The facility may be along a curb, or placed between curbside parking and moving traffic; some bike lanes include striped buffers between the bike lane and traffic lane or parking aisle.

- Bicycle Routes/Bicycle Boulevards (Class III) – Bicycle Routes provide for a shared use of the roadway with posted signage for bicycle use which can include signs, painted shared-lane markings, or 'sharrow' pavement markings. Bicycle Boulevards are another Class III type of routes that include traffic interventions to reduce the traffic speed and vehicle trips.

- Separated Bikeways (Class IV) – Separated Bikeways are part of the street design that is dedicated only for bicycles and physically separated from vehicle traffic by a vertical element or barrier, such as a curb, bollards, or vehicle parking aisle. The facility may be unidirectional or bidirectional.

Figure 5 shows the existing bicycle facilities in the study area. As shown in the figure, bicycle facilities are provided on the following streets:

- Venice Boulevard: Bicycle Lanes (Class II) are provided along Venice Boulevard between Pacific Avenue and Arlington Avenue. (City of Los Angeles)

- Duquesne Avenue: Bicycle Lanes (Class II) with green pavements are provided along Duquesne Avenue between Washington Boulevard and Leash Lane. (City of Culver City)

- Irving Place: Irving Place is classified as Bicycle Route (Class III) with Sharrows being provided between Culver Boulevard and Lucerne Avenue. (City of Culver City)

- A Street: Bicycle Routes (Class III) with Sharrows are provided along A Street between Irving Place and Van Buren Place. (City of Culver City)

- Van Buren Place: Bicycle Routes (Class III) with Sharrows are provided along Van Buren Place between A Street and Lucerne Avenue. (City of Culver City)

Future Bicycle Conditions

Future planned bicycle facilities are included in the City of Culver City's *Bicycle & Pedestrian Action Plan* and City of Los Angeles' *2035 Mobility Plan* document within each respective jurisdiction. The City of Los Angeles' Mobility Plan includes a Bicycle Enhanced Network (BEN) and Bicycle Lane Network.

The Bicycle Enhanced Network is a network of streets that will receive treatments that prioritize bicyclists. The Bicycle Enhanced Network consists of:

- Bicycle Paths – Bicycle facilities outside of the roadway that provide paved pathway separated from motorized vehicular traffic by an open space or barrier and either within the highway rights-of-way or within an independent alignment.

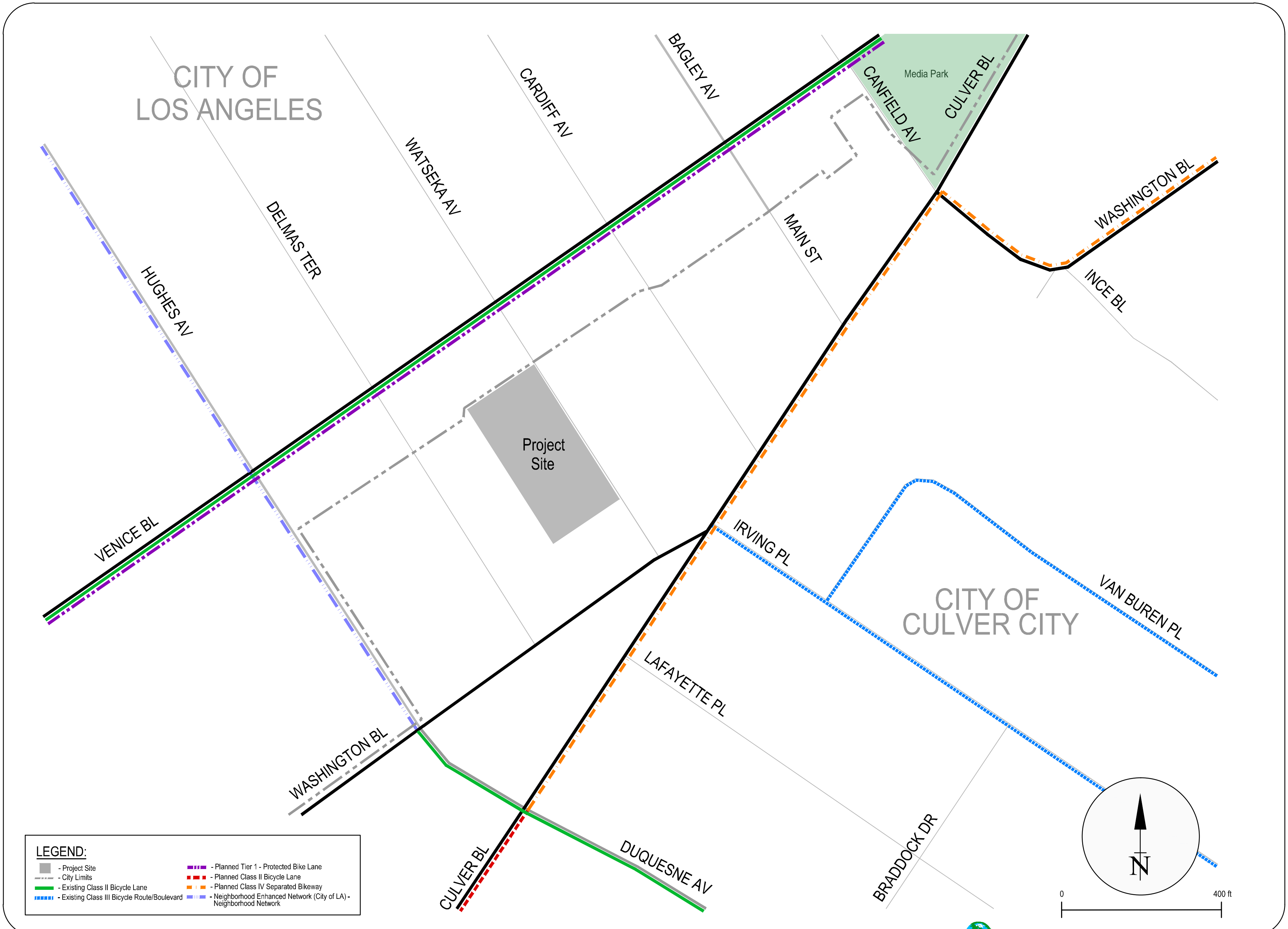

FIGURE 5
EXISTING AND PLANNED BICYCLE FACILITIES

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- Tier 1 Protected Bicycle Lanes – Bicycle facilities on arterial roadways with physical separation that provide a higher level of protection from vehicle traffic than just a striped bicycle lane.

- Neighborhood Enhanced Network Streets – Bicycle facilities on neighborhood streets that are identified to provide gap closures to the protected bicycle lane system within the Bicycle Enhanced Network.

The Bicycle Lane Network is a proposed network of bicycle lanes on arterial roadways with striped separation. The Bicycle Lane Network is comprised of Tier 2 and Tier 3 Bicycle Lanes. Tier 2 Bicycle Lanes are planned priority bicycle lanes on arterial roadways with striped separation. Tier 3 Bicycle Lanes are planned bicycle lanes on arterial roadways with striped separation but are prioritized less than Tier 2.

The future planned bicycle facilities are shown in Figure 5. As shown in the figure, the future planned bicycle facilities include following streets.

City of Culver City's Proposed Bicycle Facilities

- Culver Boulevard: Bike Routes (Class III) are proposed on Culver Boulevard between Elenda Street and Duquesne Avenue.

- Culver Boulevard: Separated Bikeways (Class IV) are proposed on Culver Boulevard between Duquesne Avenue and Washington Boulevard.

City of Los Angeles' Bicycle Enhanced Network

- Venice Boulevard: Tier 1 Protected Bicycle Lanes are proposed along Venice Boulevard between Pacific Avenue and Arlington Avenue.

- Hughes Avenue: Neighborhood Enhanced Network Street is proposed along Hughes Avenue between Exposition Boulevard and Washington Boulevard.

Adequate bicycle infrastructure would be available in the vicinity of the Project. Bicycle access and circulation possibilities to the Project site will continue to be available similar to existing and planned conditions.

EXISTING TRANSIT CONDITIONS

Per the City's Transportation Study Criteria and Guidelines, all bus operators within one mile of the proposed Project and rail transit operators within two miles of the proposed Project were identified. Fourteen bus lines and a light rail (Metro E Line) currently serve the area. Three bus lines and the E Line are operated by the Los Angeles County Metropolitan Transportation Authority (MTA or METRO), four bus lines are operated by the Santa Monica Big Blue Bus (BBB) Lines, five bus lines are operated by the Culver CityBus (CC), and the remaining two bus lines are operated by the Los Angeles Department of Transportation Commuter Express (CE). These transit lines are described below:

- <u>Metro E Line (Expo)</u> - E Line is an east/west light-rail line that provides service from Santa Monica to Union Station. There are four stations serving the study area – Westwood/Rancho (City of Los Angeles), Palms (City of Los Angeles), Culver City (City of Culver City), and La Cienega/Jefferson (City of Los Angeles). The western terminus is at the intersection of 5th Street and Colorado Avenue in Santa Monica. The eastern terminus is at the intersection of 7th Street and Flower Street in Downtown Los Angeles. This line runs every day, including weekends and holidays, at a frequency of approximately 6 minutes during peak commute hours and 12 minutes during weekday midday hours.

- <u>MTA Line 17</u> - Route 17 is a local east/west bus line that provides service from Culver City to Downtown Los Angeles and travels along Robertson Boulevard, National Boulevard, and Washington Boulevard within the study area. The western terminus is at the intersection of Robertson Boulevard and Venice Boulevard in Culver City. The eastern terminus is at the intersection of 5th Street and Wall Street in Downtown Los Angeles. This line runs from Monday to Friday, at a frequency of approximately 30 minutes during peak commute hours and 60 minutes during weekday midday hours. Service is not provided on weekends and holidays.

- <u>MTA Line 33</u> - Route 33 is a local east/west bus line that provides service from Santa Monica to Downtown Los Angeles and travels along Venice Boulevard within the study area. The western terminus is at the intersection of Santa Monica Boulevard and Ocean Avenue in Santa Monica. The eastern terminus is at the Patsaouras Bus Plaza (Union Station) in Downtown Los Angeles. This line runs every day, including weekends and holidays, at a frequency of approximately 15-20 minutes during peak commute hours and during weekday midday hours.

- <u>MTA Line 733</u> - Route 733 is an east/west "rapid bus" line that provides service from Santa Monica to Downtown Los Angeles and travels along Venice Boulevard within the study area. The western terminus is at the intersection of Santa Monica Boulevard and Ocean Avenue in Santa Monica. The eastern terminus is at the Patsaouras Bus Plaza (Union Station) in Downtown Los Angeles. This line runs every day, including weekends and holidays, at a frequency of approximately 15-20 minutes during peak commute hours and 20-30 minutes during weekday midday hours.

- BBB Line 5 - Line 5 is a local east/west bus line that provides service from Santa Monica to Palms, and travels along Motor Avenue, National Boulevard, and Manning Avenue within the study area. The western terminus is near the intersection of Main Street and Olympic Drive (near Santa Monica Civic Center) in Santa Monica. The eastern terminus is at the intersection of National Boulevard and Palms Boulevard in Palms. The line runs Monday through Friday, at a frequency of approximately 60 minutes during commute peak hours and during weekday midday hours. No service is provided on weekends or holidays.

- BBB Line Rapid 10 - Rapid 10 is an east/west "rapid bus" line that provide service from Santa Monica to Downtown Los Angeles. The line travels along I-10 freeway within the study area. The western terminus is near the intersection of Broadway and 5th Street in Santa Monica. The eastern terminus is near the intersection of Main Street and Alameda Street. The line runs Monday through Friday with peak-hour service only, at a frequency of 60-90 minutes. No service is provided during midday or evening hours, and no service is provided on weekends or holidays.

- BBB Line Rapid 12 - Rapid 12 is a north/south "rapid bus" line that provide service from Palms to UCLA, and travels along Overland Avenue, Washington Boulevard, Motor Avenue, and Venice Boulevard within the study area. The southern terminus is at the intersection of Washington Boulevard and Overland Avenue in Palms. The northern terminus is at UCLA Gateway Plaza. The line runs Monday through Friday, and on Saturday. No service is provided on Sunday. The line operates at a frequency of approximately 12-15 minutes during weekday commute peak hours, and 20 minutes during weekday midday hours.

- BBB Line 17 - Line 17 is a local north/south bus line that provides service from Culver City to UCLA, and travels along Palms Boulevard, National Boulevard, Washington Boulevard, and Robertson Boulevard within the study area. The southern terminus is at the intersection of Venice Boulevard and Robertson Boulevard (near E Line Culver City Station) in Culver City. The northern terminus is on Charles E Young Drive near Parking Garage 2 at UCLA. The bus operates every day, including weekends and holidays, at a frequency of approximately 15-20 minutes during weekday peak commute hours, and 20-30 minutes during weekday midday hours.

- CC Line 1 - Line 1 is a local east/west bus line that provides service from Venice to Culver City and travels primarily along Washington Boulevard and Culver Boulevard within the study area. The western terminus is at Windward Circle in Venice. The eastern terminus is at the Washington Fairfax Transit Hub (West Los Angeles Transit Center) in Los Angeles near the northeastern border of Culver City. This line runs every day, including weekends and holidays, at a frequency of approximately 12-15 minutes during peak commute hours, and 20-30 minutes during weekday midday hours.

- CC Line 3 - Line 3 is a local north/south bus line that provides service from Culver City to Century City, and travels primarily along Overland Avenue and Motor Avenue within the study area. The southern terminus is at the intersection of Mesmer Avenue and Centinela Avenue in Culver City. The northern terminus is at the intersection of Century Park W and Solar Way (near Westfield Century City) in Century City. This line runs every day, including weekends and holidays, at a frequency of 20-25 minutes during peak commute hours, and 25-30 minutes during weekday midday hours.

- o <u>CC Line 4</u> - Line 4 is a local east/west bus line that provides service from Playa Vista to Culver City, and travels along Jefferson Boulevard within the study area. The western terminus is at the intersection of E.A. Way and Jefferson Boulevard in Playa Vista, and the eastern terminus is at West Los Angeles Transit Center near the intersection of Fairfax Avenue and Washington Boulevard in Culver City. The line operates Monday through Friday and on Saturday, at a frequency of approximately 40-50 minutes during both commute peak hours and weekday midday hours. No Sunday or holiday service is provided.

- o <u>CC Line 5</u> - Line 5 is a local east/west bus line that provides service from Culver City to Blair Hills, and travels primarily along Braddock Drive, Madison Avenue, Culver Boulevard, Washington Boulevard, and Higuera Street within the study area. This line operates only when school is in session, Monday through Friday from 7:15-7:40 AM and from 2:45-4:05 PM. No weekend or holiday service is provided. It provides westbound/eastbound service from the intersection of Elenda Street/Braddock Drive (Culver City Schools) to the intersection of La Cienega Boulevard/Rodeo Road and eastbound only service from Venice High School (at Maplewood Road) to Culver City Schools. This line is currently temporarily discontinued due to COVID-19.

- o <u>CC Line 7</u> - Line 7 is a local east/west bus line that provides service from Marina del Rey to Culver City, and travels primarily along Culver Boulevard, Washington Boulevard, National Boulevard, Venice Boulevard, and Robertson Boulevard within the study area. The western terminus is at Fisherman's Village in Marina Del Rey. The eastern terminus is adjacent to the Metro E Line Culver City Station. This line runs Monday through Friday at a frequency of approximately 40-45 minutes during both commute peak hours and weekday midday hours. No weekend or holiday service is provided.

- o <u>CE Line 431</u> - Line 431 is a Commuter Express bus line that provides east/west service from Westwood to Downtown Los Angeles, and travels along National Boulevard, Motor Avenue, Manning Avenue, and I-10 Freeway within the study area. The western terminus is at the intersection of Sepulveda Boulevard and Ohio Avenue in Westwood. The eastern terminus is at Patsaouras Transit Plaza (Union Station) in Downtown Los Angeles. The line operates Monday through Friday only during peak commute hours. During the AM peak hours, service is provided in the eastbound direction only from Westwood to Downtown Los Angeles, at a frequency of approximately 55 minutes. During the PM peak hours, service is provided in the westbound direction only from Downtown Los Angeles to Westwood, at a frequency of approximately 60 minutes. Service is not provided during weekday off-peak hours, weekends and holidays.

- <u>CE Line 437A</u> - Line 437A is a Commuter Express bus line that provides east/west service from Venice to Downtown Los Angeles, and travels along Culver Boulevard and Washington Boulevard within the study area. The western terminus is at the intersection of Pacific Avenue and Washington Boulevard. The eastern terminus is at the intersection of Temple Street and Garey Street. The line operates Monday through Friday only during peak commute hours. During the AM peak hours, service is provided in the eastbound direction only from Venice to Downtown Los Angeles, at a frequency of approximately 40-50 minutes. During the PM peak hours, service is provided in the westbound direction only from Downtown Los Angeles to Venice, at a frequency of approximately 60-70 minutes. Service is not provided during weekday off-peak hours, weekends and holidays.

Table 1 summarizes these transit lines serving the study area. The table includes the service provider, line number, service area, service type, hours of operation, frequency and ridership. These transit lines are illustrated in Figure 6 along with associated transit stations (4 light rail stations and bus stops (133 bus stops). It can be observed from the figure that the Project site is within walking distance to the Culver City Station at Metro E line (approximately 0.5 mile) and to the Palms Station at Metro E line (approximately 0.7 mile).

The City of Culver City is currently implementing ‘Move Culver City’ Pilot Project, a tactical mobility lane pilot project involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue. These mobility lanes include a bus-only lane and a bicycle lane on either side of the street. The mobility lanes would be implemented on a pilot program basis along Culver Boulevard from Duquesne Avenue to Washington Boulevard and along Washington Boulevard to La Cienega Avenue all within the City of Culver City. The mobility lanes will offer a different mobility options to bicyclists, scooters, emergency vehicles, and transit, including Culver City Bus, Santa Monica Big Blue Bus, L.A. Metro and LADOT bus lines.

Existing Transit Network Review

The Project site is also within walking distance (within 0.25 mile) to several bus stops. A field visit to the bus stops located within a quarter mile from the proposed Project site was conducted on Tuesday, September 29, 2020, during the PM peak period (3-7 PM). Figure 7 illustrates the bus stops located within a quarter mile from the Project site. As shown in the figure, a total of 15 bus stops have been identified within a quarter mile area from the Project site.

Table 2 summaries the transit features at these bus stops, including bus stop amenities, service lines, bus stop conditions and operational conflicts. As indicated in Table 2, with the exception of the temporary bus stop at Culver Boulevard/Main Street, the bus stops provide amenities such as shelters and/or benches. No riders were observed waiting at any of the bus stops. The bus stops were observed to be generally clean. A few bus stops along Venice Boulevard had stained sidewalks. Photos showing the condition of the bus stops are shown in Appendix C.

TABLE 1
EXISTING TRANSIT SERVING THE STUDY AREA

Line/Route	Service Type	Direction	Origin	Destination	Hours of Operation	Weekday Headways (Min) Peak	Weekday Headways (Min) Midday	Average Weekday Ridership 2019
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (MTA) [1]								
E Line (Expo)	Light Rail	East/West	Santa Monica	Downtown Los Angeles	Mon-Sun 3:27am-1:00am	10	12	58,002
Line 33	Local Bus	East/West	Santa Monica	Downtown Los Angeles	Mon-Sun 24 hours	12	12	10,085
Line 733	Rapid Bus	East/West	Santa Monica	Downtown Los Angeles	Mon-Fri 4:57am-12:24am; Sat-Sun 5:00am-12:24am	18-20	20	7,764
Line 617	Local Bus	East/West	Culver City	Pico - Robertson	Mon-Fri 4:48am-12:57am; Sat-Sun 5:00am-12:30am	45	45	N/A [5]
CITY OF SANTA MONICA - BIG BLUE BUS (BBB) [2]								
Line 5	Local Bus	East/West	Santa Monica	Palms	Mon-Fri 7:10am-7:15pm	50-60	50-60	795
Rapid 10	Rapid Bus	East/West	Santa Monica	Downtown Los Angeles	Mon-Fri 6:00am-9:19am & 3:30pm-7:10pm	60-90	No Service	314
Rapid 12	Rapid Bus	North/South	Palms	UCLA	Mon-Fri 5:34am-10:33pm; Sat 6:08am-10:32pm; Sun 6:33am-10:32pm	12-15	12	4,001
Line 17	Local Bus	North/South	Culver City	UCLA	Mon-Fri 5:50am-10:49pm; Sat 6:50am-8:19pm; Sun 7:50am-8:19pm	15-20	15-20	1,596
CITY OF CULVER CITY - CULVER CITYBUS (CC) [3]								
Line 1	Local Bus	East/West	Venice	Culver City	Mon-Fri 6:00am-11:03pm; Sat-Sun 6:00am-11:55pm	12-15	20-30	2,911
Line 3	Local Bus	North/South	Culver City	Century City	Mon-Fri 6:20am-9:58pm; Sat-Sun 7:31am-9:58pm	20-30	30	2,348
Line 4	Local Bus	East/West	Playa Vista	Culver City	Mon-Fri 6:31am-8:27pm; Sat 7:56am-7:44pm	45	45	818
Line 5	Local Bus	East/West	Culver City	Blair Hills	Mon-Fri 7:45am-8:14am & 11:05am-1:37pm (When School is in Session)	Only one trip	110	64
Line 7	Local Bus	East/West	Marina del Rey	Culver City	Mon-Fri 7:09am-6:40pm	40	40-45	370
LOS ANGELES DEPARTMENT OF TRANSPORTATION (LADOT) [4]								
CE 431	Commuter Express Bus	East/West	Westwood	Downtown Los Angeles	Mon-Fri 6:40am-8:55am & 4:55pm-7:19pm	55-60	No Service	117
CE 437A	Commuter Express Bus	East/West	Venice	Downtown Los Angeles	Mon-Fri 6:14am-8:59am & 3:56pm-7:22pm	40-70	No Service	66

[1] From Metro's interactive estimated ridership stats (https://isotp.metro.net/MetroRidership/Index.aspx)

[2]Ridership data provided by City of Santa Monica (07/19/2021)

[3] Ridership data provided by City of Culver City (07/23/2021)

[4] Ridership data provided by LADOT (07/21/2021)

[5] Metro Line 617 is a new transit line that began operation June 2021.

LEGEND:

- Project Site
- Buffer from Project Site
- Metro Rail Station
- Bus Stop
- Metro Rail Line
- Los Angeles County Metropolitan Transportation Authority (MTA) Route
- Los Angeles Department of Transportation Commuter Express (CE) Route
- Santa Monica Big Blue Bus (BBB) Route
- Culver City Bus (CC) Route

Transit Ridership (2019 Average Weekday - Daily)

Los Angeles County Metropolitan Transportation Authority (MTA)
- E Line (Expo) - 58,002 Riders
- Line 33 - 10,085 Riders
- Line 733 - 7,764 Riders
- Line 617 - N/A (New Line)

City of Santa Monica - Big Blue Bus (BBB)
- Line 5 - 795 Riders
- Rapid 10 - 314 Riders
- Rapid 12 - 4,001 Riders
- Line 17 - 1,596 Riders

City of Culver City - Culver CityBus (CC)
- Line 1 - 2,911 Riders
- Line 3 - 2,348 Riders
- Line 4 - 818 Riders
- Line 5 - 64 Riders
- Line 7 - 370 Riders

Los Angeles Department of Transportation (LADOT)
- CE 431 - 117 Riders
- CE 437A - 66 Riders

FIGURE 6
EXISTING TRANSIT LINES

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FIGURE 7
EXISTING TRANSIT NETWORK REVIEW

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TABLE 2
EXISTING TRANSIT NETWORK REVIEW

No.	Bus Stop Name	Location	Lines Served	Amenities	Bus Stop Condition - Observed	Operational Conflicts
1	Venice / Hughes - Eastbound	SW corner of Venice Boulevard & Hughes Avenue	MTA 33	Benches, Trash Can	No riders waiting. Bus stop generally clean. Trash can full, some trash on floor.	Bike lanes on Venice Boulevard. Potential bus-bicycle conflicts at the intersection when buses merge left.
2	Venice / Hughes - Westbound	NE corner of Venice Boulevard & Hughes Avenue	MTA 33	Benches, Trash Can	No riders waiting. Stained sidewalk in front of bus bench.	Bike lanes on Venice Boulevard. Potential bus-bicycle conflicts at the intersection when buses merge left.
3	Venice / Bagley - Eastbound	SE corner of Venice Boulevard & Bagley Avenue / Main Street	MTA 33, 733	Shelter, Benches, MTA real-time waiting info, Trash Can	No riders waiting. Stained sidewalk in front of bus bench.	Bike lanes on Venice Boulevard. Potential bus-bicycle conflicts at the intersection when buses merge left.
4	Venice / Bagley - Westbound	NE corner of Venice Boulevard & Bagley Avenue / Main Street	MTA 33, 733	Benches, Trash Can	No riders waiting. Bus stop generally clean.	Bike lanes on Venice Boulevard. Potential bus-bicycle conflicts at the intersection when buses merge left.
5	Washington Blvd / Madison Ave - Eastbound	SE corner of Washington Boulevard & Clarington Avenue / Madison Avenue	CC 1	Shelter, Benches, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
6	Washington Blvd / Clarington Ave - Westbound	NE corner of Washington Boulevard & Clarington Avenue / Madison Avenue	CC 1	Benches, CC real-time waiting info, Trash Can	No riders waiting. Bus stop generally clean.	-
7	Washington Blvd / Duquesne Ave - Eastbound	SW corner of Washington Boulevard & Hughes Avenue / Duquesne Avenue	CC 1	Shelter, Benches, CC real-time waiting info, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
8	Washington Blvd / Hughes Ave - Westbound	NE corner of Washington Boulevard & Hughes Avenue / Duquesne Avenue	CC 1	Shelter, Benches, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
9	Culver Blvd / Madison Ave - Westbound	NW corner of Culver Boulevard & Madison Avenue	CC 7, CE 437	Shelter, Benches, Trash Can	One rider waiting. Shelter/bus stop generally clean.	-
10	Madison Ave / Culver Blvd - Southbound	SW corner of Culver Boulevard & Madison Avenue	CC 5	Shelter, Benches, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
11	Madison Ave / Culver Blvd - Northbound	SE corner of Culver Boulevard & Madison Avenue	CC 5	Shelter, Benches, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
12	Culver Blvd / Duquesne Ave - Westbound	NW corner of Culver Boulevard & Duquesne Avenue	CC 5, 7, CE 437	Shelter, Benches, CC real-time waiting info, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
13	Culver Blvd / Lafayette Pl - Eastbound	SW corner of Culver Boulevard & Lafayette Place	CC 1, 5, 7, CE 437	Shelter, Benches, CC real-time waiting info, Trash Can	One rider waiting. Shelter/bus stop generally clean.	-
14	Culver Blvd / Washington Blvd - Eastbound	SW corner of Culver Boulevard & Canfield Avenue / Washington Boulevard	CC 1, 5, 7, CE 437	Shelter, Benches, CC real-time waiting info, Trash Can	No riders waiting. Shelter/bus stop generally clean.	-
15	Culver Blvd / Main St - Westbound	NW corner of Culver Boulevard & Main Street	CC 1, 5, 7	Temporarily Traffic Cones, Painted sign "WAITING AREA" on the ground	No riders waiting. Bus stop generally clean.	Bus stop is temporarily located at the intersection of Culver Bl & Main St due to travel lane closure for outdoor seating purposes.

Date of Site Visit: 09/29/2020 (Tuesday)
Weather Conditions: Sunny

ALIGNMENT WITH VISION ZERO PROGRAM

The City of Culver City's Local Roadway Safety Plan and the City of Los Angeles' Vision Zero Program aim to decrease transportation-related serious injuries and fatalities on City streets through a number of strategies including modifying the design of streets to improve the safety for vulnerable road users. The City of Culver City has developed the Local Roadway Safety Plan that is anticipated to be adopted in November 2021. In the City of Los Angeles, the Vision Zero policy was adopted as part of the City of Los Angeles' 2035 Mobility Plan (*Mobility Plan 2035, An Element of the General Plan*; Los Angeles Department of City Planning; 2016), and the City of Los Angeles' Vision Zero Action Plan (*Vision Zero Action Plan 2015-2025*; Los Angeles Department of Transportation; 2017).

The City of Culver City and the City of Los Angeles identified High Injury Network, where a relatively small number of streets had a disproportionate number of traffic collisions. Future improvement projects, policies, and programs have been prioritized at intersections and along corridors identified within the High Injury Network to reduce traffic violence.

Figure 8 shows the High Injury Network within the study area. The streets included in High Injury Network follows:

- Venice Boulevard: Venice Boulevard between Abbot Kinney Boulevard and 12th Avenue is included in HIN. (City of Los Angeles)
- Washington Boulevard: Washington Boulevard between Lincoln Boulevard and Culver Boulevard (ending at the intersection of Washington Boulevard / Culver Boulevard & Watseka Avenue) as well as Washington Boulevard between Culver Boulevard (starting at the intersection of Culver Boulevard & Canfield Avenue / Washington Boulevard) and Fairfax Avenue are included in HIN. (City of Culver City)
- Culver Boulevard: Culver Boulevard between Overland Avenue and Washington Boulevard (ending at the intersection of Culver Boulevard & Canfield Avenue / Washington Boulevard) is included in HIN. (City of Culver City)

As shown in Figure 8, the Project site is not located along a roadway identified within the City's High Injury Network.

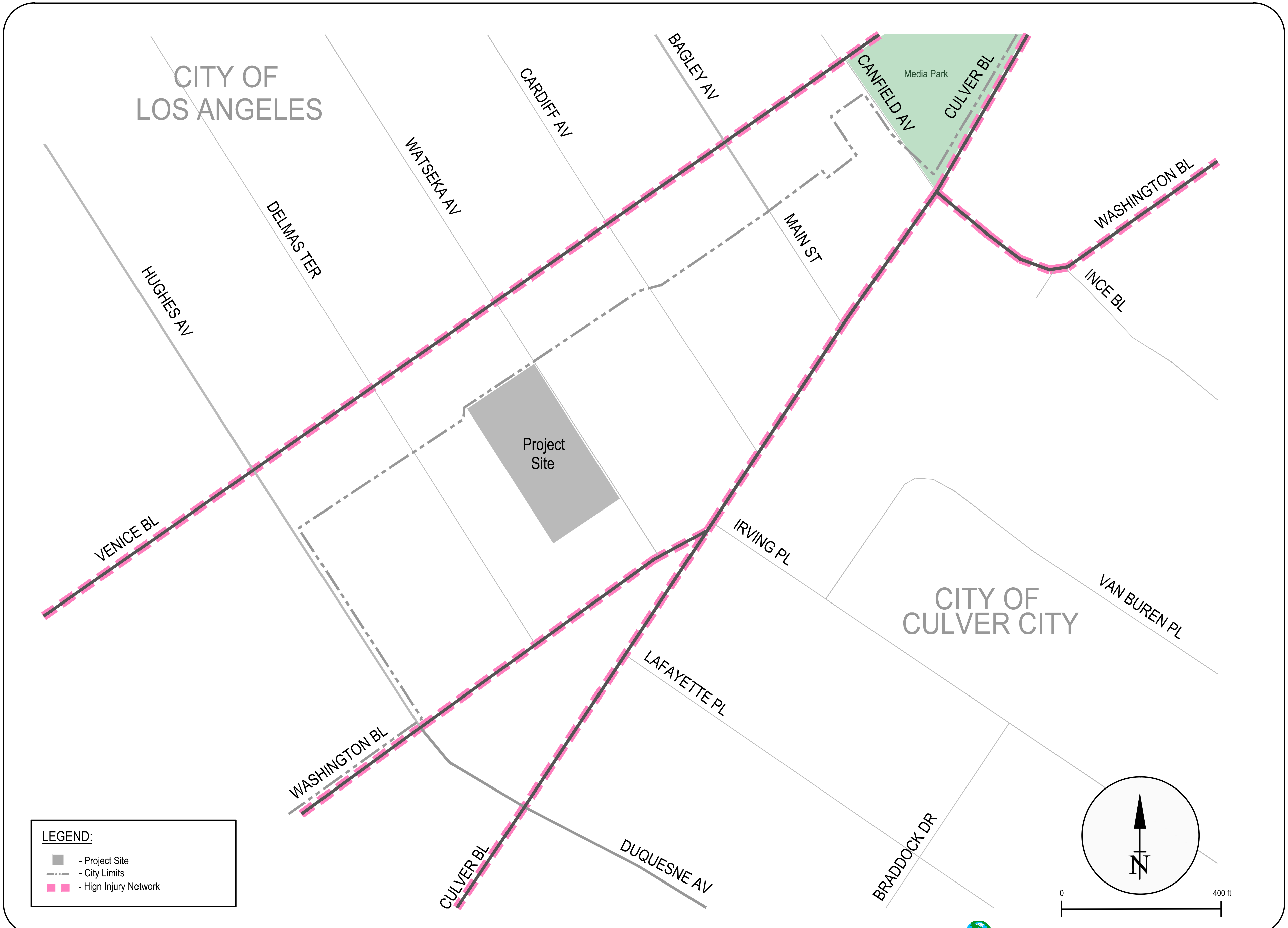

FIGURE 8
HIGH INJURY NETWORK

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III. CEQA ANALYSIS OF TRANSPORTATION IMPACTS

The analysis of transportation impacts associated with the Project was prepared utilizing the methodologies and assumptions per the latest City of Culver City's *Transportation Study Criteria and Guidelines* and is consistent with CEQA Appendix G Environmental checklist. The results were then used to assess the potential impact of the Project based on the significance thresholds established by the City of Culver City. This chapter includes a summary of the screening criteria, impact criteria, methodology and mitigation (if needed) for each City established threshold.

The CEQA evaluation consists of analysis of transportation impacts for the following City established thresholds for development projects:

- Threshold – Programs, Plans, Ordinances, and Policies
- Threshold – Vehicle Miles Traveled (VMT) Land Use Project and
- Threshold – Geometric Design Hazards

CEQA THRESHOLD – PROGRAMS, PLANS, ORDINANCES, AND POLICIES

This section provides an evaluation of the CEQA Threshold – Programs, Plans, Ordinances, and Policies. Per the CEQA Appendix G Environmental Checklist, this threshold considers the following question, "*Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?'*"

<u>Screening Criteria</u>

This CEQA threshold review is required for all projects.

Methodology

The following includes the methodology for analyzing CEQA Threshold – Programs, Plans, Ordinances, and Policies, per the City's Transportation Assessment Guidelines:

- *The City has many programs, plans, ordinances and policies related to the transportation system in Culver City. Table 3 summarizes the documents that should be reviewed for this analysis. This list of documents is subject to refinement by the City as new documents are adopted. Determination of conflicts with the proposed project and these documents may require coordination with City staff.*

TABLE 3

PROGRAMS, PLANS, ORDINANCES, AND POLICIES FOR REVIEW

Document	Last Revised
Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management	1993
General Plan Circulation Element	2004
General Plan Land Use Element	2004
Neighborhood Traffic Management Program	2004
Gateway Neighborhood Design Guidelines	2010
Gateway Adjacent Neighborhood Design Guidelines	2011
Residential Parkway Guidelines	2016
Upper Culver Crest Hillside Design Standards	2017
Short Range Transit Plan	2020
Bicycle and Pedestrian Action Plan	2020
Complete Streets Policy	2020
Local Roadway Safety Plan	2021

A project has a significant impact if it results in a conflict with any of the programs, plans, ordinances, and policies listed in Table 3.

Analysis/Project Impact

The following summarizes a review of the relevant policies and programs to assess whether the proposed Project precludes the City's implementation of any adopted policy and/or program. Based on the review and evaluation of the Project, it was determined that the Project conforms with and does not obstruct or impede the City's development policies and standards. The Project is generally considered to be consistent.

Culver City Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management – Per Culver City's Traffic Code, Chapter 7.05, prior to occupancy of any new development, the property owner or applicable heirs, assigns or successors in interest, shall make lasting provisions for transportation demand management and trip reduction measures included in Chapter 7.05. The requirements of this Section shall apply to any new development that results in a net increase of twenty-five thousand (25,000) or more gross square feet of floor area. Prior to issuance of a certificate of occupancy for any new development that equals or exceeds one hundred thousand (100,000) gross square feet, the developer shall comply with the requirements to the satisfaction of the City Planner and Director of Transportation:

The Project is proposing a comprehensive TDM Program (included in Chapter 1). The Project's TDM Program will include and comply with the requirements included in Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management. Therefore, the Project is consistent with and does not conflict with Culver City's Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management.

General Plan Circulation Element – The General Plan Circulation Element identifies transportation systems and facilities to accommodate with the Land Use Element. The Circulation Element policies seek to reduce automobile travel be establishing a context for TDM programs, capitalizing on the existing City Bus transit system, the Ballona Creek Bike Path and studying appropriate limits on the number of parking spaces for specific uses and areas. Based on a review of the Circulation Element, the Project has been found to be consistent with the policies and objectives of the Circulation Element.

<u>*Circulation Element (CE) Policy 1.A:*</u> *Facilitate movement of vehicles at intersections and along roadway links by increasing capacity, improving operation, and reducing volumes as appropriate and feasible.*

The Project is proposing a comprehensive TDM Program as part of the Project's design features including a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). The components of the Project's TDM Program promote transit use, walking, bicycling and carpooling and thereby, reducing automobile travel to the Project site. In addition, the reduction of existing driveways from four to one would improve traffic flow, pedestrian experience and circulation, and reduce the number of vehicle-vehicle, vehicle-bicycle, and vehicle-pedestrian conflicts.

CE Policy 1.F: *Reduce driveways and curb cuts on arterials in favor of side street and alley access, where appropriate, considering potential impacts on the neighborhoods served by the side streets.*

The proposed Project would support this policy by reducing the number of driveways and curb cuts along the Project site from four to one. Currently, vehicular access to the Project site is provided by four driveways located along the west side of Watseka Avenue. The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue. The Project driveway would provide one inbound lane, one outbound lane and one reversible lane. Access to the subterranean parking garage would be gate controlled. The removal of the existing four driveways reduces potential vehicle/bicycle, vehicle/pedestrian and vehicle/vehicle conflicts improving the overall safety along this section of Watseka Avenue. The driveway and loading area will be designed consistent with the Circulation Element.

CE Policy 2.C: *Maintain levels of transit service that are adequate to meet and encourage ridership demand.*

The proposed Project is located in Culver City's High Quality Transit Service Corridor Area (HQTSCA) since it is within walking distance (220 feet) of the City's 'Move Culver City' Pilot Project located along Culver Boulevard where frequent transit (15-minute frequencies) and circulator shuttles would operate. The 'Move Culver City' Pilot Project also includes enhancements to crosswalks and signage to encourage walking and bicycling and transit ridership. Additionally, the components of the Project's TDM Program promotes transit use, walking, bicycling and carpooling reducing automobile travel to the Project site. The proposed TDM plan would also encourage ridership through transit subsidies and a commute marketing program.

CE Policy 2.H: *Encourage public transit links to sites of high trip-generating uses to maximize transit use by patrons and employees.*

The proposed Project is located in Culver City's HQTSA since it is within walking distance of the City's 'Move Culver City' Pilot Project located along Culver Boulevard where frequent transit (15-minute frequencies) and circulator shuttles would operate. The 'Move Culver City' Pilot Project also includes enhancements to crosswalks and signage to encourage walking and bicycling and transit ridership. The proposed TDM plan for the Project would also encourage ridership through transit subsidies and a commute marketing program.

CE Policy 3.D: *Seek public and private contributions to provide support facilities for bicycle users (such as racks, secure storage, drinking fountains, etc.) where bikeways connect to turnouts, parks, and other open space areas, as appropriate.*

The proposed Project would support this policy by providing 28 long-term secured bicycle parking spaces, 28 short-term visitor bicycle parking spaces on-site. Additionally, the Project would contribute towards a bike hub planned to be located adjacent to Culver City Hall in Downtown Culver City as part of the Project's TDM Program.

CE Policy 3.G: *Encourage large business, commercial centers, and industrial parks to include bicycle lockers, or other secure bicycle storage and related facilities, to support bicycle commuting by employees.*

The proposed Project would support this policy by providing 28 long-term secured bicycle parking spaces, 28 short-term visitor bicycle parking spaces and lockers on-site. These bicycle spaces will allow employees of the Project the option to travel to work using a bicycle. The Project would provide safe internal access to the bicycle parking areas. Additionally, the Project's TDM Program would include a commute marketing program, commuter incentives to cover commute cost such as transit passes and bikeshare membership. The commute marketing program would include information on nearby bicycle routes and bicycle facilities.

CE Policy 4.C: *Provide safe and attractive pedestrian walkways/sidewalks which link streets and parking areas to the entrances of major developments.*

The proposed Project would support this policy by providing new sidewalk and pedestrian facilities/amenities along the Project frontage. The pedestrian facilities will include high quality enhanced landscaping and open space. The Project would also provide safe pedestrian connections to/from the Project site, along the Project frontage.

CE Policy 4.D: *Enhance the aesthetic qualities of pedestrian access routes by increasing amenities, such as trees, awnings, lighting, street furniture, and drinking fountains, etc.*

The proposed Project would support this policy by enhancing the Project frontage with street trees, lighting, and aesthetic treatments on building facades.

A new 10-foot wide sidewalk would be installed on the west side of Watseka Avenue along the Project frontage. In addition, the Project would provide a new roadway curb and street trees along the Watseka Avenue Project site frontage. Landscaping plants would be provided along the proposed open space areas, and along locations facing the public realm. A five-foot landscape area would be provided also in front of the Project building frontage along Watseka Avenue that would enhance the pedestrian environment. Street trees would be planted along the street frontage in accordance with City requirements.

<u>CE Policy 6.B:</u> *Reduce pressure on on-street parking through provision of private and public off-street parking facilities.*

The proposed Project would support this policy by providing an adequate amount of parking according to the Culver City Municipal Code and California Government Code. The Project would provide off-street parking spaces, to accommodate its needs and provide replacement parking of 132 spaces that currently exist on-site.

<u>CE Policy 6.D:</u> *Allow shared parking for adjacent uses, where appropriate.*

The proposed Project would support this policy by providing 555 off-street parking spaces including 132 secured off-street parking spaces for replacement of existing parking spaces on-site. These spaces would be utilized by the current businesses located across the Project site.

General Land Use Element – The Land Use Element designates general distribution, intensity and development policies regarding residential, commercial, industrial, open space, and institutional uses in the City, as required by State Law.

Based on a review of the Land Use Element, the Project has been found to be consistent with the policies and objectives of the Circulation Element. The Project is located on the west side of Watseka Avenue between Venice Boulevard and Washington Boulevard. Per the Land Use Element, the Project is located in the City of Culver City Downtown Neighborhood and the parcel of land is zoned for CD – Commercial Downtown. As proposed, the Project consists of 149,518 square feet of office use, consistent with the Land Use Element zoning.

In summary, the Project does not conflict with the goals, objectives, and citywide land use policies.

Neighborhood Traffic Management Program – The Neighborhood Traffic Management Program has been established to protect residential neighborhoods from non-residential cut-through traffic. Based on the results of the non-CEQA traffic operations evaluation, the Project would not cause any neighborhood cut-through traffic. The Project would not conflict with the Neighborhood Traffic Management Program.

Gateway Neighborhood Design Guidelines - The Multi-Family Neighborhood Residential Design Guidelines are intended to encourage new residential projects to be compatible with, maintain the integrity, and to preserve the unique character and best features of the Gateway Neighborhood by promoting desirable design qualities, guiding change in ways that are compatible with the existing neighborhood development pattern, and respecting the diversity and vitality of the Neighborhood.

The Project consists of 149,518 square feet of office use and in not located within the Gateway Neighborhood. Therefore, this guideline is not applicable for this Project.

Gateway Adjacent Neighborhood Design Guidelines – The Multi-Family Neighborhood Residential Design Guidelines are intended to encourage new residential projects to be compatible with, maintain the integrity of, and to preserve the unique character and best features of the Gateway Adjacent Neighborhood by promoting desirable design qualities, guiding change in ways that are compatible with the existing neighborhood development pattern, and respecting the diversity and vitality of the Neighborhood.

The Project consists of office use and in not located within the Gateway Adjacent Neighborhood. Therefore, this guideline does not apply to the proposed Project.

Residential Parkway Guidelines – The Residential Parkway Guidelines are intended to inform residents of Culver City about residential parkway regulations and to assist them in planning, creating, and maintaining a parkway landscape.

The Project consists of office use. Therefore, this guideline does not apply to the Project.

Upper Culver Crest Hillside Design Standards – The Upper Culver Crest Hillside Design Standards have been established to provide the zoning regulations necessary for the sustainable development of hillside neighborhoods in Culver City.

The Project is not located in a hillside neighborhood. Therefore, these standards do not apply to the Project.

Short-Range Transit Plan - Culver CityBus Short-Range Transit Plan is a three-year planning and policy document that outlines governance, service provision and regulatory requirements, establishes strategic performance goals and objectives, and provides a three-year financial plan for Culver CityBus and the Culver City Transportation Department.

Based on a review of the Short-Range Transit Plan, the Project has been found to be consistent with the document's goal, objectives, and policies. The Project is proposing a comprehensive TDM Program as part of the Project's design features including a bulletin board, display case, or kiosk displaying transportation information, on-site bicycle parking, a commute marketing program, commuter incentives to cover commute cost such as transit passes and bikeshare membership. A detailed TDM Program is discussed in Chapter 1.

The Project would not conflict with the goals, objectives, and policies of the Short-Range Transit Plan.

Bicycle and Pedestrian Action Plan - The City of Culver City's *Bicycle & Pedestrian Action Plan*, June 2020, introduces existing and future development plans for bicycling and walking for achieving the concept of complete streets in the City of Culver City.

This action plan expands upon the 2010 Bicycle and Pedestrian Master Plan by providing new and updated infrastructure, program, and policy recommendations. In addition to updating the 2010 plan, this Plan takes advantage of new, innovative solutions to guide City staff in prioritizing resources when implementing future projects and programs, and finally, helps make the City eligible for more grants and other outside funding for these pursuits. This document includes an inventory of the City's current bicycle and pedestrian network and recommends specific infrastructure, program, and policy changes to encourage bicycling and walking. Based on a review of the *Bicycle & Pedestrian Action Plan*, the Project has been found to be consistent with the document's goal, objectives, and policies. The proposed Project would provide contribution towards installation of a nearby bicycle hub planned adjacent to City Hall.

Action AC-1.2: Increase the supply of bicycle parking at neighborhood destinations like schools, medical centers, grocery stores, transit stations, and government offices.

The Project supports this action by providing both short-term visitor and long-term tenant bicycle parking. The Project is located near Downtown Culver City businesses including government offices, medical centers, restaurants and retail uses. The Project is providing on-site bicycle parking, including a total of 56 bicycle spaces (28 long-term and 28 short-term spaces).

Action HS-1.1: Prioritize quick implementation of active transportation facilities on Culver City's high-injury network to rapidly address known safety issues.

The adjacent segments of Venice Boulevard, Washington Boulevard and Culver Boulevard are identified as high injury corridors based on the Culver City's and City of Los Angeles' analysis of 5-year collision data. The Project would not preclude the implementation of active transportation facilities on Culver City and City of Los Angeles streets. Additionally, the Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue. The removal of the existing four driveways will reduce potential vehicle/bicycle, vehicle/pedestrian and vehicle/vehicle conflicts improving the overall safety along this section of Watseka Avenue. Additionally, the Project's driveway would be designed to provide adequate sight distance.

Action HS-3.2: Use current design guidelines to encourage development patterns that promote active transportation and allow for short trips between destinations.

The Project supports this action by proposing an office development that encourages pedestrian, bicycle, and transit trips and shorter trips between destinations. The Project is located near local serving retail/restaurant uses in the Downtown area which allows for shorter trips for employees and visitors. New sidewalks would be provided along the Project's frontage, improving conditions for those walking along Watseka Avenue. The pedestrian circulation system includes crosswalks, intersection traffic control, and sidewalks available to serve pedestrians. Sidewalks are generally available on both sides for all the roadways within the study area. The Project would provide safe pedestrian connections to/from the Project site.

The Project is providing on-site bicycle parking, including a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). These bicycle spaces will allow employees of the Project the option to travel to work using a bicycle as well as travel to the Metro E Line Station at Venice/Robertson. The Project would provide safe internal access to the bicycle parking areas.

The proposed Project is located within the Culver Boulevard High Quality Transit Service Corridor Area (HQTSCA) based on the 'Move Culver City' Pilot Project, adjacent to frequently running transit, which would encourage ridership. The components of the Project's TDM Program promote transit use, walking, bicycling and carpooling, thereby reducing automobile travel to the Project site. The proposed TDM plan would also encourage ridership through transit subsidies and a commute marketing program.

Action HS-4.1: Build an active transportation network that encourages Culver City residents to use means of transportation other than driving by providing safer, more comfortable biking and walking facilities.

The proposed Project would support this action by enhancing the sidewalk along the Project frontage with street trees, lighting, and aesthetic treatments on building facade.

A new 10-foot wide sidewalk would be installed along the west side of Watseka Avenue along the Project frontage. The Project would provide new roadway curb and street trees along the Watseka Avenue Project site frontage. Landscaping would be installed in the proposed open space areas facing the public realm. A five-foot landscape area would be provided in front of the Project building frontage along Watseka Avenue that would enhance the pedestrian environment. Street trees would be planted along the street frontage in accordance with City requirements.

The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue. The removal of the existing four driveways reduces potential vehicle-bicycle, vehicle-pedestrian and vehicle-vehicle conflicts improving the overall safety along this section of Watseka Avenue.

The Project would not conflict with the goals, objectives, and policies of the *Bicycle & Pedestrian Action Plan*.

Complete Streets Policy - The Complete Streets Policy promotes healthy and sustainable mobility for Culver City residents and visitors by providing safe, convenient, and comfortable access to destinations throughout the City by walking, bicycling, transit, and autos. The concept of Complete Streets encompasses many approaches to planning, designing and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient. Based on a review of the Complete Streets Policy, the Project is consistent with the document's goal, objectives, and policies.

Policy 5a.i: The City will plan, design, operate, and maintain a transportation system that provides a connected network of streets and facilities that accommodate all modes of travel. The City will actively seek opportunities to repurpose or enhance rights-of-way to improve connectivity for pedestrians, bicyclists, and transit users.

The Project supports this policy by proposing a development that promotes and encourage walking, biking, and transit ridership. The Project would provide a new 10-foot-wide sidewalk along its Watseka Avenue frontage, bicycle parking and a comprehensive TDM Program. The Project would enhance pedestrian rights-of-way by providing landscaping along the building frontage adjacent to the sidewalk and safe pedestrian connections to/from the Project site.

The Project also proposes to provide vehicular access via one new full-access driveway along Watseka Avenue. The removal of the existing four driveways reduce potential vehicle/bicycle, vehicle/pedestrian and vehicle/vehicle conflicts thereby improving the overall safety along this section of Watseka Avenue and enhancing walkability and connectivity.

The Project would not conflict with the goals, objectives, and policies of the Complete Streets Policy.

Policy 5a.ii: The City will pursue enhancements to the bicycle and pedestrian connectivity to public transit services, as well as to schools, parks, service retail, public facilities, regional connections, and business districts.

The Project supports this policy by proposing a new 10-foot sidewalk along its Watseka Avenue frontage. The Project is located within walking/biking distance to Downtown Culver City businesses including government offices, medical centers, restaurants and retail uses.

The Project would provide new roadway curb and street trees on the Watseka Avenue Project site frontage. In addition, landscaping would be installed in the proposed open space areas, facing the public realm, enhancing pedestrian circulation and experience. A five-foot landscape area would be provided also in front of the Project building frontage along Watseka Avenue that would enhance the pedestrian environment. Street trees would be planted along the street frontage in accordance with City requirements.

Additionally, the Project is providing on-site bicycle parking, including a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). These bicycle spaces will allow employees of the Project the option to travel to work using a bicycle as well as travel to the Metro E Line Station at Venice/Robertson. The Project would provide safe internal access to the bicycle parking areas. The proposed Project would provide contribution towards installation of a nearby bicycle hub planned adjacent to City Hall.

Policy 5b.ii: The City will emphasize pedestrian access along and across City streets by, for example, providing convenient and protected crossing locations, shortening crossing distances through the use of curb extensions and tight curb radii, and enhancing signage and pavement markings.

The Project supports this policy by proposing a new 10-foot sidewalk along its Watseka Avenue frontage. A five-foot landscape area would be provided also in front of the Project building frontage along Watseka Avenue that would liven the pedestrian environment. The Project would also provide safe pedestrian connections to/from the Project site.

Policy 5d.ii: The City will coordinate street improvements with business owners along retail and commercial corridors to develop or enhance vibrant business districts.

The Project supports this policy by providing a development that promotes and encourages walking, biking, and taking transit. The Project would enhance pedestrian rights-of-way by providing a new 10-foot sidewalk along its Watseka Avenue frontage. A five-foot landscape area would be provided also in front of the Project building frontage along Watseka Avenue that would liven the pedestrian environment. The Project would also provide safe pedestrian connections to/from the Project site.

Local Roadway Safety Plan – Culver City is currently developing a comprehensive Local Roadway Safety Plan (LRSP). The purpose is to identify traffic safety improvements needed. The improvements will seek to reduce fatal and severe injury collisions to zero.

Although the Project is not located within the City's High Injury Network (HIN), the Project has taken measures to align with LRSP policies. The Project proposes to have one new full-access driveway, replacing the existing four driveways on the Project site, enhancing walkability and connectivity. The reduction in the number of existing vehicular driveways from four to one, the Project would reduce the potential of vehicle-pedestrian, vehicle-bicycle and vehicle-vehicle conflicts, thereby improving the overall safety along this section of Watseka Avenue. Therefore, the Project is consistent with and supports the primary purpose of the Local Roadway Safety Plan.

Based on a detailed review of all relevant policies and programs to assess whether the proposed project precludes the City's implementation of any adopted policy and/or program, the Project generally conforms with, and does not obstruct or impede the City's development policies and standards, generally considered to be consistent. Further, the Project does not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities. Therefore, the Project does not cause a significant impact relative to the CEQA Threshold – Programs, Plans, Ordinances, and Policies.

CEQA THRESHOLD – VEHICLE MILES TRAVELED (VMT), LAND USE PROJECTS

The Governor's Office of Planning and Research (OPR) issued proposed updates to the CEQA guidelines in November 2017 and an accompanying technical advisory guidance in April 2018 ("OPR Technical Advisory") that amends the Appendix G question for transportation impacts to delete reference to vehicle delay and level of service and instead refer to Section 15064.3, subdivision (b)(1) of the CEQA Guidelines asking if the project will result in a substantial increase in Vehicle Miles Travelled (VMT).

For land use projects, the intent of this threshold is to assess whether a land use project or plan causes substantial vehicle miles traveled.

Accordingly, the City's new significance criteria for transportation impacts are based on VMT for land use projects and plans in accordance with the amended Appendix G question. The City has established the following screening and impact criteria for this threshold. The City's criteria are based on the OPR's Technical Advisory, but reflect local considerations.

Screening Criteria

A development project that meets any of the following VMT screening thresholds would not be required to conduct VMT impact analysis to comply with CEQA, as a less than significant impact would be presumed.

- Small projects that result in less than 250 daily trips or 25 peak hour trips.
- Projects within a ½ mile from these key Transit Priority Corridor Areas (TPCAs) and High

Quality Transit Service Corridors: Metro E (Expo) Line Culver City Station, Metro E Line La Cienega Station, Westfield-Culver City Transit Center, Sepulveda/Venice Boulevard intersection, and the ‘Move Culver City’ Pilot Project area, which includes Culver Boulevard through Downtown Culver City where frequent transit service and circulator shuttles will be provided.

- Projects located within any TPCA where at least 15% of the on-site residential units are affordable.
- Affordable housing projects where 100% of the dwelling units are affordable.
- Local serving retail projects having less than 50,000 square feet in size at a single store.

Analysis/Project Impact

The Directors of Community Planning, Transportation, and Public Works are in agreement that the portions of Culver Boulevard included in the ‘Move Culver City’ Pilot Project fall within a High Quality Transit Service Corridor Area (HQTSCA). The Project is located approximately 220 feet, which is walking distance, from the portions of Culver Boulevard where frequent transit and circulator shuttles would operate and therefore falls within the HQTSCA. Since the proposed Project is located within the Culver Boulevard HQTSCA, the Project is exempt from CEQA VMT analysis, and is not required to assess if it causes substantial vehicle miles traveled.

CEQA THRESHOLD – GEOMETRIC DESIGN HAZARDS

Per City’s TSCG, proposed projects must be reviewed for potential on-street hazards caused by the project. This section focuses on off-site conditions affected by the project. This CEQA threshold considers the following question, “*Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersection) or incompatible uses (e.g., oversized vehicles)?’*”

Screening Criteria

This CEQA threshold review is required for all projects.

Impact Criteria

Any project that causes a substantial increase in on-street geometric design hazards will result in an impact.

Methodology

Per City's TSCG, the method for determining geometric design impact involves examining the interactions vehicles; vehicles and bikes; and vehicles and pedestrians, to determine if these interactions may change with the proposed project. Based on how the interactions would change, this analysis would make an impact judgement. The following steps have been included in the geometric design review:

- Review and understand the bicycle, pedestrian, auto, and public transit network surrounding the project site with specific attention to the facilities crossing project driveways.
- Review and understand the relative bicycle, pedestrian, auto and public transit activity levels.
- Review and understand the existing environment and roadway conditions, such as slopes, curves, connectivity, proximity to intersections and barriers.
- Document how the proposed project would change and interact with the above conditions.
- Assess hazards caused by the proposed project
- Consider safety for people driving as they turn into and out of the project site.
- Consider sight-lines at the driveways and surrounding the site
- Consider the safety of people walking and biking when they cross the project driveways.
- Assess the proximity of incompatible uses that would cause a transportation hazard

Analysis/Project Impact

Consistent with the methodology above, a detailed description of the existing bicycle, pedestrian, auto, and public transit network surrounding the Project site was prepared (as described in Chapter 2). This description provides a detailed review and understanding of these transportation modal networks. Additionally, Chapter 2 provides a review and understanding of the relative auto, bicycle, pedestrian, and public transit activity levels (where available), as well as an understanding of the existing environment and roadway conditions, such as connectivity and proximity to intersections and barriers.

Per impact criteria established by the City, the preliminary Project access plans were reviewed using currently accepted traffic engineering design standards to ascertain whether any deficiencies are apparent in the site access plans that could be considered significant. The following discussion of analysis is presented:

- Current access to the Project site is provided by four driveways located along the west side of Watseka Avenue. The Project proposes to remove the existing four driveways and provide one new driveway, improving the visibility of potential vehicle/bicycle, vehicle/pedestrian and vehicle/vehicle interactions. This new driveway does not create sharp curves or a dangerous intersection. The proposed Project driveway enhances pedestrian walkability and safety by removing the existing four driveways along Watseka Avenue and replacing with one driveway, thereby reducing interactions and potential for conflicts. The proposed new driveway does not cross any bicycle facilities. The Project site plan is provided in Chapter 1, Figure 2.

- The line of sight at the Project driveway was determined using methodology included in Caltrans' *Highway Design Manual, 7th Edition, July 2020*. In general, at unsignalized intersections and driveways a substantially clear line of sight should be maintained between the driver of a vehicle stopped on the minor road/driveway and the driver of an approaching vehicle on the major road that has no traffic control to stop. Each quadrant of the intersection roads should contain a clear sight triangular area free of obstructions to provide sight distance sufficient for a stopped driver in a minor-road approach to depart from the intersection and enter (or cross) the uncontrolled roadway. In determining the sight distance triangle, a set-back distance of 10 feet for the vehicle waiting (driver's eye) on the minor road (driveway) measured from the edge of travel way of the major road was utilized. The line of sight distance for passenger cars is determined from a 3 ½-foot height at the location of the driver of the vehicle in the center of minor road lane to a 3 ½-foot object height in the center of the approaching outside lane of the major road. This provides for reciprocal line-of-sight for both vehicles. Per Caltrans' *Highway Design Manual*, corner sight distance is not required for urban driveways. Therefore, minimum stopping sight distance has been applied. The stopping sight distance is defined as the sum of two distances:

    1. Brake Reaction Distance – the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied, and
    2. Braking Distance – the distance needed to stop the vehicle from the instant brake application begins.

  Based on the prima facie speed limit of 25 miles per hour on the local roadway, Watseka Avenue, a minimum sight distance of 150 feet is required.

  Figure 9 and Figure 10 illustrate the line of sight of the Project driveway and the resulting sight distance triangles. Based on this line of sight evaluation, as indicated in the figures,

Table 201.1
Sight Distance Standards

Design Speed(1) (mph)	Stopping(2) (ft)	Passing (ft)
10	50	—
15	100	—
20	125	800
25	150	950
30	200	1,100
35	250	1,300
40	300	1,500
45	360	1,650
50	430	1,800
55	500	1,950
60	580	2,100
65	660	2,300
70	750	2,500
75	840	2,600
80	930	2,700

(1) See Topic 101 for selection of design speed.
(2) For sustained downgrades, refer to underlined standard in Index 201.3

Source: Highway Desgin Manual, 7th Edition, Caltrans, July 2020

FIGURE 9
LINE OF SIGHT AT PROJECT DRIVEWAY - LEFT-TURN LANE

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Table 201.1
Sight Distance Standards

Design Speed(1) (mph)	Stopping(2) (ft)	Passing (ft)
10	50	---
15	100	---
20	125	800
25	150	950
30	200	1,100
35	250	1,300
40	300	1,500
45	360	1,650
50	430	1,800
55	500	1,950
60	580	2,100
65	660	2,300
70	750	2,500
75	840	2,600
80	930	2,700

(1) See Topic 101 for selection of design speed.
(2) For sustained downgrades, refer to underlined standard in Index 201.3

Source: Highway Design Manual, 7th Edition, Caltrans, July 2020

FIGURE 10
LINE OF SIGHT AT PROJECT DRIVEWAY - RIGHT-TURN LANE

RAJU Associates, Inc.

three on-street parking spaces would need to be removed in order to achieve the required sight distance. However, these spaces can be replaced utilizing the available on-street space resulting from the removal of the existing driveways. Therefore, there would be no net change in the number of on-street parking spaces, with the proposed Project.

- Pedestrian access to the Project site would be obtained from Watseka Avenue. Watseka Avenue currently provides a curb-to-curb roadway width of 40 feet and a 10-foot sidewalk along both the Project's frontage and on the opposite side of the street. The Project design features/physical configurations do not negatively affect the visibility of pedestrians and bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists. No deficiencies are apparent and therefore, Project impacts are not considered significant.

  No physical conditions of the Project site and surrounding area, such as curves, slopes, walks, landscaping or other barriers, that could result in vehicle/pedestrian, vehicle/bicycle, or vehicle/vehicle conflicts or impacts have been identified. No deficiencies are apparent and therefore, project impacts are not considered significant.

- The Project is not located along any High Injury Network streets nor are any project-related changes to the public right-of-way that would negatively affect Safe Routes to School program area have been identified.

- No incompatible uses have been identified in the proximity of the Project that would cause a transportation hazard.

- No other conditions, including the presence of incompatible uses in the vicinity that would substantially increase a transportation hazard, have been identified.

Based on a review and consideration of the proposed site plan, the project description and the above analysis, the Project would not substantially increase hazards due to a geometric design feature or incompatible uses. Therefore, the Project does not cause a significant impact relative to the CEQA Threshold – Geometric Design Hazards.

IV. NON-CEQA TRANSPORTATION ANALYSIS

This chapter details the supplemental transportation analysis, methodology, and improvements to address deficiencies in addition to the CEQA analysis. These non-CEQA transportation analyses associated with the Project were prepared utilizing the methodologies and assumptions per the latest City of Culver City's TSCG. The results were then used to assess the potential effects of the proposed Project based on evaluation criteria established by the City of Culver City. This chapter includes a summary of the screening criteria, evaluation criteria, methodology and recommended corrective actions (if needed) for each evaluation component.

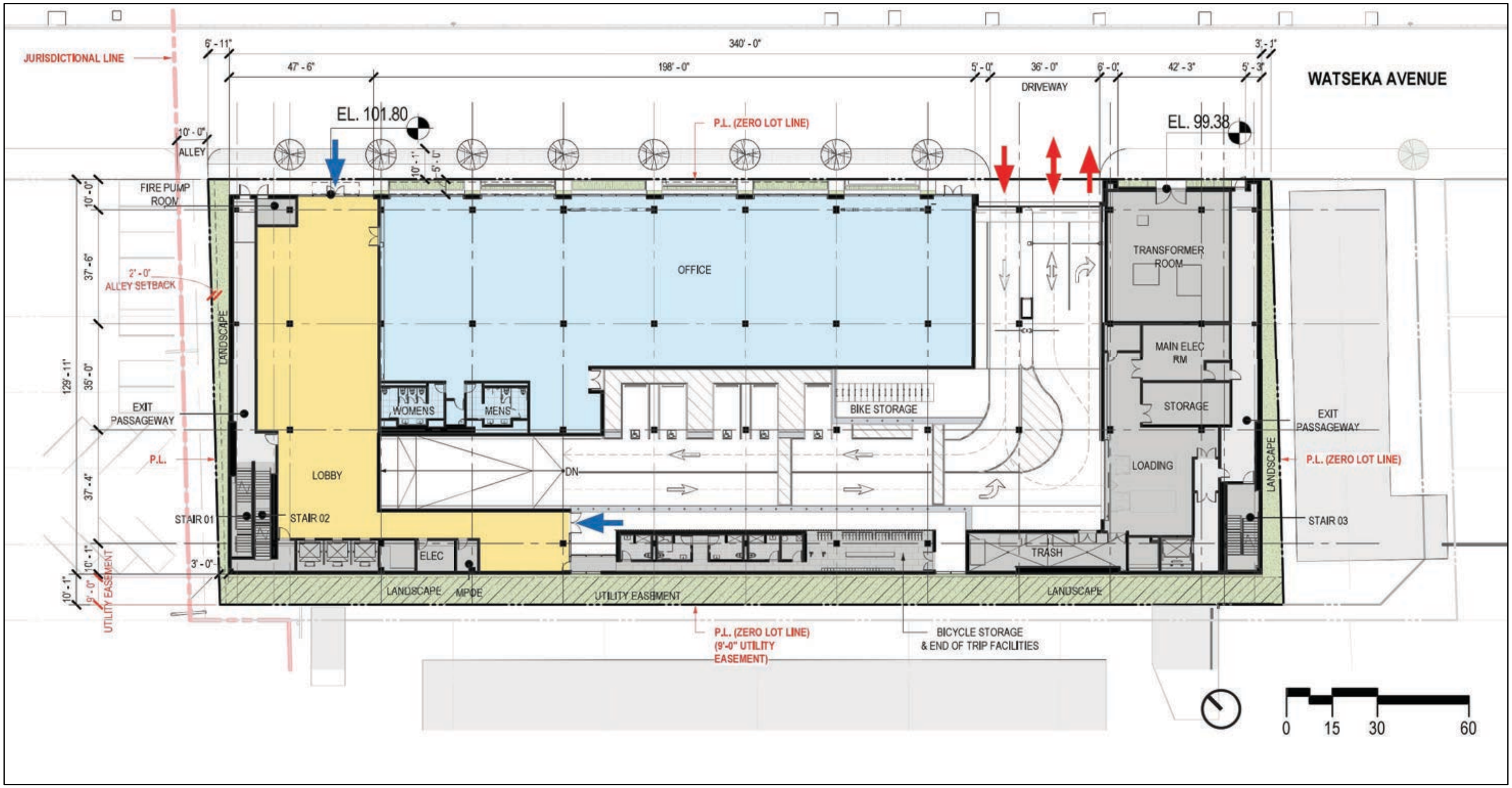
The non-CEQA transportation analyses consist of assessment of transportation effects for the following City established evaluation criteria for development projects:

- Site Plan Review
- Traffic Operations – Intersection Level of Service (LOS) and Queuing, Driveway LOS and Queuing
- Transit Operations – Travel Demand/Capacity by Route and Hazardous Conditions
- Driveways – Vehicle Access and Pedestrian and Bicycle Access
- Parking Assessment
- Multimodal Safety Analysis – Vehicular safety and safety for people walking and bicycling
- Construction Period Analysis

There are no residential/local streets within the study area that would provide a viable alternative route for traffic intrusion. Therefore, 'Neighborhood/Residential Streets' analysis per the City's TSCG is not applicable.

SITE PLAN REVIEW

As detailed in the CEQA Geometric Hazards analysis, the proposed Project would not have a geometric design hazards significant impact. As shown in Figure 11, the Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue, removing three of the existing four driveways that currently serve the existing uses on the Project site. The proposed driveway would have a width of 36 feet, providing one inbound lane, one outbound lane and one reversible lane. Access to the subterranean parking garage would be gate-controlled. Further, driveway LOS and queuing analysis is provided in the operations analysis.



Source: Gensler

FIGURE 11
PROJECT SITE PLAN - GROUND FLOOR LEVEL

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Commercial use deliveries would utilize a loading dock located within the interior of the southern end of the building, which may be accessed through the Project driveway. A turning movement analysis was performed using a delivery cargo van vehicle that would be expected to utilize the loading dock. Inbound truck turning maneuvers are provided in Figure 12 while outbound turning maneuvers are shown in Figure 13. It was determined that truck turning maneuvers would not conflict with the proposed roadway curbs, and no corrective actions are proposed.

INTERSECTION OPERATIONS ANALYSIS

This section assesses the ability of the circulation system to accommodate extra vehicular traffic generated by the related projects and the subject project. This evaluation includes intersection LOS, delay, and queuing analysis.

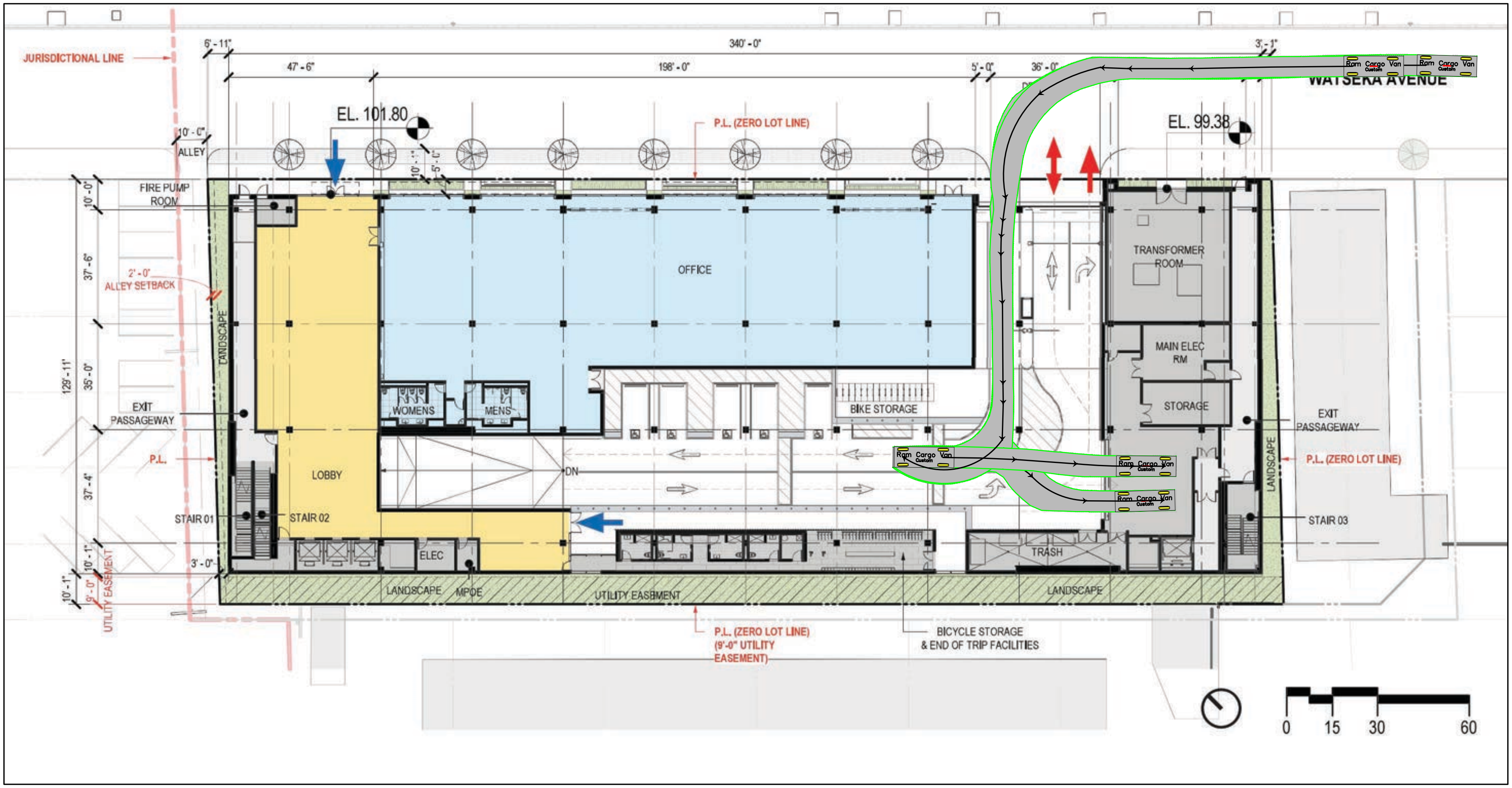
Methodology

Intersection capacity analysis and queue analysis were conducted using the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016) (HCM) methodologies for signalized and unsignalized intersections. For this operational evaluation, eight locations consisting of nearby seven signalized locations and one unsignalized location were chosen as study intersections and include the following intersections:

1. Hughes Avenue and Venice Boulevard
2. Hughes Avenue/Duquesne Avenue and Washington Boulevard
3. Duquesne Avenue and Culver Boulevard
4. Watseka Avenue/Irving Place & Washington Boulevard/Culver Boulevard
5. Bagley Avenue/Main Street and Venice Boulevard
6. Main Street and Culver Boulevard
7. Canfield Avenue/Washington Boulevard and Culver Boulevard
8. Watseka Avenue and Venice Boulevard (unsignalized)

The Project driveway has also been chosen as a study location.

The intersection operations analyses include the consideration of the ‘Move Culver City’ Pilot Project, involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue for a circulator shuttle to/from Downtown areas and ‘E’ Line Stations.



Site Plan Source: Gensler

FIGURE 12
DELIVERY CARGO VAN TURNING TEMPLATE - INBOUND

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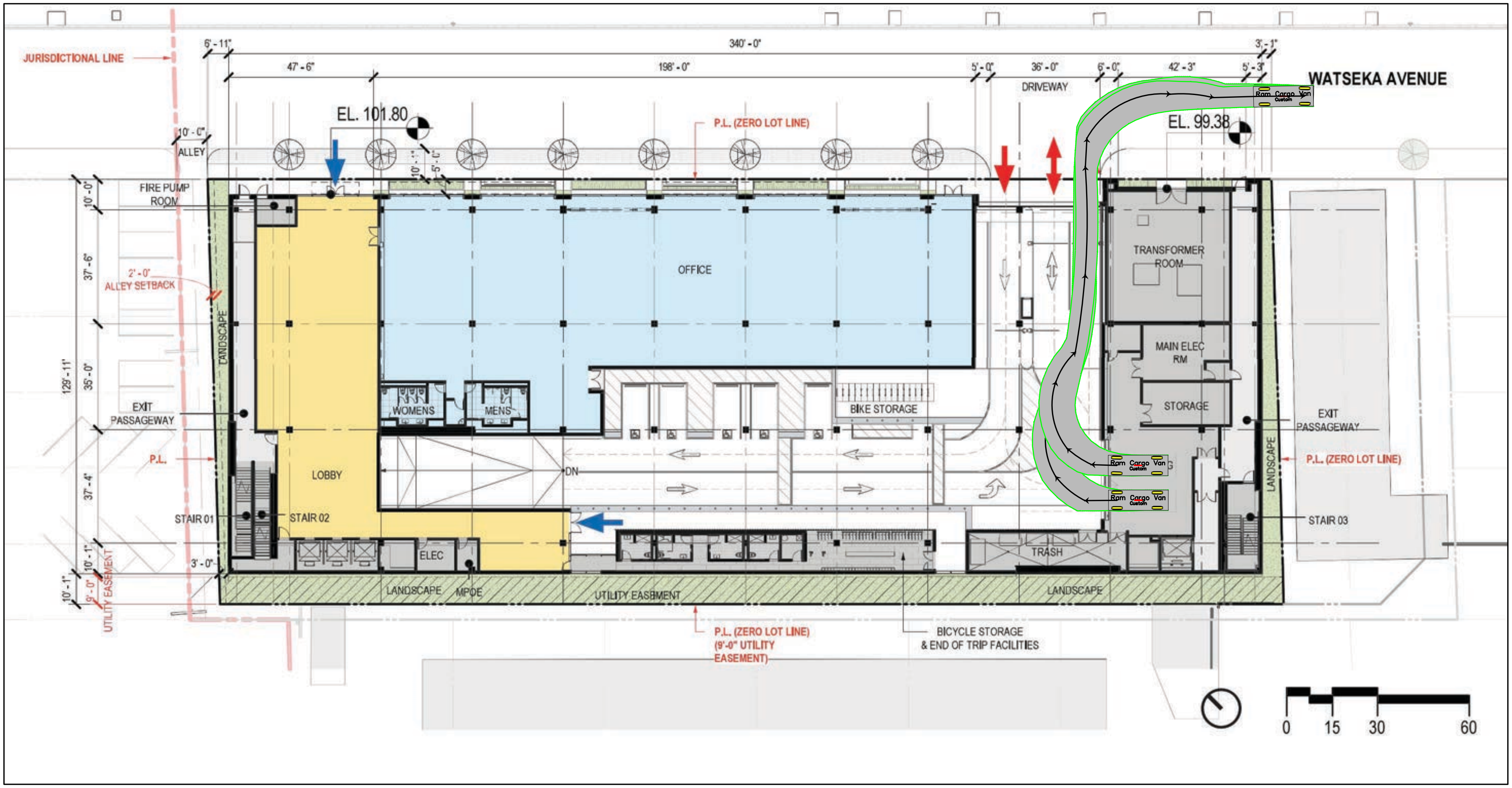

Site Plan Source: Gensler

FIGURE 13
DELIVERY CARGO VAN TURNING TEMPLATE - OUTBOUND

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The mobility lanes would be implemented on a pilot program basis along Culver Boulevard from Duquesne Avenue to Washington Boulevard and along Washington Boulevard to La Cienega Avenue all within the City of Culver City. Per the direction of Culver City, existing and future analysis conditions were performed assuming the following roadway condition:

- One bus/bike lane (mobility lane) and one general traffic lane in the westbound and eastbound directions along Washington Boulevard/Culver Boulevard between Duquesne Avenue and La Cienega Avenue.

The study intersection locations were analyzed for both morning and evening peak hours for the following conditions, consistent with the City of Culver City's TSCG:

- **Existing (2021) Conditions** - The analysis of existing traffic conditions is intended to provide a basis for the remainder of the study. The existing conditions analysis includes current traffic volumes, and an assessment of the operating conditions at these locations. Traffic counts were collected in Year 2019 and will be used for Existing 2021 conditions. These counts were chosen as the existing year (due to the COVID-19 Pandemic) and were not factored upward, but included the effects of the implementation of the mobility lanes pilot program.

- **Existing (2021) plus Project Conditions** - This traffic scenario includes estimated Project traffic volumes and an assessment of operating conditions under existing conditions with the addition of Project generated traffic.

- **Future Horizon Year (2024) without Project Conditions** - Future year traffic conditions without the proposed Project were developed for the year 2024. The objective of this analysis is to project future traffic operating conditions that could be expected to result from regional changes and related projects in the vicinity of the Project site by the opening year 2024.

- **Future Horizon Year (2024) plus Project Conditions** - This traffic scenario includes estimated Project traffic volumes along with the Future (2024) without Project traffic volumes and an assessment of operating conditions under Future Opening Year (2024) conditions with the addition of project-generated traffic.

- **Future Buildout Year (2045) without Project Conditions** - Future "buildout" year traffic conditions without the proposed Project would be developed for the year 2045. The objective of this analysis is to predict future traffic and operating conditions that might be expected to result from regional changes and related projects in the vicinity of the Project site by the buildout year 2045.

- **Future Buildout Year (2045) plus Project Conditions** - This traffic scenario includes the estimated Project traffic volumes along with the Future Buildout (2045) without Project traffic volumes and an assessment of operating conditions under Future Buildout conditions with the addition of project-generated traffic.

The latest Highway Capacity Manual (HCM) methodology was utilized to conduct operational analysis and calculate vehicular queuing. The operation analysis reports the intersection control delay (in seconds) and corresponding Levels of Service (LOS), and 95th percentile queue length (in feet) for all approaches at the study intersections. The 95th percentile queue is the maximum back-of-queue with 95th percentile traffic volumes. Parameters including traffic volume data, lane configurations, available vehicle storage lengths, crosswalk locations, posted speed limits, traffic signal timing and phasing for signalized locations obtained from the City of Culver City and LADOT, were included in the HCM analysis module within the Synchro 11 software platform. Due to the shift in traffic patterns resulting from the implementation of the mobility lanes, traffic signal splits were optimized while not changing the overall cycle lengths for the purpose of this analysis.

Existing Traffic Volumes and Levels of Service

The following sections present the existing intersection peak hour traffic volumes, a description of the methodology utilized to analyze the intersection traffic conditions, and the resulting level of service conditions at the study intersection.

Existing Traffic Volumes

Weekday morning (AM) and evening (PM) peak hour traffic counts were compiled from data collected at the study (non-CEQA) intersections in 2019. In consultation with the City of Culver City, due to the COVID-19 pandemic, these traffic counts were assumed to reflect 2021 conditions. This scenario also considers the 'Move Culver City' Pilot Project involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue. The resulting shifts in traffic patterns due to the mobility lanes were estimated. These traffic pattern shifts are included in Appendix D. The resulting Existing (2021) peak hour traffic volumes (including the mobility lanes along Culver Boulevard and Washington Boulevard) reflect typical weekday operations during current year 2021 conditions. The traffic volumes in Figure 14 present the Existing (2021) conditions during the AM and PM peak hours. These volumes provide the basis for the future conditions' analyses.

The raw intersection turning movement counts are also included in Appendix D.

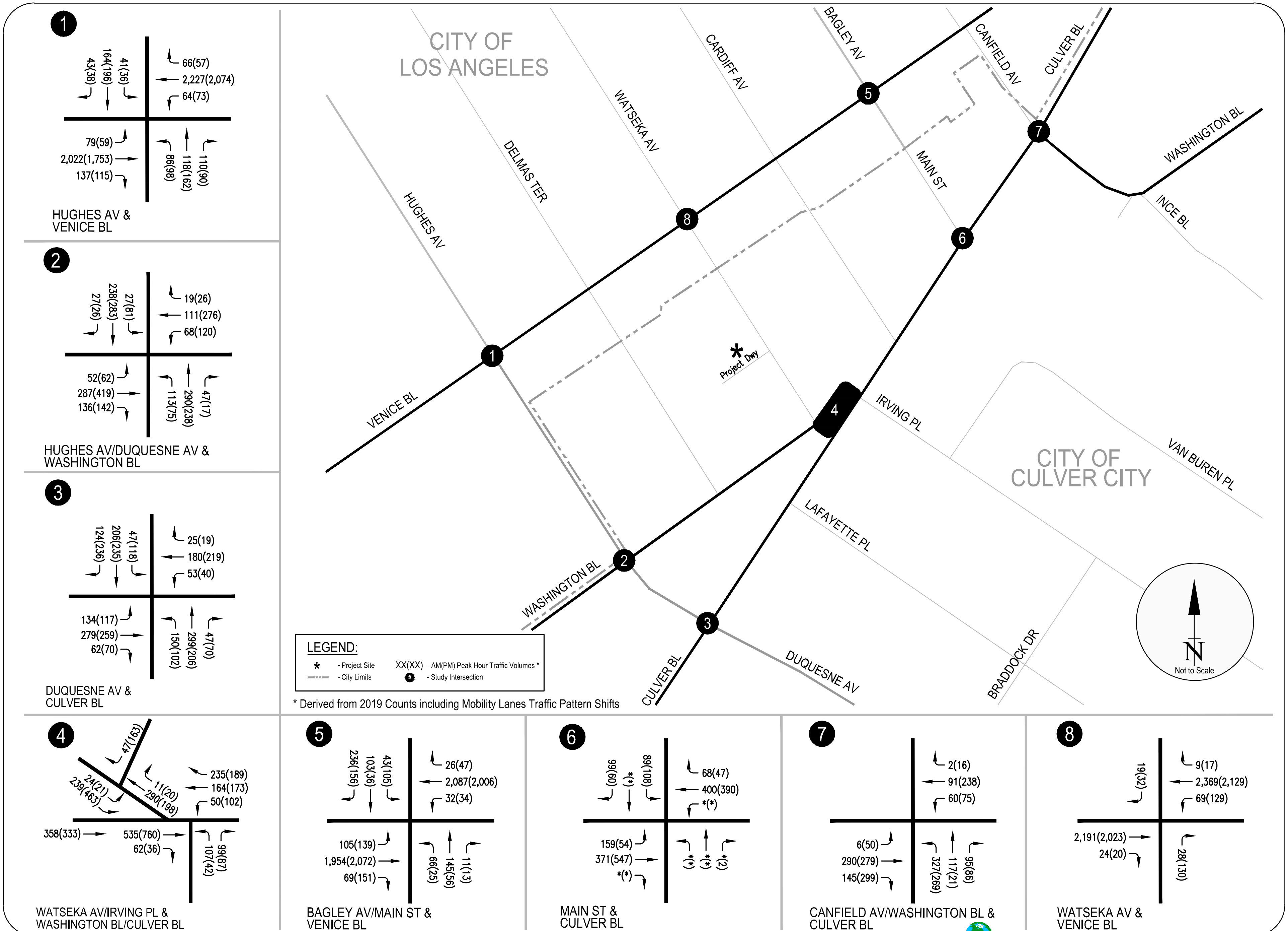

FIGURE 14
EXISTING (2021) CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

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Level of Service (LOS) Methodology

LOS is a qualitative measure used to describe the condition of traffic flow, ranging from excellent conditions at LOS A to overloaded conditions at LOS F. LOS D is typically recognized as the minimum acceptable level of service in urban areas. Seven of eight study locations are signalized intersections, and one location is stop-controlled on the minor approaches. The LOS definitions for signalized and unsignalized (stop-controlled) intersections is provided in Table 4 and Table 5, respectively.

Consistent with the City of Culver City's TSCG, the intersection capacity analysis was conducted using the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016) (HCM) signalized methodologies. The HCM signalized methodology calculates the average control delay, in seconds, for each vehicle passing through the intersection. Table 4 presents a description of the LOS categories, which range from excellent, nearly free-flow traffic at LOS A, to stop-and-go conditions at LOS F, for signalized intersections.

For the unsignalized location, intersection capacity analysis was conducted using the HCM 6th Edition unsignalized intersection methodologies. Two-way stop-controlled intersection LOS is defined in the HCM based on the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns.

Two of the seven signalized study intersections are under the jurisdiction of the City of Los Angeles and are currently controlled by the City of Los Angeles' Automated Traffic Surveillance and Control (ATSAC) System and Adaptive Traffic Control System (ATCS). These intersections include Hughes Avenue/Venice Boulevard and Bagley Avenue/Venice Boulevard.

The remaining five signalized study intersections under the jurisdiction of the City of Culver City currently operate under a signal coordination system similar to ATSAC/ATCS.

Existing Levels of Service

The existing traffic volumes presented in Figure 14 for AM and PM peak hours were used in conjunction with the level of service methodologies described above, and the intersection characteristics illustrated in Appendix B, to determine the existing operating conditions at the analyzed intersections.

TABLE 4
LEVEL OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS
HCM OPERATIONAL METHODOLOGY

Level of Service	Average Stopped Delay per Vehicle (seconds)	Definition
A	$\leq$ 10.0	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	> 10.0 and $\leq$ 20.0	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	> 20.0 and $\leq$ 35.0	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	> 35.0 and $\leq$ 55.0	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	> 55.0 and $\leq$ 80.0	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80.0	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: Highway Capacity Manual, Transportation Research Board, 2016

TABLE 5
LEVEL OF SERVICE DEFINITIONS
FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Total Delay (seconds/vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

* Source: Transportation Research Board, *Highway Capacity Manual 2016.*

Table 6 summarizes the results of the intersection capacity analysis for existing conditions at the analyzed intersections in the study area. The table indicates the existing average control delay for each intersection approach during the morning and evening peak hours and the corresponding LOS. As indicated in the table, all the study intersections are currently operating at LOS C or better during both the morning and evening peak hours for Existing (2021) conditions.

The operational analysis worksheets for Existing (2021) conditions are provided in Appendix E of the report.

Project Traffic Volumes

The development of traffic generation estimates for the Project involves the use of a three-step process: trip generation, trip distribution and traffic assignment.

Project Trip Generation

Implementation of the Project consists of constructing to 149,518 square feet of office use. The existing site includes two buildings containing 7,633 square feet of office use and a surface parking lot that will be demolished.

Utilizing the ITE's *Trip Generation Manual*, 10th Edition trip rates, the Project's peak hour trip generation was determined. Table 7 presents details of the Project's trip generation including type of use, size, applicable rate and trip generation estimates. Other calculations within the tables also provide for trip generation reductions from transit trips and existing use trips per the City's *Transportation Study Criteria and Guidelines*.

From Table 7, it can be observed that the Project's trip generation would result in an additional net total of approximately 118 trips during the morning peak hour and 117 trips during the evening peak hour. Utilizing the City of Culver City's VMT Calculator Tool (version 0.90), the Project would have a net increase of 907 daily trips.

TABLE 6
EXISTING (2021) INTERSECTION LEVEL OF SERVICE ANALYSIS

Map No.	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS
1.	Hughes Avenue & Venice Boulevard	11.5	B	11.7	B
2.	Hughes Avenue/Duquesne Avenue & Washington Boulevard	24.8	C	24.7	C
3.	Duquesne Avenue & Culver Boulevard	31.1	C	32.8	C
4.	Watseka Av/Irving Pl & Washington Bl/Culver Boulevard	19.5	B	28.0	C
5.	Bagley Avenue/Main Street & Venice Boulevard	25.8	C	28.2	C
6.	Main Street & Culver Boulevard	34.9	C	34.3	C
7.	Canfield Avenue/Washington Boulevard & Culver Boulevard	23.9	C	28.8	C
8.	Watseka Avenue & Venice Boulevard [1]	16.0	C	17.1	C

* Average intersection control delay and LOS based on HCM 6th Edition signalized methodology.
[1] Unsignalized intersection. Stop controlled on minor approaches. Worst case approach delay is reported in table.

TABLE 7
ESTIMATED PROJECT TRIP GENERATION

	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project							
General Office	149,518 s.f.	144	23	167	27	140	167
Project Trip Generation Total - Less 25% TDM/Transit Credit [1]		108	17	125	20	105	125
Existing Use to be Removed							
General Office*	7,633 s.f.	(8)	(1)	(9)	(2)	(8)	(10)
Existing Use Trip Generation Total - Less 25% TDM/Transit Credit [1]		(6)	(1)	(7)	(2)	(6)	(8)
Net Project Trip Generation Total		**102**	**16**	**118**	**18**	**99**	**117**
Trip Rates [2]							
Office (ITE Land Use 710)	Trips per 1,000 s.f.	86%	14%	[3]	16%	84%	[3]

[1] The proposed Project falls within the Culver City's High Quality Transit Service Corridor Area since it is located within walking distance of Culver Boulevard, where frequent transit and circulator shuttles would operate as part of the 'Move Culver City' Pilot Project. Therefore, a 25% transit credit was applied and approved by the City.
[2] Trip generation rates from Trip Generation Manual, 10th Edition, ITE 2017.
[3] Trip generation estimates for office was calculated using the following equations:

AM Peak Hour: $(T) = 0.94\,(X) + 26.49$
PM Peak Hour: $Ln(T) = 0.95\,Ln(X) + 0.36$

Where:
Ln = Natural logarithm
T = Two-way volume of traffic (total trip-ends)
X = Area in 1,000 gross square feet of leasable area

* Due to the small size of the existing office, ITE's average trip generation rate (1.16 trips/1,000 s.f.) was utilized for the estimation of the AM peak hour trip generation total.
** Utilizing Culver City's VMT Tool, the Project is estimated to generate a total of 907 daily trips.

Project Trip Distribution

The geographic distribution for Project trips was assumed to be the following:

- To and From the North: 20%
- To and From the South: 15%
- To and From the East: 35%
- To and From the West: 30%

Intersection level trip distribution percentages are shown in Figures 15. Based on these distribution assumptions, location and points of access of the Project driveway, and trip generation estimates from the Project, traffic estimates of Project-only trips were developed. These Project-only trips are presented in Figure 16.

Existing (2021) Plus Project Traffic Volumes and Levels of Service

Utilizing the Project-only traffic estimates developed for both AM and PM peak hours, traffic forecasts for the Existing (2021) plus Project conditions were developed. The Existing (2021) traffic volumes were combined with the Project-only traffic volumes to obtain the Existing (2021) plus Project traffic volume forecasts. The Existing (2021) plus Project traffic volumes during both AM and PM peak hours are presented in Figure 17.

Existing (2021) plus Project traffic volumes, presented in Figure 17, were analyzed to determine the intersection LOS and delay for each intersection. Table 8 presents the results of the operational analysis at the study intersections for existing conditions without and with Project. As summarized in Table 8, Existing (2021) plus Project conditions analysis indicates that all study locations would continue to operate at LOS C or better under both without and with the Project. The Project's traffic does not change the levels of service at any of the study locations compared to Existing Conditions (without Project) during both the morning and evening peak hours.

The operational analysis worksheets for Existing (2021) plus Project conditions are provided in Appendix E of the report.

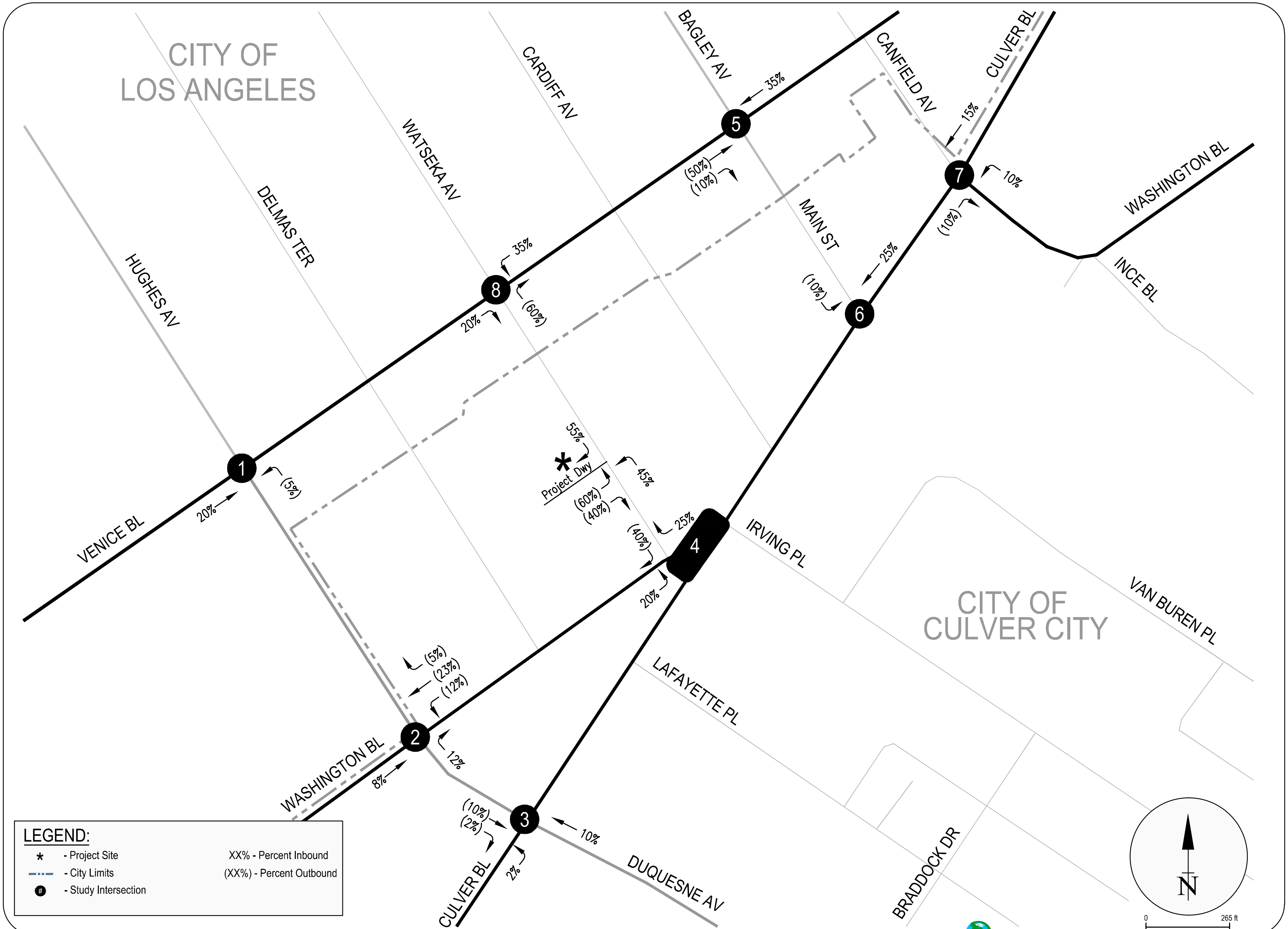

FIGURE 15
PROJECT TRIP DISTRIBUTION

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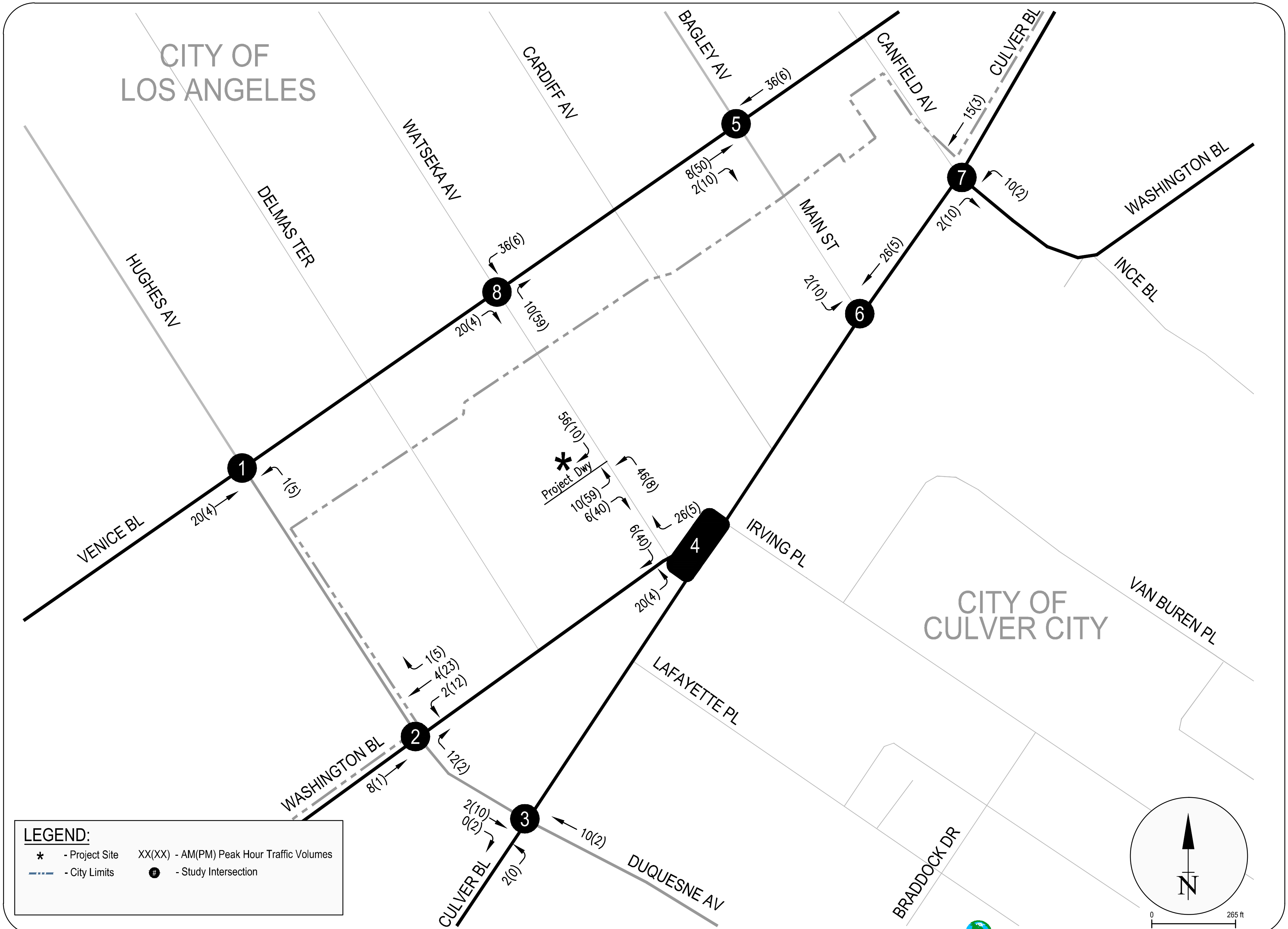

FIGURE 16
PROJECT ONLY (NET) - PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

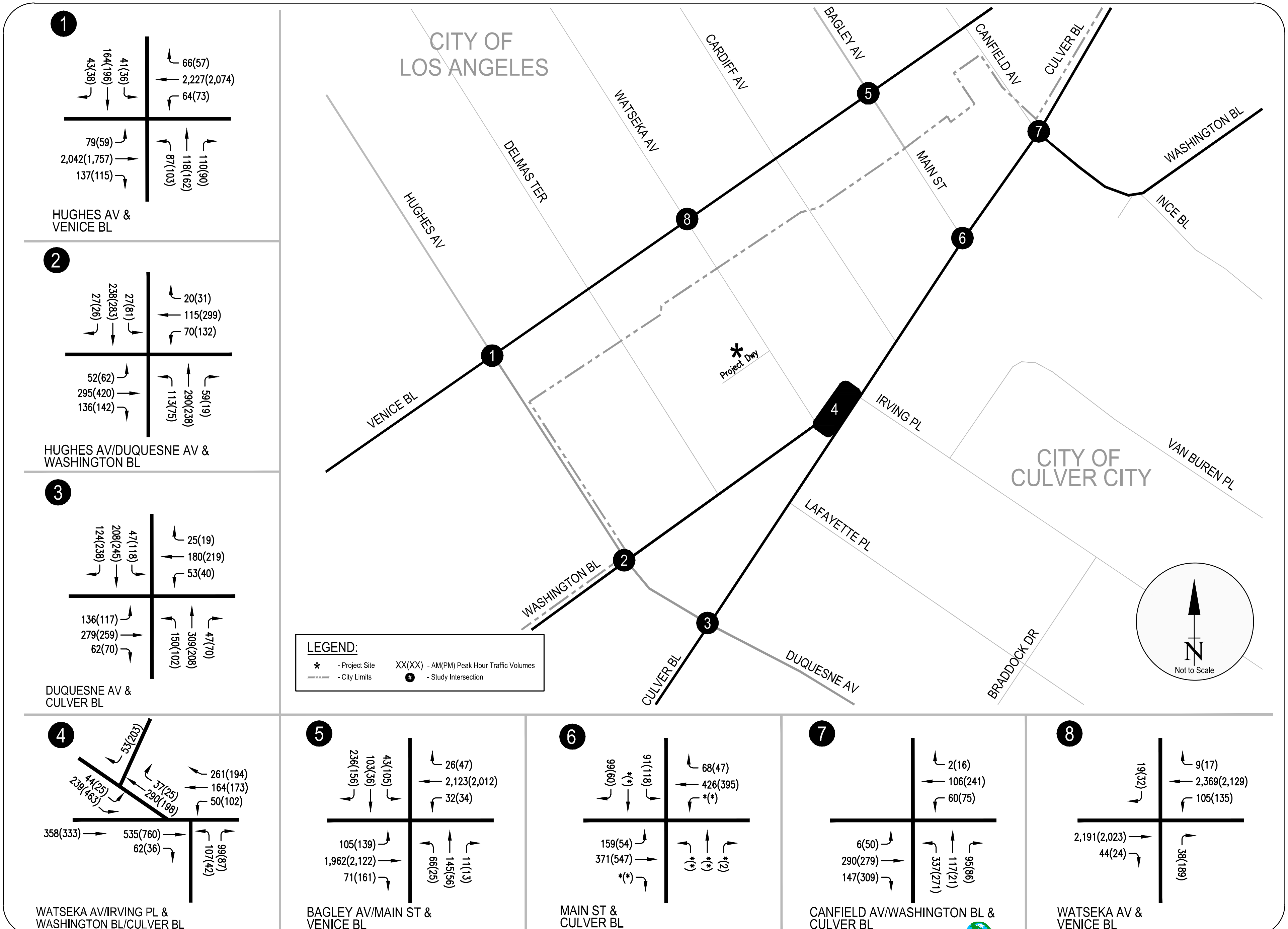

FIGURE 17
EXISTING (2021) PLUS PROJECT CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

TABLE 8
SUMMARY OF INTERSECTION LEVEL OF SERVICE ANALYSIS - EXISTING CONDITIONS

No.	Intersection	Peak Hour	Existing (2021) Conditions		Existing (2021) plus Project Conditions	
			Delay	LOS	Delay	LOS
1.	Hughes Avenue & Venice Boulevard	AM	11.5	B	11.6	B
		PM	11.7	B	11.9	B
2.	Hughes Avenue/Duquesne Avenue & Washington Boulevard	AM	24.8	C	24.9	C
		PM	24.7	C	24.4	C
3.	Duquesne Avenue & Culver Boulevard	AM	31.1	C	31.2	C
		PM	32.8	C	33.0	C
4.	Watseka Av/Irving Pl & Washington Bl/Culver Boulevard	AM	19.5	B	19.6	B
		PM	28.0	C	27.8	C
5.	Bagley Avenue/Main Street & Venice Boulevard	AM	25.8	C	26.1	C
		PM	28.2	C	29.3	C
6.	Main Street & Culver Boulevard	AM	34.9	C	34.3	C
		PM	34.3	C	34.3	C
7.	Canfield Avenue/Washington Boulevard & Culver Boulevard	AM	23.9	C	24.1	C
		PM	28.8	C	28.4	C
8.	Watseka Avenue & Venice Boulevard [1]	AM	16.0	C	16.0	C
		PM	17.1	C	20.0	C

Delay - HCM 6th Edition Control Delay in seconds per vehicle.

LOS - Level of Service

[1] Unsignalized intersection. Stop controlled on minor approaches. Worst case approach delay is reported in table.

Future Horizon Year (2024) Traffic Projections and Levels of Service

In order to address the non-CEQA assessment on the local street system, per the City's latest guidelines, estimates of the Future Horizon Year (2024) traffic volumes both with and without the Project were developed. The traffic generated by the Project was estimated and assigned separately to the street system as detailed in a previous section above.

The Future Horizon Year (2024) without the Project was first developed including estimates for background growth in area-wide trip making and trips generated by future developments (related projects) in the vicinity of the study area. The Future Horizon Year (2024) without Project traffic represents the cumulative base conditions. Next, the addition of Project traffic and the cumulative base traffic volumes provides traffic volume estimates for the Future Horizon Year (2024) plus Project scenario. Each of these future traffic scenarios is described further in this section.

Future Horizon Year (2024) without Project Traffic Projections

The Future Horizon Year (2024) without Project (Base) traffic projections reflect growth in traffic from two primary sources: Firstly, the background or ambient growth to reflect the effects of overall area-wide regional growth both within and outside the study area; and secondly, from traffic generated by specific related (cumulative) projects located within, or in the vicinity of, the study area. Each of these components is described below.

Area-wide Ambient Traffic Growth - The traffic in the vicinity of the study area was estimated to increase at a rate of about 1% per year per the approved Culver City Memorandum of Understanding (MOU). Future increases in background traffic volumes due to regional growth and development are expected to continue at this rate. With the assumed completion date of 2024, the Existing (2021) traffic volumes were adjusted upward by a factor of 3% to reflect this area-wide regional growth. The resulting Existing with Ambient Growth (2024) traffic volumes are illustrated in Figure 18.

Related Projects Traffic Generation and Assignment - As indicated, the second potential source of traffic growth in the study area is that expected from other future development projects in the vicinity. These related or "cumulative" projects are those developments that are planned and expected to be in place within the same timeframe as the Project. Per City of Culver City's Transportation Study Criteria and Guidelines, selection for related projects information should include development projects that are within a one-and-one-half (1 ½) mile radius of the subject

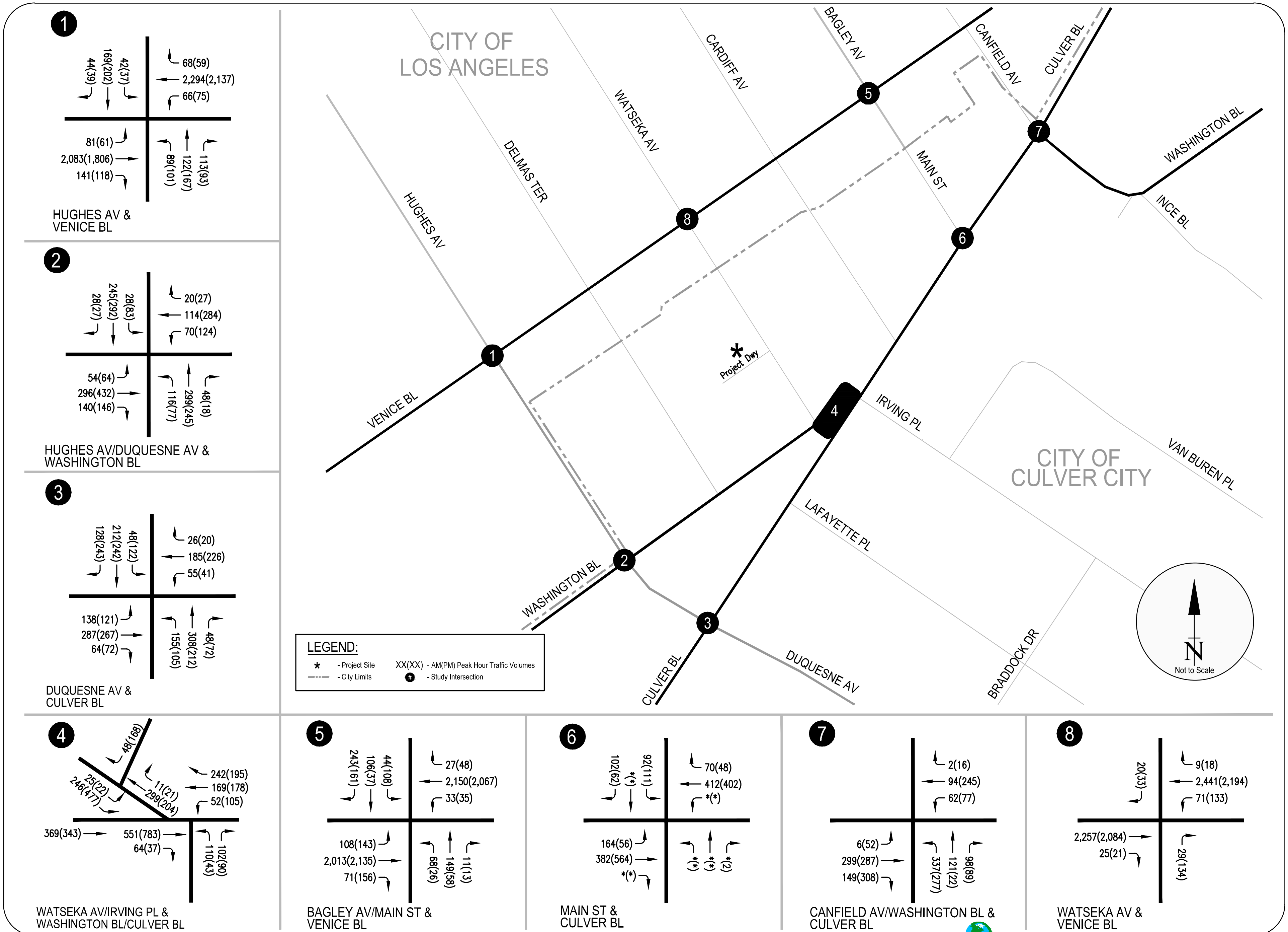

FIGURE 18
EXISTING WITH AMBIENT GROWTH (2024) CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

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project regardless of City boundaries. For the purposes of this study, related projects within a 1 ½ mile radius from the Project site were included in the related projects list.

Data describing related projects in the area was obtained from the City of Culver City and the City of Los Angeles. Sixty-two (62) related projects were identified within the study area and are listed in Table 9. The locations of these projects are shown in Figure 19.

The trip generation estimates for the related projects were based on different sources including trip generation rates contained in the ITE's *Trip Generation Manual*, 10th Edition; trip generation estimates provided by the recently completed traffic studies for projects in Culver City; and trip generation estimates for the related projects within the City of Los Angeles provided by the City of Los Angeles Department of Transportation. The trip generation estimates for the related projects are shown in Table 9. As summarized in Table 9, the related projects are expected to generate approximately 962 trips during the morning peak hour and 917 trips during the evening peak hour.

Future Horizon Year (2024) without Project Traffic Volumes and Levels of Service

Figure 20 illustrates the related projects traffic assignment. These related projects' traffic estimates were added to the Existing with Ambient Growth (2024) traffic to obtain the Future Horizon Year (2024) Base traffic volumes. Figure 21 provides the Future Horizon Year (2024) without Project traffic volumes at each of the analysis intersections during both AM and PM peak hours. These volumes represent Future Horizon Year (2024) without Project conditions.

The Future Horizon Year (2024) without Project traffic volumes, presented in Figure 21, were analyzed to determine the intersection LOS and delay for each intersection. Table 10 presents the results of the operational analysis at the study intersections for Future Horizon Year (2024) without Project conditions. As indicated in Table 10, all eight study intersections are projected to operate at LOS D or better during both the morning and evening peak hours.

The operational analysis worksheets for Future Horizon Year (2024) without Project conditions are provided in Appendix E of the report.

TABLE 9
ESTIMATED WEEKDAY TRIP GENERATION OF RELATED PROJECTS

Map No.	Project Name	Location	Description	Daily	AM Peak Hour			PM Peak Hour		
					IN	OUT	TOTAL	IN	OUT	TOTAL
City of Culver City [1]										
1	Shell Car Wash	11224 Venice Boulevard	New 3,150 s.f. commercial building including 2,285 s.f. Convenience Store and 864 s.f. automated car wash.	1,448	34	32	66	45	44	89
2	Office & Retail Project	10000 Washington Boulevard	Renovation of existing 8-story office building. Convert ground floor lobby space to retail and restaurant space. Total net increase of 10,614 s.f. including net reduction of 1,497 s.f. of office, increase of 8,424 s.f. of retail/restaurant and 3,687 s.f. of fitness.	1,316	7	7	14	39	33	72
3	Auto Repair Facility	2926 La Cienega Boulevard	Four (4) bay auto repair use within existing car rental facility.	90	4	2	6	4	5	9
4	Arora Condominiums	3837 Bentley Avenue	Three (3) new condominium dwelling units, resulting in two (2) net new dwellings.	15	0	1	1	1	0	1
5	New 4-unit Condo	4034 La Salle Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
6	Retail Building	3030 La Cienega Boulevard	Addition of 1,250 s.f. retail floor area to an existing 8,338 s.f. retail building, and new tandem parking.	47	1	0	1	2	3	5
7	Three unit condominium/ townhome Redevelopment	4241 Duquesne Avenue	New three (3) detached condominium/ townhomes, resulting in two (2) net new residential dwelling units.	15	0	1	1	1	0	1
8	Condominium Project	9615 Lucerne Avenue	Two (2) new condominium dwelling units, resulting in one (1) net new dwelling unit.	7	0	0	0	1	0	1
9	Office Building	9919 Jefferson Boulevard	New 3-story, 62,558 s.f., office and research and development (laboratory) building.	673	63	10	73	12	61	73
10	Parcel B - Culver Steps	9300 Culver Boulevard	118,000 G.S.F. of office, retail, and restaurant space	3,702	124	31	155	167	188	355
11	Condominium Project	3873 Bentley Avenue	Three (3) new condominium dwelling units, resulting in two (2) net new dwellings.	15	0	1	1	1	0	1
12	Residential Project	4227 Ince Boulevard	Subdivision of one parcel into three land lots with two (2) dwelling unit each, for a total of six (6) new units, resulting in five (5) net new units.	37	0	2	2	2	1	3
13	5-unit Condominiums	3961 Tilden Avenue	Five (5) new condominium dwelling units, resulting in two (2) net new dwelling unit.	15	0	1	1	1	0	1
14	Ivy Station (Triangle Site - Washington/National) TOD [2]	8824 Washington Boulevard; Corner of Washington Boulevard/National Boulevard	New TOD mixed use project includes a 148 room boutique hotel, approximately 57,742 gsf of retail and restaurant uses, 196,333 gsf of office use, and 200 residential units.	4,124	173	83	256	127	174	301
15	Surfas Site Mixed-Use Project [3]	8777 Washington Boulevard	Construct new office building with 128,000 s.f. of office use, 4,500 s.f. of retail/restaurant. Demolish existing 12,485 s.f. retail and 4,731 s.f restaurant	30	123	-3	120	-23	92	69
16	Condominium Project	4180 Duquesne Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
17	Condominium Project	3832 Bentley Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
18	Synapse Office and Retail/Restaurant Project [4]	8888 Washington Boulevard	New 91,952 s.f. office and retail/restaurant building, including approximately 5,972 s.f. of ground floor space (for retail/restaurant uses) and 56,559 g.s.f. of office space.	1,146	82	18	100	33	91	124
19	Lorcan O'Herlihy Architects	3434 Wesley Street	New TOD Mixed Use project with 15 dwelling units, and 14,237 s.f. of office/gallery on a vacant lot.	203	13	5	18	6	14	20
20	Condominium Project	4225 La Salle Avenue	Two (2) townhome-style dwelling units, resulting in one (1) net new d.u.	7	0	0	0	1	0	1
21	The Brick and the Machine [5]	9735 Washington Boulevard	New 3- to 4-story office and retail building consisting of 55,477 s.f. of office (upper floors), 12,249 s.f. of retail, 2,147 s.f. high turnover restaurant, and 2,000 s.f. of quality restaurant (on ground floor). The existing vacant 16,200 s.f. bank and office building to be demolished.	691	62	4	66	7	45	52
22	Residential Project	4116 Higuera Street	Two (2) townhome-style dwelling units, resulting in one (1) net new d.u.	7	0	0	0	1	0	1
23	The Culver Studios [6]	9336 Washington Boulevard	New production office buildings to replace existing outmoded structures, to include 345,007 s.f. of net new production space.	4,562	433	58	491	131	337	468
24	Cosmetique	10744-10746 Washington Boulevard	New six vehicle parking stacker for existing 4,700 s.f. medical office with additional 1,026 s.f.	36	2	1	3	1	3	4
25	Helms Homes	3336-3340 Helms Avenue	Eight (8) new condominium dwelling units, resulting in six (6) net new dwellings.	44	1	2	3	2	1	3
26	Condominium Project	3808 College Avenue	Six (6) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
27	New Assisted Living Facility	11141 Washington Boulevard	New 5-story, 157,500 s.f., 117 room assisted living facility. Existing 24,200 s.f. of commercial (retail, office, etc.) uses will be demolished.	304	14	8	22	11	19	30
28	Sweet Flower (Cannabis Retail)	10000 Culver Boulevard	Conversion of existing 5,982 s.f. retail space to storefront cannabis retail store.	1,286	31	25	56	55	53	108
29	Lenawee-Culver Place	3814 Lenawee Avenue	New 8 single family dwelling units and 95 unit, 110 bed, assisted living and memory care facility.	362	15	12	27	16	21	37
30	Willows School CUP Modification	8509 Higuera Street & 8476 Warner Drive	Modification to previously approved CUP to allow a playfield and increase student enrollment by 100, from 475 to 575, consistent with School Master Plan.	411	50	41	91	12	14	26
31	Condominium Project	3846 Bentley Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
32	Retail/Restaurant Project	8511 Warner Drive	51,520 s.f. of retail/restaurant uses.	2,420	71	53	124	123	107	230
33	Park Century School	3939 Landmark Street	New athletic field, 2,441 s.f. classroom building, and two-level subterranean parking, to allow an increase in student enrollment from 120 to 170 and increase of 20 staff people.	206	25	21	46	6	7	13
34	Schaefer II	3516 Schaefer Street	An approx. 9,338 s.f. addition to a creative office building, on a site spanning three parcels currently developed with a 7,500 s.f. building, resulting in a three-story 16,839 s.f. building.	91	9	2	11	2	9	11
35	Condominium Project	3906 Tilden Avenue	5 condominium dwelling units. 2 net new d.u.	15	0	1	1	1	0	1
36	Jackson Condos	4051 and 4055 Jackson Avenue	Nine (9) new condominium dwelling units, resulting in a three (3) net new dwelling units.	22	0	1	1	1	1	2
37	Condominium Project	4080 Lafayette Place	5 condominium dwelling units. 2 net new d.u.	15	0	1	1	1	0	1
38	Robertson Mixed Use	3727 Robertson Boulevard	New 5-story mixed-use development, including approximately 6,800 s.f. of commercial floor area and twelve (12) dwelling units. Demolition of approx. 2,850 s.f. 1-story commercial building	132	5	6	11	4	8	12
39	Condominium Project	4030 La Salle Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
40	Residential Project	4044 Madison Avenue	Three (3) new townhome dwelling units, resulting in two (2) net new d.u.	15	0	1	1	1	0	1
41	Volvo Auto Repair	11039 Washington Boulevard	Expansion of existing two-bay auto repair facility, to add three new auto bays.	70	3	2	5	3	4	7
42	Condominium Project	3826 Girad Avenue	Four (4) new condominium dwelling units, resulting in three (3) net new dwellings.	22	0	1	1	1	1	2
43	TGS CC Ventures (Cannabis Retail)	3800 Sepulveda Boulevard	New 5,280 s.f. storefront cannabis retail space on vacant lot.	1,334	31	24	55	58	57	115
44	Hotel Project	3868 Sepulveda Boulevard	New 5-story, 94-room hotel with 1,375 s.f. retail space. Existing hotel totaling 38 rooms will be demolished.	737	21	14	35	22	24	46
45	Office/Retail Project	3951 Higuera Street	Demolition of an existing 4,480 s.f. co-working office facility and construction of new 36,614 s.f. office and retail building.	844	31	8	39	38	52	90
46	Jazz Bakery	9814 Washington Boulevard	New 200 seat Performance Theatre with a museum and bakery/café, 2-stories & estimated 7,500 square feet.	140	2	0	2	9	18	27
47	ECF Site	8700, 8710, 8740, and 8750 Washington Boulevard	Preliminary Concept - Mixed Use TOD with approximately 199 residential units and 40,000 s.f. of commercial space (17,250 s.f. of live/work space, 5,000 s.f. of restaurant, and 17,750 s.f. of retail), on a 3.06 to possibly 3.53 acre site, currently developed with multiple uses	1,190	-27	24	-2	17	-5	11
48	Federal Express Site [7]	3710 & 3750 S.Robertson Boulevard	Preliminary Concept - Mixed Use TOD with approximately 141 residential units and 64,200 s.f. of creative office and 30,042 s.f. commercial (retail/restaurant/live-work space), on a 2.2 acre site.	2,013	33	-6	27	45	48	93

TABLE 9 (continued)
ESTIMATED WEEKDAY TRIP GENERATION OF RELATED PROJECTS

Map No.	Project Name	Location	Description	Daily	AM Peak Hour			PM Peak Hour		
					IN	OUT	TOTAL	IN	OUT	TOTAL
City of Los Angeles [8]										
49	The Palms Mixed-Use Project	10601 Washington Boulevard	Mixed-use project with 132-unit apartment, 26,000 s.f. office, and 18,000 s.f. retail.	2,343	64	84	148	123	91	214
50	Cumulus Mixed-Use Project	3221 S. La Cienega Boulevard	Converting existing ABC Lot to a Mixed-Use: 1,218-Unit Apartment, 200,000 s.f. Office, 50,000 s.f. Grocery Store, 30,000 s.f. Retail & 20,000 s.f. Restaurant project.	10,136	319	419	738	467	382	849
51	Venice & National Hotel Project	8900 W. National Boulevard	New 180-room hotel, 16,456 s.f. retail and 7,330 s.f. restaurant	1,589	67	47	114	57	60	117
52	Mixed-Use Project	10801 Venice Boulevard	New 6-story, 66-unit apartment building and ground floor shopping center with sub garage.	430	-5	25	20	41	18	59
53	Mixed-Use Project	10375 Washington Boulevard	7-story mixed-use building with 108 condominium dwelling units and 3,600 s.f. retail.	579	-3	35	32	31	11	42
54	Mixed-Use Project	5950 W. Jefferson Boulevard	New mixed-use project with 64,000 s.f. office, 2,000 s.f. retail and 4,000 s.f. restaurant.	716	65	13	78	23	58	81
55	Residential Project	3739 Cardiff Avenue	New 74-unit apartment building. Existing 5 single-family houses will be removed.	362	6	22	28	22	11	33
56	Mixed-Use Project	3664 S. Overland Avenue	New mixed-use project with 187-unit apartment and 5,000 s.f. restaurant.	974	21	46	67	60	36	96
57	Coffee Bean Project	6024 W. Jefferson Boulevard	New mixed-use project with 123,527 s.f. office, 64,206 s.f. manufacturing and 2,200 s.f. coffee shop with drive-through.	2,177	194	68	262	55	168	223
58	Apartment Project	3838 S. Dunn Drive	New 7-story, 78-unit apartment building attached to existing 7-story, 86-unit apartment building.	403	7	20	27	20	12	32
59	Mixed-Use Project	3577 S. Overland Avenue	New mixed-use project with 119 multifamily dwelling units and 2,000 s.f. restaurant.	478	12	25	37	29	16	45
60	Apartment Project	3301 S. Canfield Avenue	New 6-story, 50-unit apartment building.	245	5	11	16	12	8	20
61	Office Project	5850 W. Jefferson Boulevard	New 22-story, 344,947 s.f. office building.	2,856	292	48	340	54	283	337
62	Office Project	5790 W. Jefferson Boulevard	Construct new 10-story, 150,761 s.f. office building.	1,794	234	32	266	42	205	247
County of Los Angeles [1]										
63	West Los Angeles College Master Plan	9000 Overland Avenue	Approximately 92,000 s.f. of new building construction and renovation. Anticipated future student population of 18,904.	9,825	779	183	962	514	403	917

* Per *City of Culver City Transportation Study Criteria and Guidelines*, includes related projects within a one-and-one-half (1 1/2) mile radius from the project site.
** Trip generation estimates are based on trip generation rates included in *Trip Generation Manual*, 10th Edition, ITE 2018, unless noted otherwise.
[1] Source: Culver City Projects List - Updated October 15, 2020.
[2] Trip generation estimates from *Ivy Station, Culver City, Traffic Impact Analysis*, Kimley Horn, November 2015.
[3] Trip generation estimates from *Traffic Study for the 8777 Washington Boulevard Project*, Raju Associates, Inc., April 2017
[4] Trip generation estimates from *Traffic Study for the 8888 Washington Boulevard Project*, Raju Associates, Inc., February 2017
[5] Trip generation estimates from *Draft Traffic Impact Report for Proposed Washington (9735) Mixed-Use Project*, Crain & Associates, December 22, 2016
[6] Trip generation from *Culver Studios Traffic Study for the Culver Studios Innovation Plan (CPA No. 7)*, Fehr & Peers, September 2017.
[7] Trip generation estimates per City of Culver City Memorandum of Understanding document for 3710 and 3750 S. Robertson Boulevard Mixed-Use Development.
[8] Source: Los Angeles Department of Transportation - September 29, 2020. Trip generation estimates provided by City of Los Angeles.

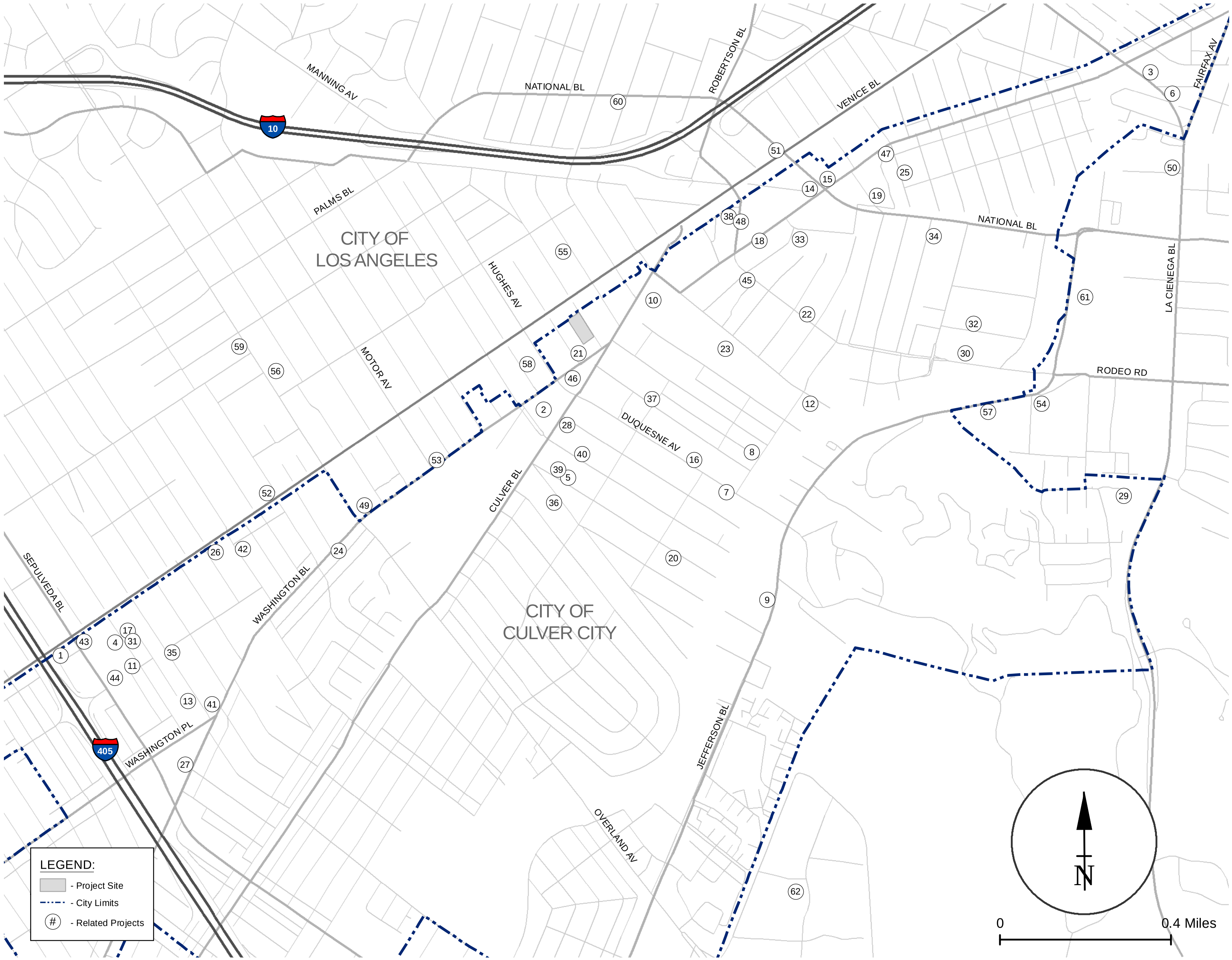

FIGURE 19
LOCATION OF RELATED PROJECTS

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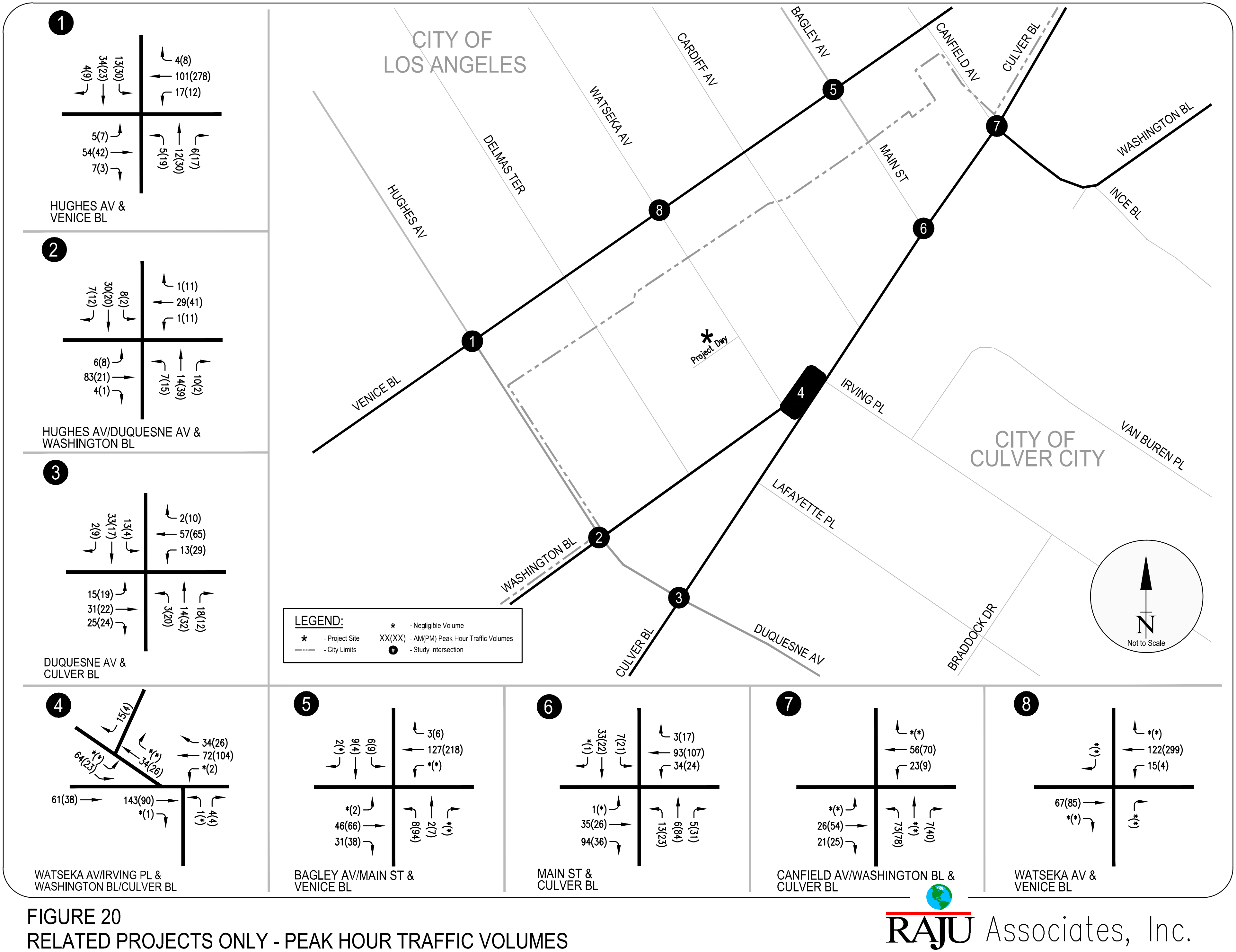

FIGURE 20
RELATED PROJECTS ONLY - PEAK HOUR TRAFFIC VOLUMES

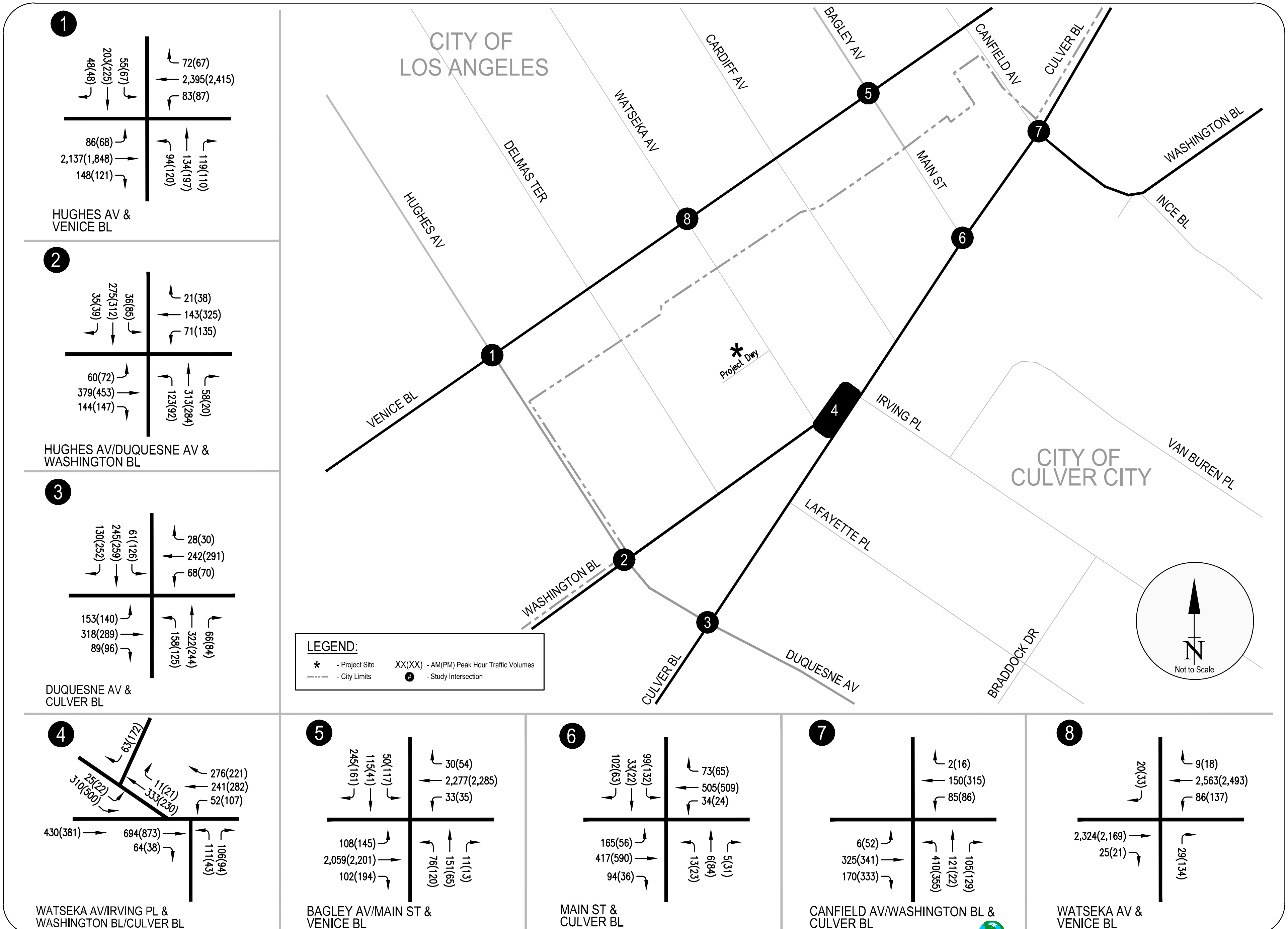

FIGURE 21
FUTURE HORIZON YEAR (2024) WITHOUT PROJECT CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

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TABLE 10
SUMMARY OF INTERSECTION LEVEL OF SERVICE ANALYSIS - FUTURE HORIZON YEAR (2024) CONDITIONS

No.	Intersection	Peak Hour	Future Horizon Year (2024) without Project Conditions		Future Horizon Year (2024) plus Project Conditions	
			Delay	LOS	Delay	LOS
1.	Hughes Avenue & Venice Boulevard	AM	17.8	B	17.9	B
		PM	27.8	C	28.4	C
2.	Hughes Avenue/Duquesne Avenue & Washington Boulevard	AM	25.7	C	25.8	C
		PM	25.7	C	25.6	C
3.	Duquesne Avenue & Culver Boulevard	AM	31.7	C	31.9	C
		PM	33.2	C	33.4	C
4.	Watseka Av/Irving Pl & Washington Bl/Culver Boulevard	AM	21.4	C	21.5	C
		PM	32.6	C	32.6	C
5.	Bagley Avenue/Main Street & Venice Boulevard	AM	30.0	C	30.7	C
		PM	37.3	D	39.7	D
6.	Main Street & Culver Boulevard	AM	35.6	D	35.1	D
		PM	35.5	D	35.9	D
7.	Canfield Avenue/Washington Boulevard & Culver Boulevard	AM	28.1	C	28.6	C
		PM	33.7	C	33.9	C
8.	Watseka Avenue & Venice Boulevard [1]	AM	17.8	C	17.8	C
		PM	19.3	C	23.6	C

Delay - HCM 6th Edition Control Delay in seconds per vehicle.
LOS - Level of Service
[1] Unsignalized intersection. Stop controlled on minor approaches. Worst case approach delay is reported in table.

Future Horizon Year (2024) Plus Project Traffic Volumes

Utilizing the Project-only traffic estimates developed for both AM and PM peak hours, traffic forecasts for the Future Horizon Year (2024) plus Project conditions were developed. The Future Horizon Year (2024) without Project traffic forecasts were combined with the Project-only traffic volumes to obtain the Future with Project traffic volume forecasts. The Future Horizon Year (2024) plus Project traffic volumes during both AM and PM peak hours are presented in Figure 22.

The Future (2024) plus Project traffic volumes, presented in Figure 22, were analyzed to determine the intersection LOS and delay for each intersection. Table 10 presents the results of the operational analysis at the study intersections for Future Horizon Year (2024) plus Project conditions. As summarized in Table 10, Future Horizon Year (2024) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Horizon Year (2024) without Project during both the morning and evening peak hours.

The operational analysis worksheets for Future Horizon Year (2024) plus Project conditions are provided in Appendix E of the report.

Future Buildout Year (2045) Traffic Projections and Levels of Service

Estimates of the Future Buildout Year (2045) traffic volumes both with and without the Project were developed. The traffic generated by the Project was estimated and assigned separately to the street system as detailed earlier. The addition of Project traffic and the Future Buildout Year (2045) without Project traffic volumes provide traffic volume estimates for the Future Buildout Year (2045) plus Project scenario.

Similar to Future Horizon Year (2024) conditions, the Future Buildout Year (2045) without the Project was first developed including estimates for background growth in area-wide trip making and trips generated by future developments (related projects) in the vicinity of the study area. The Future Buildout Year (2045) without Project traffic represents the cumulative base conditions. Next, the addition of Project traffic and the cumulative base traffic volumes provides traffic volume estimates for the Future Buildout Year (2045) plus Project scenario. Each of these future traffic scenarios is described further in this section.

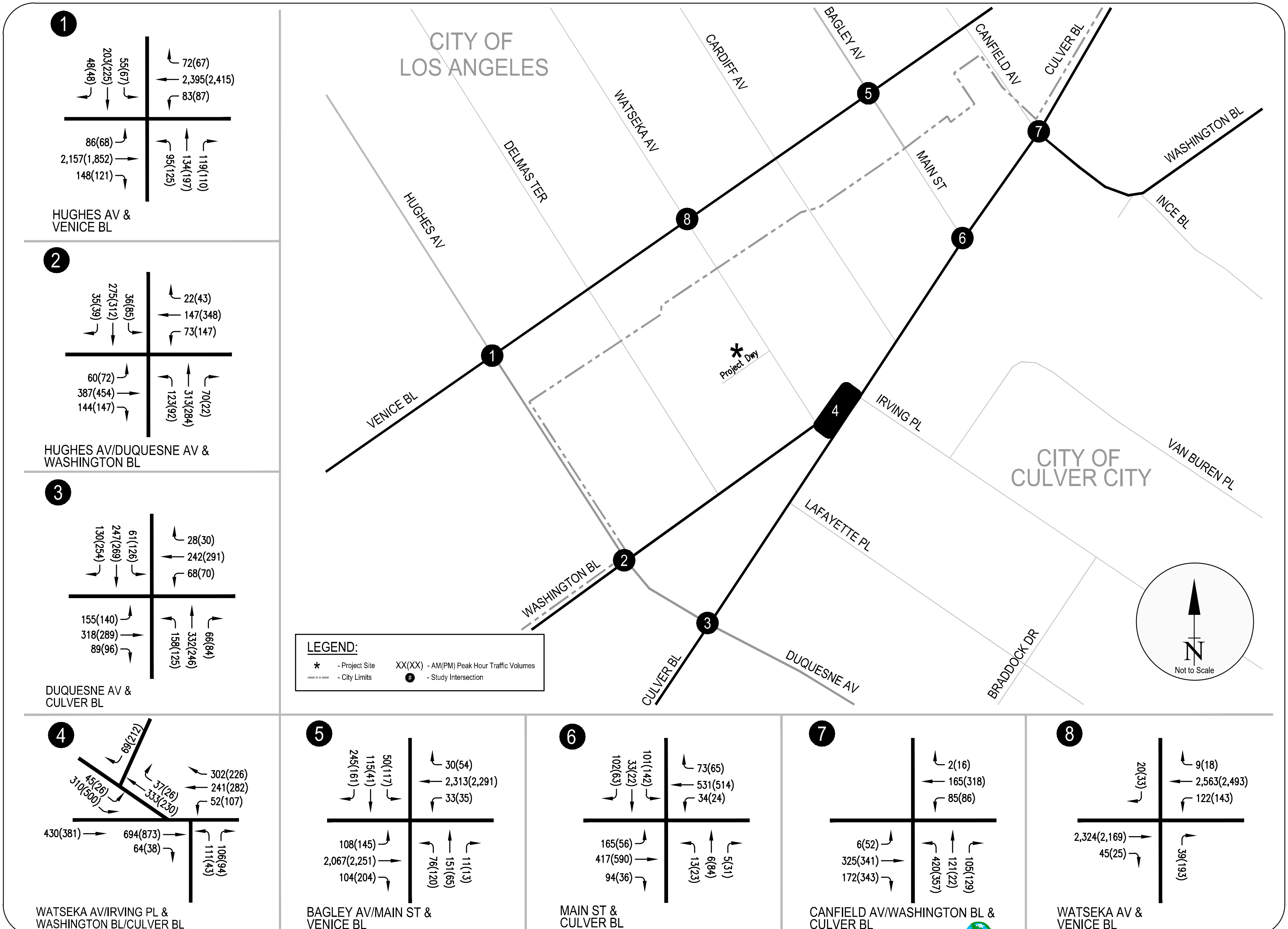

FIGURE 22
FUTURE HORIZON YEAR (2024) PLUS PROJECT CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

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Future Buildout Year (2045) without Project Traffic Projections

The Future Buildout Year (2045) without Project (Base) traffic projections reflect growth in traffic from two primary sources: Firstly, the background or ambient growth to reflect the effects of overall area-wide regional growth both within and outside the study area; and secondly, from traffic generated by specific related (cumulative) projects located within, or in the vicinity of, the study area. Each of these components is described below.

Area-wide Ambient Traffic Growth – The long-range traffic growth in the vicinity of the study area was estimated to increase by 9.5% compared to existing traffic per the approved Culver City MOU. Future increases in background traffic volumes due to regional growth and development are expected to continue at this rate. With the assumed ’buildout’ year of 2045, the Existing (2021) traffic volumes were adjusted upward by a factor of 9.5% to reflect this area-wide regional growth. The resulting Existing with Ambient Growth (2045) traffic volumes are illustrated in Figure 23.

Related Projects Traffic Generation and Assignment – The related projects peak hour trip assignment, shown in Figure 20, was utilized for Future Buildout Year (2045) conditions.

Future Buildout Year (2045) without Project Traffic Volumes and Levels of Service

Figure 20 illustrates the related projects traffic assignment. These related projects’ traffic estimates were added to the Existing with Ambient Growth (2045) traffic to obtain the Future Buildout Year (2045) without Project traffic volumes. Figure 24 provides the Future Buildout Year (2045) without Project traffic volumes at each of the analysis intersections during both AM and PM peak hours. These volumes represent Future Buildout Year (2045) without Project conditions.

The Future Buildout Year (2045) without Project traffic volumes, presented in Figure 24, were analyzed to determine the intersection LOS and delay for each intersection. Table 11 presents the results of the operational analysis at the study intersections for Future Buildout Year (2045) without Project conditions. As indicated in Table 11, all eight study intersections are projected to operate at LOS D or better during the morning peak hour. During the evening peak hour, seven of the eight study intersections are projected to operate at LOS D or better. The remaining intersection, Bagley Avenue/Main Street and Venice Boulevard, is projected to operate at LOS E during the evening peak hour.

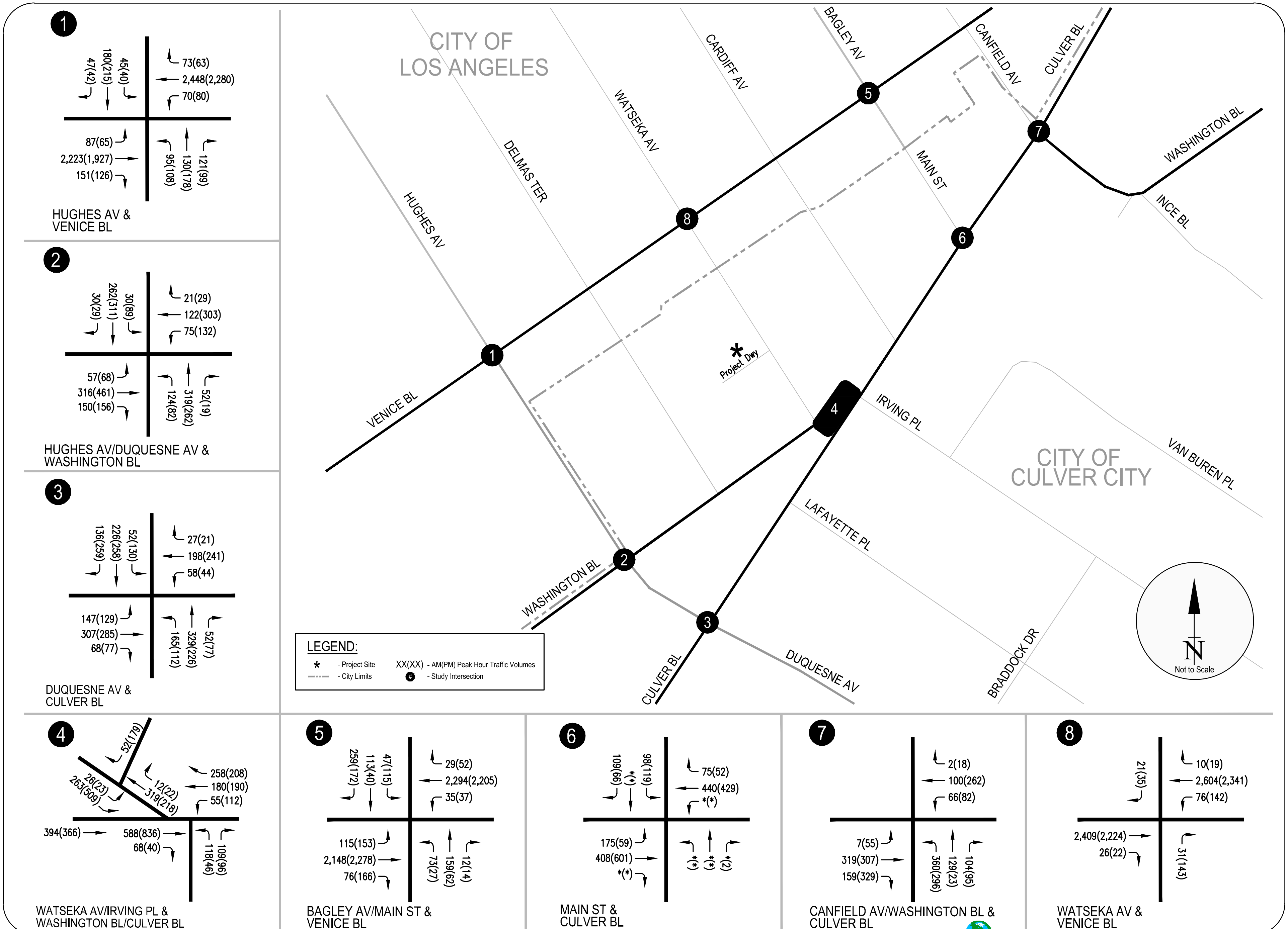

FIGURE 23
EXISTING WITH AMBIENT GROWTH (2045) CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

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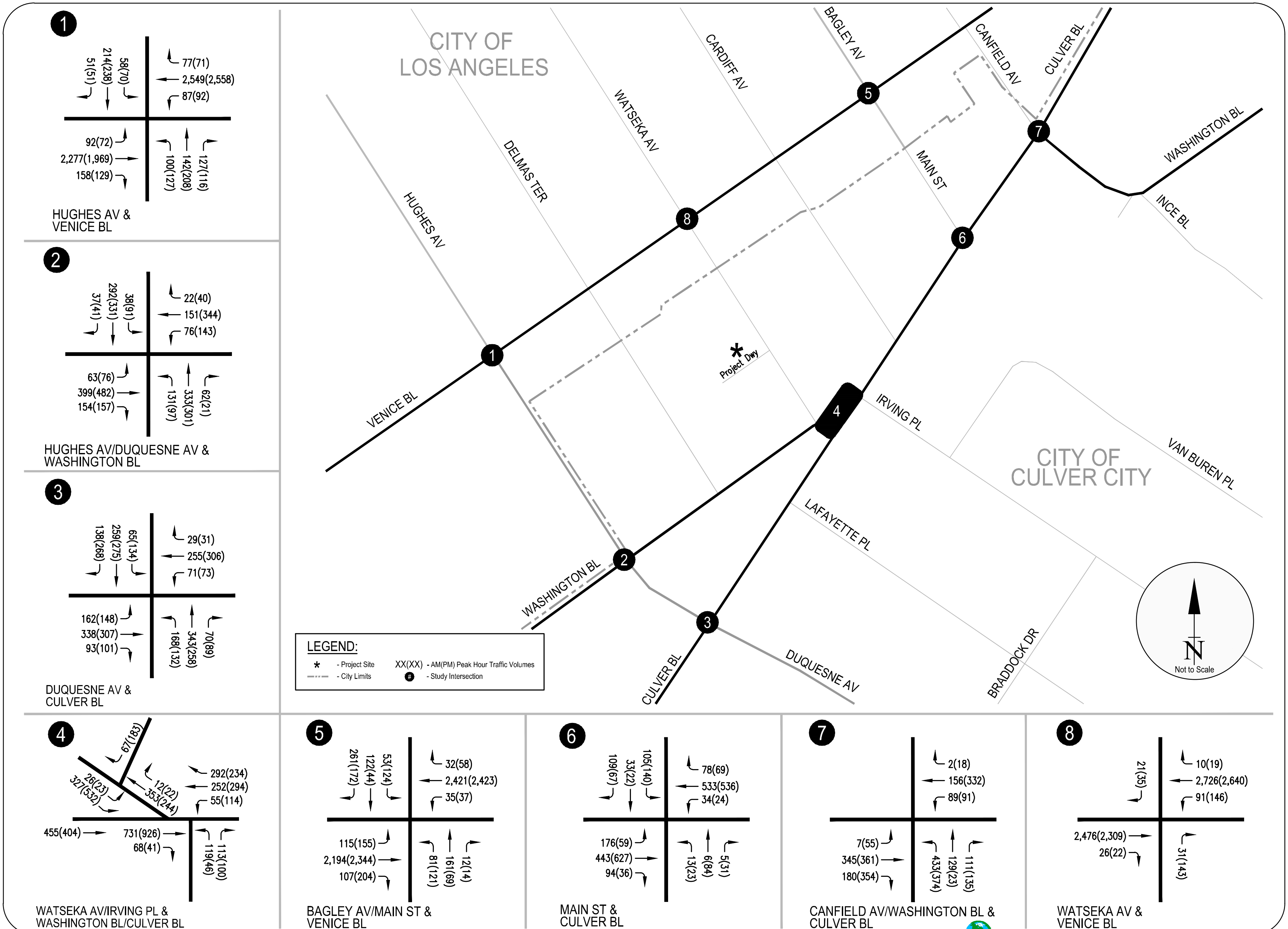


FIGURE 24
FUTURE BUILDOUT YEAR (2045) WITHOUT PROJECT CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

TABLE 11
SUMMARY OF INTERSECTION LEVEL OF SERVICE ANALYSIS - FUTURE BUILDOUT YEAR (2045) CONDITIONS

No.	Intersection	Peak Hour	Future Buildout Year (2045) without Project Conditions		Future Buildout Year (2045) plus Project Conditions	
			Delay	LOS	Delay	LOS
1.	Hughes Avenue & Venice Boulevard	AM	22.2	C	22.5	C
		PM	35.1	D	36.2	D
2.	Hughes Avenue/Duquesne Avenue & Washington Boulevard	AM	27.5	C	27.6	C
		PM	26.1	C	26.0	C
3.	Duquesne Avenue & Culver Boulevard	AM	32.3	C	32.4	C
		PM	33.7	C	33.9	C
4.	Watseka Av/Irving Pl & Washington Bl/Culver Boulevard	AM	23.1	C	23.2	C
		PM	39.0	D	38.9	D
5.	Bagley Avenue/Main Street & Venice Boulevard	AM	38.9	D	41.5	D
		PM	59.9	E	63.4	E
6.	Main Street & Culver Boulevard	AM	44.9	D	44.3	D
		PM	36.1	D	36.7	D
7.	Canfield Avenue/Washington Boulevard & Culver Boulevard	AM	28.1	C	28.7	C
		PM	33.6	C	33.9	C
8.	Watseka Avenue & Venice Boulevard [1]	AM	20.1	C	20.1	C
		PM	22.9	C	30.2	D

Delay - HCM 6th Edition Control Delay in seconds per vehicle.
LOS - Level of Service
[1] Unsignalized intersection. Stop controlled on minor approaches. Worst case approach delay is reported in table.

The operational analysis worksheets for Future Buildout Year (2045) without Project conditions are provided in Appendix E of the report.

Future Buildout Year (2045) Plus Project Traffic Volumes

Utilizing the Project-only traffic estimates developed for both AM and PM peak hours, traffic forecasts for the Future Buildout Year (2045) plus Project conditions were developed. The Future Buildout Year (2045) without Project traffic forecasts were combined with the Project-only traffic volumes to obtain the Future with Project traffic volume forecasts. The Future Buildout Year (2045) plus Project traffic volumes during both AM and PM peak hours are presented in Figure 25.

The Future Buildout Year (2045) plus Project traffic volumes, presented in Figure 25, were analyzed to determine the intersection LOS and delay for each intersection. Table 11 presents the results of the operational analysis at the study intersections for Future Buildout Year (2045) plus Project conditions. As summarized in Table 11, Future Buildout Year (2045) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Buildout Year (2045) without Project during both the morning and evening peak hours.

The operational analysis worksheets for Future Buildout Year (2045) plus Project conditions are provided in Appendix E of the report.

INTERSECTION QUEUING ANALYSIS

Per Culver City's TSCG requirements, a queuing analysis was performed at the study intersections. Similar to the intersection operations analysis, Synchro software was used to analyze intersection approach and/or turn pocket queues at intersections immediately adjacent to the Project site. The 95th-percentile queues for each scenario were reported at all study intersection approaches where Project traffic was expected to travel to and from the Project site. The 95th-percentile queues are defined to be the length of queue that has only a 5% probability of

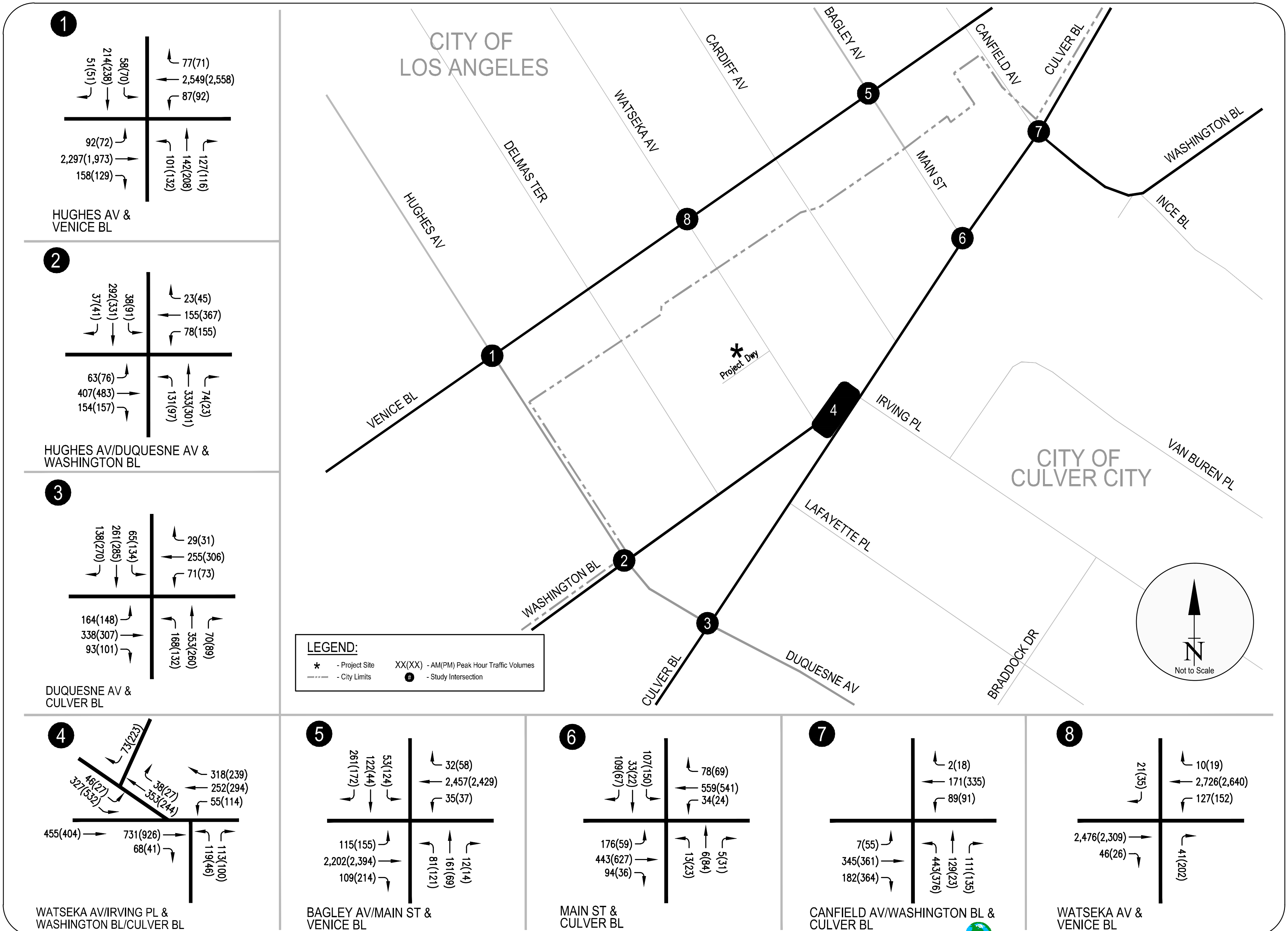


FIGURE 25
FUTURE BUILDOUT YEAR (2045) PLUS PROJECT CONDITIONS - PEAK HOUR TRAFFIC VOLUMES

RAJU Associates, Inc.

being exceeded during the analyzed peak period. This is a conservative analysis and does not represent what the average driver would experience, but it is a standard commonly used in traffic engineering design to determine lengths of turn lane pockets. Appendix E contains intersection queue lengths for all approaches at all study intersections.

Per the TSCG, significant queuing conditions would occur if trips generated by the Project result in the 95th-percentile queue lengths at nearby intersections to exceed available capacity or storage space. Significant queuing conditions would not be considered significant impacts under CEQA.

Table 12 summarizes study intersection queues for the Existing (2021) and Existing (2021) Plus Project conditions, Table 13 summarizes study intersection queues for the Future Horizon Year (2024) and Future Horizon Year (2024) plus Project conditions. Table 14 summarizes the study intersection queues for the Future Buildout Year (2045) and Future Buildout Year (2045) plus Project conditions. The 95th-percentile queues were rounded to the nearest 25 feet, approximately the amount of space a vehicle takes up on average considering spacing from other vehicles. The 95th-percentile queues are noted with bold numbers if they exceeded storage or pocket capacity.

Existing (2021) Conditions Queue Analysis

As indicated in Table 12, based on the 95th percentile queue lengths, the Project would not result in substantial increase in queuing at any of the study intersections under Existing (2021) plus Project conditions during the morning and evening peak hours.

Future Horizon Year (2024) Conditions Queue Analysis

As indicated in Table 13, based on the 95th percentile queue lengths, the Project would not result in substantial increase in queuing at any of the study intersections under Future Horizon Year (2024) plus Project conditions during the morning and evening peak hours.

Future Buildout Year (2045) Conditions Queue Analysis

As indicated in Table 14, based on the 95th percentile queue lengths, the Project would not result in substantial increase in queuing at any of the study intersections under Future Horizon Year (2045) plus Project conditions during the morning and evening peak hours.

Detailed queuing analysis worksheets are presented in Appendix E.

TABLE 12
SUMMARY OF INTERSECTION QUEUE ANALYSIS - EXISTING CONDITIONS

Intersection	Key Movement [a]	Storage Length (feet) [b]	Peak Hour	95th-Percentile Queue Length (feet) [c] Existing Conditions	95th-Percentile Queue Length (feet) [c] Existing plus Project Conditions	Queue Increase
1. Hughes Avenue & Venice Boulevard	EBT	486	AM	375	375	0
			PM	325	325	0
	NBLTR	603	AM	350	350	0
			PM	400	400	0
2. Duquesne Avenue & Washington Boulevard	EBT	435	AM	100	100	0
			PM	150	150	0
	EBTR	435	AM	100	100	0
			PM	125	125	0
	WBL	110	AM	50	50	0
			PM	75	75	0
	WBT	610	AM	25	25	0
			PM	75	75	0
	WBTR	610	AM	25	25	0
			PM	75	75	0
	NBTR	197	AM	**300**	**325**	25
			PM	**300**	**325**	25
3. Duquesne Avenue & Culver Boulevard	EBL	115	AM	100	100	0
			PM	75	75	0
	NBT	690	AM	300	300	0
			PM	200	200	0
	SBT	208	AM	**250**	**250**	0
			PM	**275**	**300**	25
	SBR	94	AM	75	75	0
			PM	0	0	0
4a. Watseka Avenue & Washington Boulevard	EBL	100	AM	50	75	25
			PM	25	50	25
	WBT	75	AM	50	50	0
			PM	25	25	0
	SBR	605	AM	75	75	0
			PM	175	225	50
4b. Irving Place & Culver Boulevard	WBTR	135	AM	**325**	**350**	25
			PM	**300**	**325**	25
5. Bagely Avenue & Venice Boulevard	EBT	1,288	AM	175	175	0
			PM	175	175	0
	EBTR	1,288	AM	225	225	0
			PM	275	325	50
	WBT	860	AM	575	600	25
			PM	550	550	0
6. Main Street & Culver Boulevard	WBT	280	AM	25	25	0
			PM	150	150	0
	SBLTR	375	AM	200	200	0
			PM	175	175	0
7. Canfield Av/Washington Bl & Culver Bl	EBT	319	AM	150	125	-25
			PM	125	125	0
	EBR	225	AM	0	0	0
			PM	0	0	0
	WBTR	580	AM	125	150	25
			PM	275	275	0
	NBLTR	230	AM	**350**	**375**	25
			PM	**275**	**275**	0
8. Watseka Avenue & Venice Boulevard	WBL	216	AM	25	25	0
			PM	25	25	0
	NBR	605	AM	0	0	0
			PM	25	50	25

* Queues that exceed capacity are **bolded**. Project related queue increases of 50 or more feet are highlighted if queues exceed capacity.

EB = Eastbound Approach; WB = Westbound Approach; NB = Northbound Approach; SB = Southbound Approach
L = Left-Turn, T = Through, R = Right-Turn

[a] Key movement defined as a queue most likely affected by the Project that either (1) extends beyond the storage bay of the turn pocket or (2) a through queue that extends to the upstream signalized intersection.
[b] Storage lengths measured from Google Maps.
[c] 95th-Percentile queue length from Highway Capacity Manual (HCM) 6th Edition methodology using Synchro 11 software. The queue length reported is the one for the lane with the highest queue in the lane group. Intersection movement 95th percentile queues rounded to the nearest 25 feet, approximately the length of one vehicle.

TABLE 13
SUMMARY OF INTERSECTION QUEUE ANALYSIS - FUTURE HORIZON YEAR (2024) CONDITIONS

Intersection	Key Movement [a]	Storage Length (feet) [b]	Peak Hour	95th-Percentile Queue Length (feet) [c]		Queue Increase
				Future (2024) without Project Conditions	Future (2024) plus Project Conditions	
1. Hughes Avenue & Venice Boulevard	EBT	486	AM	425	425	0
			PM	425	425	0
	NBLTR	603	AM	450	450	0
			PM	500	500	0
2. Duquesne Avenue & Washington Boulevard	EBT	435	AM	150	150	0
			PM	175	175	0
	EBTR	435	AM	150	150	0
			PM	175	175	0
	WBL	110	AM	50	50	0
			PM	100	100	0
	WBT	610	AM	50	50	0
			PM	100	100	0
	WBTR	610	AM	50	50	0
			PM	100	100	0
	NBTR	197	AM	**350**	**375**	25
			PM	**350**	**350**	0
3. Duquesne Avenue & Culver Boulevard	EBL	115	AM	100	100	0
			PM	100	100	0
	NBT	690	AM	325	325	0
			PM	250	250	0
	SBT	208	AM	**300**	**300**	0
			PM	**300**	**300**	0
	SBR	94	AM	75	75	0
			PM	0	0	0
4a. Watseka Avenue & Washington Boulevard	EBL	100	AM	50	75	25
			PM	25	50	25
	WBT	75	AM	50	50	0
			PM	25	25	0
	SBR	605	AM	50	100	50
			PM	175	225	50
4b. Irving Place & Culver Boulevard	WBTR	135	AM	**475**	**500**	25
			PM	**475**	**475**	0
5. Bagely Avenue & Venice Boulevard	EBT	1,288	AM	175	175	0
			PM	225	225	0
	EBTR	1,288	AM	250	250	0
			PM	425	500	75
	WBT	860	AM	675	700	25
			PM	700	700	0
6. Main Street & Culver Boulevard	WBT	280	AM	25	25	0
			PM	**300**	**300**	0
	SBLTR	375	AM	225	225	0
			PM	225	225	0
7. Canfield Av/Washington Bl & Culver Bl	EBT	319	AM	200	200	0
			PM	225	225	0
	EBR	225	AM	0	0	0
			PM	25	25	0
	WBTR	580	AM	200	200	0
			PM	450	450	0
	NBLTR	230	AM	**475**	**475**	0
			PM	**375**	**375**	0
8. Watseka Avenue & Venice Boulevard	WBL	216	AM	25	25	0
			PM	25	25	0
	NBR	605	AM	0	0	0
			PM	50	75	25

* Queues that exceed capacity are **bolded**. Project related queue increases of 50 or more feet are highlighted if queues exceed capacity.

EB = Eastbound Approach; WB = Westbound Approach; NB = Northbound Approach; SB = Southbound Approach
L = Left-Turn, T = Through, R = Right-Turn

[a] Key movement defined as a queue most likely affected by the Project that either (1) extends beyond the storage bay of the turn pocket or (2) a through queue that extends to the upstream signalized intersection.
[b] Storage lengths measured from Google Maps.
[c] 95th-Percentile queue length from Highway Capacity Manual (HCM) 6th Edition methodology using Synchro 11 software. The queue length reported is the one for the lane with the highest queue in the lane group. Intersection movement 95th percentile queues rounded to the nearest 25 feet, approximately the length of one vehicle.

TABLE 14
SUMMARY OF INTERSECTION QUEUE ANALYSIS - FUTURE BUILDOUT YEAR (2045) CONDITIONS

Intersection	Key Movement [a]	Storage Length (feet) [b]	Peak Hour	95th-Percentile Queue Length (feet) [c] Future (2045) without Project Conditions	Future (2045) plus Project Conditions	Queue Increase
1. Hughes Avenue & Venice Boulevard	EBT	486	AM	475	475	0
			PM	475	475	0
	NBLTR	603	AM	575	600	25
			PM	550	550	0
2. Duquesne Avenue & Washington Boulevard	EBT	435	AM	175	175	0
			PM	200	200	0
	EBTR	435	AM	150	150	0
			PM	175	175	0
	WBL	110	AM	50	50	0
			PM	**125**	**125**	0
	WBT	610	AM	50	50	0
			PM	100	100	0
	WBTR	610	AM	50	50	0
			PM	100	125	25
	NBTR	197	AM	**400**	**425**	25
			PM	**375**	**375**	0
3. Duquesne Avenue & Culver Boulevard	EBL	115	AM	**125**	**125**	0
			PM	100	100	0
	NBT	690	AM	350	350	0
			PM	250	250	0
	SBT	208	AM	**300**	**325**	25
			PM	**325**	**325**	0
	SBR	94	AM	75	75	0
			PM	0	0	0
4a. Watseka Avenue & Washington Boulevard	EBL	100	AM	50	75	25
			PM	25	50	25
	WBT	75	AM	50	50	0
			PM	25	25	0
	SBR	605	AM	100	100	0
			PM	200	250	50
4b. Irving Place & Culver Boulevard	WBTR	135	AM	**500**	**525**	25
			PM	**525**	**525**	0
5. Bagely Avenue & Venice Boulevard	EBT	1,288	AM	200	200	0
			PM	400	425	25
	EBTR	1,288	AM	300	325	25
			PM	850	975	125
	WBT	860	AM	800	850	50
			PM	825	825	0
6. Main Street & Culver Boulevard	WBT	280	AM	25	25	0
			PM	**325**	**325**	0
	SBLTR	375	AM	250	250	0
			PM	225	250	25
7. Canfield Av/Washington Bl & Culver Bl	EBT	319	AM	200	225	25
			PM	225	225	0
	EBR	225	AM	0	0	0
			PM	0	0	0
	WBTR	580	AM	200	225	25
			PM	475	500	25
	NBLTR	230	AM	**525**	**525**	0
			PM	**375**	**375**	0
8. Watseka Avenue & Venice Boulevard	WBL	216	AM	25	25	0
			PM	50	50	0
	NBR	605	AM	0	25	25
			PM	50	100	50

* Queues that exceed capacity are **bolded**. Project related queue increases of 50 or more feet are highlighted if queues exceed capacity.

EB = Eastbound Approach; WB = Westbound Approach; NB = Northbound Approach; SB = Southbound Approach
L = Left-Turn, T = Through, R = Right-Turn

[a] Key movement defined as a queue most likely affected by the Project that either (1) extends beyond the storage bay of the turn pocket or (2) a through queue that extends to the upstream signalized intersection.
[b] Storage lengths measured from Google Maps.
[c] 95th-Percentile queue length from Highway Capacity Manual (HCM) 6th Edition methodology using Synchro 11 software. The queue length reported is the one for the lane with the highest queue in the lane group. Intersection movement 95th percentile queues rounded to the nearest 25 feet, approximately the length of one vehicle.

Corrective Actions

Based on the LOS and queueing evaluations, the Project does not cause an unacceptable LOS or substantial increase in queuing at the study intersections. Therefore, potential for cut-through traffic and other operational effects due to the Project would not occur. No corrective actions would be required for the proposed Project.

However, the Project is proposing a comprehensive TDM Program as part of the Project's design features including a transportation coordinator, bicycle hub/share, transit subsidies, telecommuting, commuter marketing program, carpool/vanpool incentives, and bicycling/walking incentives. A detailed TDM Program is discussed in Chapter 1.

DRIVEWAY LEVEL OF SERVICE AND QUEUING ANALYSIS

Further evaluation was conducted to determine the LOS and queue lengths at the Project driveway, pursuant to HCM unsignalized intersection methodologies. The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue. The Project is proposing a driveway width of 36 feet, providing one inbound lane, one outbound lane and one reversible lane. The driveway would be controlled by a stop sign at the driveway's eastbound approach (outbound movements). Access to the subterranean parking garage would be gate controlled. This driveway would also serve the loading dock.

The purpose of the driveway LOS and queuing analysis is to determinate whether or not the Project's driveways would adversely affect queues at nearby intersections and side streets. Table 15 summarizes the estimated LOS and queues at the Project driveway on Watseka Avenue. As indicated in the table, the Project driveway would operate at LOS B or better under all scenarios (Existing plus Project, Future Horizon Year (2024) plus Project, and Future Buildout Year (2045) plus Project conditions) during both the morning and evening peak hours.

The proposed driveway on Watseka Avenue (a local roadway with lower traffic volumes) would be located approximately 190 feet north of the intersection of Watseka Avenue and Washington Boulevard and approximately 375 feet south of the intersection of Watseka Avenue and Venice Boulevard, which would provide adequate storage length to accommodate vehicle queuing at the Project driveway. As indicated in Table 15, the Project would not adversely affect queues at nearby intersections and side streets.

TABLE 15
PROJECT DRIVEWAY LEVEL OF SERVICE AND QUEUE ANALYSIS

Intersection	NB Storage Length (feet) [b]	Peak Hour	Existing (2021) plus Project Conditions			Future Horizon Year (2024) plus Project Conditions			Future Buildout Year (2045) plus Project Conditions		
			Delay	LOS	NB Queue (feet)	Delay	LOS	NB Queue (feet)	Delay	LOS	NB Queue (feet)
Watseka Avenue & Project Driveway [a]	165	AM	9.6	A	3	9.7	A	3	9.7	A	3
		PM	9.9	A	0	10.0	A	0	10.1	B	0

[a] This intersection is unsignalized. Worst case movement delay and LOS is reported in table.
[b] Distance from Project driveway to signalized intersection at Watseka Avenue & Washington Bouelvard.

Turn lanes on Watseka Avenue (i.e. northbound left-turn and southbound right-turn lanes) were evaluated for purposes of facilitating access to the Project. It was determined that they would not be required at this location, since the traffic volumes along Watseka Avenue are relatively low, and the queue analysis indicates that the Project's turning movements can be accommodated at the driveway without on-street turn lanes. The driveway at Watseka Avenue would operate at good levels of service (LOS B or better) under all scenarios (Existing plus Project, Future Horizon Year (2024) plus Project, and Future Buildout Year (2045) plus Project conditions) during both the morning and evening peak hours.

PARKING METER ASSESSMENT

Per the City's TSCG, the applicant shall work with Culver City's Public Works Department to determine the parking revenue loss associated with the removal of any parking meters due to implementation of the Project. Based on the location of the Project driveway and the line of sight evaluation presented in Chapter 3, approximately three on-street parking spaces would need to be removed in order to achieve the required sight distance at the Project's driveway. However, these spaces can be replaced utilizing the available on-street space resulting from the removal of the existing driveways.

Currently, there are eight on-street metered parking spaces located along the Project's Watseka Avenue frontage. Certain Project construction activities (i.e., concrete pours) would potentially result in the temporary closure of these eight on-street parking spaces. The Project would need to coordinate with Culver City's Public Works Department to assess the loss of parking revenue during the period of construction when use of these spaces would not be available.

The Project is not proposing any on-street valet parking operations.

TRANSIT OPERATIONS ASSESSMENT

Per the Culver City TSCG, the purpose of the transit operations analysis is to determine what effects the proposed Project may have on public transit demand, capacity, delay, and conditions. Since the Project does not generate more than 300 new vehicle trips in the PM peak hour or more than 3,000 new daily vehicle trips, a quantitative or qualitative transit delay analysis would not be required, per Culver City's TSCG.

Transit Demand and Capacity

The number of transit trips expected to result from the proposed Project is based on the number of vehicle trips. This methodology assumes an average vehicle ridership (AVR) factor of 1.4 in order to estimate the number of person trips to and from the Project. As shown in Table 8, it is estimated that up to 25% of Project trips would utilize public transit, resulting in 40 vehicle trips during the morning and evening peak hours. These vehicle trips are converted to person trips by multiplying by the 1.4 AVR. It is estimated that the Project would result in 56 (40 x 1.4 AVR) new person transit trips in the morning peak hour, and 56 new person transit trips in the evening peak hour. The nearest bus stops to the Project site are located along Venice Boulevard at Hughes Avenue and Bagley Avenue/Main Street serving MTA Lines 33 and 733, bus stops located along Washington Boulevard at Duquesne Avenue serving Culver City Bus Line 1 and bus stops located along Culver Boulevard at Main Street serving Culver City Bus Lines 1, 5 and 7 and LADOT Commuter Express Line 437.

As indicated in Table 1 (Chapter 2), based on the transit headways before the COVID-19 Pandemic, it is estimated up to 17 buses per hour would serve the nearby bus stops (within walking distance) along Venice Boulevard and up to 14 buses per hour would serve the nearby bus stops along Culver Boulevard and Washington Boulevard during both the AM and PM peak periods. The transit capacity estimated using number of buses per hour and average capacity per bus that would serve the Project site, would be 2,573 passengers per hour during peak periods. The Project's estimated transit trip generation would represent approximately 2.18% of total existing transit capacity. Therefore, the transit routes that serve the Project site can accommodate the increase in transit trips generated by the Project.

Hazardous Conditions Assessment

The intent of this assessment is to determine the potential for hazardous conditions for transit operations, vehicles, and users due to the Project's vehicular trip generation and Project design elements. Per Culver City's TSCG, examples of conditions expected to be potentially hazardous for transit operations include:

- *A project that would add a substantial number of vehicle trips (e.g., turning movements into the project driveway, curb cut) crossing or immediately adjacent to a transit only lane or transit facility (e.g., transit stop).*

- *A project that would construct or be located on a lot with physical obstructions (e.g., trees, utilities, and adjacent curb cut used by a substantial number of motorists, or on-street parking directly adjacent to a curb cut or transit stop) or slopes that would obstruct sightlines between a substantial number of motorists exiting or reversing into an off-street facility and a transit vehicle operating in a travel lane next to the off-street facility.*

- *A project would be unable to accommodate vehicle trips, including freight and delivery service vehicle trips, into its off-street facilities thereby resulting in queues on the transit-only lane or near a transit facility.*

The nearest transit stops are located along Venice Boulevard at Hughes Avenue, Venice Boulevard at Bagley Avenue, Washington Boulevard at Hughes Avenue and Culver Boulevard at Main Street, while the nearest transit only lane is located along Culver Boulevard. The Project would not add a substantial number of vehicle trips (e.g., turning movements into the project driveway, curb cut) crossing or immediately adjacent to a transit only lane or transit stop.

The Project is located along Watseka Avenue. Currently, there are no transit lines that run along Watseka Avenue. Therefore, the Project would not obstruct sightlines between a substantial number of motorists exiting or reversing into an off-street facility and a transit vehicle operating in a travel lane next to the off-street facility.

Based on the driveway queue analysis presented in a section above, the Project be able to accommodate vehicle trips into its off-street facilities and does not result in queues that would extend to Washington Boulevard on the south and Venice Boulevard on the north.

Based on this assessment, the Project would not worsen any hazardous conditions for transit operations.

MULTIMODAL SAFETY ANALYSIS

According to Culver City's TSCG, proposed projects that are located on a priority safety corridor would be required to perform a multimodal safety analysis. The Project is located along Watseka Avenue which is not included in the High Injury Network (HIN). However, at the direction of Culver City, a multimodal safety analysis has been prepared.

Per the City's TSCG, if a project is determined to adversely affect the safety of a priority safety corridor, measures would be evaluated to improve safety conditions. A priority safety corridor is defined as street identified on the High Injury Network (HIN), the Local Road Safety Plan (LRSP), or one identified by other analysis. The LRSP had not yet been adopted. Available data from Culver City's *Bicycle & Pedestrian Action Plan* and the City of Los Angeles' *Vision Zero Program* has identified Venice Boulevard, Washington Boulevard and Culver Boulevard corridors as being on the HIN.

Collision Review

As indicated in Culver City's *Bicycle & Pedestrian Action Plan*, 64 collisions took place along Culver Boulevard between Overland Avenue and Ince Boulevard/Canfield Avenue and 346 collisions occurred along Washington Boulevard between Walnut Avenue and Culver Boulevard/Irving Place between the years 2014-2018. No specific intersections near the Project site were identified within the 'Top 30' intersections (as identified in the *Bicycle & Pedestrian Action Plan*) in Culver City for the number of collisions.

Per City of Los Angeles' Vision Zero Program, Venice Boulevard between Abbot Kinney Boulevard and 12th Avenue is included in HIN. An examination for transportation incidents along this roadway within the study area was conducted. The incident data was collected from the Transportation Injury Mapping System (TIMS) (Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley; 2020) using accident records within the Statewide Integrated Traffic Records System (SWITRS). Evaluation of the incident data indicated that a total of 77 accidents occurred along Venice Boulevard (between Dunn Drive and Canfield Avenue) within the study area over the most recent 5-year period (data available for Years 2015-2019). The intersection of Venice Boulevard & Hughes Avenue had 32 collisions within the five-year period.

Pedestrian/bicycle collisions from 2015 through 2019 were also evaluated within the study area. The majority of incidents occurred along Venice Boulevard. Several intersections have high density of pedestrian/bicycle collisions. The intersection of Venice Boulevard & Hughes Avenue had six pedestrian/bicycle collisions, the intersection of Venice Boulevard & Delmas Terrace had five pedestrian/bicycle collisions, while the intersection of Venice Boulevard & Canfield Avenue had a total of four pedestrian/bicycle collisions within the five-year period.

Effects of Proposed Project on HIN

The proposed Project design would not impact any of the priority corridors nor prevent future implementation of safety treatments as identified in the Culver City's LRSP, City of Los Angeles's Vision Zero Program or other analyses.

Although the Project is not located within Culver City's and City of Los Angeles' High Injury Network (HIN), the Project has taken measures to align with Vision Zero policies. The Project plans to provide 28 long-term and 28 short-term bicycle parking spaces, thereby encouraging employees and visitors of the Project to travel via bicycle and creating a bicycle-friendly environment surrounding the Project. The Project proposes to have one new full-access driveway, replacing the existing four driveways on the Project site, enhancing walkability and connectivity and reducing the potential vehicle/bicycle, vehicle/pedestrian and vehicle/vehicle conflicts, thereby improving the overall safety along this section of Watseka Avenue.

Therefore, the proposed Project would not worsen HIN corridor and intersection safety issues or preclude the City from implementing safety projects.

CONSTRUCTION PERIOD EVALUATION

Per the City's TSCG*, "Project applicants shall work with the City to develop a temporary traffic management and control plan if construction will impact a public right-of-way. If there are detours because of construction effects, the effects of the detours shall be disclosed and accommodated in the plan. Potential interference with pedestrian and bicycle facilities caused by construction shall be identified including the duration of said interference. Detouring of pedestrian and bicycle traffic, as needed, will also be part of the plan. Other elements covered by the plan include potential temporary impact on public parking, staging of construction material and parking, and community notification as applicable."*

This section provides a construction period transportation evaluation.

Anticipated Construction Activity

Construction of the Project is expected to take approximately 27 months to complete. The construction is anticipated to involve the construction activities described below. Prior to Project construction, traffic control and management plans would be required to be submitted and approved by Culver City, as discussed further below.

- Demolition & Clearing – 1 month
- Grading & Excavation – 5 months
- Foundation/Below Grade Parking Levels – 7 months
- Above Grade Finishing the Structure/Roof Completion – 7 months
- Finishing Work – 7 months

Construction Trucks

Haul Trucks and Route: Hauling activity is expected to occur during the demolition and excavation construction activities. Up to 8 haul truckloads per day are anticipated on peak haul days during demolition. Up to 115 haul truckloads per day are anticipated on peak haul days during excavation. These truckloads represent one-way trips. Trucks are expected to be staged on-site. Haul trucks would typically utilize Culver City and City of Los Angeles truck routes such as Venice Boulevard to access the I-10 and I-405 freeways from the construction site.

Equipment and Delivery Trucks: In addition to haul trucks, the Project site is also expected to generate equipment and delivery trucks. This would include concrete delivery and other materials including plumbing supplies, electrical fixtures, and items used in furnishing the building. These materials would be delivered to the Project site and stored on-site. These deliveries are expected to occur in variously sized vehicles including small delivery trucks to cement mixer trucks and 18-wheel trucks. Additionally, construction equipment would have to be delivered to the Project site. This equipment could include cranes, bulldozers, excavators, and other large items of machinery. Typically, the heavy equipment is transported to the site on large trucks.

Construction Employees: The number of construction workers would vary throughout the construction period. The following construction activities are expected to involve up to the following number of workers on site per day on peak activity days:

- Demolition & Clearing – 5 workers
- Grading & Excavation – 15 workers
- Draining, Utilities and Trenching – 20 workers
- Foundation, Concrete Pour and Concrete Structures – 60 workers

- Building Construction – 75 workers
- Paving – 30 workers

Construction Worker Parking: It is anticipated that construction employees would be parked off-site at nearby public parking structures. Potential off-site parking locations would be identified and approved by the City as part of the traffic control and management plans prior to construction. If the off-site parking location is beyond walking distance, the construction employees would be shuttled to the site. Once the underground parking structure component of the Project is complete, construction workers would be parked on-site.

Construction Hours

Culver City Municipal Code Section 9.07.035 provides that permitted construction activities are limited to the hours from 8:00 AM to 7:00 PM on weekdays and 9:00 AM to 6:00 PM on Saturdays.

Construction Management Measures

The following measures would be taken to minimize the effects of Project construction on nearby areas:

- A flagger would be placed at the truck entry and exit from the Project site to coordinate the entering and exiting trucks.

- Off-site haul truck staging would be provided in a legal area furnished by the construction truck contractor. The route to and from the Project site will be identified in the Construction Management Plan. Trucks will not be permitted to travel along residential streets. The community will be notified in accordance with City requirements.

- Access would remain unobstructed for land uses in proximity to the Project site during Project construction.

- Deliveries and pick-up of construction materials would be scheduled during non-peak travel periods and coordinated to reduce the potential of trucks waiting to load or unload for protracted periods of time.

- Any temporary travel lane closures, when needed, would be scheduled to avoid peak commuting hours and peak school pick-up and drop-off hours to the extent possible. In the event of a lane closure, a worksite traffic control plan, approved by City of Culver

City, would be implemented to route traffic around any such lane closures. Any impact on the public right of way such as parking, shoulder closure, lane closure, etc., must be approved by the City as part of the worksite traffic control plan in advance of the work.

Construction Management Plan

A final Construction Management Plan (CMP) shall be prepared by the Project contractor in consultation with the Project's traffic and/or civil engineer. The CMP would define the scope and scheduling of construction activities as well as the Applicant's proposed construction site management responsibilities in order to ensure that disturbance of nearby land uses or interruption of pedestrian, vehicle, bicycle, and public transit are minimized to the extent feasible. The CMP shall be subject to review and approval by the Culver City's Building Official, City Traffic Engineer and Current Planning Manager, prior to issuance of any Project demolition, grading, or excavation permit. The CMP shall also be reviewed and approved by the Culver City's Fire and Police Departments. The Culver City Building Official, City Engineer, City Traffic Engineer and Current Planning Manager, as applicable, would reserve the right to reject any engineer at any time and to require that the CMP be prepared by a different engineer.

Prior to commencement of construction, the contractor shall advise the Public Works Inspector and Building Inspector (Inspectors) of the construction schedule and shall meet with the Inspectors. Also, biweekly construction management meetings with Culver City staff and other representatives of surrounding developments if under construction at around the same time as the Project shall be required, as determined appropriate by City staff, to ensure concurrent construction projects are managed in collaboration with one another. The CMP shall assess project construction impacts and provide effective strategies to limit the use of the public right of way (streets and sidewalks) during peak traffic periods and shall be subject to adjustment by City staff as deemed necessary and appropriate to preserve the general public safety and welfare.

Prior to approval of the final CMP, the applicant shall conduct one Community Meeting pursuant to the notification requirements of the Culver City's Community Meeting guidelines, to discuss and provide the following information to the surrounding community:

- Construction schedule and hours.
- Framework for construction phases.

- Identify traffic diversion plan by phase and activity. (The Traffic Control Plan will be submitted for review and approval by the City for each phase).

- Potential location of construction parking and office trailers.

- Truck hauling routes and material deliveries (i.e. identify the potential routes and restrictions.

- Discuss the types and number of trucks anticipated and for what construction activity). Use of residential street by haul trucks, material deliveries, or construction worker vehicles would be specifically prohibited.

- Emergency access plan.

- Demolition plan.

- Staging plan for the concrete pours, material loading and removal.

- Crane location(s).

- Accessible applicant and contractor contacts during construction activity and during off hours (relevant email address and phone numbers).

- Community notification procedures.

- The final CMP shall at a minimum include the following:

    - The name and telephone number of a contact person who can be reached 24 hours a day regarding construction or construction traffic complaints or emergency situations.

    - An up-to-date list of local police, fire, and emergency response organizations and procedures for the continuous coordination of construction activity, potential delays, and any alerts related to unanticipated road conditions or delays, with local police, fire, and emergency response agencies. Coordination shall include the assessment of any alternative access routes that might be required through the site, and maps showing access to and within the site and to adjacent properties.

    - Construction plans and procedures to address: community and City notification of key construction activities; temporary construction fencing and maintenance of construction areas within public view; noise and vibration controls; dust management and control; and worker education on required management measures and best practices to reduce disturbances to adjacent and nearby land uses.

    - Procedures for the training and certification of flag persons.

    - To the extent known identification of the location, times, and estimated duration of any roadway closures; procedures for traffic detours, pedestrian protection, reducing effects on public transit and other transportation modes; and, plans for use of protective devices, warning signs, and staging or queuing areas.

- The location of temporary power, portable toilet and trash and materials storage locations.

- The timing and duration of any street and/or lane closures shall be approved in advance by the City and made available in digital format for posting on the City's website and distribution via email alerts on the City's "Gov Delivery" system. The Plans shall be updated weekly during the duration of project construction, as determined necessary by the City. The final CMP shall require that review and approval of any proposed lane closures include coordination with the Fire and Police Departments to minimize potential effects on traffic flow and emergency response.

- Provisions that staging of construction equipment and materials will be accommodated within the Project site and that construction worker parking will be accommodated on the Project site and at off-site locations to be determined and disclosed, potentially with shuttles to and from the Project site.

V. SUMMARY OF CONCLUSIONS

This transportation assessment study has been prepared consistent with the current City of Culver City's *Transportation Study Criteria and Guidelines* (TSCG), July 13, 2020 for both CEQA and non-CEQA evaluations as applicable.

The CEQA evaluation consists of analysis of transportation impacts for the following relevant City adopted thresholds for development projects:

- Conflicting with Plans, Programs, Ordinances or Policies
- Causing Substantial Vehicle Miles Traveled (VMT), and
- Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use.

The non-CEQA Transportation Analysis includes site plan review, intersection operations analysis, driveway operations analysis, parking meter assessment, multimodal safety analysis, transit operations analysis, and a construction period evaluation.

Raju Associates, Inc. performed this detailed study and the following summarizes the results of the analysis:

<u>PROJECT DESCRIPTION</u>

- The Project consists of a four-story building containing 149,518 square feet of office use and a three-level subterranean parking garage. The Project would provide a total of 555 vehicle parking spaces. The Project will also provide a total of 56 bicycle spaces (28 long-term and 28 short-term spaces). The existing site includes two buildings containing 7,633 square feet of office use and a surface parking lot that will be demolished. The Project is anticipated to be completed by the Year 2024.

- The Project is located within walking distance (approximately 220 feet) of Culver City's 'Move Culver City' Pilot Project located along Culver Boulevard and Washington Boulevard. The 'Move Culver City' Project will provide frequent transit service (15 minutes frequencies) as well as circulator shuttle service along Culver Boulevard adjacent to the Project site. Additionally, 'Move Culver City' Project includes enhancements to sidewalks, crosswalks and signage to encourage walking and bicycling.

- The Project is proposing a comprehensive Transportation Demand Management (TDM) Program. The Project's TDM Program will be consistent with the requirements of Culver City's Traffic Code, Chapter 7.05: Motor Vehicle Air Quality Management.

- Currently, four driveways located along the west side of Watseka Avenue provide access to the existing uses on the Project site. The Project proposes a single full-access driveway located along Watseka Avenue that would provide access (inbound and outbound) to the Project site.

- The Project would generate a net increase of 907 daily trips, of which a net total of approximately 118 trips would occur during the morning peak hour and 117 trips during the evening peak hour.

CEQA ANALYSIS OF TRANSPORTATION IMPACTS

- Conflicting with Plans, Programs, Ordinances or Policies - This threshold test is conducted to assess whether a project would conflict with an adopted program, policy, plan, or ordinance that is adopted to protect the environment. In general, transportation policies or standards adopted to protect the environment are those that support multimodal transportation options and a reduction in VMT.

    - The Project's design features support multimodal transportation options and would be consistent with policies, plans, ordinances, and programs. The Project design includes features that minimize impacts to the public right-of-way and enhance the user experience by integrating multimodal transportation options.

    - The Project would not conflict with adopted policies, plans, ordinances, and programs, or preclude City action to fulfill or implement projects associated with multimodal networks. Therefore, the Project would have a less than significant impact on the City's transportation-related plans, programs, ordinances, and policies.

- Causing Substantial Vehicle Miles Traveled (VMT) - For land use projects, the intent of this threshold is to assess whether a land use project or plan causes substantial vehicle miles traveled.

    - The Directors of Community Planning, Transportation, and Public Works are in agreement that the portions of Culver Boulevard included in the 'Move Culver City' Pilot Project fall within a High Quality Transit Service Corridor Area (HQTSCA). The Project is located approximately 220 feet, which is within walking distance, from the portions of Culver Boulevard where frequent transit and circulator shuttles would operate and therefore falls within the HQTSCA. Since the proposed Project is located within the Culver Boulevard HQTSCA, the Project is exempt from CEQA VMT analysis, and is not required to assess if it causes substantial vehicle miles traveled.

- Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use - Impacts regarding the potential increase of hazards due to a geometric design feature generally relate to the design of access points to and from the project site, and may include safety, operational, or capacity impacts.

    - Based on a review of the Project's site plan, the project description, and analysis of the factors associated with impact criteria, it was observed that the Project would not substantially increase hazards due to a geometric design feature or incompatible uses. Therefore, the Project would cause a less than significant impact associated with geometric design hazards and incompatible use.

Summarizing, the Project would not cause significant transportation impacts relative to the City-established CEQA thresholds including the following: Conflicting with Plans, Policies or Ordinances; Causing Substantial Vehicle Miles Traveled (VMT); and Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use. Therefore, no project-specific mitigation measures would be required.

NON-CEQA TRANSPORTATION ANALYSIS

- The study area includes key facilities generally bounded by Venice Boulevard on the north, Washington Boulevard/Culver Boulevard on the south, Hughes Avenue/Duquesne Avenue on the west, and Canfield Avenue/Washington Boulevard/Ince Avenue on the east.

- Per the direction of Culver City, the intersection operations analyses consider the 'Move Culver City' Pilot Project involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Avenue. The mobility lanes would be implemented on a pilot program basis along Culver Boulevard from Duquesne Avenue to Washington Boulevard and extend along Washington Boulevard to La Cienega Avenue all within the City of Culver City.

- Site Plan Review - The Project proposes to provide all vehicular access via one new full-access driveway along Watseka Avenue, removing the existing four driveways that currently serve the existing uses on the Project site. The proposed driveway would have a width of 36 feet, providing one inbound lane, one outbound lane and one reversible lane. Access to the subterranean parking garage would be gate controlled.

  Commercial deliveries would utilize a loading dock located within the interior of the southern end of the building, which may be accessed through the Project driveway. A turning movement analysis was performed using the typical truck that would be expected to utilize the loading dock. It was determined that truck turning maneuvers would not conflict with the proposed roadway curbs, and no corrective actions would be required.

- Intersection Operation Analysis and Queuing

  Operational Evaluation. HCM methodology was utilized to calculate operational analysis and vehicle queuing. Eight intersections were evaluated (non-CEQA) within the study area for this Project.

  Existing Conditions: All the study intersections are currently operating at LOS C or better during both the morning and evening peak hours for Existing (2021) conditions.

  Existing (2021) plus Project conditions analysis indicates that all study locations would continue to operate at LOS C or better under both without and with the

Project. The Project's traffic does not change the levels of service at any of the study locations compared to Existing Conditions (without Project) during both the morning and evening peak hours.

Future Horizon Year (2024) Conditions: All study intersections are projected to operate at LOS D or better during both the morning and evening peak hours under base (without Project) conditions.

Future Horizon Year (2024) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Horizon Year (2024) Base (without Project) during both the morning and evening peak hours.

Future Buildout Year (2045) Conditions: All eight study intersections are projected to operate at LOS D or better during the morning peak hour under base conditions. During the evening peak hour, seven of the eight study intersections are projected to operate at LOS D or better. The remaining intersection is projected to operate at LOS E and includes:

- o Bagley Avenue/Main Street and Venice Boulevard – LOS E during the PM peak hour

Future Buildout Year (2045) plus Project conditions analysis indicates the Project's traffic does not change the levels of service to LOS E or F at any of the study locations compared to Future Buildout Year (2045) Base (without Project) during both the morning and evening peak hours.

Queuing Analysis. The queuing analysis indicates that the Project's weekday AM and PM peak hour traffic volumes would have minimal effect on vehicle queuing at the study intersections under existing and future conditions with the Project. Therefore, no project-related corrective measures would be required at the analysis locations.

- <u>Driveway Operations Analysis</u> - The purpose of the driveway LOS and queuing analysis is to determinate whether or not the Project's driveways would adversely affect queues at nearby intersections and side streets. The driveway would operate at LOS B or better under all scenarios (Existing plus Project, Future Horizon Year (2024) plus Project, and Future Buildout Year (2045) plus Project conditions) during both the morning and evening peak hours.

  The proposed driveway on Watseka Avenue would be located approximately 190 feet north of the intersection of Watseka Avenue and Washington Boulevard and approximately 375 feet south of the intersection of Watseka Avenue and Venice Boulevard, which would provide adequate storage length to accommodate vehicle queuing along Watseka Avenue at the Project driveway. Therefore, the Project driveway would not adversely affect queues at nearby intersections and side streets.

- <u>Parking Meter Assessment</u> - Per the City's TSCG, the applicant shall work with Culver City's Public Works Department to determine the parking revenue loss associated with the removal of any parking meters due to implementation of the Project. Based on the location of the Project driveway and the line of sight evaluation, approximately three on-street parking spaces would need to be removed in order to achieve the required sight distance at the Project's driveway. However, these spaces can be replaced utilizing the available on-street space resulting from the removal of the existing driveways. Therefore, there would not be any loss of on-street parking spaces, but rather a re-arrangement of existing parking spaces, and consequently, no loss in parking revenues due to the proposed Project is estimated to occur due to the proposed Project's changes to on-street parking spaces.

Currently, there are eight on-street metered parking spaces located along the Project's Watseka Avenue frontage. Certain Project construction activities (i.e., concrete pours) would potentially result in the temporary closure of these metered spaces. The Project would coordinate with Culver City's Public Works Department to assess the loss of parking revenue during the period of construction when use of these spaces would not be available.

The Project is not proposing any on-street valet parking operations.

- Multimodal Safety Analysis - The proposed Project design would not impact any of the priority corridors nor prevent future implementation of safety treatments as identified in the Culver City's Local Road Safety Plan, City of Los Angeles's Vision Zero Program or any other adopted or draft planning documents.

- Transit Operations Analysis - The Project would generate approximately 56 new transit trips in the morning and evening peak hours. The Project is estimated to utilize approximately 2.18% of the total existing transit capacity along bus routes that serve the Project site. The Project would not worsen or cause any hazardous conditions to transit operations.

- Construction Period Evaluation – A final Construction Management Plan (CMP) shall be prepared by the Project contractor in consultation with the Project's traffic and/or civil engineer. The CMP would define the scope and scheduling of construction activities as well as the proposed Project's construction site management responsibilities in order to ensure that disturbance of nearby land uses or interruption of pedestrian, vehicle, bicycle, and public transit are minimized to the extent feasible.

APPENDIX A

Memorandum of Understanding (MOU)

Memorandum of Understanding for Transportation Study

This Memorandum of Understanding (MOU) acknowledges and agrees to all the City of Culver City requirements and fees for the review of a transportation study for the following project.

Date Submitted: 6/16/2021 **MOU Version #** 4

Project Name: WATSEKA OFFICE PROJECT

Project Address: 3855 Watseka Avenue, Culver City, CA 90232

Project Description: The Project consists of 149,518 s.f. of office use, replacing 7,633 s.f. of existing office use.

Land Use	Gross Floor Area (sq. ft.) *Defined per latest ITE publication*	Residential Units (#)
General Office	149,518 s.f.	
Existing Gen. Office	7,633 s.f. (to be removed)	

Project Horizon Year: 2024 **Ambient Growth Rate (% per year):** 1% per year

Directional Distribution (%): N: 20% S: 15% E: 35% W: 30%

Trip Generation Rates: Show AM, PM and daily trip generation rates for each land use and attach total daily trips generation calculations. Indicate ITE Latest Edition/Other ITE 10th Edition

Land Use	ITE Code#	AM Trips (NET)		PM Trips (NET)		Daily Totals *	
		In	Out	In	Out	In	Out
Gen. Office	710	102	16	18	99	454	454

* Project daily trips (907 trips) based on Culver City's VMT Tool. Does not include existing trip credit.

Study Intersections: Show all study intersections, intersections subject to capacity analysis credit for advanced traffic signal control synchronization, whether intersections are signalized or non-signalized, and use the same numbering system for all lists of intersections and figures in the study.

No.	Intersection	Signalized/Non-Signalized	Jurisdiction
1	Hughes Avenue/Venice Boulevard	Signalized	City of Los Angeles/Caltrans
2	Hughes Av/Duquesne Av/Washington Bl	Signalized	Culver City
3	Duquesne Avenue/Culver Boulevard	Signalized	Culver City
4	Washington Bl-Irving Pl/Culver Bl	Signalized	Culver City
5	Bagley Avenue/Venice Boulevard	Signalized	City of Los Angeles/Caltrans
6	Main Street/Culver Boulevard	Signalized	Culver City
7	Canfield Av-Washington Bl/Culver Bl	Signalized	Culver City
8	Watseka Avenue/Venice Boulevard	Non-Signalized	City of Los Angeles/Caltrans

Residential Streets: Show all residential streets to be studied.

No.	Street Name	Limits	Jurisdiction

Trip Credits: Indicate trip credits to be requested (subject to City approval)

	Trip Credits	Yes/No
Existing Uses	See attached trip generation table	YES
Pass-By Trips	-	NO
Internal Trip Capture	-	NO
Transit-Oriented Development (TOD)	-	NO
Transportation Demand Management (TDM)	25%	YES

Related Projects: Before the start of any proposed project analysis, consultants shall:

1. Obtain a list of related projects from the Culver City Current Planning Division and other affected jurisdictions.
2. Prepare a draft list of "related projects specific to the proposed project."
3. Obtain written approval from the City of the "related projects specific to the proposed project."

Maps: The following maps shall be attached to the MOU:

1. A map showing the study intersections and street segments to be analyzed, including City limit lines where applicable.
2. A map showing the project's trip distribution percentages for each land use (inbound and outbound) on the area's road network.
3. A map showing the project's trip assignments at the study intersections and project driveways, as well as road segments when applicable.
4. A site plan of the project showing property lines, alleys, project's driveways and nearby driveways and intersections on both sides of the street including dimensions.

Proposed Mitigation and Transportation Improvements: Any proposed transportation improvement(s) or mitigation measure(s) shall be listed and accompanied by plans of the existing and proposed improvements, including city limit lines and existing and proposed property lines. The City may initially accept conceptual plans with the Transportation Study, but detailed design of such improvements will be part of the project's plans submittals.

Post-Occupancy Traffic Counts: By signing below, the Property Owner/ Developer/Applicant hereby agrees to pay for and submit to the City a post-occupancy traffic count analysis of the development to the satisfaction of the City. The analysis shall determine the amount of actual traffic (motor vehicle, bicycle, and pedestrian) generated by the development compared to the ITE trip generation rates. The analysis shall include a traffic count of all onsite driveways taken upon reaching eighty-five percent (85%) occupancy of the total building gross floor area or within one (1) year of the issuance of the first Temporary Certificate of Occupancy (TCO), as determined by the City. The data shall be used to confirm the findings in the approved study and not result in any additional traffic mitigation measures and/or conditions of approval on the subject project.

Fees: Payment of a fee to the City's PWD for the City's processing of the MOU shall be required before the City approves the MOU. Payment for review of the Transportation Study shall be paid before the City's PWD completes its review of the Transportation Study. Said fees shall be per the most recent Fee Schedule as approved by the City Council.

Applicant Information:

	Property Owner/Applicant	Developer/Applicant	Traffic Consultant
Name	Mr. Stephen Lindgren		Mr. Srinath Raju, P.E.
Title	Vice President		CEO/President
Company	TDCP 3855 Watseka, LLC		Raju Associates, Inc.
Street Address	915 Wilshire Bl, Suite 2050		505 E. Colorado Bl, Suite 202
City, State, Zip	Los Angeles, CA, 90017		Pasadena, CA, 91101
Office	(213) 538-0900		(626) 792-2700
Cell			(310) 569-7559
Fax			(626) 792-2772
Email	slindgren@lpc.com		srinath.raju@rajuassociates.com

Public Agency Information: If any of the intersection(s) to be studied as part of this study are located within the City of Los Angeles, the unincorporated areas of Los Angeles County and/or impact any other public agency (i.e., Caltrans), then this MOU shall also be approved by the reviewing staff representative from each agency:

	City of Los Angeles	County of Los Angeles	Other Public Agency
Name	Mr. Eddie Guerrero/Mr. Pedro Ayala		
Title	Senior Transportation Engineer		
Company	LADOT		
Street Address	7166 W. Manchester Avenue		
City, State, Zip	Los Angeles, CA, 90045		
Office	(213) 485-1062		
Cell			
Fax			
Email	eddie.guerrero@lacity.org pedro.ayala@lacity.org		

Signatures/Expiration: This MOU shall become valid as of the date of the City's signature and expire one year thereafter. If the administrative draft of the study has not been filed with the City by the expiration date, the MOU shall expire and a new MOU filing, fee, review, and approval process shall be required.

Approved By: **Date:**

Property Owner/Applicant

Developer/Applicant

Srinath R

Traffic Consultant 6/16/2021

Heba El-Guindy 6/17/2021

City of Culver City

Additional Considerations:

- Project will consider the pilot program involving mobility lanes along Culver and Washington Boulevards between Duquesne Avenue and La Cienega Boulevard for a circulator shuttle to/from Downtown areas and 'E' Line Stations. The mobility lanes would be implemented on a pilot-program basis along Culver Boulevard from Duquesne Avenue to Washington Boulevard and travel along Washington Boulevard to La Cienega Boulevard all within the City of Culver City. This evaluation will be coordinated with Culver City.

- Transportation study will include multi-modal review of bicycle, pedestrian and transit facilities consistent with the Transportation Analysis Guidelines along with potential project adverse effects (if any) and associated improvements.

- Transportation study to evaluate scenarios detailed in the recently-approved Transportation Study Criteria and Guidelines:

    - Existing Conditions
    - Existing plus Project
    - Future Background Horizon (2024) Base
    - Future Background Horizon (2024) plus Project
    - Future Buildout (Cumulative Horizon 2045) Base
    - Future Buildout (Cumulative Horizon 2045) plus Project

- Per the direction of Culver City, existing and future analysis conditions will be performed for the following scenario:

    - One bus/bike lane and one general traffic lane in the westbound and eastbound directions along Washington Boulevard/Culver Boulevard.

- Transportation study will perform Level of Service (LOS) Analyses. The Project is exempt from CEQA Analysis since it is located in Transit Priority Area (TPA)/High Quality Transit Service Area (HQTSA).

- Transportation study will include evaluation of site plan components including internal circulation, parking supply and demand, as well as location, capacity and control of the project's access driveway.

- Either as part of the Transportation Study report or separately, the Project will develop a Transportation Demand Management (TDM) plan to increase walking, cycling and use of transit.

- No growth applied to Existing 2019 intersection traffic counts. These counts will represent Existing 2021 conditions.

- An ambient growth factor of 1% per year (a total of 3%) will be applied to Existing traffic counts to obtain Future Year 2024 (without related projects and project) conditions.

- A total ambient growth of 9.5% will be applied to Existing traffic counts to obtain Future Year 2045 (without related projects and project) conditions.

EXHIBIT 1
ESTIMATED PROJECT TRIP GENERATION

	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Project							
General Office	149,518 s.f.	144	23	167	27	140	167
Project Trip Generation Total - Less 25% TDM/Transit Credit		108	17	125	20	105	125
Existing Use to be Removed							
General Office*	7,633 s.f.	(8)	(1)	(9)	(2)	(8)	(10)
Existing Use Trip Generation Total - Less 25% TDM/Transit Credit		(6)	(1)	(7)	(2)	(6)	(8)
Net Project Trip Generation Total		**102**	**16**	**118**	**18**	**99**	**117**
Trip Rates [1]							
Office (ITE Land Use 710)	Trips per 1,000 s.f.	86%	14%	[2]	16%	84%	[2]

[1] Trip generation rates from Trip Generation Manual, 10th Edition, ITE 2017.
[2] Trip generation estimates for office was calculated using the following equations:

AM Peak Hour: $(T) = 0.94\,(X) + 26.49$
PM Peak Hour: $Ln(T) = 0.95\,Ln(X) + 0.36$

Where:
Ln = Natural logarithm
T = Two-way volume of traffic (total trip-ends)
X = Area in 1,000 gross square feet of leasable area

* Due to the small size of the existing office, ITE's average trip generation rate (1.16 trips/1,000 s.f.) was utilized for the estimation of the AM peak hour trip generation total.
** Utilizing Culver City's VMT Tool, the Project is estimated to generate a total of 907 daily trips.

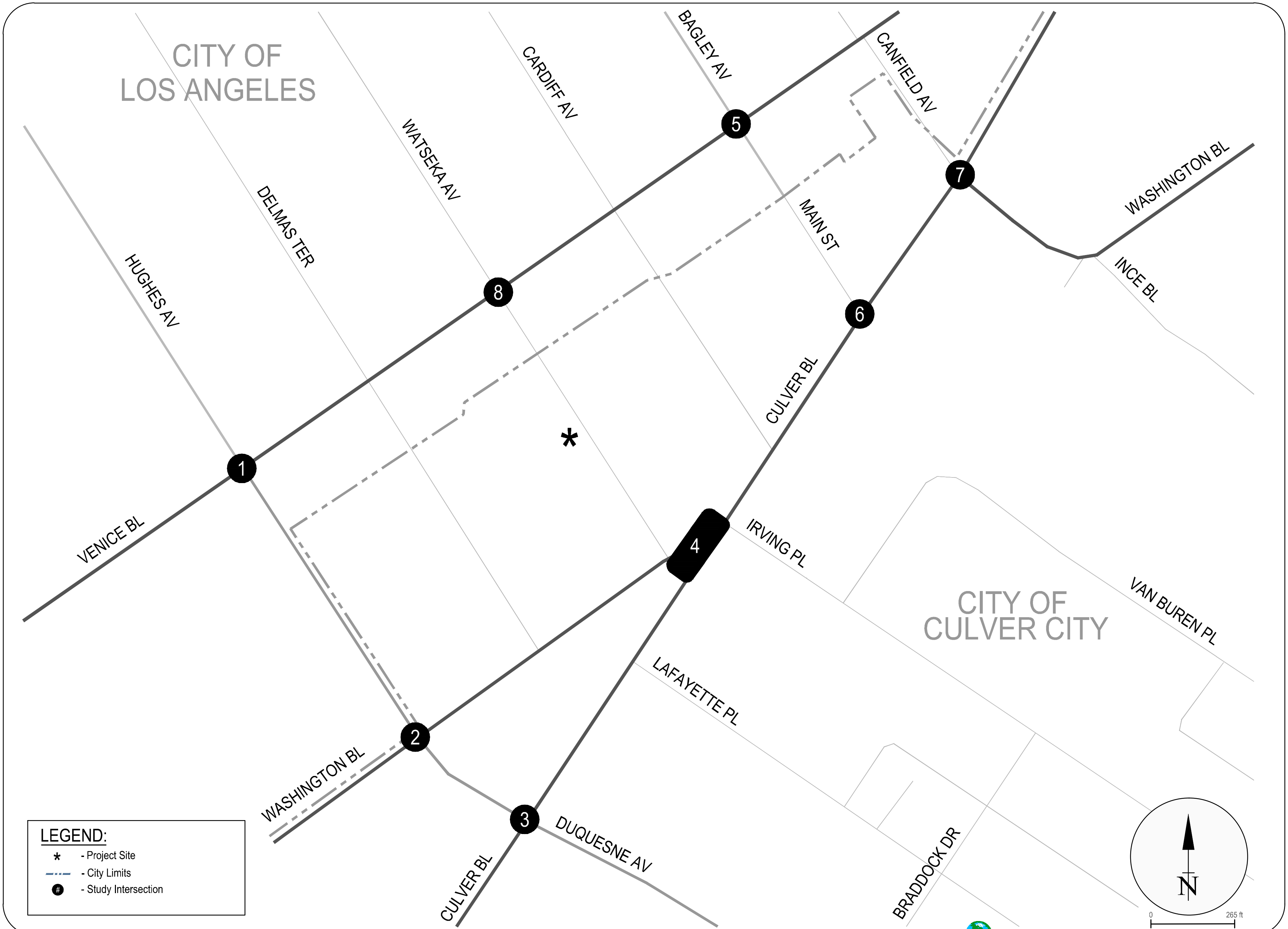


EXHIBIT 2
LOCATION OF PROJECT AND ANALYZED INTERSECTIONS

RAJU Associates, Inc.

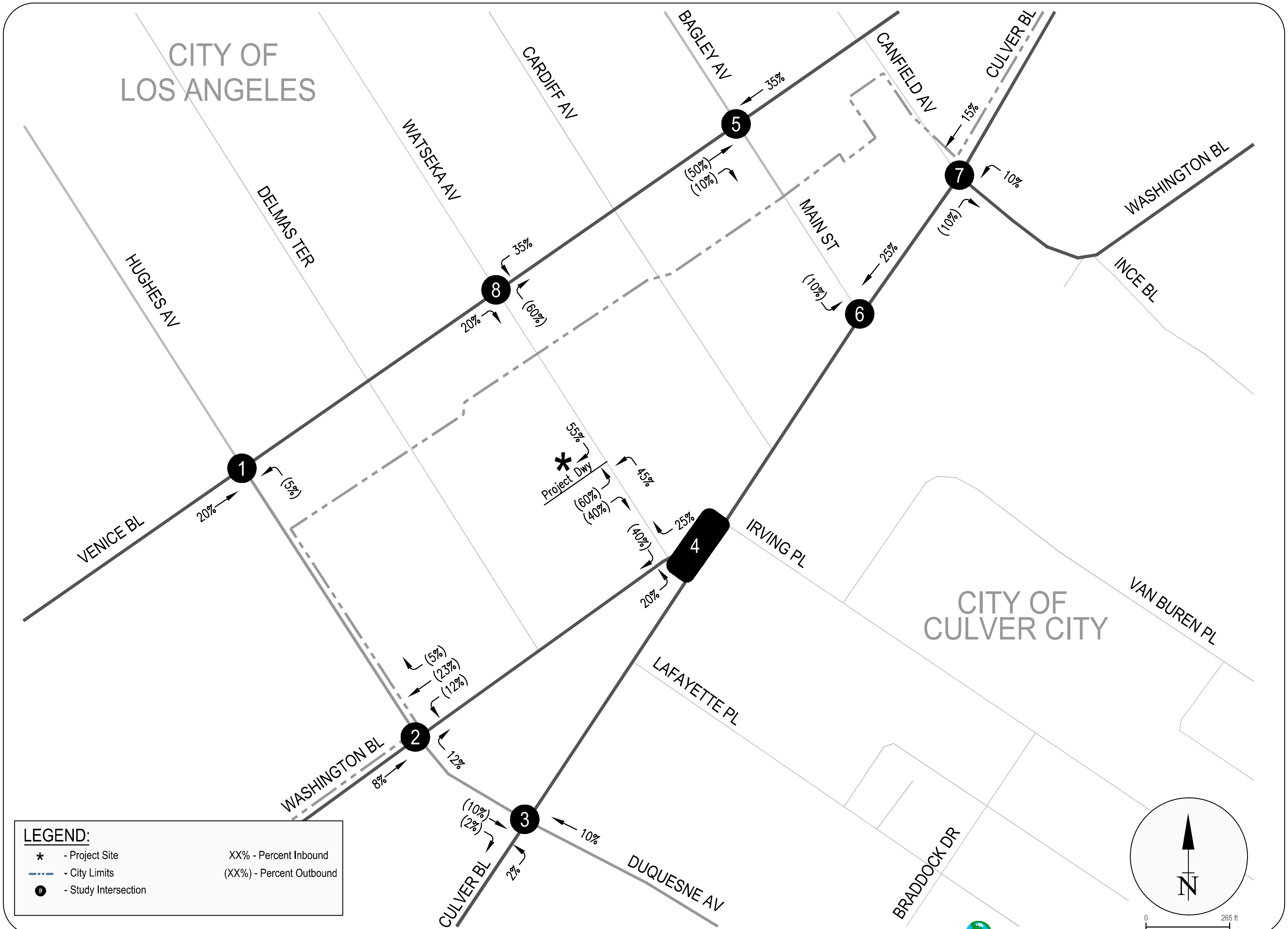


EXHIBIT 3
PROJECT TRIP DISTRIBUTION
MOBILITY LANES - ONE BUS/BIKE LANE AND ONE GENERAL TRAFFIC LANE WB AND EB CULVER BL/WASHINGTON BL

RAJU Associates, Inc.

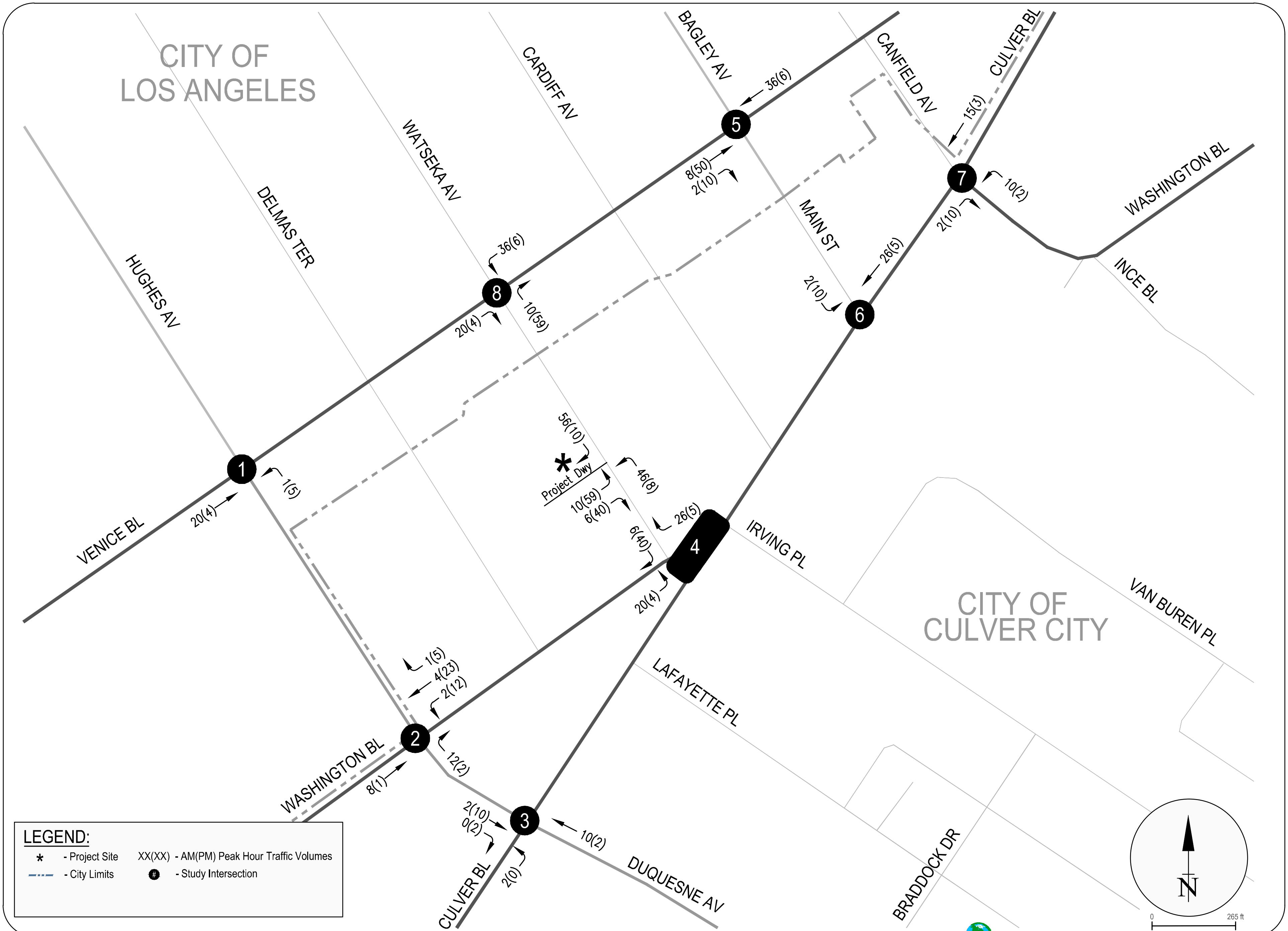
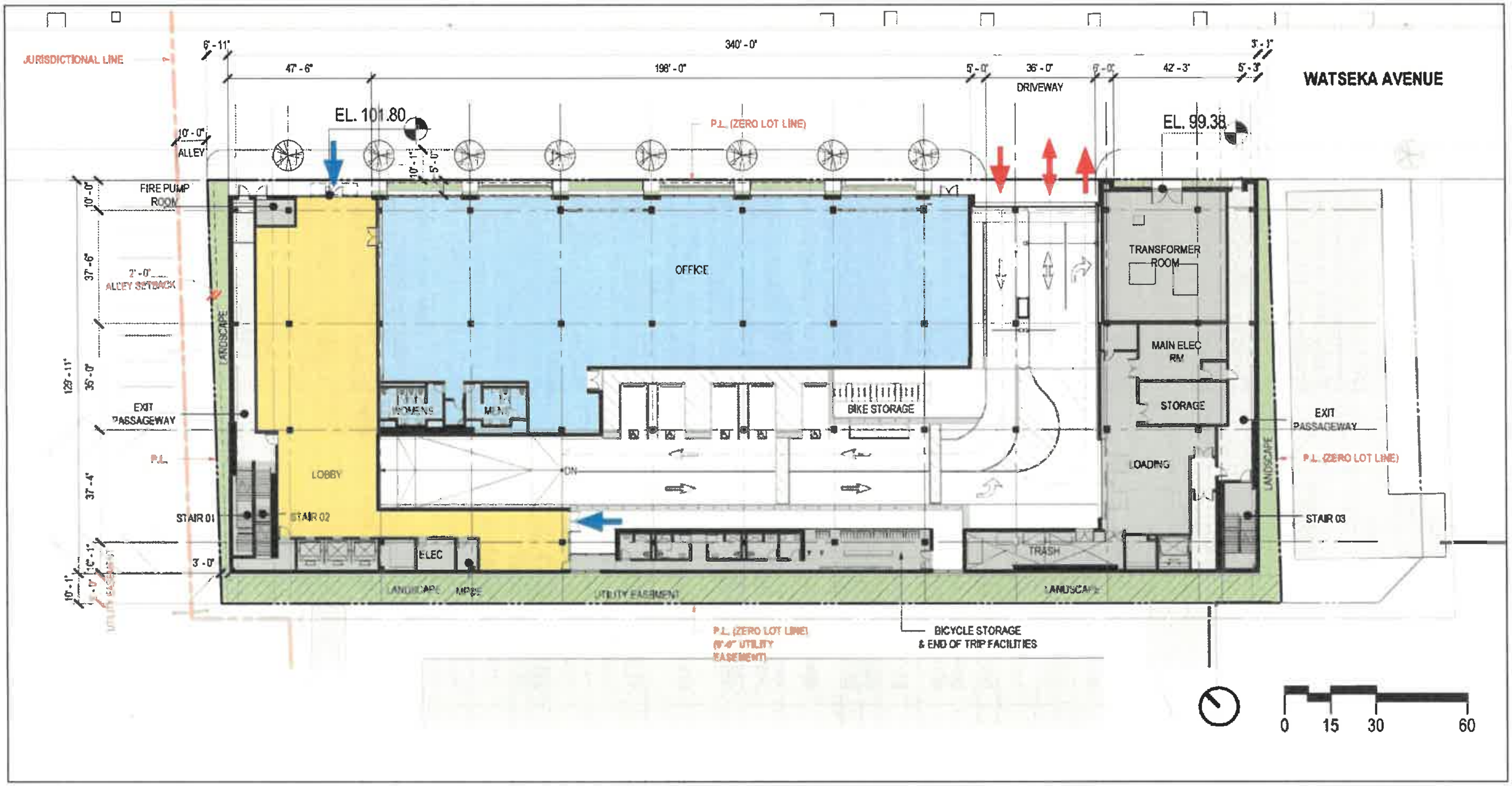


EXHIBIT 4
PROJECT ONLY - PEAK HOUR TRAFFIC VOLUMES
MOBILITY LANES - ONE BUS/BIKE LANE AND ONE GENERAL TRAFFIC LANE WB AND EB CULVER BL/WASHINGTON BL

RAJU Associates, Inc.



Source: Gensler

EXHIBIT 5
GROUND FLOOR SITE PLAN

RAJU Associates, Inc.

EXHIBIT 6
LIST OF RELATED PROJECTS

Map No.	Project Name	Location	Description
City of Culver City [1]			
1	Shell Car Wash	11224 Venice Boulevard	New 3,150 s.f. commercial building including 2,285 s.f. Convenience Store and 864 s.f. automated car wash.
2	Office & Retail Project	10000 Washington Boulevard	Renovation of existing 8-story office building. Convert ground floor lobby space to retail and restaurant space. Total net increase of 10,614 s.f. including net reduction of 1,497 s.f. of office, increase of 8,424 s.f. of retail/restaurant and 3,687 s.f. of fitness.
3	Auto Repair Facility	2926 La Cienega Boulevard	4 bay auto repair use within existing car rental facility.
4	Arora Condominiums	3837 Bentley Avenue	3 attached residential condominium dwelling units.
5	New 4-unit Condo	4034 La Salle Avenue	4 condominium dwelling units.
6	Retail Building	3030 La Cienega Boulevard	Addition of 1,250 s.f. retail floor area to an existing 8,338 s.f. retail building, and new tandem parking.
7	Three unit condominium/ townhome Redevelopment	4241 Duquesne Avenue	New three detached condominium/ townhomes, resulting in two net new residential dwelling units.
8	Condominium Project	9615 Lucerne Avenue	2 condominium dwelling units. 1 net new d.u.
9	Office Building	9919 Jefferson Boulevard	New 3-story, 62,558 s.f., office and research and development (laboratory) building.
10	Parcel B - Culver Steps	9300 Culver Boulevard	118,000 G.S.F. of office, retail, and restaurant space.
11	Condominium Project	3873 Bentley Avenue	3 condominium dwelling units.
12	Residential Project	4227 Ince Boulevard	Subdivision of one parcel into three land lots with 2 dwelling unit each, for a total of 6 new units, resulting in 5 net new units.
13	5-unit Condominiums	3961 Tilden Avenue	5 condominium dwelling units.
14	Ivy Station (Triangle Site - Washington/National) TOD	8824 Washington Boulevard; Corner of Washington Boulevard/National Boulevard	New TOD mixed use project includes a 148 room boutique hotel, approximately 57,742 gsf of retail and restaurant uses, 196,333 gsf of office use, and 200 residential units.
15	Surfas Site Mixed-Use Project	8777 Washington Boulevard	Construct new office building with 128,000 s.f. of office use, 4,500 s.f. of retail/restaurant. Demolish existing 12,485 s.f. retail and 4,731 s.f restaurant
16	Condominium Project	4180 Duquesne Avenue	4 condominium dwelling units.
17	Condominium Project	3832 Bentley Avenue	4 condominium dwelling units.
18	Synapse Office and Retail/Restaurant Project	8888 Washington Boulevard	New 91,952 s.f. office and retail/restaurant building, including approximately 5,972 s.f. of ground floor space (for retail/restaurant uses) and 56,559 g.s.f. of office space.
19	Lorcan O'Herlihy Architects	3434 Wesley Street	New TOD Mixed Use project with 15 dwelling units, and 14,237 s.f. of office/gallery on a vacant lot.
20	Condominium Project	4225 La Salle Avenue	2 condominium dwelling units. 1 net new d.u.
21	The Brick and the Machine	9735 Washington Boulevard	New 3- to 4-story office and retail building consisting of 55,477 s.f. of office (upper floors), 12,249 s.f. of retail, 2,147 s.f. high turnover restaurant, and 2,000 s.f. of quality restaurant (on ground floor). The existing vacant 16,200 s.f. bank and office building to be demolished.
22	Residential Project	4116 Higuera Street	2 new condominium dwelling units, resulting in 1 net new dwelling units.
23	The Culver Studios	9336 Washington Boulevard	New production office buildings to replace existing outmoded structures, to include 345,007 s.f. of net new production space.
24	Cosmetique	10744-10746 Washington Boulevard	New six vehicle parking stacker for existing 4,700 s.f. medical office with additional 1,026 s.f.
25	Helms Homes	3336-3340 Helms Avenue	8 condominium dwelling units. 6 net new d.u.
26	Condominium Project	3808 College Avenue	6 condominium dwelling units. 3 net new d.u.
27	New Assisted Living Facility	11141 Washington Boulevard	New 5-story, 157,500 s.f., 117 room assisted living facility. Existing 24,200 s.f. of commercial (retail, office, etc.) uses will be demolished.
28	Sweet Flower (Cannabis Retail)	10000 Culver Boulevard	Conversion of existing 5,982 s.f. retail space to storefront cannabis retail store.
29	Lenawee-Culver Place	3814 Lenawee Avenue	New 8 single family dwelling units and 95 unit, 110 bed, assisted living and memory care facility.
30	Willows School CUP Modification	8509 Higuera Street & 8476 Warner Drive	Modification to previously approved CUP to allow a playfield and increase student enrollment by 100, from 475 to 575, consistent with School Master Plan.
31	Condominium Project	3846 Bentley Avenue	4 condominium dwelling units.
32	Retail/Restaurant Project	8511 Warner Drive	51,520 s.f. of retail/restaurant uses.
33	Park Century School	3939 Landmark Street	New athletic field, 2,441 s.f. classroom building, and two-level subterranean parking, to allow an increase in student enrollment from 120 to 170 and increase of 20 staff people.
34	Schaefer II	3516 Schaefer Street	An approx. 9,338 s.f. addition to a creative office building, on a site spanning three parcels currently developed with a 7,500 s.f. building, resulting in a three-story 16,839 s.f. building.
35	Condominium Project	3906 Tilden Avenue	5 condominium dwelling units. 2 net new d.u.
36	Jackson Condos	4051 and 4055 Jackson Avenue	9 condominium dwelling units. 3 net new d.u.
37	Condominium Project	4080 Lafayette Place	5 condominium dwelling units. 2 net new d.u.
38	Robertson Mixed Use	3727 Robertson Boulevard	New 5-story mixed-use development, including approximately 6,800 s.f. of commercial floor area and twelve (12) dwelling units. Demolition of approx. 2,850 s.f. 1-story commercial building
39	Condominium Project	4030 La Salle Avenue	4 condominium dwelling units. 3 net new d.u.
40	Residential Project	4044 Madison Avenue	3 condominium dwelling units. 2 net new d.u.
41	Volvo Auto Repair	11039 Washington Boulevard	Expansion of existing two-bay auto repair facility, to add three new auto bays.

EXHIBIT 6 (continued)
LIST OF RELATED PROJECTS

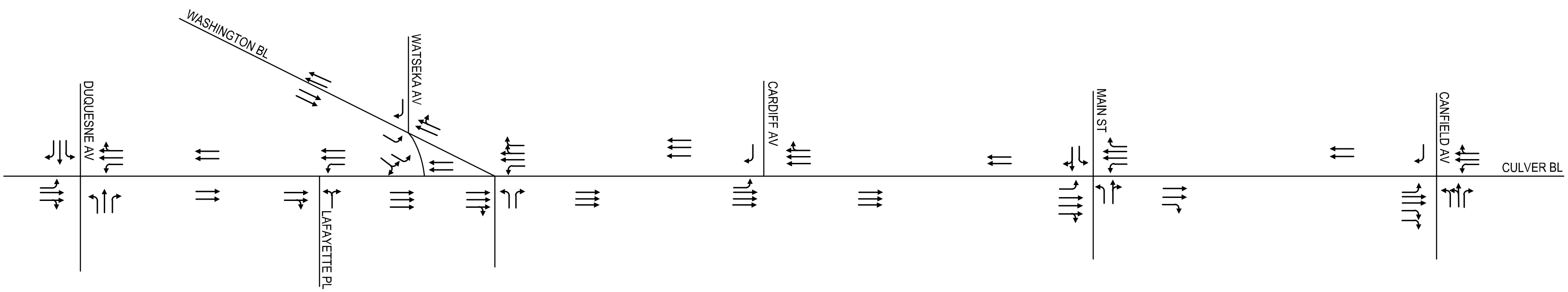
Map No.	Project Name	Location	Description
42	Condominium Project	3826 Girad Avenue	4 condominium dwelling units. 3 net new d.u.
43	TGS CC Ventures (Cannabis Retail)	3800 Sepulveda Boulevard	New 5,280 s.f. storefront cannabis retail space on vacant lot.
44	Hotel Project	3868 Sepulveda Boulevard	New 5-story, 94-room hotel with 1,375 s.f. retail space. Existing hotel totaling 38 rooms will be demolished.
45	Office/Retail Project	3951 Higuera Street	Demolition of an existing 4,480 s.f. co-working office facility and construction of new 36,614 s.f. office and retail building.
46	Jazz Bakery	9814 Washington Boulevard	New 200 seat Performance Theatre with a museum and bakery/café, 2-stories & estimated 7,500 square feet.
47	ECF Site	8700, 8710, 8740, and 8750 Washington Boulevard	Preliminary Concept - Mixed Use TOD with approximately 199 residential units and 40,000 s.f. of commercial space (17,250 s.f. of live/work space, 5,000 s.f. of restaurant, and 17,750 s.f. of retail), on a 3.06 to possibly 3.53 acre site, currently developed with multiple uses
48	Federal Express Site	3710 & 3750 S.Robertson Boulevard	Preliminary Concept - Mixed Use TOD with approximately 141 residential units and 64,200 s.f. of creative office and 30,042 s.f. commercial (retail/restaurant/live-work space), on a 2.2 acre site.
City of Los Angeles [2]			
49	The Palms Mixed-Use Project	10601 Washington Boulevard	Mixed-use project with 132-unit apartment, 26,000 s.f. office, and 18,000 s.f. retail.
50	Cumulus Mixed-Use Project	3221 S. La Cienega Boulevard	Converting existing ABC Lot to a Mixed-Use: 1,218-Unit Apartment, 200,000 s.f. Office, 50,000 s.f. Grocery Store, 30,000 s.f. Retail & 20,000 s.f. Restaurant project.
51	Venice & National Hotel Project	8900 W. National Boulevard	New 180-room hotel, 16,456 s.f. retail and 7,330 s.f. restaurant
52	Mixed-Use Project	10801 Venice Boulevard	New 6-story, 66-unit apartment building and ground floor shopping center with sub garage.
53	Mixed-Use Project	10375 Washington Boulevard	7-story mixed-use building with 108 condominium dwelling units and 3,600 s.f. retail.
54	Mixed-Use Project	5950 W. Jefferson Boulevard	New mixed-use project with 64,000 s.f. office, 2,000 s.f. retail and 4,000 s.f. restaurant.
55	Residential Project	3739 Cardiff Avenue	New 74-unit apartment building. Existing 5 single-family houses will be removed.
56	Mixed-Use Project	3664 S. Overland Avenue	New mixed-use project with 187-unit apartment and 5,000 s.f. restaurant
57	Coffee Bean Project	6024 W. Jefferson Boulevard	New mixed-use project with 123,527 s.f. office, 64,206 s.f. manufacturing and 2,200 s.f. coffee shop with drive-through.
58	Apartment Project	3838 S. Dunn Drive	New 7-story, 78-unit apartment building attached to existing 7-story, 86-unit apartment building.
59	Mixed-Use Project	3577 S. Overland Avenue	New mixed-use project with 119 multifamily dwelling units and 2,000 s.f. restaurant.
60	Apartment Project	3301 S. Canfield Avenue	New 6-story, 50-unit apartment building.
61	Office Project	5850 W. Jefferson Boulevard	New 22-story, 344,947 s.f. office building.
62	Office Project	5790 W. Jefferson Boulevard	Construct new 10-story, 150,761 s.f. office building
County of Los Angeles [1]			
63	West Los Angeles College Master Plan	9000 Overland Avenue	Approximately 92,000 s.f. of new building construction and renovation. Anticipated future student population of 18,904.

* Per *City of Culver City Transportation Study Criteria and Guidelines*, includes related projects within a one-and-one-half (1 1/2) mile radius from the project site

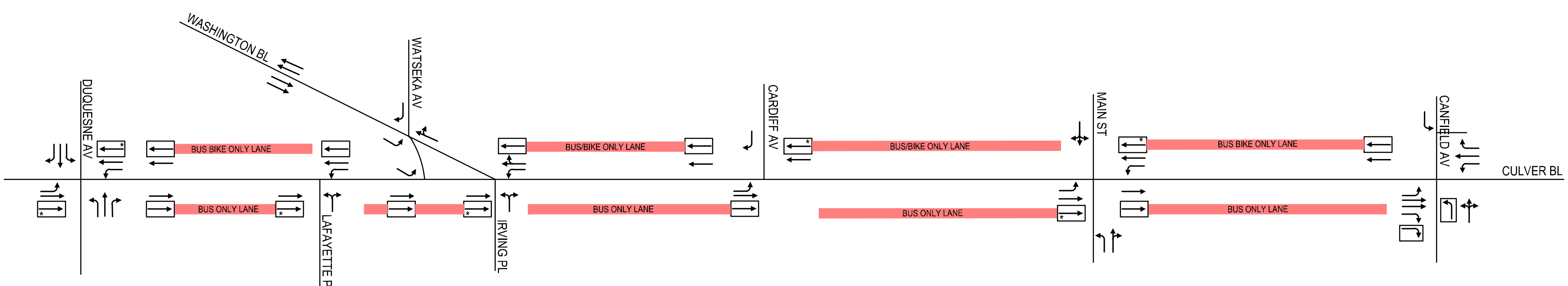
[1] Source: Culver City Projects List - Updated October 15, 2020.

[2] Source: Los Angeles Department of Transportation - September 29, 2020.

EXISTING (2019) CONDITIONS - PRE-COVID



Scenario: Mobility Lanes - One Bike/Bus Lane and One General Traffic Lane Culver Westbound and Eastbound



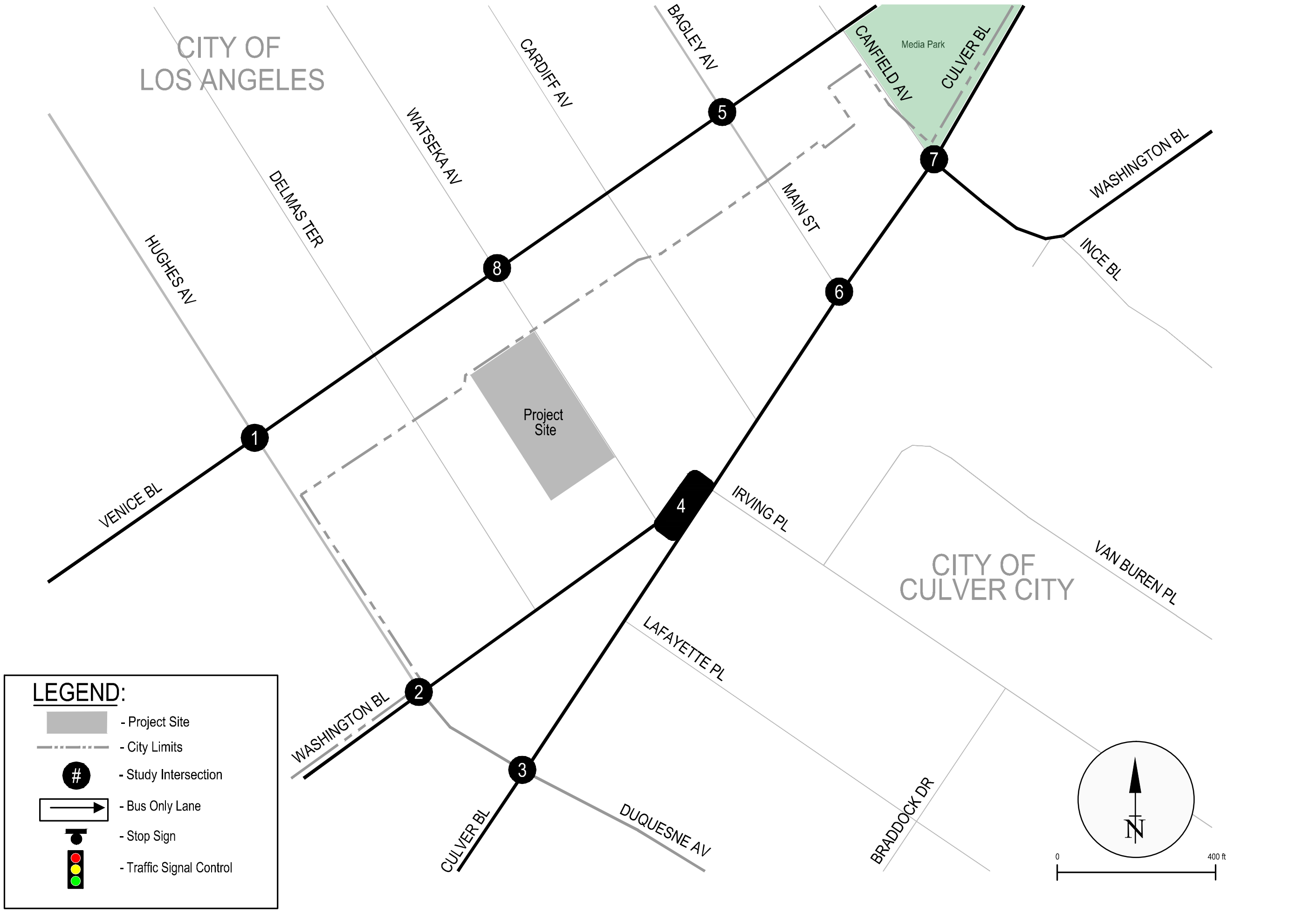
* General traffic right-turn allowed

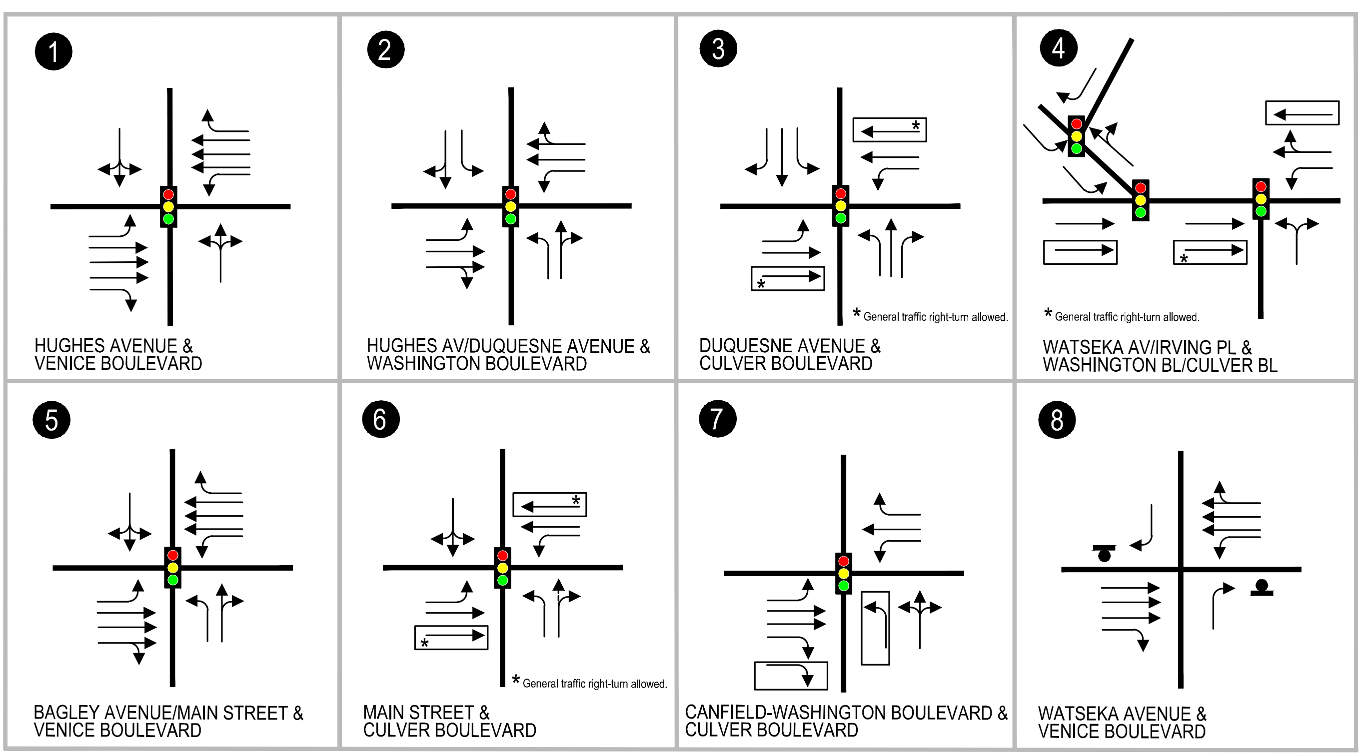
EXHIBIT 7
INTERSECTION LANE CONFIGURATIONS

RAJU Associates, Inc.

APPENDIX B

Intersection Lane Configurations





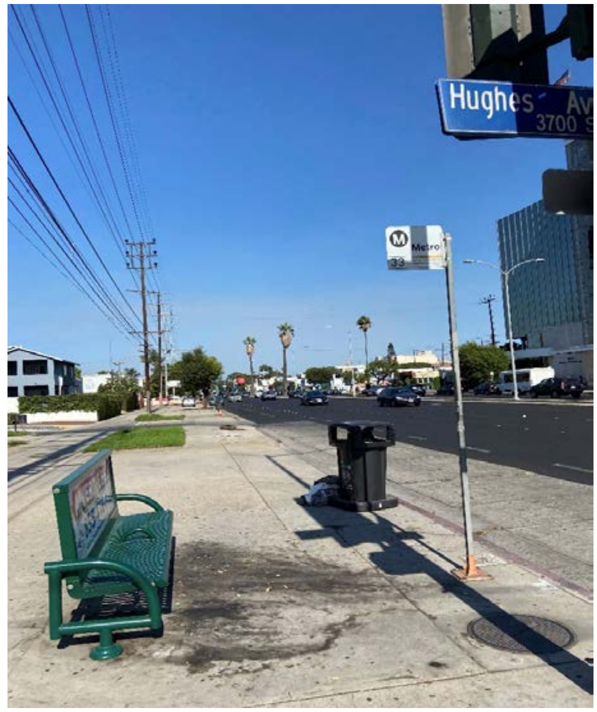
APPENDIX B1
INTERSECTION LANE CONFIGURATIONS - ALL SCENARIOS

RAJU Associates, Inc.

APPENDIX C

Existing Transit Network Review - Bus Stops

Venice Boulevard & Hughes Avenue - Eastbound
- Looking West

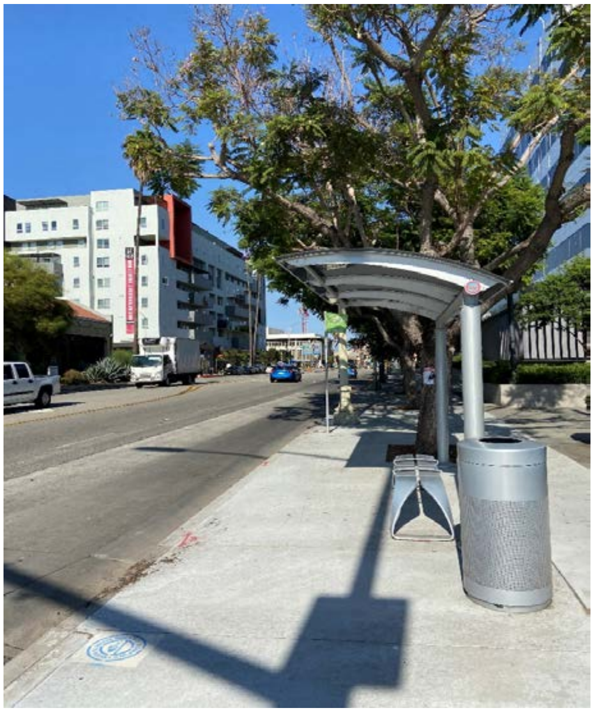


Venice Boulevard & Hughes Avenue - Westbound
- Looking East

Venice Boulevard & Bagley Avenue - Main Street
- Eastbound - Looking East

Venice Boulevard & Bagley Avenue - Main Street
- Westbound - Looking West

Appendix C-1
Existing Transit Network Review - Bus Stops



Washington Boulevard & Clarington Avenue
- Madison Avenue - Eastbound - Looking East

Washington Boulevard & Clarington Avenue
- Madison Avenue - Westbound - Looking East

Washington Boulevard & Hughes Avenue
- Duquesne Avenue - Eastbound - Looking East

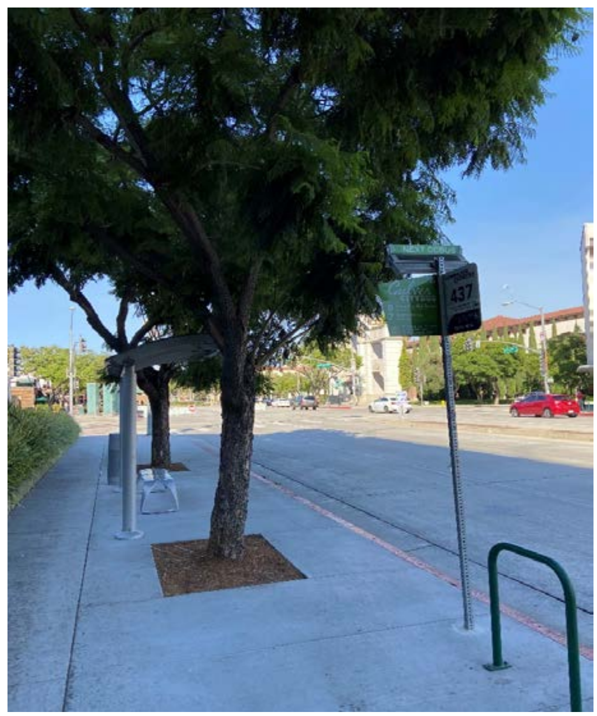
Washington Boulevard & Hughes Avenue
- Duquesne Avenue - Westbound - Looking West

Appendix C-2
Existing Transit Network Review - Bus Stops

Culver Boulevard & Madison Avenue - Westbound
- Looking East

Madison Avenue & Culver Boulevard - Southbound
- Looking South

Madison Avenue & Culver Boulevard - Northbound
- Looking South



Culver Boulevard & Duquesne Avenue - Westbound
- Looking East

Appendix C-3
Existing Transit Network Review - Bus Stops

Culver Boulevard & Lafayette Place - Eastbound
- Looking West

Culver Boulevard & Main Street - Eastbound
- Looking West

Culver Boulevard & Main Street - Westbound
- Looking West

Appendix C-4
Existing Transit Network Review - Bus Stops

APPENDIX D

Existing Traffic Counts

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	LA	PROJECT #:	SC
Tue, Apr 23, 19	NORTH & SOUTH:	Hughes	LOCATION #:	10
	EAST & WEST:	Venice	CONTROL:	SIGNAL

NOTES:

Queue EB PM

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

	NORTHBOUND Hughes			SOUTHBOUND Hughes			EASTBOUND Venice			WESTBOUND Venice				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	0	1	0	0	1	0	1	3	0	1	3	0		0	0	0	0	
AM																		
7:00 AM	28	24	8	3	13	7	13	186	14	30	310	8	644	0	0	5	4	9
7:15 AM	38	33	11	2	23	7	7	211	16	21	348	7	724	0	0	1	8	9
7:30 AM	25	44	9	8	37	7	10	266	19	31	384	15	855	0	0	3	11	14
7:45 AM	29	41	12	11	36	7	11	319	29	31	373	17	916	0	0	0	10	10
8:00 AM	31	40	10	12	36	10	12	277	31	44	384	13	900	0	0	2	8	10
8:15 AM	23	35	11	11	35	5	23	398	27	35	362	12	977	0	0	4	6	10
8:30 AM	21	36	16	16	54	7	21	397	28	42	385	7	1,030	0	0	3	7	10
8:45 AM	19	39	18	9	43	18	19	348	46	38	361	18	976	0	0	1	6	7
9:00 AM	23	30	25	5	32	13	26	326	36	46	333	7	902	0	0	0	13	13
9:15 AM	22	30	41	15	38	14	18	369	30	19	277	6	879	0	0	2	4	6
9:30 AM	26	25	31	10	36	8	19	238	39	42	328	8	810	0	0	1	13	14
9:45 AM	21	38	14	8	27	10	13	239	26	37	352	18	803	0	0	3	8	11
VOLUMES	306	415	206	110	410	113	192	3,574	341	416	4,197	136	10,416	0	0	25	98	123
APPROACH %	33%	45%	22%	17%	65%	18%	5%	87%	8%	9%	88%	3%						
APP/DEPART	927	/	718	633	/	1,069	4,107	/	3,988	4,749	/	4,641	0					
BEGIN PEAK HR		8:15 AM																
VOLUMES	86	140	70	41	164	43	89	1,469	137	161	1,441	44	3,885					
APPROACH %	29%	47%	24%	17%	66%	17%	5%	87%	8%	10%	88%	3%						
PEAK HR FACTOR		0.949			0.805			0.946			0.948		0.943					
APP/DEPART	296	/	265	248	/	430	1,695	/	1,612	1,646	/	1,578	0					
PM																		
03:00 PM	19	28	31	10	43	10	18	286	34	49	285	3	816	0	0	3	8	11
3:15 PM	16	37	22	10	37	16	26	302	35	31	287	12	831	0	0	3	2	5
3:30 PM	22	44	20	11	49	7	26	273	23	40	255	8	778	0	0	2	9	11
3:45 PM	22	23	20	9	66	7	32	275	32	37	308	5	836	0	0	2	3	5
4:00 PM	22	39	19	7	46	11	35	268	28	50	277	8	810	0	0	1	3	4
4:15 PM	25	47	21	5	51	12	26	271	40	37	303	10	848	0	0	1	4	5
4:30 PM	20	53	15	12	56	9	20	270	30	36	332	10	863	0	0	3	2	5
4:45 PM	18	37	14	5	47	12	23	207	31	45	350	12	801	0	0	2	7	9
5:00 PM	22	40	14	11	49	9	34	293	25	34	328	9	868	0	0	3	4	7
5:15 PM	22	60	9	7	49	10	40	278	28	38	386	6	933	0	0	2	7	9
5:30 PM	26	47	19	6	48	6	30	204	29	46	369	6	836	0	0	0	3	3
5:45 PM	28	42	22	12	50	13	25	252	33	60	365	9	911	0	0	0	5	5
VOLUMES	262	497	226	105	591	122	335	3,179	368	503	3,845	98	10,131	0	0	22	57	79
APPROACH %	27%	50%	23%	13%	72%	15%	9%	82%	9%	11%	86%	2%						
APP/DEPART	985	/	908	818	/	1,405	3,882	/	3,567	4,446	/	4,251	0					
BEGIN PEAK HR		5:00 PM																
VOLUMES	98	189	64	36	196	38	129	1,027	115	178	1,448	30	3,548					
APPROACH %	28%	54%	18%	13%	73%	14%	10%	81%	9%	11%	87%	2%						
PEAK HR FACTOR		0.954			0.900			0.903			0.954		0.951					
APP/DEPART	351	/	343	270	/	470	1,271	/	1,146	1,656	/	1,589	0					

Hughes

NORTH SIDE

Venice WEST SIDE

EAST SIDE **Venice**

SOUTH SIDE

Hughes

	ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM	11	6	8	9	34	6	3	5	3	17	4	3	0	5	12
7:15 AM	26	5	7	9	47	11	2	5	6	24	7	3	1	1	12
7:30 AM	23	5	8	7	43	6	2	5	5	18	9	3	2	0	14
7:45 AM	12	17	6	9	44	7	8	5	4	24	5	9	1	3	18
8:00 AM	10	6	12	7	35	7	2	11	6	26	2	4	1	0	7
8:15 AM	9	1	9	10	29	3	1	9	8	21	5	0	0	2	7
8:30 AM	19	9	8	8	44	11	3	6	5	25	8	6	2	2	18
8:45 AM	20	6	16	22	64	7	2	15	12	36	13	4	1	10	28
9:00 AM	22	5	8	14	49	10	3	8	12	33	12	2	0	1	15
9:15 AM	11	14	11	10	46	3	6	11	7	27	8	8	0	3	19
9:30 AM	19	14	12	17	62	11	7	9	16	43	8	7	3	0	18
9:45 AM	18	12	11	11	52	11	7	10	6	34	7	5	0	5	17
TOTAL	200	100	116	133	549	93	46	99	90	328	88	54	11	32	185
PM															
3:00 PM	16	23	18	9	66	9	18	16	9	52	7	5	2	0	14
3:15 PM	11	16	16	9	52	5	13	12	7	37	6	3	4	2	15
3:30 PM	6	20	13	13	52	0	10	12	12	34	6	10	1	1	18
3:45 PM	10	22	15	12	59	6	13	11	9	39	3	6	2	0	11
4:00 PM	12	16	12	11	51	9	6	8	9	32	0	9	2	1	12
4:15 PM	9	30	15	9	63	3	21	14	7	45	6	9	1	2	18
4:30 PM	13	23	12	12	60	6	15	12	11	44	7	8	0	1	16
4:45 PM	18	19	11	15	63	13	9	10	11	43	5	10	1	4	20
5:00 PM	21	22	16	15	74	14	9	14	8	45	6	12	2	7	27
5:15 PM	25	15	16	11	67	16	7	13	10	46	5	8	3	1	17
5:30 PM	19	16	16	13	64	14	8	13	8	43	5	8	3	5	21
5:45 PM	13	15	7	18	53	6	8	5	15	34	7	7	2	3	19
TOTAL	173	237	167	147	724	101	137	140	116	494	63	95	23	27	208

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	Culver City	PROJECT #:	SC
Tue, Apr 23, 19	NORTH & SOUTH:	Hughes	LOCATION #:	11
	EAST & WEST:	Washington	CONTROL:	SIGNAL

NOTES:

Queue EB PM

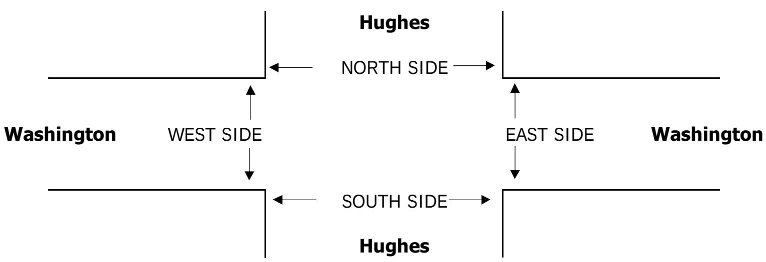
AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Hughes			Hughes			Washington			Washington			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
AM 7:00 AM	43	52	9	3	29	6	7	58	19	9	119	9	363
7:15 AM	43	69	6	3	44	2	6	57	20	5	147	11	413
7:30 AM	35	64	6	6	49	12	8	77	32	23	155	6	473
7:45 AM	29	64	8	8	63	10	9	102	33	18	152	11	507
8:00 AM	27	70	7	12	83	6	17	115	33	9	134	9	522
8:15 AM	30	63	14	4	60	10	9	131	26	15	97	6	465
8:30 AM	28	65	10	6	97	16	10	138	38	19	125	11	563
8:45 AM	28	52	16	5	80	10	16	144	39	25	124	15	554
VOLUMES	263	499	76	47	505	72	82	822	240	123	1,053	78	3,860
APPROACH %	31%	60%	9%	8%	81%	12%	7%	72%	21%	10%	84%	6%	
APP/DEPART	838	/	659	624	/	867	1,144	/	946	1,254	/	1,388	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	113	250	47	27	320	42	52	528	136	68	480	41	2,104
APPROACH %	28%	61%	11%	7%	82%	11%	7%	74%	19%	12%	81%	7%	
PEAK HR FACTOR		0.958			0.817			0.899			0.898		0.934
APP/DEPART	410	/	343	389	/	523	716	/	603	589	/	635	0
PM 4:00 PM	22	42	4	13	102	13	15	197	37	23	105	18	591
4:15 PM	19	48	5	22	89	7	16	201	38	20	84	19	568
4:30 PM	20	54	3	16	107	12	14	205	38	34	98	15	616
4:45 PM	19	46	3	13	90	14	14	196	41	28	101	8	573
5:00 PM	12	40	4	12	85	8	14	235	37	20	133	11	611
5:15 PM	28	68	6	22	97	13	12	200	42	28	101	13	630
5:30 PM	19	57	3	24	90	12	14	205	31	35	139	7	636
5:45 PM	16	47	4	23	96	13	22	198	32	37	109	22	619
VOLUMES	155	402	32	145	756	92	121	1,637	296	225	870	113	4,844
APPROACH %	26%	68%	5%	15%	76%	9%	6%	80%	14%	19%	72%	9%	
APP/DEPART	589	/	635	993	/	1,270	2,054	/	1,821	1,208	/	1,118	0
BEGIN PEAK HR		5:00 PM											
VOLUMES	75	212	17	81	368	46	62	838	142	120	482	53	2,496
APPROACH %	25%	70%	6%	16%	74%	9%	6%	80%	14%	18%	74%	8%	
PEAK HR FACTOR		0.745			0.938			0.911			0.905		0.981
APP/DEPART	304	/	326	495	/	626	1,042	/	940	655	/	604	0

U-TURNS	NB	SB	EB	WB	TTL
	0	0	0	0	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	1	1
8:45 AM	0	0	0	0	0
VOLUMES	0	0	0	1	1
4:00 PM	0	0	0	1	1
4:15 PM	0	0	0	1	1
4:30 PM	0	0	0	1	1
4:45 PM	0	0	0	0	0
5:00 PM	0	0	1	0	1
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	4	4
5:45 PM	0	0	0	0	0
VOLUMES	0	0	1	7	8



	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM	1	3	2	14	20	1	3	1	11	16	0	0	1	3	4
7:15 AM	1	5	5	12	23	1	3	4	7	15	0	2	1	5	8
7:30 AM	1	4	2	5	12	1	2	2	4	9	0	2	0	1	3
7:45 AM	8	4	5	10	27	7	4	4	9	24	1	0	1	1	3
8:00 AM	5	4	8	13	30	5	4	7	12	28	0	0	1	1	2
8:15 AM	4	7	5	14	30	4	2	4	12	22	0	5	1	2	8
8:30 AM	14	3	9	12	38	11	3	7	10	31	3	0	2	2	7
8:45 AM	14	10	10	30	64	11	10	8	20	49	3	0	2	10	15
TOTAL	48	40	46	110	244	41	31	37	85	194	7	9	9	25	50
AM BEGIN PEAK HR			8:00 AM			31	19	26	54	130					
PM 4:00 PM	16	5	15	5	41	16	4	13	4	37	0	1	2	1	4
4:15 PM	24	12	13	12	61	21	10	12	9	52	3	2	1	3	9
4:30 PM	17	12	16	16	61	17	11	15	15	58	0	1	1	1	3
4:45 PM	15	7	11	17	50	13	6	9	14	42	2	1	2	3	8
5:00 PM	20	8	15	11	54	15	7	12	8	42	5	1	3	3	12
5:15 PM	21	9	12	21	63	17	8	9	20	54	4	1	3	1	9
5:30 PM	12	6	9	15	42	11	4	5	11	31	1	2	4	4	11
5:45 PM	25	9	10	15	59	21	8	9	13	51	4	1	1	2	8
TOTAL	150	68	101	112	431	131	58	84	94	367	19	10	17	18	64
PM BEGIN PEAK HR			5:00 PM			64	27	35	52	178					

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	Culver City	PROJECT #:	SC
Tue, Apr 23, 19	NORTH & SOUTH:	Duquesne	LOCATION #:	12
	EAST & WEST:	Culver	CONTROL:	SIGNAL

NOTES:

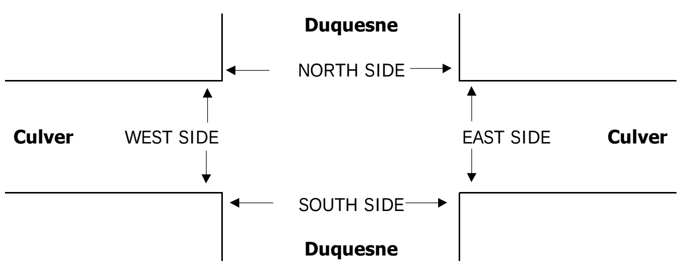
Queue EB AM/PM; Queue NB AM/PM;

AM PM MD OTHER OTHER

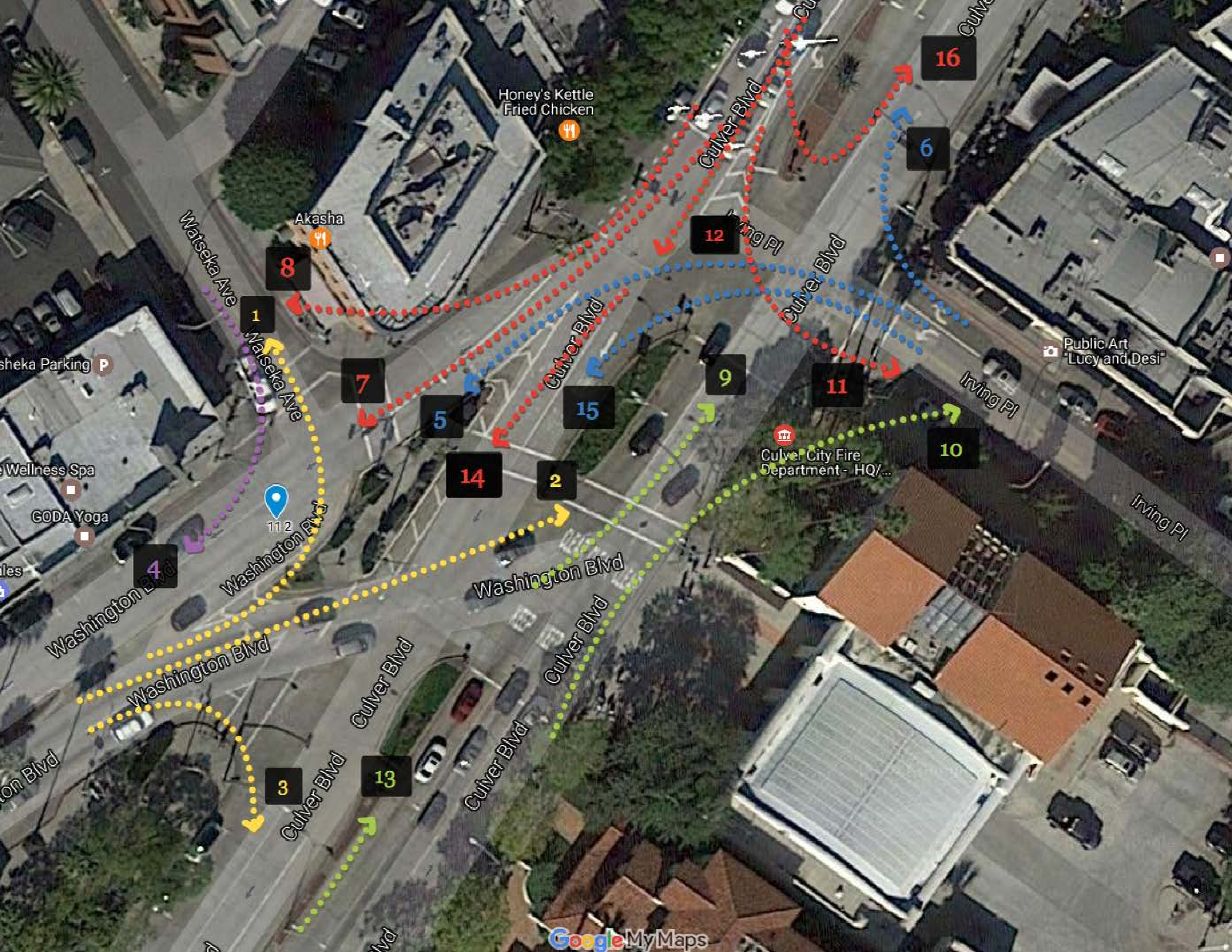
▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

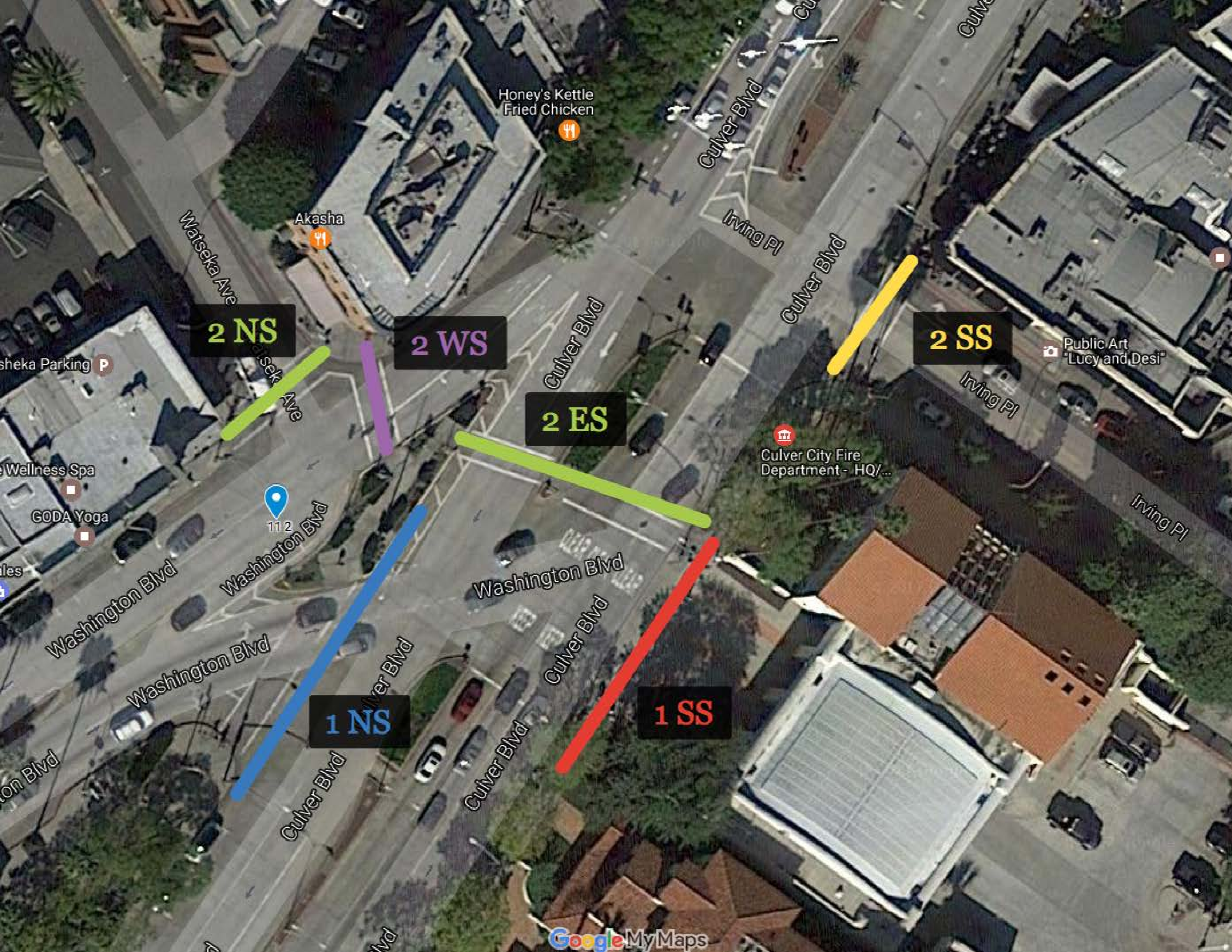
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
		Duquesne			Duquesne			Culver			Culver								
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	1	1	1	1	1	2	0	1	2	0		0	0	0	0	
AM	7:00 AM	21	92	10	1	35	16	14	198	13	13	135	4	552	0	0	0	1	1
AM	7:15 AM	28	84	17	10	40	13	21	239	15	14	166	4	651	0	0	0	0	0
AM	7:30 AM	27	75	18	6	59	32	22	272	16	15	219	8	769	0	0	0	0	0
AM	7:45 AM	33	77	13	13	56	42	22	230	19	10	181	7	703	0	0	1	0	1
AM	8:00 AM	32	72	10	11	70	32	30	234	18	15	172	5	701	0	0	1	1	2
AM	8:15 AM	38	76	18	12	58	23	22	250	23	18	217	10	765	0	0	0	0	0
AM	8:30 AM	32	60	18	9	61	47	28	244	9	6	226	8	748	0	0	3	0	3
AM	8:45 AM	48	76	16	15	75	46	29	217	12	14	218	2	768	0	0	2	1	3
AM	VOLUMES	259	612	120	77	454	251	188	1,884	125	105	1,534	48	5,657	0	0	7	3	10
AM	APPROACH %	26%	62%	12%	10%	58%	32%	9%	86%	6%	6%	91%	3%						
AM	APP/DEPART	991	/	841	782	/	681	2,197	/	2,084	1,687	/	2,051	0					
AM	BEGIN PEAK HR		8:00 AM																
AM	VOLUMES	150	284	62	47	264	148	109	945	62	53	833	25	2,982					
AM	APPROACH %	30%	57%	13%	10%	58%	32%	10%	85%	6%	6%	91%	3%						
AM	PEAK HR FACTOR		0.886			0.844			0.946			0.930		0.971					
AM	APP/DEPART	496	/	412	459	/	377	1,116	/	1,056	911	/	1,137	0					
PM	4:00 PM	30	39	21	30	93	56	21	158	29	9	157	5	648	0	0	0	0	0
PM	4:15 PM	21	41	18	26	84	44	29	206	20	13	151	7	660	0	0	0	2	2
PM	4:30 PM	23	40	18	33	73	66	25	222	17	15	148	6	686	1	0	2	1	4
PM	4:45 PM	22	46	14	20	86	56	23	227	16	6	140	0	656	0	0	1	0	1
PM	5:00 PM	19	44	21	28	72	60	24	243	21	10	190	6	738	0	0	1	1	2
PM	5:15 PM	25	57	21	35	56	76	30	220	19	14	179	8	740	0	0	2	1	3
PM	5:30 PM	36	53	20	35	66	84	20	221	14	10	172	5	736	0	1	0	1	2
PM	5:45 PM	19	46	17	31	84	70	18	160	15	8	178	3	649	0	0	0	0	0
PM	VOLUMES	195	366	150	238	614	512	190	1,657	151	85	1,315	40	5,513	1	1	6	6	14
PM	APPROACH %	27%	51%	21%	17%	45%	38%	10%	83%	8%	6%	91%	3%						
PM	APP/DEPART	711	/	591	1,364	/	845	1,998	/	2,050	1,440	/	2,027	0					
PM	BEGIN PEAK HR		4:45 PM																
PM	VOLUMES	102	200	76	118	280	276	97	911	70	40	681	19	2,870					
PM	APPROACH %	27%	53%	20%	18%	42%	41%	9%	85%	6%	5%	92%	3%						
PM	PEAK HR FACTOR		0.867			0.911			0.936			0.898		0.970					
PM	APP/DEPART	378	/	313	674	/	387	1,078	/	1,107	740	/	1,063	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	5	2	4	7	18	5	2	3	5	15	0	0	1	2	3
AM	7:15 AM	7	6	4	12	29	5	4	3	7	19	2	2	1	5	10
AM	7:30 AM	2	3	6	4	15	1	2	5	4	12	1	1	1	0	3
AM	7:45 AM	7	6	4	10	27	4	5	3	7	19	3	1	1	3	8
AM	8:00 AM	9	8	13	8	38	6	6	12	7	31	3	2	1	1	7
AM	8:15 AM	9	7	7	12	35	8	7	4	10	29	1	0	3	2	6
AM	8:30 AM	9	6	7	7	29	7	5	7	7	26	2	1	0	0	3
AM	8:45 AM	8	13	3	17	41	7	12	2	8	29	1	1	1	9	12
AM	TOTAL	56	51	48	77	232	43	43	39	55	180	13	8	9	22	52
	AM BEGIN PEAK HR			8:00 AM			28	30	25	32	115					
PM	4:00 PM	10	12	14	16	52	9	11	13	12	45	1	1	1	4	7
PM	4:15 PM	19	18	18	11	66	19	16	17	9	61	0	2	1	2	5
PM	4:30 PM	7	34	15	11	67	7	32	13	9	61	0	2	2	2	6
PM	4:45 PM	9	16	12	11	48	7	16	10	7	40	2	0	2	4	8
PM	5:00 PM	13	15	13	7	48	12	14	11	5	42	1	1	2	2	6
PM	5:15 PM	18	13	20	19	70	18	13	17	15	63	0	0	3	4	7
PM	5:30 PM	15	24	22	20	81	14	23	20	16	73	1	1	2	4	8
PM	5:45 PM	9	9	15	10	43	7	7	14	9	37	2	2	1	1	6
PM	TOTAL	100	141	129	105	475	93	132	115	82	422	7	9	14	23	53



16
Honey's Kettle Fried Chicken
Culver Blvd
6
Akasha
8
12
Irving Pl
Culver Blvd
Watseka Ave
1
Watseka Ave
sheka Parking
Public Art "Lucy and Desi"
7
Culver Blvd
9
11
Irving Pl
5
15
Culver City Fire Department - HQ/...
10
14
2
e Wellness Spa
GODA Yoga
112
Washington Blvd
Irving Pl
4
Washington Blvd
Washington Blvd
Washington Blvd
Culver Blvd
Culver Blvd
3
13
Culver Blvd
Culver Blvd
Google My Maps



Honey's Kettle Fried Chicken
Akasha
Watseka Ave
Culver Blvd
Irving Pl
2 NS
2 WS
2 ES
2 SS
Public Art "Lucy and Desi"
Culver City Fire Department - HQ/...
Wellness Spa
GODA Yoga
Washington Blvd
1 NS
1 SS
Google My Maps

INTERSECTION TURNING MOVEMENT COUNTS

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

T816

DATE:	LOCATION:	Culver City	PROJECT #:	SC
Tue, Mar 19, 19	NORTH & SOUTH:	Washington	LOCATION #:	11
	EAST & WEST:	Irving and Culver	CONTROL:	SIGNAL

NOTES:

EB AM/PM Queue

AM
PM
MD
OTHER
OTHER

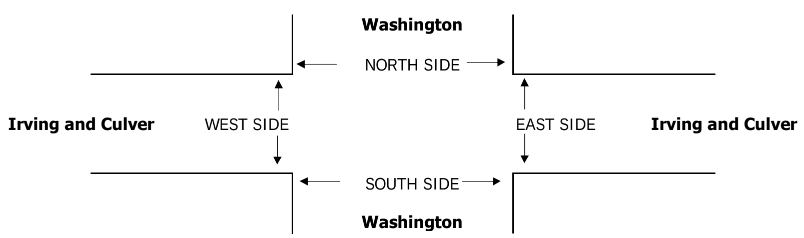
N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Washington			SOUTHBOUND Washington			EASTBOUND Irving and Culver			WESTBOUND Irving and Culver				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	3	1	1	3	1	1	2	0	1	1	1		0	0	0	0	
AM	7:00 AM	3	0	11	32	0	0	0	207	0	2	254	0	509	0	0	0	0	0
AM	7:15 AM	13	0	12	54	0	1	0	247	0	4	332	0	663	0	0	0	0	0
AM	7:30 AM	16	0	9	81	0	1	0	214	0	8	364	0	693	0	0	0	0	0
AM	7:45 AM	12	0	22	87	0	7	0	259	0	9	411	0	807	0	0	0	0	0
AM	8:00 AM	34	0	29	122	0	5	0	250	0	10	362	0	812	0	0	0	0	0
AM	8:15 AM	17	0	27	148	0	4	0	307	0	9	361	0	873	0	0	0	0	0
AM	8:30 AM	18	0	27	142	0	3	0	245	0	26	330	0	791	0	0	0	0	0
AM	8:45 AM	38	0	16	114	0	5	0	237	0	5	400	0	815	0	0	0	0	0
AM	VOLUMES	151	0	153	780	0	26	0	1,966	0	73	2,814	0	5,963	0	0	0	0	0
AM	APPROACH %	50%	0%	50%	97%	0%	3%	0%	100%	0%	3%	97%	0%						
AM	APP/DEPART	304	/	0	806	/	73	1,966	/	2,899	2,887	/	2,991	0					
AM	BEGIN PEAK HR		8:00 AM																
AM	VOLUMES	107	0	99	526	0	17	0	1,039	0	50	1,453	0	3,291					
AM	APPROACH %	52%	0%	48%	97%	0%	3%	0%	100%	0%	3%	97%	0%						
AM	PEAK HR FACTOR		0.817			0.893			0.846			0.928		0.942					
AM	APP/DEPART	206	/	0	543	/	50	1,039	/	1,664	1,503	/	1,577	0					
PM	4:00 PM	14	0	18	217	0	4	0	220	0	21	239	0	733	0	0	0	0	0
PM	4:15 PM	21	0	29	246	0	6	0	259	0	29	236	0	826	0	0	0	0	0
PM	4:30 PM	21	0	31	206	0	3	0	270	0	24	259	0	814	0	0	0	0	0
PM	4:45 PM	8	0	15	174	0	5	0	224	0	26	245	0	697	0	0	0	0	0
PM	5:00 PM	7	0	16	220	0	4	0	249	0	26	264	0	786	0	0	0	0	0
PM	5:15 PM	14	0	16	240	0	2	0	278	0	27	285	0	862	0	0	0	0	0
PM	5:30 PM	12	0	32	205	0	5	0	232	0	23	264	0	773	0	0	0	0	0
PM	5:45 PM	9	0	23	237	0	3	0	232	0	26	260	0	790	0	0	0	0	0
PM	VOLUMES	106	0	180	1,745	0	32	0	1,964	0	202	2,052	0	6,281	0	0	0	0	0
PM	APPROACH %	37%	0%	63%	98%	0%	2%	0%	100%	0%	9%	91%	0%						
PM	APP/DEPART	286	/	0	1,777	/	202	1,964	/	3,889	2,254	/	2,190	0					
PM	BEGIN PEAK HR		5:00 PM																
PM	VOLUMES	42	0	87	902	0	14	0	991	0	102	1,073	0	3,211					
PM	APPROACH %	33%	0%	67%	98%	0%	2%	0%	100%	0%	9%	91%	0%						
PM	PEAK HR FACTOR		0.733			0.946			0.891			0.942		0.931					
PM	APP/DEPART	129	/	0	916	/	102	991	/	1,980	1,175	/	1,129	0					

	SL from Washington to Watseka	SL from Washington to Culver	SR from Washington to Culver	SR from Watseka to Washington	NL from Irving to Washington	NR from Irving to Culver	WT from Culver to Washington	WR from Culver to Watseka	ET Culver + Washington (SUM 2,13)	ER from Culver to Irving	WL from Culver to Irving	WT Culver + Washington (SUM 14, 7, 8)	ET only Culver	WT only Culver	NL from Irving to Culver	EU Culver	
[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	TOTAL
7:00 AM	3	32	0	2	0	11	122	5	238	1	1	254	206	127	3	1	**1,006**
7:15 AM	8	54	1	5	7	12	145	2	296	5	2	332	242	185	6	2	**1,304**
7:30 AM	4	81	1	2	11	9	176	5	290	5	7	364	209	183	5	1	**1,353**
7:45 AM	4	87	7	16	8	22	175	3	337	9	6	411	250	233	4	3	**1,575**
8:00 AM	5	122	5	6	18	29	169	4	358	14	9	362	236	189	16	1	**1,543**
8:15 AM	4	148	4	8	10	27	155	4	442	13	8	361	294	202	7	1	**1,688**
8:30 AM	5	142	3	19	13	27	129	4	374	13	23	330	232	197	5	3	**1,519**
8:45 AM	10	114	5	14	25	16	162	9	346	5	3	400	232	229	13	2	**1,585**
TOTAL	43	780	26	72	92	153	1,233	36	2,681	65	59	2,814	1,901	1,545	59	14	
HOURLY																	
7:00 AM	19	254	9	25	26	54	618	15	1,161	20	16	1,361	907	728	18	7	**5,238**
7:15 AM	21	344	14	29	44	72	665	14	1,281	33	24	1,469	937	790	31	7	**5,775**
7:30 AM	17	438	17	32	47	87	675	16	1,427	41	30	1,498	989	807	32	6	**6,159**
7:45 AM	18	499	19	49	49	105	628	15	1,511	49	46	1,464	1,012	821	32	8	**6,325**
8:00 AM	24	526	17	47	66	99	615	21	1,520	45	43	1,453	994	817	41	7	**6,335**
4:00 PM	3	217	4	52	7	18	94	4	427	10	9	239	210	141	7	12	**1,454**
4:15 PM	1	246	6	46	12	29	88	7	499	6	15	236	253	141	9	14	**1,608**
4:30 PM	4	206	3	33	14	31	89	10	469	7	15	259	263	160	7	9	**1,579**
4:45 PM	5	174	5	44	2	15	79	9	387	11	15	245	213	157	6	11	**1,378**
5:00 PM	5	220	4	39	4	16	94	9	461	8	14	264	241	161	3	12	**1,555**
5:15 PM	6	240	2	59	10	16	109	6	512	6	13	285	272	170	4	14	**1,724**
5:30 PM	6	205	5	42	10	32	91	10	432	5	17	264	227	163	2	6	**1,517**
5:45 PM	4	237	3	23	5	23	108	11	466	3	17	260	229	141	4	9	**1,543**
TOTAL	34	1,745	32	338	64	180	752	66	3,653	56	115	2,052	1,908	1,234	42	87	
HOURLY																	
4:00 PM	13	843	18	175	35	93	350	30	1,782	34	54	979	939	599	29	46	**6,019**
4:15 PM	15	846	18	162	32	91	350	35	1,816	32	59	1,004	970	619	25	46	**6,120**
4:30 PM	20	840	14	175	30	78	371	34	1,829	32	57	1,053	989	648	20	46	**6,236**
4:45 PM	22	839	16	184	26	79	373	34	1,792	30	59	1,058	953	651	15	43	**6,174**
5:00 PM	21	902	14	163	29	87	402	36	1,871	22	61	1,073	969	635	13	41	**6,339**

[1] Please use reference figure for location of movement number.



		1 PEDESTRIAN + BIKE CROSSINGS					1 PEDESTRIAN CROSSINGS					1 BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	3	3	0	0	6	2	1	0	0	3	1	2	0	0	3
AM	7:15 AM	6	6	0	0	12	6	6	0	0	12	0	0	0	0	0
AM	7:30 AM	1	12	0	0	13	1	9	0	0	10	0	3	0	0	3
AM	7:45 AM	0	3	0	0	3	0	1	0	0	1	0	2	0	0	2
AM	8:00 AM	3	8	0	0	11	3	8	0	0	11	0	0	0	0	0
AM	8:15 AM	9	8	0	0	17	8	6	0	0	14	1	2	0	0	3
AM	8:30 AM	10	3	0	0	13	10	3	0	0	13	0	0	0	0	0
AM	8:45 AM	10	9	0	0	19	10	8	0	0	18	0	1	0	0	1
AM	TOTAL	42	52	0	0	94	40	42	0	0	82	2	10	0	0	12
PM	4:00 PM	20	10	0	0	30	17	10	0	0	27	3	0	0	0	3
PM	4:15 PM	29	18	0	0	47	29	14	0	0	43	0	4	0	0	4
PM	4:30 PM	29	10	0	0	39	28	9	0	0	37	1	1	0	0	2
PM	4:45 PM	18	34	0	0	52	15	32	0	0	47	3	2	0	0	5
PM	5:00 PM	24	15	0	0	39	24	13	0	0	37	0	2	0	0	2
PM	5:15 PM	28	22	0	0	50	28	21	0	0	49	0	1	0	0	1
PM	5:30 PM	15	16	0	0	31	15	13	0	0	28	0	3	0	0	3
PM	5:45 PM	36	25	0	0	61	35	24	0	0	59	1	1	0	0	2
PM	TOTAL	199	150	0	0	349	191	136	0	0	327	8	14	0	0	22

		2 PEDESTRIAN + BIKE CROSSINGS					2 PEDESTRIAN CROSSINGS					2 BICYCLE CROSSINGS			
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS
AM	7:00 AM	2	6	2	2	12	2	3	0	2	7	0	3	2	0
AM	7:15 AM	0	5	0	10	15	0	4	0	8	12	0	1	0	2
AM	7:30 AM	4	3	0	10	17	1	0	0	9	10	3	3	0	1
AM	7:45 AM	8	5	0	8	21	8	3	0	8	19	0	2	0	0
AM	8:00 AM	3	5	1	4	13	3	4	1	3	11	0	1	0	1
AM	8:15 AM	4	7	4	11	26	4	4	3	10	21	0	3	1	1
AM	8:30 AM	9	9	5	8	31	8	8	5	7	28	1	1	0	1
AM	8:45 AM	2	14	3	12	31	0	13	3	12	28	2	1	0	0
AM	TOTAL	32	54	15	65	166	26	39	12	59	136	6	15	3	6
PM	4:00 PM	4	21	8	28	61	4	21	8	28	61	0	0	0	0
PM	4:15 PM	6	29	6	24	65	6	27	6	24	63	0	2	0	0
PM	4:30 PM	0	20	11	31	62	0	17	10	31	58	0	3	1	0
PM	4:45 PM	7	35	5	21	68	6	32	5	20	63	1	3	0	1
PM	5:00 PM	14	31	10	39	94	13	22	7	39	81	1	9	3	0
PM	5:15 PM	13	32	20	53	118	13	31	20	52	116	0	1	0	1
PM	5:30 PM	6	28	7	11	52	2	25	7	11	45	4	3	0	0
PM	5:45 PM	11	35	5	34	85	9	34	5	34	82	2	1	0	0
PM	TOTAL	61	231	72	241	605	53	209	68	239	569	8	22	4	2

* Please use pedestrian reference figure for location of pedestrian crossing.

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	LA	PROJECT #:	SC
Thu, Mar 21, 19	NORTH & SOUTH:	Bagley	LOCATION #:	4
	EAST & WEST:	Venice	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Bagley			SOUTHBOUND Bagley			EASTBOUND Venice			WESTBOUND Venice				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	0	0	1	0	1	3	0	1	3	0		0	0	0	0	
AM	7:00 AM	10	23	10	5	6	14	9	194	6	6	337	4	624	0	0	3	2	5
	7:15 AM	11	31	22	9	17	17	15	243	9	8	316	4	702	0	0	4	1	5
	7:30 AM	23	36	11	7	40	23	12	278	18	9	335	3	795	0	0	0	1	1
	7:45 AM	16	31	11	12	42	24	18	328	17	10	339	3	851	0	0	3	1	4
	8:00 AM	19	38	13	12	55	40	17	302	22	9	359	2	888	0	0	0	2	2
	8:15 AM	18	44	16	7	62	33	24	281	21	21	379	5	911	0	0	5	2	7
	8:30 AM	19	37	14	7	56	28	17	359	24	21	349	5	936	0	0	5	0	5
	8:45 AM	18	40	13	6	60	36	29	301	26	10	354	12	905	0	0	5	0	5
	9:00 AM	11	37	18	9	43	35	22	336	32	12	388	4	947	0	0	7	0	7
	9:15 AM	16	28	21	9	39	34	28	277	37	10	330	6	835	0	0	12	0	12
	9:30 AM	8	37	6	4	26	27	30	205	35	16	351	10	755	0	0	7	3	10
	9:45 AM	11	20	14	8	31	19	42	233	24	15	396	11	824	0	0	23	4	27
	VOLUMES	180	402	169	95	477	330	263	3,337	271	147	4,233	69	9,973	0	0	74	16	90
	APPROACH %	24%	54%	23%	11%	53%	37%	7%	86%	7%	3%	95%	2%						
	APP/DEPART	751	/	660	902	/	879	3,871	/	3,617	4,449	/	4,817	0					
	BEGIN PEAK HR		8:15 AM																
	VOLUMES	66	158	61	29	221	132	92	1,277	103	64	1,470	26	3,699					
	APPROACH %	23%	55%	21%	8%	58%	35%	6%	87%	7%	4%	94%	2%						
	PEAK HR FACTOR		0.913			0.936			0.920			0.963		0.977					
	APP/DEPART	285	/	254	382	/	386	1,472	/	1,369	1,560	/	1,690	0					
PM	03:00 PM	9	18	8	16	28	31	41	334	45	29	327	5	891	0	0	10	8	18
	3:15 PM	8	12	1	10	32	16	33	317	42	18	304	11	804	2	0	7	6	15
	3:30 PM	7	25	10	7	41	20	33	257	51	17	313	8	789	0	0	3	6	9
	3:45 PM	2	30	4	8	60	26	33	262	44	23	319	13	824	0	0	4	8	12
	4:00 PM	3	20	6	9	39	23	32	211	44	22	302	5	716	0	0	9	4	13
	4:15 PM	7	15	2	12	37	23	36	186	43	21	347	10	739	0	0	6	2	8
	4:30 PM	7	9	7	12	43	25	29	257	29	31	319	10	778	1	0	2	8	11
	4:45 PM	8	21	9	4	47	15	42	279	50	26	325	6	832	0	0	7	4	11
	5:00 PM	3	14	5	9	38	24	41	281	60	25	331	21	852	1	0	5	7	13
	5:15 PM	11	22	9	10	48	29	25	294	49	20	366	9	892	0	0	4	5	9
	5:30 PM	4	14	12	12	37	23	20	310	66	22	388	8	916	0	0	5	10	15
	5:45 PM	7	22	5	16	20	31	37	312	81	15	406	9	961	0	0	10	6	16
	VOLUMES	76	222	78	125	470	286	402	3,300	604	269	4,047	115	9,994	4	0	72	74	150
	APPROACH %	20%	59%	21%	14%	53%	32%	9%	77%	14%	6%	91%	3%						
	APP/DEPART	376	/	667	881	/	1,273	4,306	/	3,577	4,431	/	4,477	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	25	72	31	47	143	107	123	1,197	256	82	1,491	47	3,621					
	APPROACH %	20%	56%	24%	16%	48%	36%	8%	76%	16%	5%	92%	3%						
	PEAK HR FACTOR		0.762			0.853			0.916			0.942		0.942					
	APP/DEPART	128	/	218	297	/	454	1,576	/	1,303	1,620	/	1,646	0					

Bagley

NORTH SIDE

Venice WEST SIDE

EAST SIDE **Venice**

SOUTH SIDE

Bagley

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	6	14	4	4	28	4	10	4	4	22	2	4	0	0	6
	7:15 AM	10	11	5	5	31	8	5	3	3	19	2	6	2	0	10
	7:30 AM	6	8	4	6	24	2	4	4	5	15	4	3	0	0	7
	7:45 AM	15	17	8	7	47	9	11	8	6	34	6	6	0	0	12
	8:00 AM	9	13	14	14	50	7	11	13	13	44	2	2	1	1	6
	8:15 AM	6	2	8	11	27	2	1	8	9	20	4	1	0	1	6
	8:30 AM	18	22	10	18	68	12	18	9	15	54	6	4	1	0	11
	8:45 AM	9	16	9	12	46	6	10	9	8	33	3	6	0	4	13
	9:00 AM	13	10	11	10	44	11	7	11	7	36	2	3	0	3	8
	9:15 AM	7	12	10	7	36	4	9	9	6	28	3	3	1	1	8
	9:30 AM	13	10	9	7	39	11	8	8	4	31	2	2	1	2	7
	9:45 AM	9	29	21	29	88	7	14	18	18	57	2	5	3	1	11
	TOTAL	121	164	113	130	528	83	108	104	98	393	38	45	9	13	105
PM	3:00 PM	23	15	19	28	85	21	12	16	23	72	1	3	2	1	7
	3:15 PM	30	19	16	13	78	27	15	14	12	68	3	3	2	1	9
	3:30 PM	22	27	14	36	99	20	22	12	28	82	2	3	2	1	8
	3:45 PM	26	24	22	18	90	24	22	22	18	86	2	1	0	0	3
	4:00 PM	17	30	22	26	95	16	22	18	23	79	1	7	2	2	12
	4:15 PM	15	14	14	10	53	12	11	13	10	46	3	3	1	0	7
	4:30 PM	22	30	15	17	84	18	21	14	12	65	4	8	1	4	17
	4:45 PM	19	23	37	23	102	16	19	36	21	92	3	4	1	2	10
	5:00 PM	22	21	18	17	78	17	12	9	13	51	5	5	0	2	12
	5:15 PM	18	24	20	27	89	13	19	19	25	76	5	2	0	2	9
	5:30 PM	17	22	18	18	75	11	14	15	18	58	6	7	3	0	16
	5:45 PM	23	27	15	22	87	17	15	13	22	67	6	10	2	0	18
	TOTAL	254	276	230	255	1,015	212	204	201	225	842	41	56	16	15	128

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	Culver City	PROJECT #:	SC
Thu, Mar 21, 19	NORTH & SOUTH:	Main	LOCATION #:	12
	EAST & WEST:	Culver	CONTROL:	SIGNAL

NOTES:

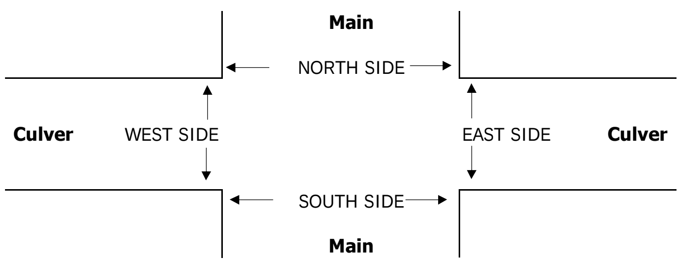
EB/WB AM/PM queue

AM PM MD OTHER OTHER

N ▲ ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

	NORTHBOUND (Main)			SOUTHBOUND (Main)			EASTBOUND (Culver)			WESTBOUND (Culver)				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	0	1	0	1	X	1	1	3	0	1	3	0		0	0	0	0	
AM																		
7:00 AM	0	0	0	9	0	15	25	199	1	4	255	19	527	0	0	0	1	1
7:15 AM	0	0	2	11	0	18	46	257	2	1	300	20	657	0	0	0	0	0
7:30 AM	0	0	1	17	0	35	40	258	1	0	314	33	699	0	0	0	0	0
7:45 AM	0	0	1	19	0	44	41	302	0	0	365	19	791	0	0	4	0	4
8:00 AM	0	0	0	32	0	55	44	315	0	0	328	21	795	0	0	0	0	0
8:15 AM	0	0	0	38	0	54	59	331	0	0	330	22	834	0	0	0	0	0
8:30 AM	0	0	0	32	0	75	67	337	0	0	317	7	835	0	0	1	0	1
8:45 AM	0	0	0	35	0	51	52	310	0	0	343	18	809	0	0	0	0	0
VOLUMES	0	0	4	193	0	347	374	2,309	4	5	2,552	159	5,947	0	0	5	1	6
APPROACH %	0%	0%	100%	36%	0%	64%	14%	86%	0%	0%	94%	6%						
APP/DEPART	4	/	528	540	/	8	2,687	/	2,507	2,716	/	2,904	0					
BEGIN PEAK HR		8:00 AM																
VOLUMES	0	0	0	137	0	235	222	1,293	0	0	1,318	68	3,273					
APPROACH %	0%	0%	0%	37%	0%	63%	15%	85%	0%	0%	95%	5%						
PEAK HR FACTOR		0.000			0.869			0.938			0.960		0.980					
APP/DEPART	0	/	289	372	/	0	1,515	/	1,430	1,386	/	1,554	0					
PM																		
4:00 PM	0	0	1	63	0	38	19	373	0	0	215	12	721	0	0	1	0	1
4:15 PM	0	0	0	65	0	32	14	417	0	0	210	10	748	0	0	2	0	2
4:30 PM	0	0	2	52	0	42	16	435	0	0	213	11	771	0	0	2	0	2
4:45 PM	0	0	0	72	0	43	21	402	0	0	249	17	804	0	0	2	0	2
5:00 PM	0	0	0	69	0	43	24	372	0	0	274	6	788	0	0	3	0	3
5:15 PM	0	0	0	78	0	29	27	415	0	0	268	13	830	0	0	3	0	3
5:30 PM	0	0	0	60	0	46	23	383	0	0	230	11	753	0	0	2	0	2
5:45 PM	0	0	0	79	0	38	21	389	0	1	242	19	789	0	0	2	0	2
VOLUMES	0	0	3	538	0	311	165	3,186	0	1	1,901	99	6,204	0	0	17	0	17
APPROACH %	0%	0%	100%	63%	0%	37%	5%	95%	0%	0%	95%	5%						
APP/DEPART	3	/	247	849	/	1	3,351	/	3,727	2,001	/	2,229	0					
BEGIN PEAK HR		4:30 PM																
VOLUMES	0	0	2	271	0	157	88	1,624	0	0	1,004	47	3,193					
APPROACH %	0%	0%	100%	63%	0%	37%	5%	95%	0%	0%	96%	4%						
PEAK HR FACTOR		0.250			0.930			0.949			0.935		0.962					
APP/DEPART	2	/	125	428	/	0	1,712	/	1,897	1,051	/	1,171	0					



	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM	12	3	1	1	17	10	1	1	1	13	2	2	0	0	4
7:15 AM	13	9	0	3	25	13	6	0	3	22	0	3	0	0	3
7:30 AM	14	2	1	4	21	12	1	1	4	18	2	1	0	0	3
7:45 AM	15	1	0	3	19	12	1	0	3	16	3	0	0	0	3
8:00 AM	15	2	0	8	25	11	1	0	6	18	4	1	0	2	7
8:15 AM	27	0	0	6	33	26	0	0	6	32	1	0	0	0	1
8:30 AM	31	4	0	3	38	28	2	0	3	33	3	2	0	0	5
8:45 AM	25	1	0	5	31	21	1	0	4	26	4	0	0	1	5
TOTAL	152	22	2	33	209	133	13	2	30	178	19	9	0	3	31
AM BEGIN PEAK HR			8:00 AM			86	4	0	19	109					
PM															
4:00 PM	58	3	2	9	72	56	2	1	9	68	2	1	1	0	4
4:15 PM	44	5	0	4	53	41	3	0	3	47	3	2	0	1	6
4:30 PM	53	5	0	6	64	50	1	0	6	57	3	4	0	0	7
4:45 PM	79	4	0	15	98	78	1	0	15	94	1	3	0	0	4
5:00 PM	75	1	0	19	95	74	1	0	19	94	1	0	0	0	1
5:15 PM	62	1	0	13	76	59	0	0	13	72	3	1	0	0	4
5:30 PM	71	2	0	7	80	71	0	0	7	78	0	2	0	0	2
5:45 PM	59	3	0	12	74	58	1	0	12	71	1	2	0	0	3
TOTAL	501	24	2	85	612	487	9	1	84	581	14	15	1	1	31
PM BEGIN PEAK HR			4:30 PM			261	3	0	53	317					

INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:	LOCATION:	Culver City	PROJECT #:	SC
Tue, Mar 19, 19	NORTH & SOUTH:	Canfield	LOCATION #:	13
	EAST & WEST:	Culver	CONTROL:	SIGNAL

NOTES:

PM SB queue

AM / PM / MD / OTHER / OTHER

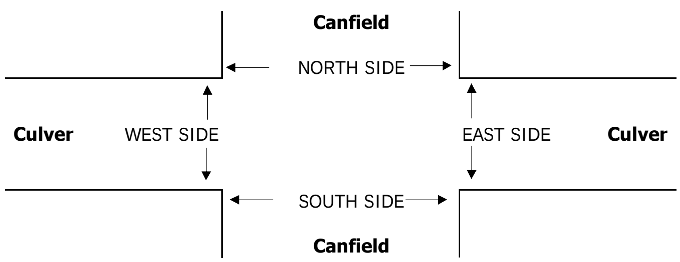
▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

	NORTHBOUND Canfield			SOUTHBOUND Canfield			EASTBOUND Culver			WESTBOUND Culver			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	0.5	1	X	X	1	1	2	2	1	2	0	
AM 7:00 AM	237	12	10	0	0	0	1	109	97	4	46	0	516
7:15 AM	261	10	24	0	0	1	0	161	128	7	44	0	636
7:30 AM	340	36	13	0	0	0	0	114	133	4	54	2	696
7:45 AM	318	29	17	0	0	0	1	162	161	10	47	0	745
8:00 AM	305	47	19	0	0	3	0	147	192	15	49	0	777
8:15 AM	280	21	28	0	0	1	2	155	238	21	39	0	785
8:30 AM	258	20	31	0	0	4	3	149	201	14	32	2	714
8:45 AM	271	17	33	0	0	2	1	150	190	10	27	3	704
VOLUMES	2,270	192	175	0	0	11	8	1,147	1,340	85	338	7	5,573
APPROACH %	86%	7%	7%	0%	0%	100%	0%	46%	54%	20%	79%	2%	
APP/DEPART	2,637	/	204	11	/	1,424	2,495	/	1,323	430	/	2,622	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	1,161	117	95	0	0	8	6	613	792	60	167	2	3,021
APPROACH %	85%	9%	7%	0%	0%	100%	0%	43%	56%	26%	73%	1%	
PEAK HR FACTOR		0.925			0.500			0.893			0.895		0.962
APP/DEPART	1,373	/	122	8	/	851	1,411	/	709	229	/	1,339	0
PM 4:00 PM	141	3	25	0	0	12	7	122	270	23	65	1	669
4:15 PM	150	1	14	0	0	25	7	152	332	21	66	1	769
4:30 PM	138	3	25	0	0	14	7	149	326	24	71	7	764
4:45 PM	175	5	18	0	0	14	7	190	245	14	66	2	736
5:00 PM	189	3	15	0	0	23	13	133	284	22	92	4	778
5:15 PM	196	5	17	0	0	22	12	160	340	20	70	0	842
5:30 PM	187	5	26	0	0	21	12	159	302	22	75	6	815
5:45 PM	160	8	28	0	0	21	13	138	302	11	65	6	752
VOLUMES	1,336	33	168	0	0	152	78	1,203	2,401	157	570	27	6,125
APPROACH %	87%	2%	11%	0%	0%	100%	2%	33%	65%	21%	76%	4%	
APP/DEPART	1,537	/	135	152	/	2,554	3,682	/	1,375	754	/	2,061	0
BEGIN PEAK HR		5:00 PM											
VOLUMES	732	21	86	0	0	87	50	590	1,228	75	302	16	3,187
APPROACH %	87%	3%	10%	0%	0%	100%	3%	32%	66%	19%	77%	4%	
PEAK HR FACTOR		0.962			0.946			0.912			0.833		0.946
APP/DEPART	839	/	84	87	/	1,300	1,868	/	679	393	/	1,124	0

U-TURNS

	NB	SB	EB	WB	TTL
LANES	0	0	0	0	
AM 7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	1	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	2	1	3
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
VOLUMES	0	0	3	1	4
PM 4:00 PM	0	0	0	1	1
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	2	2
5:30 PM	0	0	2	1	3
5:45 PM	0	0	1	0	1
VOLUMES	0	0	3	4	7



PEDESTRIAN + BIKE CROSSINGS

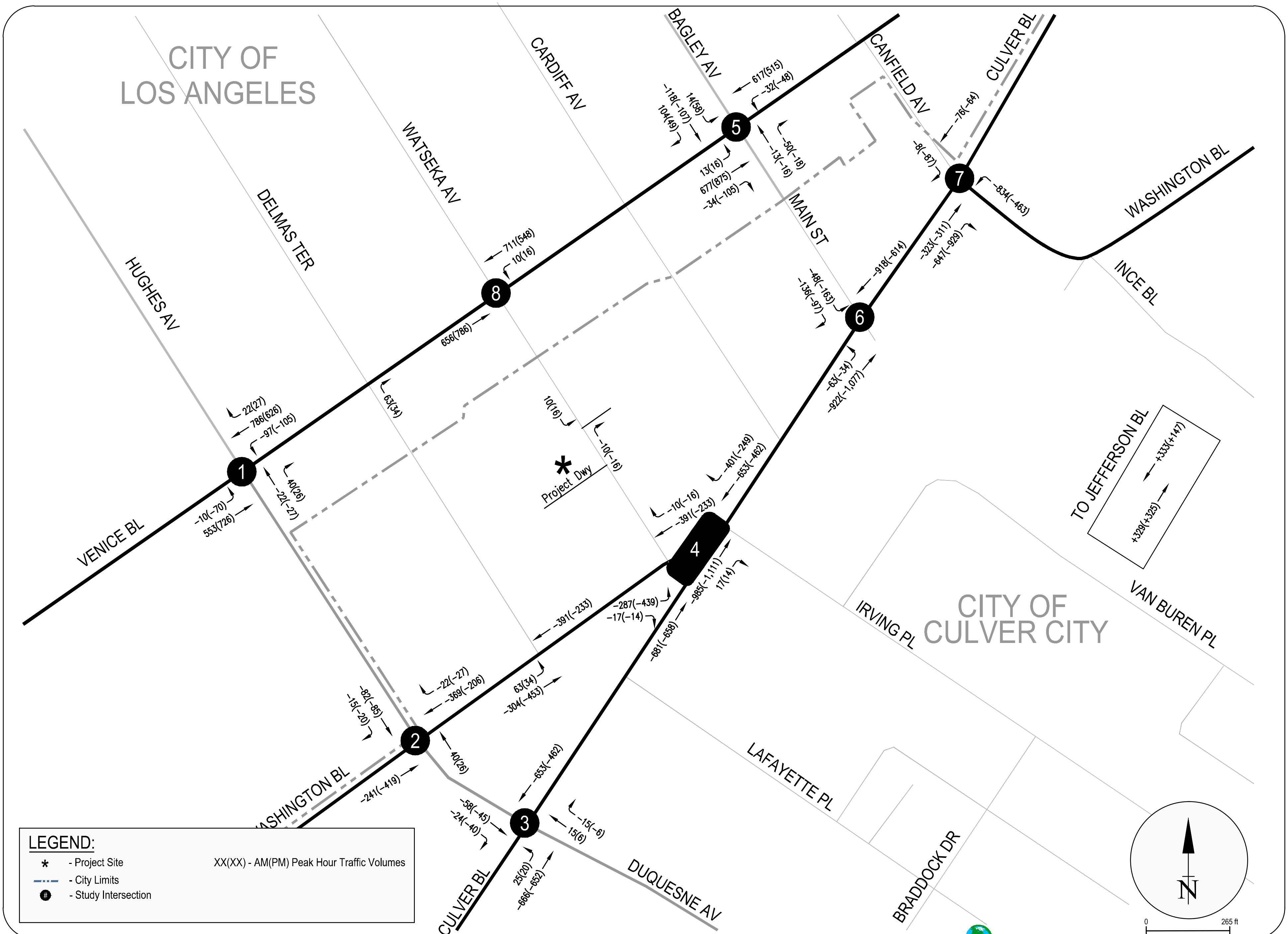
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM	12	2	10	0	24
7:15 AM	9	1	6	0	16
7:30 AM	19	2	17	1	39
7:45 AM	16	3	14	2	35
8:00 AM	9	3	12	1	25
8:15 AM	26	5	20	2	53
8:30 AM	28	4	28	2	62
8:45 AM	33	3	41	1	78
TOTAL	152	23	148	9	332
AM BEGIN PEAK HR			7:45 AM		
PM 4:00 PM	66	0	73	0	139
4:15 PM	58	3	65	1	127
4:30 PM	54	4	100	1	159
4:45 PM	63	0	107	0	170
5:00 PM	88	8	82	3	181
5:15 PM	83	3	81	1	168
5:30 PM	86	4	84	0	174
5:45 PM	113	4	101	0	218
TOTAL	611	26	693	6	1,336
PM BEGIN PEAK HR			5:00 PM		

PEDESTRIAN CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM	10	0	9	0	19
7:15 AM	7	0	4	0	11
7:30 AM	15	0	12	0	27
7:45 AM	13	0	13	0	26
8:00 AM	7	1	10	0	18
8:15 AM	22	1	17	0	40
8:30 AM	23	0	26	0	49
8:45 AM	31	1	38	0	70
TOTAL	128	3	129	0	260
AM BEGIN PEAK HR	65	2	66	0	133
PM 4:00 PM	60	0	71	0	131
4:15 PM	57	0	60	0	117
4:30 PM	51	2	95	1	149
4:45 PM	62	0	105	0	167
5:00 PM	83	3	77	0	163
5:15 PM	79	1	80	0	160
5:30 PM	81	3	80	0	164
5:45 PM	111	4	99	0	214
TOTAL	584	13	667	1	1,265
PM BEGIN PEAK HR	354	11	336	0	701

BICYCLE CROSSINGS

	NS	SS	ES	WS	TOTAL
AM 7:00 AM	2	2	1	0	5
7:15 AM	2	1	2	0	5
7:30 AM	4	2	5	1	12
7:45 AM	3	3	1	2	9
8:00 AM	2	2	2	1	7
8:15 AM	4	4	3	2	13
8:30 AM	5	4	2	2	13
8:45 AM	2	2	3	1	8
TOTAL	24	20	19	9	72
AM BEGIN PEAK HR					
PM 4:00 PM	6	0	2	0	8
4:15 PM	1	3	5	1	10
4:30 PM	3	2	5	0	10
4:45 PM	1	0	2	0	3
5:00 PM	5	5	5	3	18
5:15 PM	4	2	1	1	8
5:30 PM	5	1	4	0	10
5:45 PM	2	0	2	0	4
TOTAL	27	13	26	5	71



APPENDIX D
WATSEKA PROJECT - MOBILITY LANES PATTERN SHIFTS (OVERALL)

RAJU Associates, Inc.

APPENDIX E

Operational Analysis Worksheets

EXISTING CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	2022	137	64	2227	66	86	118	110	41	164	43
Future Volume (veh/h)	79	2022	137	64	2227	66	86	118	110	41	164	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.94	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	2022	94	64	2227	45	86	118	110	41	164	43
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	3280	967	138	3280	952	128	162	136	83	305	74
Arrive On Green	0.64	0.64	0.64	1.00	1.00	1.00	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	164	5106	1505	192	5106	1482	335	601	505	177	1135	275
Grp Volume(v), veh/h	79	2022	94	64	2227	45	314	0	0	248	0	0
Grp Sat Flow(s),veh/h/ln	164	1702	1505	192	1702	1482	1441	0	0	1586	0	0
Q Serve(g_s), s	39.6	28.1	2.9	30.3	0.0	0.0	9.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	39.6	28.1	2.9	58.4	0.0	0.0	24.7	0.0	0.0	15.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.27		0.35	0.17		0.17
Lane Grp Cap(c), veh/h	166	3280	967	138	3280	952	426	0	0	462	0	0
V/C Ratio(X)	0.48	0.62	0.10	0.46	0.68	0.05	0.74	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	166	3280	967	138	3280	952	447	0	0	485	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.8	12.7	8.2	10.7	0.0	0.0	41.0	0.0	0.0	37.4	0.0	0.0
Incr Delay (d2), s/veh	9.8	0.9	0.2	11.1	1.2	0.1	6.2	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	15.0	1.6	2.4	0.6	0.0	14.3	0.0	0.0	10.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	13.6	8.4	21.7	1.2	0.1	47.2	0.0	0.0	38.4	0.0	0.0
LnGrp LOS	C	B	A	C	A	A	D	A	A	D	A	A
Approach Vol, veh/h		2195			2336			314			248	
Approach Delay, s/veh		13.8			1.7			47.2			38.4	
Approach LOS		B			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		81.7		38.3		81.7		38.3				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		60.4		17.5		41.6		26.7				
Green Ext Time (p_c), s		13.9		1.3		27.9		1.1				

Intersection Summary		
HCM 6th Ctrl Delay		11.5
HCM 6th LOS		B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	1753	115	73	2074	57	98	162	90	36	196	38
Future Volume (veh/h)	59	1753	115	73	2074	57	98	162	90	36	196	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.93	0.97		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	1753	66	73	2074	39	98	162	90	36	196	38
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	3217	920	172	3217	927	134	197	101	73	351	64
Arrive On Green	0.63	0.63	0.63	1.00	1.00	1.00	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	192	5106	1460	257	5106	1471	341	699	360	137	1246	227
Grp Volume(v), veh/h	59	1753	66	73	2074	39	350	0	0	270	0	0
Grp Sat Flow(s),veh/h/ln	192	1702	1460	257	1702	1471	1400	0	0	1610	0	0
Q Serve(g_s), s	19.7	23.2	2.1	19.1	0.0	0.0	12.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.7	23.2	2.1	42.3	0.0	0.0	29.1	0.0	0.0	16.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.28		0.26	0.13		0.14
Lane Grp Cap(c), veh/h	181	3217	920	172	3217	927	433	0	0	487	0	0
V/C Ratio(X)	0.33	0.54	0.07	0.42	0.64	0.04	0.81	0.00	0.00	0.55	0.00	0.00
Avail Cap(c_a), veh/h	181	3217	920	172	3217	927	584	0	0	656	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.8	12.5	8.6	6.5	0.0	0.0	41.6	0.0	0.0	36.5	0.0	0.0
Incr Delay (d2), s/veh	4.8	0.7	0.2	7.6	1.0	0.1	6.4	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	12.9	1.2	1.8	0.5	0.0	15.9	0.0	0.0	11.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	13.2	8.8	14.1	1.0	0.1	48.0	0.0	0.0	37.5	0.0	0.0
LnGrp LOS	B	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1878			2186			350			270	
Approach Delay, s/veh		13.1			1.4			48.0			37.5	
Approach LOS		B			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.2		39.8		80.2		39.8				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0				
Max Q Clear Time (g_c+I1), s		44.3		18.3		25.2		31.1				
Green Ext Time (p_c), s		17.3		1.7		26.3		1.9				

Intersection Summary		
HCM 6th Ctrl Delay		11.7
HCM 6th LOS		B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	287	136	68	111	19	113	290	47	27	238	27
Future Volume (veh/h)	52	287	136	68	111	19	113	290	47	27	238	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.97		0.92	0.97		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	287	136	68	111	19	113	290	47	27	238	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	852	1512	693	631	1970	329	201	400	65	156	421	48
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.34	0.34	0.34	0.26	0.26	0.26
Sat Flow, veh/h	1246	2328	1067	954	3033	506	1078	1549	251	1015	1632	185
Grp Volume(v), veh/h	52	217	206	68	64	66	113	0	337	27	0	265
Grp Sat Flow(s),veh/h/ln	1246	1777	1617	954	1777	1762	1078	0	1800	1015	0	1817
Q Serve(g_s), s	1.9	5.8	6.1	3.7	1.6	1.6	12.1	0.0	19.7	3.0	0.0	15.2
Cycle Q Clear(g_c), s	3.5	5.8	6.1	9.8	1.6	1.6	27.3	0.0	19.7	22.6	0.0	15.2
Prop In Lane	1.00		0.66	1.00		0.29	1.00		0.14	1.00		0.10
Lane Grp Cap(c), veh/h	852	1154	1051	631	1154	1145	201	0	464	156	0	469
V/C Ratio(X)	0.06	0.19	0.20	0.11	0.06	0.06	0.56	0.00	0.73	0.17	0.00	0.57
Avail Cap(c_a), veh/h	852	1154	1051	631	1154	1145	484	0	936	422	0	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.00	0.86	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	8.4	8.4	10.4	7.6	7.7	45.5	0.0	35.7	50.6	0.0	38.7
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.3	0.1	0.1	0.8	0.0	0.7	0.2	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(95%),veh/ln	0.9	4.0	3.9	1.5	1.1	1.1	5.6	0.0	12.4	1.4	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.4	8.8	8.9	10.8	7.7	7.8	46.3	0.0	36.4	50.8	0.0	39.1
LnGrp LOS	A	A	A	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h		475			198			450			292	
Approach Delay, s/veh		8.8			8.8			38.9			40.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		83.5		36.5		83.5		36.5				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 47		* 62		* 47		* 62				
Max Q Clear Time (g_c+I1), s		8.1		29.3		11.8		24.6				
Green Ext Time (p_c), s		6.0		1.6		2.1		1.1				
Intersection Summary												
HCM 6th Ctrl Delay			24.8									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	419	142	120	276	26	75	238	17	81	283	26
Future Volume (veh/h)	62	419	142	120	276	26	75	238	17	81	283	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.93	0.98		0.95	0.97		0.92	0.97		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	419	142	120	276	26	75	238	17	81	283	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	718	1673	558	548	2136	199	167	436	31	192	426	39
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.08	0.08	0.08	0.25	0.25	0.25
Sat Flow, veh/h	1059	2562	855	836	3270	305	1040	1713	122	1089	1673	154
Grp Volume(v), veh/h	62	289	272	120	149	153	75	0	255	81	0	309
Grp Sat Flow(s),veh/h/ln	1059	1777	1640	836	1777	1798	1040	0	1836	1089	0	1827
Q Serve(g_s), s	2.8	8.1	8.3	8.4	3.8	3.9	8.6	0.0	16.0	8.5	0.0	18.2
Cycle Q Clear(g_c), s	6.7	8.1	8.3	16.7	3.8	3.9	26.8	0.0	16.0	24.5	0.0	18.2
Prop In Lane	1.00		0.52	1.00		0.17	1.00		0.07	1.00		0.08
Lane Grp Cap(c), veh/h	718	1161	1071	548	1161	1175	167	0	467	192	0	465
V/C Ratio(X)	0.09	0.25	0.25	0.22	0.13	0.13	0.45	0.00	0.55	0.42	0.00	0.67
Avail Cap(c_a), veh/h	718	1161	1071	548	1161	1175	330	0	756	363	0	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	8.6	8.7	12.1	7.9	7.9	62.3	0.0	48.3	50.1	0.0	40.2
Incr Delay (d2), s/veh	0.2	0.5	0.6	0.9	0.2	0.2	0.7	0.0	0.3	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	5.6	5.3	3.0	2.6	2.7	4.4	0.0	12.4	4.2	0.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	9.1	9.2	13.0	8.1	8.1	62.9	0.0	48.7	50.6	0.0	40.8
LnGrp LOS	A	A	A	B	A	A	E	A	D	D	A	D
Approach Vol, veh/h		623			422			330			390	
Approach Delay, s/veh		9.2			9.5			51.9			42.8	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		83.9		36.1		83.9		36.1				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49				
Max Q Clear Time (g_c+I1), s		10.3		28.8		18.7		26.5				
Green Ext Time (p_c), s		8.8		1.1		5.4		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			24.7									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	279	62	53	180	25	150	299	47	47	206	124
Future Volume (veh/h)	134	279	62	53	180	25	150	299	47	47	206	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.98		0.96	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	279	0	53	180	1	150	299	20	47	206	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	780	661	536	768	627	390	561	438	313	462	352
Arrive On Green	0.08	0.42	0.00	0.08	0.41	0.41	0.10	0.30	0.30	0.02	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1526	1781	1870	1461	1781	1870	1426
Grp Volume(v), veh/h	134	279	0	53	180	1	150	299	20	47	206	57
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1526	1781	1870	1461	1781	1870	1426
Q Serve(g_s), s	4.9	12.3	0.0	1.9	7.5	0.0	7.0	16.0	1.2	2.3	12.6	4.5
Cycle Q Clear(g_c), s	4.9	12.3	0.0	1.9	7.5	0.0	7.0	16.0	1.2	2.3	12.6	4.5
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	620	780	661	536	768	627	390	561	438	313	462	352
V/C Ratio(X)	0.22	0.36	0.00	0.10	0.23	0.00	0.38	0.53	0.05	0.15	0.45	0.16
Avail Cap(c_a), veh/h	622	780	661	564	768	627	391	642	502	335	561	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	16.9	24.0	0.0	16.9	23.1	20.9	27.6	35.0	29.8	32.2	47.3	43.6
Incr Delay (d2), s/veh	0.1	1.3	0.0	0.0	0.7	0.0	0.2	1.7	0.1	0.1	1.2	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(95%),veh/ln	3.6	9.5	0.0	1.4	6.2	0.0	5.4	11.9	0.8	1.8	10.3	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	25.3	0.0	16.9	23.8	20.9	27.9	36.7	29.9	32.3	48.5	43.9
LnGrp LOS	B	C	A	B	C	C	C	D	C	C	D	D
Approach Vol, veh/h		413			234			469			310	
Approach Delay, s/veh		22.6			22.2			33.6			45.2	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	55.5	15.9	35.4	13.9	54.8	9.5	41.8
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	3.9	14.3	9.0	14.6	6.9	9.5	4.3	18.0
Green Ext Time (p_c), s	0.0	3.1	0.1	2.5	0.0	2.0	0.0	3.4

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	259	70	40	219	19	102	206	70	118	235	236
Future Volume (veh/h)	117	259	70	40	219	19	102	206	70	118	235	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.90	0.96		1.00	0.96		0.88	0.93		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	259	19	40	219	0	102	206	50	118	235	177
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	540	733	557	491	707	599	385	601	449	413	529	387
Arrive On Green	0.08	0.39	0.39	0.07	0.38	0.00	0.10	0.32	0.32	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1420	1781	1870	1585	1781	1870	1398	1781	1870	1368
Grp Volume(v), veh/h	117	259	19	40	219	0	102	206	50	118	235	177
Grp Sat Flow(s),veh/h/ln	1781	1870	1420	1781	1870	1585	1781	1870	1398	1781	1870	1368
Q Serve(g_s), s	4.6	11.7	1.0	1.5	9.9	0.0	4.4	10.1	3.0	5.6	14.3	15.5
Cycle Q Clear(g_c), s	4.6	11.7	1.0	1.5	9.9	0.0	4.4	10.1	3.0	5.6	14.3	15.5
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	540	733	557	491	707	599	385	601	449	413	529	387
V/C Ratio(X)	0.22	0.35	0.03	0.08	0.31	0.00	0.26	0.34	0.11	0.29	0.44	0.46
Avail Cap(c_a), veh/h	543	733	557	535	707	599	391	642	480	413	561	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	19.2	25.7	22.5	19.3	26.3	0.0	24.4	31.1	28.7	29.2	45.5	50.8
Incr Delay (d2), s/veh	0.1	1.3	0.1	0.0	1.1	0.0	0.1	0.7	0.2	0.1	0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	9.3	0.6	1.1	8.1	0.0	3.3	8.2	1.9	4.5	11.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	27.1	22.6	19.3	27.4	0.0	24.6	31.8	28.9	29.3	46.4	52.1
LnGrp LOS	B	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		395			259			358			530	
Approach Delay, s/veh		24.5			26.2			29.3			44.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	52.6	15.6	39.7	13.8	50.9	11.0	44.3
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	3.5	13.7	6.4	17.5	6.6	11.9	7.6	12.1
Green Ext Time (p_c), s	0.0	3.1	0.0	3.7	0.0	2.4	0.0	2.7

Intersection Summary		
HCM 6th Ctrl Delay		32.8
HCM 6th LOS		C

Notes

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

OPERATIONAL ANALYSIS - EXISTING CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	EXISTING CONDITIONS											
	AM PEAK HOUR						PM PEAK HOUR					
4.1 Watseka Avenue & Washington Boulevard		EB	WB	SB	Total			EB	WB	SB	Total	
	App Vol	24	301	47	372		App Vol	21	218	163	402	
	App Delay	39.9	3.9	40.7			App Delay	29	4.3	32.2		
	Total Delay	958	1174	1913	4044		Total Delay	609	937	5249	6795	
	Ave Delay				10.9	A	Ave Delay				16.9	B
4.2 Culver Boulevard & Washington Boulevard		EB	WB	SB	Total			EB	WB	SB	Total	
	App Vol	358	205	239	802		App Vol	333	186	463	982	
	App Delay	26.8	5.2	53.9			App Delay	40.9	4.9	72.5		
	Total Delay	9587	1066	12882	23535		Total Delay	13620	911	33568	48099	
	Ave Delay				29.3	C	Ave Delay				49.0	D
4.3 Irving Place & Culver Boulevard		EB	WB	NB	Total			EB	WB	NB	Total	
	App Vol	597	449	206	1252		App Vol	796	464	129	1389	
	App Delay	0.6	19.1	52.9			App Delay	2.6	29.7	52.8		
	Total Delay	358	8589	10897	19845		Total Delay	2070	13781	6811	22662	
	Ave Delay				15.9	B	Ave Delay				16.3	B
Overall Intersection Results	App Delay	47,425					App Delay	77,555				
	App Vol	2,426					App Vol	2,773				
		19.5 LOS B						**28.0 LOS C**				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	0	290	11	0	47
Future Volume (vph)	24	0	290	11	0	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		1.00			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1850			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1850			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	24	0	290	11	0	47
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	24	0	301	0	0	47
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	22.9		70.1			22.9
Effective Green, g (s)	22.9		70.1			22.9
Actuated g/C Ratio	0.19		0.58			0.19
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	337		1080			307
v/s Ratio Prot	0.01		c0.16			
v/s Ratio Perm						c0.03
v/c Ratio	0.07		0.28			0.15
Uniform Delay, d1	39.8		12.4			40.5
Progression Factor	1.00		0.27			1.00
Incremental Delay, d2	0.1		0.6			0.2
Delay (s)	39.9		4.0			40.7
Level of Service	D		A			D
Approach Delay (s)		39.9	4.0		40.7	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	24	301	47
v/c Ratio	0.07	0.28	0.15
Control Delay	38.1	4.4	39.7
Queue Delay	0.0	0.7	0.0
Total Delay	38.1	5.0	39.7
Queue Length 50th (ft)	15	27	30
Queue Length 95th (ft)	43	48	71
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	398	1081	362
Starvation Cap Reductn	0	475	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.06	0.50	0.13

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	358	205	0	239	0
Future Volume (vph)	0	358	205	0	239	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	358	205	0	239	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	358	205	0	239	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		50.6	70.1		22.9	
Effective Green, g (s)		50.6	70.1		22.9	
Actuated g/C Ratio		0.42	0.58		0.19	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		785	1088		328	
v/s Ratio Prot		c0.19	c0.11			
v/s Ratio Perm					c0.14	
v/c Ratio		0.46	0.19		0.73	
Uniform Delay, d1		24.8	11.7		45.6	
Progression Factor		1.00	0.42		1.00	
Incremental Delay, d2		1.9	0.3		8.2	
Delay (s)		26.8	5.2		53.9	
Level of Service		C	A		D	
Approach Delay (s)		26.8	5.2		53.9	
Approach LOS		C	A		D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	358	205	239
v/c Ratio	0.44	0.19	0.73
Control Delay	29.2	5.9	59.5
Queue Delay	0.0	1.3	0.0
Total Delay	29.2	7.1	59.5
Queue Length 50th (ft)	202	33	173
Queue Length 95th (ft)	381	81	293
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	812	1088	387
Starvation Cap Reductn	0	684	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.51	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	535	62	50	164	235	107	0	99	0	0	0
Future Volume (vph)	0	535	62	50	164	235	107	0	99	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.91			0.94				
Flt Protected		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (prot)		1863	1446	1770	1698			1698				
Flt Permitted		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (perm)		1863	1446	1770	1698			1698				
Peak-hour factor, PHF	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. Flow (vph)	0	535	62	50	164	235	107	0	99	0	0	0
RTOR Reduction (vph)	0	0	24	0	0	0	0	169	0	0	0	0
Lane Group Flow (vph)	0	535	38	50	399	0	0	37	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		73.5	73.5	9.6	70.1			9.7				
Effective Green, g (s)		73.5	73.5	9.6	70.1			9.7				
Actuated g/C Ratio		0.61	0.61	0.08	0.58			0.08				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1141	885	141	991			137				
v/s Ratio Prot		c0.29		0.03	c0.23			c0.02				
v/s Ratio Perm			0.03									
v/c Ratio		0.47	0.04	0.35	0.40			0.27				
Uniform Delay, d1		12.6	9.3	52.3	13.6			51.8				
Progression Factor		0.03	0.00	1.00	1.00			1.00				
Incremental Delay, d2		0.3	0.0	1.5	1.2			1.1				
Delay (s)		0.7	0.0	53.8	14.8			52.9				
Level of Service		A	A	D	B			D				
Approach Delay (s)		0.6			19.1			52.9			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	535	62	50	399	206
v/c Ratio	0.43	0.06	0.28	0.40	0.67
Control Delay	1.1	0.1	54.7	16.4	22.3
Queue Delay	0.1	0.2	0.0	0.0	0.0
Total Delay	1.3	0.3	54.7	16.4	22.3
Queue Length 50th (ft)	5	0	36	158	16
Queue Length 95th (ft)	6	m0	86	321	121
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1318	1049	177	992	364
Starvation Cap Reductn	181	656	0	0	0
Spillback Cap Reductn	0	0	0	12	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.16	0.28	0.41	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	0	198	20	0	163
Future Volume (vph)	21	0	198	20	0	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1822			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1822			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	0	198	20	0	163
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	21	0	218	0	0	163
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	37.1		57.6			37.1
Effective Green, g (s)	37.1		57.6			37.1
Actuated g/C Ratio	0.31		0.48			0.31
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	547		874			498
v/s Ratio Prot	0.01		c0.12			
v/s Ratio Perm						c0.10
v/c Ratio	0.04		0.25			0.33
Uniform Delay, d1	29.0		18.4			31.9
Progression Factor	1.00		0.20			1.00
Incremental Delay, d2	0.0		0.6			0.4
Delay (s)	29.0		4.3			32.2
Level of Service	C		A			C
Approach Delay (s)		29.0	4.3		32.2	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	21	218	163
v/c Ratio	0.04	0.25	0.33
Control Delay	28.8	4.4	33.8
Queue Delay	0.0	0.8	0.0
Total Delay	28.8	5.2	33.8
Queue Length 50th (ft)	11	16	96
Queue Length 95th (ft)	34	27	178
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	560	873	510
Starvation Cap Reductn	0	410	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.47	0.32

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	333	186	0	463	0
Future Volume (vph)	0	333	186	0	463	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	333	186	0	463	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	333	186	0	463	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		35.7	57.6		37.1	
Effective Green, g (s)		35.7	57.6		37.1	
Actuated g/C Ratio		0.30	0.48		0.31	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		554	894		499	
v/s Ratio Prot		c0.18	c0.10			
v/s Ratio Perm					c0.29	
v/c Ratio		0.60	0.21		0.93	
Uniform Delay, d1		36.1	18.0		40.2	
Progression Factor		1.00	0.25		1.00	
Incremental Delay, d2		4.9	0.5		32.4	
Delay (s)		40.9	4.9		72.5	
Level of Service		D	A		E	
Approach Delay (s)		40.9	4.9		72.5	
Approach LOS		D	A		E	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	333	186	463
v/c Ratio	0.60	0.21	0.93
Control Delay	41.9	5.0	76.7
Queue Delay	0.0	1.0	0.0
Total Delay	41.9	6.0	76.7
Queue Length 50th (ft)	223	18	343
Queue Length 95th (ft)	373	33	#647
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	554	894	511
Starvation Cap Reductn	0	492	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.46	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	760	36	102	173	189	42	0	87	0	0	0
Future Volume (vph)	0	760	36	102	173	189	42	0	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1717			1666				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1717			1666				
Peak-hour factor, PHF	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. Flow (vph)	0	760	36	102	173	189	42	0	87	0	0	0
RTOR Reduction (vph)	0	0	14	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	0	760	22	102	362	0	0	9	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	12.0	57.6			8.0				
Effective Green, g (s)		72.8	72.8	12.0	57.6			8.0				
Actuated g/C Ratio		0.61	0.61	0.10	0.48			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	700	177	824			111				
v/s Ratio Prot		c0.41		c0.06	0.21			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.67	0.03	0.58	0.44			0.08				
Uniform Delay, d1		15.7	9.5	51.6	20.6			52.5				
Progression Factor		0.08	1.00	1.00	1.00			1.00				
Incremental Delay, d2		1.0	0.0	4.6	1.7			0.3				
Delay (s)		2.2	9.5	56.1	22.3			52.8				
Level of Service		A	A	E	C			D				
Approach Delay (s)		2.6			29.7			52.8			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	760	36	102	362	129
v/c Ratio	0.63	0.05	0.58	0.44	0.46
Control Delay	2.1	0.1	65.9	23.0	7.4
Queue Delay	0.5	0.4	0.0	0.0	0.0
Total Delay	2.6	0.5	65.9	23.0	7.4
Queue Length 50th (ft)	10	0	77	183	0
Queue Length 95th (ft)	m36	m0	#168	307	36
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1215	783	177	824	360
Starvation Cap Reductn	154	547	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.15	0.58	0.44	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1954	69	32	2087	26	66	145	11	43	103	236
Future Volume (veh/h)	105	1954	69	32	2087	26	66	145	11	43	103	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	0.98		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	1954	69	32	2087	4	66	145	11	43	103	236
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	2258	80	246	2569	749	192	483	37	68	133	272
Arrive On Green	0.16	0.89	0.89	0.14	0.50	0.50	0.09	0.09	0.09	0.28	0.28	0.28
Sat Flow, veh/h	1781	5049	178	1781	5106	1489	1026	1709	130	124	471	962
Grp Volume(v), veh/h	105	1316	707	32	2087	4	66	0	156	382	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1822	1781	1702	1489	1026	0	1838	1557	0	0
Q Serve(g_s), s	6.7	21.6	21.9	1.9	41.2	0.2	0.0	0.0	9.5	18.3	0.0	0.0
Cycle Q Clear(g_c), s	6.7	21.6	21.9	1.9	41.2	0.2	22.3	0.0	9.5	27.9	0.0	0.0
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.07	0.11		0.62
Lane Grp Cap(c), veh/h	144	1523	815	246	2569	749	192	0	520	474	0	0
V/C Ratio(X)	0.73	0.86	0.87	0.13	0.81	0.01	0.34	0.00	0.30	0.81	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	896	246	2569	749	201	0	536	487	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.00	0.85	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.1	4.6	4.7	45.4	25.1	14.9	49.1	0.0	43.3	40.7	0.0	0.0
Incr Delay (d2), s/veh	17.6	7.3	13.7	0.2	3.0	0.0	0.9	0.0	0.3	10.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.2	6.5	9.1	1.5	22.9	0.1	3.8	0.0	8.0	17.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.7	11.9	18.3	45.6	28.1	14.9	50.0	0.0	43.6	50.9	0.0	0.0
LnGrp LOS	E	B	B	D	C	B	D	A	D	D	A	A
Approach Vol, veh/h		2128			2123			222			382	
Approach Delay, s/veh		16.8			28.3			45.5			50.9	
Approach LOS		B			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.7	65.4		39.9	21.6	58.5		39.9				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	8.7	43.2		29.9	3.9	23.9		24.3				
Green Ext Time (p_c), s	0.0	14.8		1.1	0.0	29.7		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			25.8									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	2072	151	34	2006	47	25	56	13	105	36	156
Future Volume (veh/h)	139	2072	151	34	2006	47	25	56	13	105	36	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.96		0.90	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	139	2072	151	34	2006	0	25	56	13	105	36	156
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2253	162	202	2534	787	294	412	96	165	63	207
Arrive On Green	0.17	0.94	0.94	0.11	0.50	0.00	0.09	0.09	0.09	0.29	0.29	0.29
Sat Flow, veh/h	1781	4819	347	1781	5106	1585	1142	1436	333	432	219	721
Grp Volume(v), veh/h	139	1457	766	34	2006	0	25	0	69	297	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1762	1781	1702	1585	1142	0	1769	1372	0	0
Q Serve(g_s), s	9.2	23.1	25.9	2.1	39.1	0.0	0.0	0.0	4.3	19.6	0.0	0.0
Cycle Q Clear(g_c), s	9.2	23.1	25.9	2.1	39.1	0.0	4.1	0.0	4.3	23.9	0.0	0.0
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.19	0.35		0.53
Lane Grp Cap(c), veh/h	148	1592	824	202	2534	787	294	0	508	435	0	0
V/C Ratio(X)	0.94	0.92	0.93	0.17	0.79	0.00	0.08	0.00	0.14	0.68	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	866	202	2534	787	300	0	516	441	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.99	0.00	0.99	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.7	2.8	2.9	48.1	25.1	0.0	40.6	0.0	40.7	39.2	0.0	0.0
Incr Delay (d2), s/veh	90.0	11.4	24.3	0.4	2.7	0.0	0.1	0.0	0.1	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.9	6.9	11.3	1.7	21.9	0.0	1.3	0.0	3.5	13.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.7	14.2	27.2	48.4	27.8	0.0	40.7	0.0	40.8	43.5	0.0	0.0
LnGrp LOS	F	B	C	D	C	A	D	A	D	D	A	A
Approach Vol, veh/h		2362			2040			94			297	
Approach Delay, s/veh		25.8			28.1			40.8			43.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	64.6		40.4	18.6	60.9		40.4
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0
Max Q Clear Time (g_c+I1), s	11.2	41.1		25.9	4.1	27.9		6.3
Green Ext Time (p_c), s	0.0	16.4		1.3	0.0	28.2		0.4

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	371	0	0	400	68	0	0	0	89	0	99
Future Volume (veh/h)	159	371	0	0	400	68	0	0	0	89	0	99
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		0.90	1.00		1.00	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	371	0	0	400	23	0	0	0	89	0	99
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	455	386	856	1052	801	60	375	0	167	14	153
Arrive On Green	0.10	0.24	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.20	0.00	0.20
Sat Flow, veh/h	1781	1870	1585	1781	1870	1423	1296	1870	0	612	72	761
Grp Volume(v), veh/h	159	371	0	0	400	23	0	0	0	188	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1423	1296	1870	0	1445	0	0
Q Serve(g_s), s	10.5	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0
Cycle Q Clear(g_c), s	10.5	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	0.47		0.53
Lane Grp Cap(c), veh/h	187	455	386	856	1052	801	60	375	0	334	0	0
V/C Ratio(X)	0.85	0.82	0.00	0.00	0.38	0.03	0.00	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	327	920	779	856	1052	801	178	546	0	464	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.98	0.98	0.00	0.00	0.00	0.44	0.00	0.00
Uniform Delay (d), s/veh	52.8	42.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.9	0.0	0.0
Incr Delay (d2), s/veh	4.3	16.6	0.0	0.0	1.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	18.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	7.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	59.5	0.0	0.0	1.0	0.1	0.0	0.0	0.0	44.1	0.0	0.0
LnGrp LOS	E	E	A	A	A	A	A	A	A	D	A	A
Approach Vol, veh/h		530			423			0			188	
Approach Delay, s/veh		58.8			1.0			0.0			44.1	
Approach LOS		E			A						D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	56.1	34.2		29.7	17.6	72.7		29.7
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6
Max Green Setting (Gmax), s	* 10	* 59		35.0	22.0	* 47		35.0
Max Q Clear Time (g_c+I1), s	0.0	24.5		16.2	12.5	2.0		0.0
Green Ext Time (p_c), s	0.0	4.7		0.7	0.1	5.7		0.0

Intersection Summary			
HCM 6th Ctrl Delay			34.9
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	547	0	0	390	47	0	0	2	108	0	60
Future Volume (veh/h)	54	547	0	0	390	47	0	0	2	108	0	60
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		0.74	1.00		0.94	0.94		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	547	0	0	390	47	0	0	2	108	0	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	646	548	586	1002	626	60	0	380	265	10	125
Arrive On Green	0.08	0.35	0.00	0.00	0.71	0.71	0.00	0.00	0.26	0.26	0.00	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1168	1343	0	1487	842	39	490
Grp Volume(v), veh/h	54	547	0	0	390	47	0	0	2	168	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1168	1343	0	1487	1371	0	0
Q Serve(g_s), s	3.5	32.5	0.0	0.0	9.9	1.5	0.0	0.0	0.1	11.2	0.0	0.0
Cycle Q Clear(g_c), s	3.5	32.5	0.0	0.0	9.9	1.5	0.0	0.0	0.1	12.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.64		0.36
Lane Grp Cap(c), veh/h	136	646	548	586	1002	626	60	0	380	400	0	0
V/C Ratio(X)	0.40	0.85	0.00	0.00	0.39	0.08	0.00	0.00	0.01	0.42	0.00	0.00
Avail Cap(c_a), veh/h	163	941	798	586	1002	626	108	0	434	449	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.66	0.66	0.00	0.00	1.00	0.52	0.00	0.00
Uniform Delay (d), s/veh	52.8	36.3	0.0	0.0	9.4	8.2	0.0	0.0	33.3	37.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	14.5	0.0	0.0	0.8	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	23.9	0.0	0.0	6.2	0.7	0.0	0.0	0.1	6.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	50.9	0.0	0.0	10.2	8.4	0.0	0.0	33.3	37.8	0.0	0.0
LnGrp LOS	D	D	A	A	B	A	A	A	C	D	A	A
Approach Vol, veh/h		601			437			2			168	
Approach Delay, s/veh		51.1			10.0			33.3			37.8	
Approach LOS		D			A			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.2	46.5		36.3	14.2	69.5		36.3				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 9	* 60		35.0	11.0	* 58		35.0				
Max Q Clear Time (g_c+I1), s	0.0	34.5		14.3	5.5	11.9		2.1				
Green Ext Time (p_c), s	0.0	7.0		0.7	0.0	5.9		0.0				

Intersection Summary				
HCM 6th Ctrl Delay			34.3	
HCM 6th LOS			C	

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	290	145	60	91	2	327	117	95	0	0	0
Future Volume (vph)	6	290	145	60	91	2	327	117	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1573	1770	1863	570		1739				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1573	1770	1863	570		1739				
Peak-hour factor, PHF	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. Flow (vph)	6	290	145	60	91	2	327	117	95	0	0	0
RTOR Reduction (vph)	0	0	26	0	0	2	0	6	0	0	0	0
Lane Group Flow (vph)	6	290	119	60	91	0	0	533	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	19.5	98.2	8.8	26.9	26.9		76.9				
Effective Green, g (s)	1.4	19.5	98.2	8.8	26.9	26.9		76.9				
Actuated g/C Ratio	0.01	0.16	0.82	0.07	0.22	0.22		0.64				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	575	1287	129	417	127		1114				
v/s Ratio Prot	0.00	c0.08	0.06	c0.03	0.05							
v/s Ratio Perm			0.01			0.00		0.31				
v/c Ratio	0.30	0.50	0.09	0.47	0.22	0.00		0.48				
Uniform Delay, d1	58.8	45.8	2.1	53.3	38.0	36.1		11.2				
Progression Factor	1.15	0.92	1.03	1.00	1.00	1.00		1.00				
Incremental Delay, d2	3.0	1.4	0.1	1.0	0.6	0.0		1.5				
Delay (s)	70.7	43.7	2.3	54.3	38.5	36.2		12.6				
Level of Service	E	D	A	D	D	D		B				
Approach Delay (s)		30.4			44.7			12.6			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	6	290	145	60	91	2	327	117	95	0	0	0
Lane Group Flow (vph)	6	290	145	60	91	2	0	539	0	0	0	0
v/c Ratio	0.06	0.57	0.11	0.37	0.22	0.01		0.46				
Control Delay	62.8	48.8	0.4	58.4	38.5	0.0		11.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	62.8	48.8	0.4	58.4	38.5	0.0		11.9				
Queue Length 50th (ft)	5	113	0	44	55	0		192				
Queue Length 95th (ft)	m18	143	3	100	122	0		353				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1335	162	446	210		1165				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.06	0.49	0.11	0.37	0.20	0.01		0.46				

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	279	299	75	238	16	269	21	86	0	0	0
Future Volume (vph)	50	279	299	75	238	16	269	21	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.93				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1565	1770	1863	565		1616				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1565	1770	1863	565		1616				
Peak-hour factor, PHF	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. Flow (vph)	50	279	299	75	238	16	269	21	86	0	0	0
RTOR Reduction (vph)	0	0	56	0	0	13	0	7	0	0	0	0
Lane Group Flow (vph)	50	279	243	75	238	3	0	369	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	7.0	19.8	97.7	9.3	22.1	22.1		76.1				
Effective Green, g (s)	7.0	19.8	97.7	9.3	22.1	22.1		76.1				
Actuated g/C Ratio	0.06	0.17	0.81	0.08	0.18	0.18		0.63				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	103	583	1274	137	343	104		1024				
v/s Ratio Prot	0.03	0.08	0.12	c0.04	c0.13							
v/s Ratio Perm			0.03			0.01		0.23				
v/c Ratio	0.49	0.48	0.19	0.55	0.69	0.03		0.36				
Uniform Delay, d1	54.8	45.4	2.5	53.3	45.8	40.1		10.4				
Progression Factor	1.24	0.91	1.52	1.00	1.00	1.00		1.00				
Incremental Delay, d2	1.3	1.2	0.1	2.4	7.8	0.2		1.0				
Delay (s)	69.2	42.8	3.9	55.7	53.6	40.4		11.4				
Level of Service	E	D	A	E	D	D		B				
Approach Delay (s)		26.4			53.5			11.4			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	50	279	299	75	238	16	269	21	86	0	0	0
Lane Group Flow (vph)	50	279	299	75	238	16	0	376	0	0	0	0
v/c Ratio	0.41	0.48	0.22	0.44	0.70	0.09		0.36				
Control Delay	75.3	43.7	0.7	59.9	57.0	0.9		12.3				
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0		0.0				
Total Delay	75.3	43.7	0.8	59.9	57.0	0.9		12.3				
Queue Length 50th (ft)	41	106	6	56	174	0		124				
Queue Length 95th (ft)	93	137	1	117	282	0		266				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	162	716	1347	221	434	207		1043				
Starvation Cap Reductn	0	0	372	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.31	0.39	0.31	0.34	0.55	0.08		0.36				

Intersection Summary

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2191	24	69	2369	9	0	0	28	0	0	19
Future Vol, veh/h	0	2191	24	69	2369	9	0	0	28	0	0	19
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2191	24	69	2369	9	0	0	28	0	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2231	0	0	-	-	1128	-	-	1229
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*505	-	-	0	0	*402	0	0	*358
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*497	-	-	-	-	*389	-	-	*345
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	15	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	-	-	* 497	-	-	345
HCM Lane V/C Ratio	0.072	-	-	0.139	-	-	0.055
HCM Control Delay (s)	15	-	-	13.4	-	-	16
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0.5	-	-	0.2

Notes

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2023	20	129	2129	17	0	0	130	0	0	32
Future Vol, veh/h	0	2023	20	129	2129	17	0	0	130	0	0	32
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2023	20	129	2129	17	0	0	130	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2064	0	0	-	-	1054	-	-	1157
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*561	-	-	0	0	*446	0	0	*402
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*549	-	-	-	-	*428	-	-	*371
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	17.1	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	-	-	* 549	-	-	371
HCM Lane V/C Ratio	0.304	-	-	0.235	-	-	0.086
HCM Control Delay (s)	17.1	-	-	13.6	-	-	15.6
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	1.3	-	-	0.9	-	-	0.3

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

EXISTING PLUS PROJECT CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	2042	137	64	2227	66	87	118	110	41	164	43
Future Volume (veh/h)	79	2042	137	64	2227	66	87	118	110	41	164	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.94	0.98		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	2042	93	64	2227	45	87	118	110	41	164	43
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	3279	966	136	3279	952	129	161	135	83	306	74
Arrive On Green	0.64	0.64	0.64	1.00	1.00	1.00	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	164	5106	1505	189	5106	1482	338	598	502	177	1134	275
Grp Volume(v), veh/h	79	2042	93	64	2227	45	315	0	0	248	0	0
Grp Sat Flow(s),veh/h/ln	164	1702	1505	189	1702	1482	1437	0	0	1586	0	0
Q Serve(g_s), s	39.7	28.6	2.8	32.1	0.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	39.7	28.6	2.8	60.7	0.0	0.0	24.9	0.0	0.0	15.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.28		0.35	0.17		0.17
Lane Grp Cap(c), veh/h	166	3279	966	136	3279	952	426	0	0	462	0	0
V/C Ratio(X)	0.48	0.62	0.10	0.47	0.68	0.05	0.74	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	166	3279	966	136	3279	952	446	0	0	485	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.8	12.8	8.2	11.3	0.0	0.0	41.0	0.0	0.0	37.3	0.0	0.0
Incr Delay (d2), s/veh	9.8	0.9	0.2	11.6	1.2	0.1	6.4	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	15.2	1.6	2.5	0.6	0.0	14.4	0.0	0.0	10.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	13.7	8.4	22.9	1.2	0.1	47.4	0.0	0.0	38.4	0.0	0.0
LnGrp LOS	C	B	A	C	A	A	D	A	A	D	A	A
Approach Vol, veh/h		2214			2336			315			248	
Approach Delay, s/veh		13.9			1.7			47.4			38.4	
Approach LOS		B			A			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		81.7		38.3		81.7		38.3				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		62.7		17.5		41.7		26.9				
Green Ext Time (p_c), s		11.8		1.3		28.0		1.1				
Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									
Notes												

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	1757	115	73	2074	57	103	162	90	36	196	38
Future Volume (veh/h)	59	1757	115	73	2074	57	103	162	90	36	196	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.93	0.97		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	1757	63	73	2074	39	103	162	90	36	196	38
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	3209	918	171	3209	924	139	193	99	73	352	64
Arrive On Green	0.63	0.63	0.63	1.00	1.00	1.00	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	192	5106	1460	257	5106	1471	353	680	351	137	1244	226
Grp Volume(v), veh/h	59	1757	63	73	2074	39	355	0	0	270	0	0
Grp Sat Flow(s),veh/h/ln	192	1702	1460	257	1702	1471	1384	0	0	1607	0	0
Q Serve(g_s), s	19.7	23.4	2.0	19.3	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.7	23.4	2.0	42.7	0.0	0.0	30.0	0.0	0.0	16.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.29		0.25	0.13		0.14
Lane Grp Cap(c), veh/h	181	3209	918	171	3209	924	431	0	0	489	0	0
V/C Ratio(X)	0.33	0.55	0.07	0.43	0.65	0.04	0.82	0.00	0.00	0.55	0.00	0.00
Avail Cap(c_a), veh/h	181	3209	918	171	3209	924	579	0	0	655	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.0	12.6	8.7	6.6	0.0	0.0	41.8	0.0	0.0	36.4	0.0	0.0
Incr Delay (d2), s/veh	4.8	0.7	0.1	7.7	1.0	0.1	7.5	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	13.0	1.1	1.9	0.5	0.0	16.3	0.0	0.0	11.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	13.3	8.8	14.4	1.0	0.1	49.3	0.0	0.0	37.3	0.0	0.0
LnGrp LOS	B	B	A	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1879			2186			355			270	
Approach Delay, s/veh		13.3			1.5			49.3			37.3	
Approach LOS		B			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0				
Max Q Clear Time (g_c+I1), s		44.7		18.3		25.4		32.0				
Green Ext Time (p_c), s		16.9		1.7		26.3		1.9				

Intersection Summary			
HCM 6th Ctrl Delay			11.9
HCM 6th LOS			B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	295	136	70	115	20	113	290	59	27	238	27
Future Volume (veh/h)	52	295	136	70	115	20	113	290	59	27	238	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.97		0.92	0.97		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	295	136	70	115	20	113	290	59	27	238	27
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	848	1526	681	626	1964	333	202	383	78	145	421	48
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.34	0.34	0.34	0.26	0.26	0.26
Sat Flow, veh/h	1240	2349	1049	947	3025	513	1078	1484	302	1005	1632	185
Grp Volume(v), veh/h	52	221	210	70	66	69	113	0	349	27	0	265
Grp Sat Flow(s),veh/h/ln	1240	1777	1622	947	1777	1761	1078	0	1786	1005	0	1817
Q Serve(g_s), s	1.9	6.0	6.3	3.9	1.6	1.7	12.1	0.0	20.8	3.0	0.0	15.2
Cycle Q Clear(g_c), s	3.6	6.0	6.3	10.1	1.6	1.7	27.3	0.0	20.8	23.8	0.0	15.2
Prop In Lane	1.00		0.65	1.00		0.29	1.00		0.17	1.00		0.10
Lane Grp Cap(c), veh/h	848	1154	1053	626	1154	1143	202	0	461	145	0	469
V/C Ratio(X)	0.06	0.19	0.20	0.11	0.06	0.06	0.56	0.00	0.76	0.19	0.00	0.57
Avail Cap(c_a), veh/h	848	1154	1053	626	1154	1143	484	0	929	408	0	945
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	8.4	8.5	10.5	7.7	7.7	45.5	0.0	36.1	51.7	0.0	38.7
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.4	0.1	0.1	0.8	0.0	0.8	0.2	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(95%),veh/ln	0.9	4.1	4.0	1.5	1.1	1.2	5.6	0.0	12.9	1.4	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	8.8	8.9	10.9	7.8	7.8	46.3	0.0	36.9	51.9	0.0	39.1
LnGrp LOS	A	A	A	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h		483			205			462			292	
Approach Delay, s/veh		8.8			8.8			39.2			40.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		83.4		36.6		83.4		36.6
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6
Max Green Setting (Gmax), s		* 47		* 62		* 47		* 62
Max Q Clear Time (g_c+I1), s		8.3		29.3		12.1		25.8
Green Ext Time (p_c), s		6.1		1.7		2.2		1.1

Intersection Summary	
HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	420	142	132	299	31	75	238	19	81	283	26
Future Volume (veh/h)	62	420	142	132	299	31	75	238	19	81	283	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.93	0.98		0.95	0.97		0.92	0.97		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	62	420	142	132	299	31	75	238	19	81	283	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	698	1674	557	547	2114	217	167	432	34	190	426	39
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.08	0.08	0.08	0.25	0.25	0.25
Sat Flow, veh/h	1034	2563	853	835	3237	332	1040	1697	135	1087	1673	154
Grp Volume(v), veh/h	62	289	273	132	163	167	75	0	257	81	0	309
Grp Sat Flow(s),veh/h/ln	1034	1777	1640	835	1777	1792	1040	0	1832	1087	0	1827
Q Serve(g_s), s	2.9	8.1	8.3	9.4	4.2	4.3	8.6	0.0	16.2	8.5	0.0	18.2
Cycle Q Clear(g_c), s	7.2	8.1	8.3	17.7	4.2	4.3	26.8	0.0	16.2	24.7	0.0	18.2
Prop In Lane	1.00		0.52	1.00		0.19	1.00		0.07	1.00		0.08
Lane Grp Cap(c), veh/h	698	1161	1071	547	1161	1170	167	0	466	190	0	465
V/C Ratio(X)	0.09	0.25	0.25	0.24	0.14	0.14	0.45	0.00	0.55	0.43	0.00	0.66
Avail Cap(c_a), veh/h	698	1161	1071	547	1161	1170	330	0	754	361	0	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.00	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.3	8.6	8.7	12.3	7.9	8.0	62.3	0.0	48.4	50.3	0.0	40.2
Incr Delay (d2), s/veh	0.3	0.5	0.6	1.0	0.3	0.3	0.7	0.0	0.4	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	5.6	5.3	3.3	2.9	3.0	4.4	0.0	12.5	4.2	0.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	9.1	9.2	13.4	8.2	8.2	62.9	0.0	48.8	50.8	0.0	40.8
LnGrp LOS	A	A	A	B	A	A	E	A	D	D	A	D
Approach Vol, veh/h		624			462			332			390	
Approach Delay, s/veh		9.2			9.7			52.0			42.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		83.9		36.1		83.9		36.1				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49				
Max Q Clear Time (g_c+I1), s		10.3		28.8		19.7		26.7				
Green Ext Time (p_c), s		8.8		1.1		5.9		1.3				

Intersection Summary			
HCM 6th Ctrl Delay			24.4
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	279	62	53	180	25	150	309	47	47	208	124
Future Volume (veh/h)	136	279	62	53	180	25	150	309	47	47	208	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.98		0.96	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	279	0	53	180	1	150	309	20	47	208	56
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	619	779	660	536	767	626	389	562	439	307	462	353
Arrive On Green	0.08	0.42	0.00	0.08	0.41	0.41	0.10	0.30	0.30	0.02	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1526	1781	1870	1461	1781	1870	1426
Grp Volume(v), veh/h	136	279	0	53	180	1	150	309	20	47	208	56
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1526	1781	1870	1461	1781	1870	1426
Q Serve(g_s), s	5.0	12.3	0.0	1.9	7.5	0.0	7.0	16.6	1.2	2.3	12.7	4.4
Cycle Q Clear(g_c), s	5.0	12.3	0.0	1.9	7.5	0.0	7.0	16.6	1.2	2.3	12.7	4.4
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	619	779	660	536	767	626	389	562	439	307	462	353
V/C Ratio(X)	0.22	0.36	0.00	0.10	0.23	0.00	0.39	0.55	0.05	0.15	0.45	0.16
Avail Cap(c_a), veh/h	621	779	660	564	767	626	391	642	502	328	561	428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	17.0	24.0	0.0	16.9	23.1	20.9	27.6	35.2	29.8	32.3	47.3	43.5
Incr Delay (d2), s/veh	0.1	1.3	0.0	0.0	0.7	0.0	0.2	1.8	0.1	0.1	1.3	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(95%),veh/ln	3.7	9.5	0.0	1.4	6.2	0.0	5.4	12.3	0.8	1.8	10.4	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.1	25.3	0.0	16.9	23.8	20.9	27.8	37.0	29.9	32.3	48.6	43.9
LnGrp LOS	B	C	A	B	C	C	C	D	C	C	D	D
Approach Vol, veh/h		415			234			479			311	
Approach Delay, s/veh		22.6			22.2			33.8			45.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	55.5	15.9	35.5	13.9	54.7	9.5	41.8
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	3.9	14.3	9.0	14.7	7.0	9.5	4.3	18.6
Green Ext Time (p_c), s	0.0	3.1	0.1	2.5	0.0	2.0	0.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	259	70	40	219	19	102	208	70	118	245	238
Future Volume (veh/h)	117	259	70	40	219	19	102	208	70	118	245	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.90	0.96		1.00	0.96		0.88	0.93		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	259	19	40	219	0	102	208	50	118	245	179
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	539	733	556	491	706	599	379	601	450	412	530	387
Arrive On Green	0.08	0.39	0.39	0.07	0.38	0.00	0.10	0.32	0.32	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1420	1781	1870	1585	1781	1870	1398	1781	1870	1368
Grp Volume(v), veh/h	117	259	19	40	219	0	102	208	50	118	245	179
Grp Sat Flow(s),veh/h/ln	1781	1870	1420	1781	1870	1585	1781	1870	1398	1781	1870	1368
Q Serve(g_s), s	4.6	11.7	1.0	1.5	9.9	0.0	4.4	10.2	3.0	5.6	14.9	15.7
Cycle Q Clear(g_c), s	4.6	11.7	1.0	1.5	9.9	0.0	4.4	10.2	3.0	5.6	14.9	15.7
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	539	733	556	491	706	599	379	601	450	412	530	387
V/C Ratio(X)	0.22	0.35	0.03	0.08	0.31	0.00	0.27	0.35	0.11	0.29	0.46	0.46
Avail Cap(c_a), veh/h	542	733	556	534	706	599	385	642	480	412	561	410
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	19.2	25.8	22.5	19.3	26.3	0.0	24.5	31.1	28.6	29.2	45.7	50.9
Incr Delay (d2), s/veh	0.1	1.3	0.1	0.0	1.1	0.0	0.1	0.7	0.2	0.1	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	9.3	0.6	1.1	8.1	0.0	3.3	8.2	1.9	4.5	11.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	27.1	22.6	19.4	27.5	0.0	24.7	31.8	28.9	29.3	46.7	52.2
LnGrp LOS	B	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		395			259			360			542	
Approach Delay, s/veh		24.6			26.2			29.4			44.7	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	52.5	15.6	39.8	13.8	50.8	11.0	44.4
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	3.5	13.7	6.4	17.7	6.6	11.9	7.6	12.2
Green Ext Time (p_c), s	0.0	3.1	0.0	3.8	0.0	2.4	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	33.0
HCM 6th LOS	C

Notes

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

OPERATIONAL ANALYSIS - EXISTING PLUS CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	EXISTING PLUS PROJECT CONDITIONS									
	AM PEAK HOUR					PM PEAK HOUR				
		EB	WB	SB	Total		EB	WB	SB	Total
4.1 Watseka Avenue & Washington Boulevard	App Vol	44	327	53	424	App Vol	25	223	203	451
	App Delay	40.5	3.9	40.9		App Delay	28.9	4.3	33.2	
	Total Delay	1782	1275	2168	5225	Total Delay	723	959	6740	8421
	Ave Delay				12.3 B	Ave Delay				18.7 B
		EB	WB	SB	Total		EB	WB	SB	Total
4.2 Culver Boulevard & Washington Boulevard	App Vol	358	205	239	802	App Vol	333	186	463	982
	App Delay	26.8	5.2	53.9		App Delay	41.2	4.9	70.4	
	Total Delay	9594	1066	12877	23538	Total Delay	13720	911	32595	47226
	Ave Delay				29.3 C	Ave Delay				48.1 D
		EB	WB	NB	Total		EB	WB	NB	Total
4.3 Irving Place & Culver Boulevard	App Vol	597	475	206	1278	App Vol	796	469	129	1394
	App Delay	0.6	19.3	52.9		App Delay	2.6	29.9	52.8	
	Total Delay	358	9168	10897	20423	Total Delay	2070	14023	6811	22904
	Ave Delay				16.0 B	Ave Delay				16.4 B
Overall Intersection Results	App Delay	49,186				App Delay	78,551			
	App Vol	2,504				App Vol	2,827			
		19.6 LOS B					**27.8 LOS C**			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	0	290	37	0	53
Future Volume (vph)	44	0	290	37	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.98			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1823			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1823			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	44	0	290	37	0	53
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	44	0	327	0	0	53
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	22.9		70.1			22.9
Effective Green, g (s)	22.9		70.1			22.9
Actuated g/C Ratio	0.19		0.58			0.19
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	337		1064			307
v/s Ratio Prot	0.02		c0.18			
v/s Ratio Perm						c0.03
v/c Ratio	0.13		0.31			0.17
Uniform Delay, d1	40.3		12.6			40.6
Progression Factor	1.00		0.25			1.00
Incremental Delay, d2	0.2		0.7			0.3
Delay (s)	40.5		3.9			40.9
Level of Service	D		A			D
Approach Delay (s)		40.5	3.9		40.9	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	44	327	53
v/c Ratio	0.13	0.31	0.17
Control Delay	39.2	4.3	40.2
Queue Delay	0.0	0.6	0.0
Total Delay	39.2	4.9	40.2
Queue Length 50th (ft)	28	27	34
Queue Length 95th (ft)	67	48	78
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	398	1065	362
Starvation Cap Reductn	0	413	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.11	0.50	0.15

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	358	205	0	239	0
Future Volume (vph)	0	358	205	0	239	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	358	205	0	239	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	358	205	0	239	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		50.6	70.1		22.9	
Effective Green, g (s)		50.6	70.1		22.9	
Actuated g/C Ratio		0.42	0.58		0.19	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		785	1088		328	
v/s Ratio Prot		c0.19	c0.11			
v/s Ratio Perm					c0.14	
v/c Ratio		0.46	0.19		0.73	
Uniform Delay, d1		24.8	11.7		45.6	
Progression Factor		1.00	0.42		1.00	
Incremental Delay, d2		1.9	0.3		8.2	
Delay (s)		26.8	5.2		53.9	
Level of Service		C	A		D	
Approach Delay (s)		26.8	5.2		53.9	
Approach LOS		C	A		D	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	358	205	239
v/c Ratio	0.44	0.19	0.73
Control Delay	29.2	5.9	59.5
Queue Delay	0.0	1.2	0.0
Total Delay	29.2	7.1	59.5
Queue Length 50th (ft)	202	33	173
Queue Length 95th (ft)	381	81	293
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	812	1088	387
Starvation Cap Reductn	0	683	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.51	0.62

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	535	62	50	164	261	107	0	99	0	0	0
Future Volume (vph)	0	535	62	50	164	261	107	0	99	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.91			0.94				
Flt Protected		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (prot)		1863	1446	1770	1691			1698				
Flt Permitted		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (perm)		1863	1446	1770	1691			1698				
Peak-hour factor, PHF	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. Flow (vph)	0	535	62	50	164	261	107	0	99	0	0	0
RTOR Reduction (vph)	0	0	24	0	0	0	0	169	0	0	0	0
Lane Group Flow (vph)	0	535	38	50	425	0	0	37	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		73.5	73.5	9.6	70.1			9.7				
Effective Green, g (s)		73.5	73.5	9.6	70.1			9.7				
Actuated g/C Ratio		0.61	0.61	0.08	0.58			0.08				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1141	885	141	987			137				
v/s Ratio Prot		c0.29		0.03	c0.25			c0.02				
v/s Ratio Perm			0.03									
v/c Ratio		0.47	0.04	0.35	0.43			0.27				
Uniform Delay, d1		12.6	9.3	52.3	13.9			51.8				
Progression Factor		0.03	0.00	1.00	1.00			1.00				
Incremental Delay, d2		0.3	0.0	1.5	1.4			1.1				
Delay (s)		0.7	0.0	53.8	15.2			52.9				
Level of Service		A	A	D	B			D				
Approach Delay (s)		0.6			19.3			52.9			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	535	62	50	425	206
v/c Ratio	0.43	0.06	0.28	0.43	0.67
Control Delay	1.1	0.1	54.7	16.9	22.3
Queue Delay	0.1	0.2	0.0	0.0	0.0
Total Delay	1.3	0.3	54.7	16.9	22.3
Queue Length 50th (ft)	5	0	36	172	16
Queue Length 95th (ft)	6	m0	86	349	121
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1318	1049	177	988	364
Starvation Cap Reductn	181	656	0	0	0
Spillback Cap Reductn	0	0	0	12	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.16	0.28	0.44	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	198	25	0	203
Future Volume (vph)	25	0	198	25	0	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.98			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1813			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1813			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	198	25	0	203
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	25	0	223	0	0	203
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	37.3		57.4			37.3
Effective Green, g (s)	37.3		57.4			37.3
Actuated g/C Ratio	0.31		0.48			0.31
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	550		867			500
v/s Ratio Prot	0.01		c0.12			
v/s Ratio Perm						c0.13
v/c Ratio	0.05		0.26			0.41
Uniform Delay, d1	28.9		18.6			32.6
Progression Factor	1.00		0.20			1.00
Incremental Delay, d2	0.0		0.7			0.5
Delay (s)	28.9		4.3			33.2
Level of Service	C		A			C
Approach Delay (s)		28.9	4.3		33.2	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	25	223	203
v/c Ratio	0.05	0.26	0.41
Control Delay	28.8	4.4	35.4
Queue Delay	0.0	0.8	0.0
Total Delay	28.8	5.2	35.4
Queue Length 50th (ft)	13	16	123
Queue Length 95th (ft)	38	27	220
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	560	867	510
Starvation Cap Reductn	0	395	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.47	0.40

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	
Traffic Volume (vph)	0	333	186	0	463	0
Future Volume (vph)	0	333	186	0	463	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	333	186	0	463	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	333	186	0	463	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		35.5	57.4		37.3	
Effective Green, g (s)		35.5	57.4		37.3	
Actuated g/C Ratio		0.30	0.48		0.31	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		551	891		502	
v/s Ratio Prot		c0.18	c0.10			
v/s Ratio Perm					c0.29	
v/c Ratio		0.60	0.21		0.92	
Uniform Delay, d1		36.2	18.1		40.0	
Progression Factor		1.00	0.25		1.00	
Incremental Delay, d2		5.0	0.5		30.5	
Delay (s)		41.2	4.9		70.4	
Level of Service		D	A		E	
Approach Delay (s)		41.2	4.9		70.4	
Approach LOS		D	A		E	

Intersection Summary			
HCM 2000 Control Delay	48.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	333	186	463
v/c Ratio	0.60	0.21	0.92
Control Delay	42.1	5.1	75.1
Queue Delay	0.0	1.0	0.0
Total Delay	42.1	6.1	75.1
Queue Length 50th (ft)	223	18	343
Queue Length 95th (ft)	373	33	#647
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	551	891	511
Starvation Cap Reductn	0	492	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.60	0.47	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	760	36	102	173	194	42	0	87	0	0	0
Future Volume (vph)	0	760	36	102	173	194	42	0	87	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1715			1666				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1715			1666				
Peak-hour factor, PHF	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. Flow (vph)	0	760	36	102	173	194	42	0	87	0	0	0
RTOR Reduction (vph)	0	0	14	0	0	0	0	120	0	0	0	0
Lane Group Flow (vph)	0	760	22	102	367	0	0	9	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	12.0	57.4			8.0				
Effective Green, g (s)		72.8	72.8	12.0	57.4			8.0				
Actuated g/C Ratio		0.61	0.61	0.10	0.48			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	700	177	820			111				
v/s Ratio Prot		c0.41		c0.06	0.21			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.67	0.03	0.58	0.45			0.08				
Uniform Delay, d1		15.7	9.5	51.6	20.8			52.5				
Progression Factor		0.08	1.00	1.00	1.00			1.00				
Incremental Delay, d2		1.0	0.0	4.6	1.8			0.3				
Delay (s)		2.2	9.5	56.1	22.6			52.8				
Level of Service		A	A	E	C			D				
Approach Delay (s)		2.6			29.9			52.8			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	760	36	102	367	129
v/c Ratio	0.63	0.05	0.58	0.45	0.46
Control Delay	2.1	0.1	65.9	23.2	7.4
Queue Delay	0.6	0.4	0.0	0.0	0.0
Total Delay	2.7	0.5	65.9	23.2	7.4
Queue Length 50th (ft)	10	0	77	186	0
Queue Length 95th (ft)	m36	m0	#168	314	36
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1212	781	177	820	360
Starvation Cap Reductn	154	547	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.15	0.58	0.45	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	1962	71	32	2123	26	66	145	11	43	103	236
Future Volume (veh/h)	105	1962	71	32	2123	26	66	145	11	43	103	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	0.98		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	1962	71	32	2123	4	66	145	11	43	103	236
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	2261	82	244	2569	749	192	483	37	68	133	272
Arrive On Green	0.16	0.90	0.90	0.14	0.50	0.50	0.09	0.09	0.09	0.28	0.28	0.28
Sat Flow, veh/h	1781	5043	182	1781	5106	1489	1026	1709	130	124	471	962
Grp Volume(v), veh/h	105	1323	710	32	2123	4	66	0	156	382	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1821	1781	1702	1489	1026	0	1838	1557	0	0
Q Serve(g_s), s	6.7	21.6	22.0	1.9	42.4	0.2	0.0	0.0	9.5	18.3	0.0	0.0
Cycle Q Clear(g_c), s	6.7	21.6	22.0	1.9	42.4	0.2	22.3	0.0	9.5	27.9	0.0	0.0
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.07	0.11		0.62
Lane Grp Cap(c), veh/h	144	1526	816	244	2569	749	192	0	520	474	0	0
V/C Ratio(X)	0.73	0.87	0.87	0.13	0.83	0.01	0.34	0.00	0.30	0.81	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	895	244	2569	749	201	0	536	487	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.00	0.85	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.1	4.5	4.6	45.5	25.4	14.9	49.1	0.0	43.3	40.7	0.0	0.0
Incr Delay (d2), s/veh	17.6	7.4	13.9	0.2	3.3	0.0	0.9	0.0	0.3	10.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.2	6.5	9.1	1.5	23.5	0.1	3.8	0.0	8.0	17.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.7	12.0	18.5	45.7	28.7	14.9	50.0	0.0	43.6	50.9	0.0	0.0
LnGrp LOS	E	B	B	D	C	B	D	A	D	D	A	A
Approach Vol, veh/h		2138			2159			222			382	
Approach Delay, s/veh		16.8			28.9			45.5			50.9	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	14.7	65.4	39.9	21.5	58.6	39.9
Change Period (Y+Rc), s	* 5	* 5	6.0	* 5	* 4.8	6.0
Max Green Setting (Gmax), s	* 10	* 59	35.0	* 10	* 59	35.0
Max Q Clear Time (g_c+I1), s	8.7	44.4	29.9	3.9	24.0	24.3
Green Ext Time (p_c), s	0.0	13.7	1.1	0.0	29.8	0.8

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	2122	161	34	2012	47	25	56	13	105	36	156
Future Volume (veh/h)	139	2122	161	34	2012	47	25	56	13	105	36	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.96		0.90	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	139	2122	161	34	2012	0	25	56	13	105	36	156
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2271	170	193	2534	787	294	412	96	165	63	207
Arrive On Green	0.17	0.95	0.95	0.11	0.50	0.00	0.09	0.09	0.09	0.29	0.29	0.29
Sat Flow, veh/h	1781	4803	360	1781	5106	1585	1142	1436	333	432	219	721
Grp Volume(v), veh/h	139	1495	788	34	2012	0	25	0	69	297	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1759	1781	1702	1585	1142	0	1769	1372	0	0
Q Serve(g_s), s	9.2	23.6	28.0	2.1	39.3	0.0	0.0	0.0	4.3	19.6	0.0	0.0
Cycle Q Clear(g_c), s	9.2	23.6	28.0	2.1	39.3	0.0	4.1	0.0	4.3	23.9	0.0	0.0
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.19	0.35		0.53
Lane Grp Cap(c), veh/h	148	1610	832	193	2534	787	294	0	508	435	0	0
V/C Ratio(X)	0.94	0.93	0.95	0.18	0.79	0.00	0.08	0.00	0.14	0.68	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	865	193	2534	787	300	0	516	441	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.99	0.00	0.99	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.7	2.4	2.5	48.6	25.1	0.0	40.6	0.0	40.7	39.2	0.0	0.0
Incr Delay (d2), s/veh	90.0	13.3	29.6	0.4	2.7	0.0	0.1	0.0	0.1	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.9	7.4	12.7	1.7	22.0	0.0	1.3	0.0	3.5	13.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.7	15.6	32.0	49.1	27.8	0.0	40.7	0.0	40.8	43.5	0.0	0.0
LnGrp LOS	F	B	C	D	C	A	D	A	D	D	A	A
Approach Vol, veh/h		2422			2046			94			297	
Approach Delay, s/veh		28.1			28.2			40.8			43.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	64.6		40.4	18.0	61.5		40.4
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0
Max Q Clear Time (g_c+I1), s	11.2	41.3		25.9	4.1	30.0		6.3
Green Ext Time (p_c), s	0.0	16.2		1.3	0.0	26.8		0.4

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

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	371	0	0	426	68	0	0	0	91	0	99
Future Volume (veh/h)	159	371	0	0	426	68	0	0	0	91	0	99
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		0.90	1.00		1.00	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	371	0	0	426	22	0	0	0	91	0	99
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	455	386	854	1051	799	60	377	0	170	14	152
Arrive On Green	0.10	0.24	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.20	0.00	0.20
Sat Flow, veh/h	1781	1870	1585	1781	1870	1423	1296	1870	0	621	71	753
Grp Volume(v), veh/h	159	371	0	0	426	22	0	0	0	190	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1423	1296	1870	0	1444	0	0
Q Serve(g_s), s	10.5	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	0.0	0.0
Cycle Q Clear(g_c), s	10.5	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	0.48		0.52
Lane Grp Cap(c), veh/h	187	455	386	854	1051	799	60	377	0	335	0	0
V/C Ratio(X)	0.85	0.82	0.00	0.00	0.41	0.03	0.00	0.00	0.00	0.57	0.00	0.00
Avail Cap(c_a), veh/h	327	920	779	854	1051	799	177	546	0	464	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.98	0.98	0.00	0.00	0.00	0.44	0.00	0.00
Uniform Delay (d), s/veh	52.8	42.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.9	0.0	0.0
Incr Delay (d2), s/veh	4.3	16.6	0.0	0.0	1.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	18.1	0.0	0.0	0.6	0.0	0.0	0.0	0.0	7.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.1	59.5	0.0	0.0	1.1	0.1	0.0	0.0	0.0	44.1	0.0	0.0
LnGrp LOS	E	E	A	A	A	A	A	A	A	D	A	A
Approach Vol, veh/h		530			448			0			190	
Approach Delay, s/veh		58.8			1.1			0.0			44.1	
Approach LOS		E			A						D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	56.0	34.2		29.8	17.6	72.6		29.8				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 10	* 59		35.0	22.0	* 47		35.0				
Max Q Clear Time (g_c+I1), s	0.0	24.5		16.4	12.5	2.0		0.0				
Green Ext Time (p_c), s	0.0	4.7		0.7	0.1	6.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			34.3
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	547	0	0	395	47	0	0	2	118	0	60
Future Volume (veh/h)	54	547	0	0	395	47	0	0	2	118	0	60
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		0.74	1.00		0.94	0.94		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	547	0	0	395	47	0	0	2	118	0	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	646	548	586	1002	626	60	0	380	273	9	118
Arrive On Green	0.08	0.35	0.00	0.00	0.71	0.71	0.00	0.00	0.26	0.26	0.00	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1168	1343	0	1487	870	37	461
Grp Volume(v), veh/h	54	547	0	0	395	47	0	0	2	178	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1168	1343	0	1487	1369	0	0
Q Serve(g_s), s	3.5	32.5	0.0	0.0	10.1	1.5	0.0	0.0	0.1	12.2	0.0	0.0
Cycle Q Clear(g_c), s	3.5	32.5	0.0	0.0	10.1	1.5	0.0	0.0	0.1	13.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.66		0.34
Lane Grp Cap(c), veh/h	136	646	548	586	1002	626	60	0	380	400	0	0
V/C Ratio(X)	0.40	0.85	0.00	0.00	0.39	0.08	0.00	0.00	0.01	0.44	0.00	0.00
Avail Cap(c_a), veh/h	163	941	798	586	1002	626	108	0	434	449	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.65	0.65	0.00	0.00	1.00	0.52	0.00	0.00
Uniform Delay (d), s/veh	52.8	36.3	0.0	0.0	9.5	8.2	0.0	0.0	33.3	38.0	0.0	0.0
Incr Delay (d2), s/veh	0.7	14.5	0.0	0.0	0.8	0.2	0.0	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	23.9	0.0	0.0	6.2	0.7	0.0	0.0	0.1	7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	50.9	0.0	0.0	10.2	8.4	0.0	0.0	33.3	38.2	0.0	0.0
LnGrp LOS	D	D	A	A	B	A	A	A	C	D	A	A
Approach Vol, veh/h		601			442			2			178	
Approach Delay, s/veh		51.1			10.0			33.3			38.2	
Approach LOS		D			B			C			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.2	46.5		36.3	14.2	69.5		36.3				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 9	* 60		35.0	11.0	* 58		35.0				
Max Q Clear Time (g_c+I1), s	0.0	34.5		15.2	5.5	12.1		2.1				
Green Ext Time (p_c), s	0.0	7.0		0.7	0.0	6.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			34.3
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	290	147	60	106	2	337	117	95	0	0	0
Future Volume (vph)	6	290	147	60	106	2	337	117	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1573	1770	1863	570		1740				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1573	1770	1863	570		1740				
Peak-hour factor, PHF	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. Flow (vph)	6	290	147	60	106	2	337	117	95	0	0	0
RTOR Reduction (vph)	0	0	27	0	0	2	0	6	0	0	0	0
Lane Group Flow (vph)	6	290	120	60	106	0	0	543	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	19.5	98.2	8.8	26.9	26.9		76.9				
Effective Green, g (s)	1.4	19.5	98.2	8.8	26.9	26.9		76.9				
Actuated g/C Ratio	0.01	0.16	0.82	0.07	0.22	0.22		0.64				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	575	1287	129	417	127		1115				
v/s Ratio Prot	0.00	c0.08	0.06	c0.03	0.06							
v/s Ratio Perm			0.02			0.00		0.31				
v/c Ratio	0.30	0.50	0.09	0.47	0.25	0.00		0.49				
Uniform Delay, d1	58.8	45.8	2.1	53.3	38.3	36.1		11.3				
Progression Factor	1.15	0.92	1.28	1.00	1.00	1.00		1.00				
Incremental Delay, d2	3.0	1.4	0.1	1.0	0.7	0.0		1.5				
Delay (s)	70.8	43.5	2.8	54.3	39.0	36.2		12.8				
Level of Service	E	D	A	D	D	D		B				
Approach Delay (s)		30.3			44.4			12.8			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	6	290	147	60	106	2	337	117	95	0	0	0
Lane Group Flow (vph)	6	290	147	60	106	2	0	549	0	0	0	0
v/c Ratio	0.06	0.57	0.11	0.37	0.25	0.01		0.47				
Control Delay	63.0	48.6	0.5	58.4	39.2	0.0		12.1				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	63.0	48.6	0.5	58.4	39.2	0.0		12.1				
Queue Length 50th (ft)	5	113	0	44	64	0		198				
Queue Length 95th (ft)	m17	134	7	100	139	0		364				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1335	162	446	210		1166				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.06	0.49	0.11	0.37	0.24	0.01		0.47				

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	279	309	75	241	16	271	21	86	0	0	0
Future Volume (vph)	50	279	309	75	241	16	271	21	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.93				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1565	1770	1863	565		1617				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1565	1770	1863	565		1617				
Peak-hour factor, PHF	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. Flow (vph)	50	279	309	75	241	16	271	21	86	0	0	0
RTOR Reduction (vph)	0	0	57	0	0	13	0	7	0	0	0	0
Lane Group Flow (vph)	50	279	252	75	241	3	0	371	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	7.0	19.9	97.7	9.3	22.2	22.2		76.0				
Effective Green, g (s)	7.0	19.9	97.7	9.3	22.2	22.2		76.0				
Actuated g/C Ratio	0.06	0.17	0.81	0.08	0.18	0.18		0.63				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	103	586	1274	137	344	104		1024				
v/s Ratio Prot	0.03	0.08	0.13	c0.04	c0.13							
v/s Ratio Perm			0.03			0.01		0.23				
v/c Ratio	0.49	0.48	0.20	0.55	0.70	0.03		0.36				
Uniform Delay, d1	54.8	45.3	2.5	53.3	45.8	40.1		10.5				
Progression Factor	1.21	0.91	1.18	1.00	1.00	1.00		1.00				
Incremental Delay, d2	1.2	1.2	0.2	2.4	8.2	0.2		1.0				
Delay (s)	67.5	42.3	3.1	55.7	54.0	40.3		11.5				
Level of Service	E	D	A	E	D	D		B				
Approach Delay (s)		25.3			53.7			11.5			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	50	279	309	75	241	16	271	21	86	0	0	0
Lane Group Flow (vph)	50	279	309	75	241	16	0	378	0	0	0	0
v/c Ratio	0.41	0.48	0.23	0.44	0.70	0.09		0.36				
Control Delay	73.7	43.2	0.6	59.9	57.1	0.9		12.4				
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0		0.0				
Total Delay	73.7	43.2	0.8	59.9	57.1	0.9		12.4				
Queue Length 50th (ft)	41	104	0	56	176	0		126				
Queue Length 95th (ft)	91	131	2	117	286	0		268				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	162	716	1349	221	434	207		1041				
Starvation Cap Reductn	0	0	364	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.31	0.39	0.31	0.34	0.56	0.08		0.36				

Intersection Summary

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2191	44	105	2369	9	0	0	38	0	0	19
Future Vol, veh/h	0	2191	44	105	2369	9	0	0	38	0	0	19
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2191	44	105	2369	9	0	0	38	0	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2251	0	0	-	-	1128	-	-	1229
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*505	-	-	0	0	*402	0	0	*358
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*497	-	-	-	-	*389	-	-	*345
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	15.3	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	-	-	* 497	-	-	345
HCM Lane V/C Ratio	0.098	-	-	0.211	-	-	0.055
HCM Control Delay (s)	15.3	-	-	14.2	-	-	16
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.8	-	-	0.2

Notes

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2023	24	135	2129	17	0	0	189	0	0	32
Future Vol, veh/h	0	2023	24	135	2129	17	0	0	189	0	0	32
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2023	24	135	2129	17	0	0	189	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2068	0	0	-	-	1054	-	-	1157
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*561	-	-	0	0	*446	0	0	*402
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*549	-	-	-	-	*428	-	-	*371
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	20	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	-	-	* 549	-	-	371
HCM Lane V/C Ratio	0.442	-	-	0.246	-	-	0.086
HCM Control Delay (s)	20	-	-	13.7	-	-	15.6
HCM Lane LOS	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	2.3	-	-	1	-	-	0.3

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

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	9	67	14	44	81
Future Vol, veh/h	14	9	67	14	44	81
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	14	9	67	14	44	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	233	85	125	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	760	980	1474	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	725	980	1474	-	-	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	6.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1474	-	807	-	-
HCM Lane V/C Ratio	0.045	-	0.029	-	-
HCM Control Delay (s)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	87	58	13	37	145	15
Future Vol, veh/h	87	58	13	37	145	15
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	87	58	13	37	145	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	216	153	160	0	-	0
Stage 1	153	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	777	898	1432	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	770	898	1432	-	-	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	965	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	9.9		2		0	
HCM LOS	A					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1432	-	770	898	-	-
HCM Lane V/C Ratio	0.009	-	0.113	0.065	-	-
HCM Control Delay (s)	7.5	0	10.3	9.3	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	0.2	-	-

FUTURE HORIZON YEAR (2024) WITHOUT PROJECT CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	2137	148	83	2395	72	94	134	119	55	203	48
Future Volume (veh/h)	86	2137	148	83	2395	72	94	134	119	55	203	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.95	0.98		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	2137	101	83	2395	44	94	134	119	55	203	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	3209	945	121	3209	930	123	156	126	88	292	64
Arrive On Green	0.63	0.63	0.63	0.84	0.84	0.84	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	139	5106	1504	170	5106	1480	298	552	444	187	1033	227
Grp Volume(v), veh/h	86	2137	101	83	2395	44	347	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	139	1702	1504	170	1702	1480	1294	0	0	1447	0	0
Q Serve(g_s), s	50.9	32.1	3.2	43.3	24.6	0.6	9.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	75.4	32.1	3.2	75.4	24.6	0.6	31.9	0.0	0.0	22.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.27		0.34	0.18		0.16
Lane Grp Cap(c), veh/h	119	3209	945	121	3209	930	405	0	0	445	0	0
V/C Ratio(X)	0.72	0.67	0.11	0.68	0.75	0.05	0.86	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	119	3209	945	121	3209	930	405	0	0	445	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.5	14.2	8.9	31.5	5.7	3.7	42.4	0.0	0.0	38.1	0.0	0.0
Incr Delay (d2), s/veh	36.6	1.1	0.2	30.3	1.6	0.1	19.3	0.0	0.0	4.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	16.9	1.9	6.2	8.0	0.4	17.8	0.0	0.0	13.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.1	15.4	9.1	61.8	7.3	3.8	61.8	0.0	0.0	42.6	0.0	0.0
LnGrp LOS	E	B	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		2324			2522			347			306	
Approach Delay, s/veh		17.4			9.0			61.8			42.6	
Approach LOS		B			A			E			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		77.4		24.3		77.4		33.9				
Green Ext Time (p_c), s		0.0		1.2		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			17.8									
HCM 6th LOS			B									

Notes

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

Future Horizon Year (2024) w/o Project PM
09/09/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1848	121	87	2415	67	120	197	110	67	225	48
Future Volume (veh/h)	68	1848	121	87	2415	67	120	197	110	67	225	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	0.99		0.94	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	1848	61	87	2415	33	120	197	110	67	225	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	2870	815	134	2870	821	153	224	117	109	349	69
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	138	5106	1449	235	5106	1461	327	641	336	208	998	198
Grp Volume(v), veh/h	68	1848	61	87	2415	33	427	0	0	340	0	0
Grp Sat Flow(s),veh/h/ln	138	1702	1449	235	1702	1461	1304	0	0	1404	0	0
Q Serve(g_s), s	20.3	29.8	2.3	37.6	47.2	1.2	14.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	67.4	29.8	2.3	67.4	47.2	1.2	38.7	0.0	0.0	23.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.28		0.26	0.20		0.14
Lane Grp Cap(c), veh/h	83	2870	815	134	2870	821	494	0	0	527	0	0
V/C Ratio(X)	0.82	0.64	0.07	0.65	0.84	0.04	0.86	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	83	2870	815	134	2870	821	544	0	0	580	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.5	18.0	12.0	44.0	21.8	11.8	38.6	0.0	0.0	32.3	0.0	0.0
Incr Delay (d2), s/veh	77.5	1.1	0.2	24.1	3.3	0.1	14.5	0.0	0.0	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.9	16.6	1.4	6.3	25.1	0.7	20.1	0.0	0.0	13.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	134.0	19.2	12.2	68.1	25.1	11.9	53.0	0.0	0.0	34.5	0.0	0.0
LnGrp LOS	F	B	B	E	C	B	D	A	A	C	A	A
Approach Vol, veh/h		1977			2535			427			340	
Approach Delay, s/veh		22.9			26.4			53.0			34.5	
Approach LOS		C			C			D			C	

Timer - Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.0		48.0		72.0		48.0
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0
Max Q Clear Time (g_c+I1), s		69.4		25.7		69.4		40.7
Green Ext Time (p_c), s		0.0		2.0		0.0		1.3

Intersection Summary		
HCM 6th Ctrl Delay		27.8
HCM 6th LOS		C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	379	144	71	143	21	123	313	58	36	275	35
Future Volume (veh/h)	60	379	144	71	143	21	123	313	58	36	275	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.98		0.93	0.98		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	379	144	71	143	21	123	313	58	36	275	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	781	1536	573	536	1912	275	212	442	82	166	469	60
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1208	2494	931	872	3104	447	1045	1514	281	995	1609	205
Grp Volume(v), veh/h	60	268	255	71	81	83	123	0	371	36	0	310
Grp Sat Flow(s),veh/h/ln	1208	1777	1648	872	1777	1774	1045	0	1795	995	0	1813
Q Serve(g_s), s	2.5	8.2	8.4	4.8	2.2	2.3	13.7	0.0	22.2	4.0	0.0	17.5
Cycle Q Clear(g_c), s	4.8	8.2	8.4	13.3	2.2	2.3	31.2	0.0	22.2	26.2	0.0	17.5
Prop In Lane	1.00		0.56	1.00		0.25	1.00		0.16	1.00		0.11
Lane Grp Cap(c), veh/h	781	1094	1015	536	1094	1093	212	0	523	166	0	529
V/C Ratio(X)	0.08	0.24	0.25	0.13	0.07	0.08	0.58	0.00	0.71	0.22	0.00	0.59
Avail Cap(c_a), veh/h	781	1094	1015	536	1094	1093	442	0	918	385	0	928
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	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.3	10.4	10.5	13.5	9.3	9.3	49.7	0.0	38.0	49.6	0.0	36.3
Incr Delay (d2), s/veh	0.2	0.5	0.6	0.5	0.1	0.1	0.8	0.0	0.6	0.2	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(95%),veh/ln	1.2	5.8	5.6	1.8	1.5	1.6	6.4	0.0	14.4	1.8	0.0	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	11.0	11.1	14.0	9.4	9.4	50.4	0.0	38.5	49.9	0.0	36.7
LnGrp LOS	B	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h		583			235			494			346	
Approach Delay, s/veh		11.0			10.8			41.5			38.1	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.4		40.6		79.4		40.6				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 48		* 61		* 48		* 61				
Max Q Clear Time (g_c+I1), s		10.4		33.2		15.3		28.2				
Green Ext Time (p_c), s		7.5		1.8		2.6		1.3				

Intersection Summary		
HCM 6th Ctrl Delay		25.7
HCM 6th LOS		C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	453	147	135	325	38	92	284	20	85	312	39
Future Volume (veh/h)	72	453	147	135	325	38	92	284	20	85	312	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.93	0.99		0.95	0.98		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	453	147	135	325	38	92	284	20	85	312	39
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	638	1605	514	494	1977	229	178	494	35	196	465	58
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.09	0.09	0.09	0.29	0.29	0.29
Sat Flow, veh/h	1003	2590	830	807	3190	369	1011	1717	121	1053	1614	202
Grp Volume(v), veh/h	72	309	291	135	180	183	92	0	304	85	0	351
Grp Sat Flow(s),veh/h/ln	1003	1777	1643	807	1777	1782	1011	0	1837	1053	0	1816
Q Serve(g_s), s	3.9	9.6	9.8	11.1	5.1	5.2	10.8	0.0	19.0	9.2	0.0	20.5
Cycle Q Clear(g_c), s	9.2	9.6	9.8	21.0	5.1	5.2	31.3	0.0	19.0	28.2	0.0	20.5
Prop In Lane	1.00		0.51	1.00		0.21	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	638	1101	1018	494	1101	1104	178	0	529	196	0	523
V/C Ratio(X)	0.11	0.28	0.29	0.27	0.16	0.17	0.52	0.00	0.57	0.43	0.00	0.67
Avail Cap(c_a), veh/h	638	1101	1018	494	1101	1104	304	0	756	327	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.00	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	10.5	10.5	15.4	9.7	9.7	63.0	0.0	47.3	49.5	0.0	37.7
Incr Delay (d2), s/veh	0.4	0.6	0.7	1.4	0.3	0.3	0.8	0.0	0.3	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	6.8	6.5	3.9	3.6	3.7	5.4	0.0	14.3	4.4	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.0	11.1	11.3	16.8	10.0	10.0	63.8	0.0	47.6	50.0	0.0	38.3
LnGrp LOS	B	B	B	B	A	B	E	A	D	D	A	D
Approach Vol, veh/h		672			498			396			436	
Approach Delay, s/veh		11.3			11.8			51.4			40.6	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.9		40.1		79.9		40.1				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49				
Max Q Clear Time (g_c+I1), s		11.8		33.3		23.0		30.2				
Green Ext Time (p_c), s		9.6		1.2		6.4		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	318	89	68	242	28	158	322	66	61	245	130
Future Volume (veh/h)	153	318	89	68	242	28	158	322	66	61	245	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		1.00	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	318	10	68	242	0	158	322	32	61	245	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	561	754	600	498	753	638	373	567	443	308	476	364
Arrive On Green	0.08	0.40	0.40	0.08	0.40	0.00	0.10	0.30	0.30	0.02	0.08	0.08
Sat Flow, veh/h	1781	1870	1490	1781	1870	1585	1781	1870	1462	1781	1870	1430
Grp Volume(v), veh/h	153	318	10	68	242	0	158	322	32	61	245	53
Grp Sat Flow(s),veh/h/ln	1781	1870	1490	1781	1870	1585	1781	1870	1462	1781	1870	1430
Q Serve(g_s), s	5.8	14.7	0.5	2.5	10.7	0.0	7.4	17.4	1.9	3.0	15.0	4.1
Cycle Q Clear(g_c), s	5.8	14.7	0.5	2.5	10.7	0.0	7.4	17.4	1.9	3.0	15.0	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	561	754	600	498	753	638	373	567	443	308	476	364
V/C Ratio(X)	0.27	0.42	0.02	0.14	0.32	0.00	0.42	0.57	0.07	0.20	0.51	0.15
Avail Cap(c_a), veh/h	561	754	600	515	753	638	374	642	502	322	561	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	17.9	25.8	21.5	17.5	24.6	0.0	27.5	35.2	29.8	31.7	47.9	42.9
Incr Delay (d2), s/veh	0.1	1.7	0.1	0.0	1.1	0.0	0.3	1.9	0.1	0.1	1.5	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(95%),veh/ln	4.2	11.1	0.3	1.8	8.6	0.0	5.6	12.8	1.2	2.4	11.8	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	27.5	21.6	17.6	25.7	0.0	27.8	37.1	29.9	31.8	49.3	43.2
LnGrp LOS	B	C	C	B	C	A	C	D	C	C	D	D
Approach Vol, veh/h		481			310			512			359	
Approach Delay, s/veh		24.4			24.0			33.8			45.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	53.9	15.9	36.3	13.9	53.8	10.1	42.2
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	4.5	16.7	9.4	17.0	7.8	12.7	5.0	19.4
Green Ext Time (p_c), s	0.0	3.6	0.1	2.7	0.0	2.7	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	289	96	70	291	30	125	244	84	126	259	252
Future Volume (veh/h)	140	289	96	70	291	30	125	244	84	126	259	252
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.89	0.97		1.00	0.96		0.88	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	289	33	70	291	0	125	244	49	126	259	182
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	700	529	474	700	594	374	606	453	391	531	388
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.00	0.10	0.32	0.32	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1414	1781	1870	1585	1781	1870	1399	1781	1870	1369
Grp Volume(v), veh/h	140	289	33	70	291	0	125	244	49	126	259	182
Grp Sat Flow(s),veh/h/ln	1781	1870	1414	1781	1870	1585	1781	1870	1399	1781	1870	1369
Q Serve(g_s), s	5.6	13.7	1.8	2.7	13.8	0.0	5.4	12.2	2.9	6.0	15.8	16.0
Cycle Q Clear(g_c), s	5.6	13.7	1.8	2.7	13.8	0.0	5.4	12.2	2.9	6.0	15.8	16.0
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	483	700	529	474	700	594	374	606	453	391	531	388
V/C Ratio(X)	0.29	0.41	0.06	0.15	0.42	0.00	0.33	0.40	0.11	0.32	0.49	0.47
Avail Cap(c_a), veh/h	485	700	529	490	700	594	377	642	480	391	561	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.70	0.70	0.70
Uniform Delay (d), s/veh	20.1	27.8	24.1	19.3	27.8	0.0	24.9	31.6	28.4	29.4	46.1	51.0
Incr Delay (d2), s/veh	0.1	1.8	0.2	0.1	1.8	0.0	0.2	0.9	0.2	0.1	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	10.6	1.1	2.0	10.6	0.0	4.1	9.5	1.8	4.8	12.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	29.6	24.3	19.3	29.6	0.0	25.0	32.5	28.7	29.5	47.2	52.3
LnGrp LOS	C	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		462			361			418			567	
Approach Delay, s/veh		26.4			27.6			29.8			44.9	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	50.4	15.8	39.8	13.9	50.4	11.0	44.7
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	4.7	15.7	7.4	18.0	7.6	15.8	8.0	14.2
Green Ext Time (p_c), s	0.0	3.5	0.1	3.9	0.0	3.3	0.0	3.1

Intersection Summary	
HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C

Notes

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

OPERATIONAL ANALYSIS - FUTURE HORIZON YEAR (2024) WITHOUT PROJECT CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	FUTURE HORIZON YEAR (2024) WITHOUT PROJECT									
	AM PEAK HOUR					PM PEAK HOUR				
		EB	WB	SB	Total		EB	WB	SB	Total
4.1 Watseka Avenue & Washington Boulevard	App Vol	25	344	63	432	App Vol	22	251	172	445
	App Delay	36.9	4.4	38		App Delay	28.4	4.3	31.8	
	Total Delay	923	1514	2394	4830	Total Delay	625	1079	5470	7174
	Ave Delay				11.2 B	Ave Delay				16.1 B
		EB	WB	SB	Total		EB	WB	SB	Total
4.2 Culver Boulevard & Washington Boulevard	App Vol	430	284	310	1024	App Vol	381	296	500	1177
	App Delay	32.8	5.3	57.3		App Delay	45.9	4.4	100.5	
	Total Delay	14104	1505	17763	33372	Total Delay	17488	1302	50250	69040
	Ave Delay				32.6 C	Ave Delay				58.7 E
		EB	WB	NB	Total		EB	WB	NB	Total
4.3 Irving Place & Culver Boulevard	App Vol	758	569	217	1544	App Vol	911	610	137	1658
	App Delay	1.7	22.8	53.5		App Delay	4.1	32.3	52.9	
	Total Delay	1289	12973	11610	25871	Total Delay	3735	19703	7247	30685
	Ave Delay				16.8 B	Ave Delay				18.5 C
Overall Intersection Results	App Delay	64,074				App Delay	106,899			
	App Vol	3,000				App Vol	3,280			
		21.4 LOS C					32.6 LOS C			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	333	11	0	63
Future Volume (vph)	25	0	333	11	0	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		1.00			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1851			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1851			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	0	333	11	0	63
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	25	0	344	0	0	63
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	26.7		66.1			26.7
Effective Green, g (s)	26.7		66.1			26.7
Actuated g/C Ratio	0.22		0.55			0.22
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	393		1019			358
v/s Ratio Prot	0.01		c0.19			
v/s Ratio Perm						c0.04
v/c Ratio	0.06		0.34			0.18
Uniform Delay, d1	36.8		14.9			37.7
Progression Factor	1.00		0.24			1.00
Incremental Delay, d2	0.1		0.8			0.2
Delay (s)	36.9		4.4			38.0
Level of Service	D		A			D
Approach Delay (s)		36.9	4.4		38.0	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	25	344	63
v/c Ratio	0.06	0.34	0.18
Control Delay	35.8	4.7	38.0
Queue Delay	0.0	0.9	0.0
Total Delay	35.8	5.6	38.0
Queue Length 50th (ft)	15	31	39
Queue Length 95th (ft)	43	51	87
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	427	1020	389
Starvation Cap Reductn	0	407	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.06	0.56	0.16

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	430	284	0	310	0
Future Volume (vph)	0	430	284	0	310	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	430	284	0	310	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	430	284	0	310	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		46.6	66.1		26.7	
Effective Green, g (s)		46.6	66.1		26.7	
Actuated g/C Ratio		0.39	0.55		0.22	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		723	1026		383	
v/s Ratio Prot		c0.23	c0.15			
v/s Ratio Perm					c0.18	
v/c Ratio		0.59	0.28		0.81	
Uniform Delay, d1		29.2	14.3		44.2	
Progression Factor		1.00	0.33		1.00	
Incremental Delay, d2		3.6	0.6		13.1	
Delay (s)		32.8	5.3		57.3	
Level of Service		C	A		E	
Approach Delay (s)		32.8	5.3		57.3	
Approach LOS		C	A		E	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	430	284	310
v/c Ratio	0.57	0.28	0.81
Control Delay	34.9	5.7	63.4
Queue Delay	0.0	1.4	0.0
Total Delay	34.9	7.1	63.4
Queue Length 50th (ft)	272	43	223
Queue Length 95th (ft)	#525	89	#421
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	750	1026	416
Starvation Cap Reductn	0	543	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.59	0.75

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	694	64	52	241	276	111	0	106	0	0	0
Future Volume (vph)	0	694	64	52	241	276	111	0	106	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.93				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1446	1770	1714			1697				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1446	1770	1714			1697				
Peak-hour factor, PHF	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. Flow (vph)	0	694	64	52	241	276	111	0	106	0	0	0
RTOR Reduction (vph)	0	0	25	0	0	0	0	169	0	0	0	0
Lane Group Flow (vph)	0	694	39	52	517	0	0	48	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		73.3	73.3	9.6	66.1			9.9				
Effective Green, g (s)		73.3	73.3	9.6	66.1			9.9				
Actuated g/C Ratio		0.61	0.61	0.08	0.55			0.08				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1137	883	141	944			140				
v/s Ratio Prot		c0.37		0.03	c0.30			c0.03				
v/s Ratio Perm			0.03									
v/c Ratio		0.61	0.04	0.37	0.55			0.34				
Uniform Delay, d1		14.5	9.3	52.3	17.3			52.0				
Progression Factor		0.08	0.07	1.00	1.00			1.00				
Incremental Delay, d2		0.8	0.0	1.6	2.3			1.5				
Delay (s)		1.9	0.6	54.0	19.6			53.5				
Level of Service		A	A	D	B			D				
Approach Delay (s)		1.7			22.8			53.5			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	694	64	52	517	217
v/c Ratio	0.55	0.06	0.29	0.55	0.70
Control Delay	1.9	0.1	55.0	21.3	25.1
Queue Delay	0.2	0.3	0.0	0.0	0.6
Total Delay	2.1	0.4	55.0	21.3	25.7
Queue Length 50th (ft)	7	0	38	248	25
Queue Length 95th (ft)	36	m0	89	474	135
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1287	1026	177	944	364
Starvation Cap Reductn	139	671	0	0	0
Spillback Cap Reductn	0	0	0	12	24
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.18	0.29	0.55	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	0	230	21	0	172
Future Volume (vph)	22	0	230	21	0	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1825			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1825			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	0	230	21	0	172
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	22	0	251	0	0	172
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	38.0		56.7			38.0
Effective Green, g (s)	38.0		56.7			38.0
Actuated g/C Ratio	0.32		0.47			0.32
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	560		862			510
v/s Ratio Prot	0.01		c0.14			
v/s Ratio Perm						c0.11
v/c Ratio	0.04		0.29			0.34
Uniform Delay, d1	28.4		19.4			31.4
Progression Factor	1.00		0.18			1.00
Incremental Delay, d2	0.0		0.7			0.4
Delay (s)	28.4		4.3			31.8
Level of Service	C		A			C
Approach Delay (s)		28.4	4.3		31.8	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	22	251	172
v/c Ratio	0.04	0.29	0.34
Control Delay	28.8	4.3	33.7
Queue Delay	0.0	1.4	0.0
Total Delay	28.8	5.7	33.7
Queue Length 50th (ft)	12	17	102
Queue Length 95th (ft)	35	28	187
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	560	861	510
Starvation Cap Reductn	0	423	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.57	0.34

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	
Traffic Volume (vph)	0	381	296	0	500	0
Future Volume (vph)	0	381	296	0	500	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	381	296	0	500	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	381	296	0	500	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		34.8	56.7		38.0	
Effective Green, g (s)		34.8	56.7		38.0	
Actuated g/C Ratio		0.29	0.47		0.32	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		540	880		511	
v/s Ratio Prot		c0.20	c0.16			
v/s Ratio Perm					c0.31	
v/c Ratio		0.71	0.34		0.98	
Uniform Delay, d1		38.0	19.9		40.6	
Progression Factor		1.00	0.18		1.00	
Incremental Delay, d2		7.9	0.8		59.9	
Delay (s)		45.9	4.4		100.5	
Level of Service		D	A		F	
Approach Delay (s)		45.9	4.4		100.5	
Approach LOS		D	A		F	

Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	381	296	500
v/c Ratio	0.71	0.34	0.98
Control Delay	46.7	4.5	102.9
Queue Delay	0.1	1.3	0.0
Total Delay	46.8	5.8	102.9
Queue Length 50th (ft)	264	22	382
Queue Length 95th (ft)	#465	37	#718
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	539	879	511
Starvation Cap Reductn	0	383	0
Spillback Cap Reductn	6	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.71	0.60	0.98

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	873	38	107	282	221	43	0	94	0	0	0
Future Volume (vph)	0	873	38	107	282	221	43	0	94	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.93			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1740			1664				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1740			1664				
Peak-hour factor, PHF	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. Flow (vph)	0	873	38	107	282	221	43	0	94	0	0	0
RTOR Reduction (vph)	0	0	15	0	0	0	0	128	0	0	0	0
Lane Group Flow (vph)	0	873	23	107	503	0	0	9	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	12.0	56.7			8.0				
Effective Green, g (s)		72.8	72.8	12.0	56.7			8.0				
Actuated g/C Ratio		0.61	0.61	0.10	0.47			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	700	177	822			110				
v/s Ratio Prot		c0.47		0.06	c0.29			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.77	0.03	0.60	0.61			0.08				
Uniform Delay, d1		17.5	9.5	51.7	23.5			52.6				
Progression Factor		0.12	1.00	1.00	1.00			1.00				
Incremental Delay, d2		1.8	0.0	5.9	3.4			0.3				
Delay (s)		3.9	9.5	57.6	26.9			52.9				
Level of Service		A	A	E	C			D				
Approach Delay (s)		4.1			32.3			52.9			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	873	38	107	503	137
v/c Ratio	0.73	0.05	0.60	0.61	0.48
Control Delay	3.0	0.1	67.7	27.6	8.7
Queue Delay	1.1	0.4	0.0	0.0	0.0
Total Delay	4.1	0.5	67.7	27.6	8.7
Queue Length 50th (ft)	26	0	81	282	0
Queue Length 95th (ft)	m41	m0	#180	474	44
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1200	775	177	821	360
Starvation Cap Reductn	133	549	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.17	0.60	0.61	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	2059	102	33	2277	30	76	151	11	50	115	245
Future Volume (veh/h)	108	2059	102	33	2277	30	76	151	11	50	115	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	0.99		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	2059	102	33	2277	5	76	151	11	50	115	245
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	2287	113	209	2530	737	171	498	36	73	137	261
Arrive On Green	0.16	0.92	0.92	0.12	0.50	0.50	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4964	245	1781	5106	1488	1008	1715	125	134	471	898
Grp Volume(v), veh/h	108	1408	753	33	2277	5	76	0	162	410	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1805	1781	1702	1488	1008	0	1840	1503	0	0
Q Serve(g_s), s	6.9	22.6	23.8	2.0	48.7	0.2	0.0	0.0	9.8	22.2	0.0	0.0
Cycle Q Clear(g_c), s	6.9	22.6	23.8	2.0	48.7	0.2	27.2	0.0	9.8	32.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.07	0.12		0.60
Lane Grp Cap(c), veh/h	144	1568	831	209	2530	737	171	0	534	470	0	0
V/C Ratio(X)	0.75	0.90	0.91	0.16	0.90	0.01	0.44	0.00	0.30	0.87	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	887	209	2530	737	173	0	537	472	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.00	0.75	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.1	3.4	3.5	47.6	27.6	15.3	50.8	0.0	43.0	41.7	0.0	0.0
Incr Delay (d2), s/veh	20.3	9.6	18.7	0.3	6.2	0.0	1.4	0.0	0.2	19.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.6	6.6	10.1	1.6	27.3	0.1	4.4	0.0	8.0	20.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.4	13.1	22.2	48.0	33.8	15.3	52.2	0.0	43.2	60.9	0.0	0.0
LnGrp LOS	E	B	C	D	C	B	D	A	D	E	A	A
Approach Vol, veh/h		2269			2315			238			410	
Approach Delay, s/veh		18.8			33.9			46.1			60.9	
Approach LOS		B			C			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.7	64.5		40.8	19.1	60.1		40.8				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	8.9	50.7		34.0	4.0	25.8		29.2				
Green Ext Time (p_c), s	0.0	8.0		0.3	0.0	29.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			30.0									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	2201	194	35	2285	54	120	65	13	117	41	161
Future Volume (veh/h)	145	2201	194	35	2285	54	120	65	13	117	41	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.96		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	2201	194	35	2285	0	120	65	13	117	41	161
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2291	198	171	2524	783	283	429	86	168	62	193
Arrive On Green	0.17	0.97	0.97	0.10	0.49	0.00	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4739	409	1781	5106	1585	1137	1484	297	440	214	666
Grp Volume(v), veh/h	145	1568	827	35	2285	0	120	0	78	319	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1744	1781	1702	1585	1137	0	1780	1320	0	0
Q Serve(g_s), s	9.7	23.3	36.0	2.2	49.2	0.0	0.0	0.0	4.8	22.9	0.0	0.0
Cycle Q Clear(g_c), s	9.7	23.3	36.0	2.2	49.2	0.0	20.3	0.0	4.8	27.7	0.0	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.17	0.37		0.50
Lane Grp Cap(c), veh/h	148	1646	843	171	2524	783	283	0	515	423	0	0
V/C Ratio(X)	0.98	0.95	0.98	0.21	0.91	0.00	0.42	0.00	0.15	0.75	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	858	171	2524	783	286	0	519	426	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.97	0.00	0.97	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.9	1.4	1.6	50.0	27.8	0.0	47.8	0.0	40.8	40.8	0.0	0.0
Incr Delay (d2), s/veh	124.0	18.3	46.1	0.6	6.6	0.0	1.0	0.0	0.1	7.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.9	8.5	17.1	1.8	27.5	0.0	6.8	0.0	4.0	14.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	173.9	19.7	47.7	50.6	34.4	0.0	48.7	0.0	40.9	48.6	0.0	0.0
LnGrp LOS	F	B	D	D	C	A	D	A	D	D	A	A
Approach Vol, veh/h		2540			2320			198			319	
Approach Delay, s/veh		37.6			34.6			45.7			48.6	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	64.3		40.7	16.5	62.8		40.7				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	11.7	51.2		29.7	4.2	38.0		22.3				
Green Ext Time (p_c), s	0.0	7.6		0.9	0.0	20.0		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			37.3									
HCM 6th LOS			D									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	417	94	34	505	73	13	6	5	99	33	102
Future Volume (veh/h)	165	417	94	34	505	73	13	6	5	99	33	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.90	0.98		0.97	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	165	417	87	34	505	23	13	6	5	99	33	102
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	516	424	777	1020	774	267	201	167	166	58	140
Arrive On Green	0.11	0.28	0.28	0.75	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	1536	1781	1870	1419	1224	931	775	570	270	649
Grp Volume(v), veh/h	165	417	87	34	505	23	13	0	11	234	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1536	1781	1870	1419	1224	0	1706	1488	0	0
Q Serve(g_s), s	10.9	24.9	5.2	0.0	0.0	0.0	0.0	0.0	0.6	15.3	0.0	0.0
Cycle Q Clear(g_c), s	10.9	24.9	5.2	0.0	0.0	0.0	1.5	0.0	0.6	17.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	0.42		0.44
Lane Grp Cap(c), veh/h	191	516	424	777	1020	774	267	0	368	364	0	0
V/C Ratio(X)	0.86	0.81	0.21	0.04	0.50	0.03	0.05	0.00	0.03	0.64	0.00	0.00
Avail Cap(c_a), veh/h	193	926	760	777	1020	774	360	0	498	475	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	0.39	0.00	0.00
Uniform Delay (d), s/veh	52.7	40.5	33.4	7.9	0.0	0.0	37.5	0.0	37.2	43.6	0.0	0.0
Incr Delay (d2), s/veh	37.7	14.1	1.1	0.0	1.6	0.1	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.1	19.3	3.7	0.4	0.8	0.0	0.6	0.0	0.5	9.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	54.6	34.5	7.9	1.6	0.1	37.5	0.0	37.2	43.9	0.0	0.0
LnGrp LOS	F	D	C	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		669			562			24			234	
Approach Delay, s/veh		60.8			2.0			37.4			43.9	
Approach LOS		E			A			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	50.4	38.1		31.5	17.9	70.6		31.5				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 10	* 59		35.0	13.0	* 56		35.0				
Max Q Clear Time (g_c+I1), s	2.0	26.9		19.4	12.9	2.0		3.5				
Green Ext Time (p_c), s	0.0	6.2		0.9	0.0	7.8		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			35.6
HCM 6th LOS			D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	590	36	24	509	65	23	84	33	132	22	63
Future Volume (veh/h)	56	590	36	24	509	65	23	84	33	132	22	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.74	0.94		0.94	0.95		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	590	36	24	509	65	23	84	33	132	22	63
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	694	569	538	1009	632	348	323	127	212	40	84
Arrive On Green	0.07	0.37	0.37	0.24	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1534	1781	1870	1171	1238	1252	492	636	157	324
Grp Volume(v), veh/h	56	590	36	24	509	65	23	0	117	217	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1534	1781	1870	1171	1238	0	1744	1117	0	0
Q Serve(g_s), s	3.6	34.8	1.8	0.0	20.7	3.2	0.0	0.0	6.4	16.8	0.0	0.0
Cycle Q Clear(g_c), s	3.6	34.8	1.8	0.0	20.7	3.2	1.9	0.0	6.4	23.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	0.61		0.29
Lane Grp Cap(c), veh/h	125	694	569	538	1009	632	348	0	450	337	0	0
V/C Ratio(X)	0.45	0.85	0.06	0.04	0.50	0.10	0.07	0.00	0.26	0.64	0.00	0.00
Avail Cap(c_a), veh/h	163	941	772	538	1009	632	390	0	509	381	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.45	0.45	0.45	1.00	0.00	1.00	0.48	0.00	0.00
Uniform Delay (d), s/veh	53.5	34.7	24.3	30.0	17.5	13.5	33.7	0.0	35.4	43.4	0.0	0.0
Incr Delay (d2), s/veh	0.9	14.0	0.2	0.0	0.8	0.1	0.0	0.0	0.1	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	25.1	1.2	0.9	12.0	1.6	0.9	0.0	5.0	9.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	48.7	24.5	30.0	18.3	13.6	33.8	0.0	35.5	44.4	0.0	0.0
LnGrp LOS	D	D	C	C	B	B	C	A	D	D	A	A
Approach Vol, veh/h		682			598			140			217	
Approach Delay, s/veh		47.9			18.2			35.2			44.4	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	33.9	49.5		36.6	13.5	70.0		36.6
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6
Max Green Setting (Gmax), s	* 9	* 60		35.0	11.0	* 58		35.0
Max Q Clear Time (g_c+I1), s	2.0	36.8		25.2	5.6	22.7		8.4
Green Ext Time (p_c), s	0.0	7.7		0.7	0.0	7.9		0.5

Intersection Summary	
HCM 6th Ctrl Delay	35.5
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	325	170	85	150	2	410	121	105	0	0	0
Future Volume (vph)	6	325	170	85	150	2	410	121	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1573	1770	1863	571		1740				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1573	1770	1863	571		1740				
Peak-hour factor, PHF	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. Flow (vph)	6	325	170	85	150	2	410	121	105	0	0	0
RTOR Reduction (vph)	0	0	31	0	0	2	0	6	0	0	0	0
Lane Group Flow (vph)	6	325	139	85	150	0	0	630	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	20.2	98.2	8.8	27.6	27.6		76.2				
Effective Green, g (s)	1.4	20.2	98.2	8.8	27.6	27.6		76.2				
Actuated g/C Ratio	0.01	0.17	0.82	0.07	0.23	0.23		0.64				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	595	1287	129	428	131		1104				
v/s Ratio Prot	0.00	c0.09	0.07	c0.05	0.08							
v/s Ratio Perm			0.02			0.00		0.36				
v/c Ratio	0.30	0.55	0.11	0.66	0.35	0.00		0.57				
Uniform Delay, d1	58.8	45.7	2.2	54.1	38.7	35.6		12.5				
Progression Factor	1.32	1.09	1.60	1.00	1.00	1.00		1.00				
Incremental Delay, d2	2.9	1.7	0.1	9.3	1.0	0.0		2.2				
Delay (s)	80.4	51.4	3.6	63.4	39.7	35.6		14.7				
Level of Service	F	D	A	E	D	D		B				
Approach Delay (s)		35.5			48.2			14.7			0.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	6	325	170	85	150	2	410	121	105	0	0	0
Lane Group Flow (vph)	6	325	170	85	150	2	0	636	0	0	0	0
v/c Ratio	0.06	0.62	0.13	0.52	0.35	0.01		0.55				
Control Delay	71.8	57.1	0.6	64.8	40.7	0.0		13.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	71.8	57.1	0.6	64.8	40.7	0.0		13.9				
Queue Length 50th (ft)	4	97	2	64	92	0		256				
Queue Length 95th (ft)	m12	190	7	#140	189	0		463				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1339	162	456	213		1157				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		7				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.06	0.55	0.13	0.52	0.33	0.01		0.55				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	341	333	86	315	16	355	22	129	0	0	0
Future Volume (vph)	52	341	333	86	315	16	355	22	129	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.92				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1564	1770	1863	567		1596				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1564	1770	1863	567		1596				
Peak-hour factor, PHF	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. Flow (vph)	52	341	333	86	315	16	355	22	129	0	0	0
RTOR Reduction (vph)	0	0	62	0	0	13	0	10	0	0	0	0
Lane Group Flow (vph)	52	341	271	86	315	3	0	496	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	6.6	21.9	97.8	9.2	24.5	24.5		74.1				
Effective Green, g (s)	6.6	21.9	97.8	9.2	24.5	24.5		74.1				
Actuated g/C Ratio	0.05	0.18	0.81	0.08	0.20	0.20		0.62				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	97	645	1274	135	380	115		985				
v/s Ratio Prot	0.03	0.10	0.13	c0.05	c0.17							
v/s Ratio Perm			0.04			0.01		0.31				
v/c Ratio	0.54	0.53	0.21	0.64	0.83	0.03		0.50				
Uniform Delay, d1	55.2	44.4	2.5	53.8	45.7	38.2		12.7				
Progression Factor	1.14	1.10	2.10	1.00	1.00	1.00		1.00				
Incremental Delay, d2	2.5	1.3	0.2	7.3	17.5	0.2		1.9				
Delay (s)	65.6	50.2	5.4	61.0	63.2	38.4		14.6				
Level of Service	E	D	A	E	E	D		B				
Approach Delay (s)		30.8			61.8			14.6			0.0	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	52	341	333	86	315	16	355	22	129	0	0	0
Lane Group Flow (vph)	52	341	333	86	315	16	0	506	0	0	0	0
v/c Ratio	0.44	0.53	0.25	0.51	0.83	0.08		0.50				
Control Delay	72.4	51.8	0.8	63.2	67.8	0.8		14.9				
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0		0.1				
Total Delay	72.4	51.8	1.0	63.2	67.8	0.8		15.0				
Queue Length 50th (ft)	39	105	7	65	232	0		208				
Queue Length 95th (ft)	m80	215	14	133	#440	0		372				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	132	678	1353	177	403	199		1006				
Starvation Cap Reductn	0	0	381	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		58				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.39	0.50	0.34	0.49	0.78	0.08		0.53				

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2324	25	86	2563	9	0	0	29	0	0	20
Future Vol, veh/h	0	2324	25	86	2563	9	0	0	29	0	0	20
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	0	0	0	2	0	0	2
Mvmt Flow	0	2324	25	86	2563	9	0	0	29	0	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2365	0	0	-	-	1194	-	-	1326
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*449	-	-	0	0	*357	0	0	*314
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*442	-	-	-	-	*346	-	-	*302
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	16.4	17.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	346	-	-	* 442	-	-	302
HCM Lane V/C Ratio	0.084	-	-	0.195	-	-	0.066
HCM Control Delay (s)	16.4	-	-	15.1	-	-	17.8
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.7	-	-	0.2

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2169	21	137	2493	18	0	0	134	0	0	33
Future Vol, veh/h	0	2169	21	137	2493	18	0	0	134	0	0	33
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2169	21	137	2493	18	0	0	134	0	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2211	0	0	-	-	1127	-	-	1340
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*505	-	-	0	0	*402	0	0	*314
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*495	-	-	-	-	*386	-	-	*289
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	19.3	19.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	-	-	* 495	-	-	289
HCM Lane V/C Ratio	0.347	-	-	0.277	-	-	0.114
HCM Control Delay (s)	19.3	-	-	15.1	-	-	19.1
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	1.6	-	-	1.1	-	-	0.4

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

FUTURE HORIZON YEAR (2024) PLUS PROJECT CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	2157	148	83	2395	72	95	134	119	55	203	48
Future Volume (veh/h)	86	2157	148	83	2395	72	95	134	119	55	203	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.95	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	2157	100	83	2395	44	95	134	119	55	203	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	3208	945	120	3208	930	123	156	125	88	293	64
Arrive On Green	0.63	0.63	0.63	0.84	0.84	0.84	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	139	5106	1504	167	5106	1480	300	549	441	187	1033	227
Grp Volume(v), veh/h	86	2157	100	83	2395	44	348	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	139	1702	1504	167	1702	1480	1291	0	0	1447	0	0
Q Serve(g_s), s	50.8	32.6	3.2	42.8	24.6	0.6	9.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	75.4	32.6	3.2	75.4	24.6	0.6	32.1	0.0	0.0	22.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.27		0.34	0.18		0.16
Lane Grp Cap(c), veh/h	119	3208	945	120	3208	930	404	0	0	445	0	0
V/C Ratio(X)	0.72	0.67	0.11	0.69	0.75	0.05	0.86	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	119	3208	945	120	3208	930	404	0	0	445	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.6	14.4	8.9	32.2	5.7	3.7	42.5	0.0	0.0	38.1	0.0	0.0
Incr Delay (d2), s/veh	36.6	1.1	0.2	32.3	1.6	0.1	20.1	0.0	0.0	4.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	17.2	1.9	6.2	8.0	0.4	18.0	0.0	0.0	13.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.2	15.5	9.1	64.5	7.3	3.8	62.6	0.0	0.0	42.6	0.0	0.0
LnGrp LOS	E	B	A	E	A	A	E	A	A	D	A	A
Approach Vol, veh/h		2343			2522			348			306	
Approach Delay, s/veh		17.6			9.1			62.6			42.6	
Approach LOS		B			A			E			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		77.4		24.3		77.4		34.1				
Green Ext Time (p_c), s		0.0		1.2		0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			17.9
HCM 6th LOS			B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1852	121	87	2415	67	125	197	110	67	225	48
Future Volume (veh/h)	68	1852	121	87	2415	67	125	197	110	67	225	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	0.99		0.94	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	1852	58	87	2415	33	125	197	110	67	225	48
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	2848	808	132	2848	815	158	223	117	110	354	70
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	138	5106	1449	235	5106	1461	338	630	331	210	1001	199
Grp Volume(v), veh/h	68	1852	58	87	2415	33	432	0	0	340	0	0
Grp Sat Flow(s),veh/h/ln	138	1702	1449	235	1702	1461	1299	0	0	1411	0	0
Q Serve(g_s), s	19.3	30.2	2.2	36.7	47.6	1.2	15.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	66.9	30.2	2.2	66.9	47.6	1.2	39.3	0.0	0.0	23.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.29		0.25	0.20		0.14
Lane Grp Cap(c), veh/h	82	2848	808	132	2848	815	498	0	0	535	0	0
V/C Ratio(X)	0.83	0.65	0.07	0.66	0.85	0.04	0.87	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	82	2848	808	132	2848	815	542	0	0	582	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.8	18.4	12.2	44.8	22.3	12.0	38.4	0.0	0.0	31.8	0.0	0.0
Incr Delay (d2), s/veh	82.7	1.2	0.2	25.4	3.5	0.1	15.1	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	16.9	1.3	6.4	25.4	0.7	20.4	0.0	0.0	13.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.5	19.6	12.4	70.2	25.8	12.1	53.6	0.0	0.0	33.8	0.0	0.0
LnGrp LOS	F	B	B	E	C	B	D	A	A	C	A	A
Approach Vol, veh/h		1978			2535			432			340	
Approach Delay, s/veh		23.5			27.1			53.6			33.8	
Approach LOS		C			C			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.5		48.5		71.5		48.5				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0				
Max Q Clear Time (g_c+I1), s		68.9		25.3		68.9		41.3				
Green Ext Time (p_c), s		0.0		2.1		0.0		1.2				

Intersection Summary			
HCM 6th Ctrl Delay			28.4
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	387	144	73	147	22	123	313	70	36	275	35
Future Volume (veh/h)	60	387	144	73	147	22	123	313	70	36	275	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.98		0.93	0.98		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	387	144	73	147	22	123	313	70	36	275	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	777	1545	565	531	1905	279	213	425	95	157	470	60
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1203	2510	918	865	3096	454	1045	1457	326	985	1609	205
Grp Volume(v), veh/h	60	272	259	73	83	86	123	0	383	36	0	310
Grp Sat Flow(s),veh/h/ln	1203	1777	1651	865	1777	1773	1045	0	1783	985	0	1813
Q Serve(g_s), s	2.5	8.3	8.6	5.0	2.3	2.4	13.7	0.0	23.3	4.1	0.0	17.5
Cycle Q Clear(g_c), s	4.9	8.3	8.6	13.6	2.3	2.4	31.2	0.0	23.3	27.4	0.0	17.5
Prop In Lane	1.00		0.56	1.00		0.26	1.00		0.18	1.00		0.11
Lane Grp Cap(c), veh/h	777	1094	1016	531	1094	1091	213	0	520	157	0	530
V/C Ratio(X)	0.08	0.25	0.25	0.14	0.08	0.08	0.58	0.00	0.74	0.23	0.00	0.59
Avail Cap(c_a), veh/h	777	1094	1016	531	1094	1091	442	0	912	373	0	928
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	0.84	0.00	0.84	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.3	10.5	10.5	13.6	9.3	9.3	49.6	0.0	38.3	50.6	0.0	36.3
Incr Delay (d2), s/veh	0.2	0.5	0.6	0.5	0.1	0.1	0.8	0.0	0.6	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(95%),veh/ln	1.3	5.9	5.7	1.9	1.6	1.7	6.4	0.0	14.9	1.8	0.0	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	11.0	11.1	14.2	9.4	9.5	50.4	0.0	39.0	50.9	0.0	36.7
LnGrp LOS	B	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h		591			242			506			346	
Approach Delay, s/veh		11.0			10.9			41.7			38.1	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.4		40.6		79.4		40.6				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 48		* 61		* 48		* 61				
Max Q Clear Time (g_c+I1), s		10.6		33.2		15.6		29.4				
Green Ext Time (p_c), s		7.7		1.9		2.7		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			25.8									
HCM 6th LOS			C									
Notes												

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	454	147	147	348	43	92	284	22	85	312	39
Future Volume (veh/h)	72	454	147	147	348	43	92	284	22	85	312	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.93	0.99		0.95	0.98		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	454	147	147	348	43	92	284	22	85	312	39
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	1606	514	493	1962	240	179	490	38	195	465	58
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	979	2592	829	806	3167	387	1011	1703	132	1051	1614	202
Grp Volume(v), veh/h	72	310	291	147	194	197	92	0	306	85	0	351
Grp Sat Flow(s),veh/h/ln	979	1777	1644	806	1777	1778	1011	0	1834	1051	0	1816
Q Serve(g_s), s	4.1	9.6	9.8	12.4	5.6	5.7	10.8	0.0	19.2	9.2	0.0	20.5
Cycle Q Clear(g_c), s	9.8	9.6	9.8	22.2	5.6	5.7	31.3	0.0	19.2	28.4	0.0	20.5
Prop In Lane	1.00		0.50	1.00		0.22	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	620	1101	1018	493	1101	1102	179	0	528	195	0	523
V/C Ratio(X)	0.12	0.28	0.29	0.30	0.18	0.18	0.52	0.00	0.58	0.44	0.00	0.67
Avail Cap(c_a), veh/h	620	1101	1018	493	1101	1102	304	0	755	325	0	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.00	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	10.5	10.6	15.7	9.7	9.8	63.0	0.0	47.3	49.6	0.0	37.7
Incr Delay (d2), s/veh	0.4	0.6	0.7	1.5	0.3	0.4	0.8	0.0	0.3	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	6.8	6.5	4.4	3.9	4.0	5.4	0.0	14.3	4.4	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	11.2	11.3	17.2	10.1	10.1	63.8	0.0	47.7	50.2	0.0	38.3
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	D
Approach Vol, veh/h		673			538			398			436	
Approach Delay, s/veh		11.3			12.1			51.4			40.6	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.9		40.1		79.9		40.1				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49				
Max Q Clear Time (g_c+I1), s		11.8		33.3		24.2		30.4				
Green Ext Time (p_c), s		9.7		1.2		7.0		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			25.6									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	318	89	68	242	28	158	332	66	61	247	130
Future Volume (veh/h)	155	318	89	68	242	28	158	332	66	61	247	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		1.00	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	155	318	10	68	242	0	158	332	32	61	247	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	560	753	600	498	752	637	372	568	444	302	477	364
Arrive On Green	0.08	0.40	0.40	0.08	0.40	0.00	0.10	0.30	0.30	0.02	0.08	0.08
Sat Flow, veh/h	1781	1870	1490	1781	1870	1585	1781	1870	1462	1781	1870	1430
Grp Volume(v), veh/h	155	318	10	68	242	0	158	332	32	61	247	52
Grp Sat Flow(s),veh/h/ln	1781	1870	1490	1781	1870	1585	1781	1870	1462	1781	1870	1430
Q Serve(g_s), s	5.9	14.7	0.5	2.5	10.7	0.0	7.3	18.0	1.9	3.0	15.2	4.0
Cycle Q Clear(g_c), s	5.9	14.7	0.5	2.5	10.7	0.0	7.3	18.0	1.9	3.0	15.2	4.0
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	560	753	600	498	752	637	372	568	444	302	477	364
V/C Ratio(X)	0.28	0.42	0.02	0.14	0.32	0.00	0.42	0.58	0.07	0.20	0.52	0.14
Avail Cap(c_a), veh/h	561	753	600	515	752	637	373	642	502	315	561	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	18.0	25.8	21.6	17.6	24.6	0.0	27.5	35.4	29.7	31.7	47.9	42.8
Incr Delay (d2), s/veh	0.1	1.7	0.1	0.0	1.1	0.0	0.3	2.1	0.1	0.1	1.5	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(95%),veh/ln	4.3	11.1	0.3	1.8	8.6	0.0	5.6	13.2	1.2	2.4	12.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	27.5	21.6	17.6	25.8	0.0	27.8	37.5	29.9	31.8	49.4	43.1
LnGrp LOS	B	C	C	B	C	A	C	D	C	C	D	D
Approach Vol, veh/h		483			310			522			360	
Approach Delay, s/veh		24.4			24.0			34.1			45.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	53.8	15.9	36.4	13.9	53.7	10.1	42.2
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	4.5	16.7	9.3	17.2	7.9	12.7	5.0	20.0
Green Ext Time (p_c), s	0.0	3.6	0.1	2.7	0.0	2.7	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	289	96	70	291	30	125	246	84	126	269	254
Future Volume (veh/h)	140	289	96	70	291	30	125	246	84	126	269	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.89	0.97		1.00	0.96		0.88	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	289	33	70	291	0	125	246	49	126	269	184
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	483	699	528	473	699	593	368	607	454	390	532	389
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.00	0.10	0.32	0.32	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1413	1781	1870	1585	1781	1870	1400	1781	1870	1369
Grp Volume(v), veh/h	140	289	33	70	291	0	125	246	49	126	269	184
Grp Sat Flow(s),veh/h/ln	1781	1870	1413	1781	1870	1585	1781	1870	1400	1781	1870	1369
Q Serve(g_s), s	5.6	13.7	1.8	2.7	13.8	0.0	5.4	12.3	2.9	6.0	16.4	16.1
Cycle Q Clear(g_c), s	5.6	13.7	1.8	2.7	13.8	0.0	5.4	12.3	2.9	6.0	16.4	16.1
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	483	699	528	473	699	593	368	607	454	390	532	389
V/C Ratio(X)	0.29	0.41	0.06	0.15	0.42	0.00	0.34	0.41	0.11	0.32	0.51	0.47
Avail Cap(c_a), veh/h	484	699	528	489	699	593	371	642	481	390	561	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.70	0.70	0.70
Uniform Delay (d), s/veh	20.2	27.8	24.1	19.3	27.9	0.0	24.9	31.5	28.4	29.3	46.4	51.0
Incr Delay (d2), s/veh	0.1	1.8	0.2	0.1	1.8	0.0	0.2	0.9	0.2	0.1	1.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	10.6	1.1	2.0	10.6	0.0	4.1	9.6	1.8	4.8	12.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	29.7	24.3	19.3	29.7	0.0	25.1	32.5	28.6	29.4	47.5	52.3
LnGrp LOS	C	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		462			361			420			579	
Approach Delay, s/veh		26.4			27.7			29.8			45.1	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.9	50.3	15.8	39.9	13.9	50.4	11.0	44.7				
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8				
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41				
Max Q Clear Time (g_c+I1), s	4.7	15.7	7.4	18.4	7.6	15.8	8.0	14.3				
Green Ext Time (p_c), s	0.0	3.5	0.1	4.0	0.0	3.3	0.0	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			33.4									
HCM 6th LOS			C									

Notes

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

OPERATIONAL ANALYSIS - FUTURE HORIZON YEAR (2024) PLUS PROJECT CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	FUTURE HORIZON YEAR (2024) PLUS PROJECT											
	AM PEAK HOUR						PM PEAK HOUR					
		EB	WB	SB	Total			EB	WB	SB	Total	
4.1 Watseka Avenue & Washington Boulevard	App Vol	45	370	69	484		App Vol	26	256	212	494	
	App Delay	37.3	4.4	38.1			App Delay	28.5	4.3	32.8		
	Total Delay	1679	1628	2629	5935		Total Delay	741	1101	6954	8795	
	Ave Delay				12.3	B	Ave Delay				17.8	B
		EB	WB	SB	Total			EB	WB	SB	Total	
4.2 Culver Boulevard & Washington Boulevard	App Vol	430	284	310	1024		App Vol	381	296	500	1177	
	App Delay	32.9	5.3	57.0			App Delay	45.9	4.4	100.5		
	Total Delay	14147	1505	17679	33332		Total Delay	17496	1302	50235	69033	
	Ave Delay				32.6	C	Ave Delay				58.7	E
		EB	WB	NB	Total			EB	WB	NB	Total	
4.3 Irving Place & Culver Boulevard	App Vol	758	595	217	1570		App Vol	911	615	137	1663	
	App Delay	1.7	23.4	53.5			App Delay	4.1	32.4	52.9		
	Total Delay	1289	13923	11610	26821		Total Delay	3735	19926	7247	30908	
	Ave Delay				17.1	B	Ave Delay				18.6	B
Overall Intersection Results	App Delay	66,088					App Delay	108,737				
	App Vol	3,078					App Vol	3,334				
		21.5 LOS C						32.6 LOS C				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	0	333	37	0	69
Future Volume (vph)	45	0	333	37	0	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1828			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1828			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	45	0	333	37	0	69
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	45	0	370	0	0	69
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	26.8		66.0			26.8
Effective Green, g (s)	26.8		66.0			26.8
Actuated g/C Ratio	0.22		0.55			0.22
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	395		1005			359
v/s Ratio Prot	0.03		c0.20			
v/s Ratio Perm						c0.04
v/c Ratio	0.11		0.37			0.19
Uniform Delay, d1	37.1		15.2			37.8
Progression Factor	1.00		0.23			1.00
Incremental Delay, d2	0.1		0.9			0.3
Delay (s)	37.3		4.4			38.1
Level of Service	D		A			D
Approach Delay (s)		37.3	4.4		38.1	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	45	370	69
v/c Ratio	0.11	0.37	0.19
Control Delay	36.6	4.7	38.2
Queue Delay	0.0	0.9	0.0
Total Delay	36.6	5.6	38.2
Queue Length 50th (ft)	27	31	43
Queue Length 95th (ft)	66	51	93
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	427	1004	389
Starvation Cap Reductn	0	378	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.11	0.59	0.18

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	430	284	0	310	0
Future Volume (vph)	0	430	284	0	310	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	430	284	0	310	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	430	284	0	310	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		46.5	66.0		26.8	
Effective Green, g (s)		46.5	66.0		26.8	
Actuated g/C Ratio		0.39	0.55		0.22	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		721	1024		384	
v/s Ratio Prot		c0.23	c0.15			
v/s Ratio Perm					c0.18	
v/c Ratio		0.60	0.28		0.81	
Uniform Delay, d1		29.3	14.3		44.2	
Progression Factor		1.00	0.33		1.00	
Incremental Delay, d2		3.7	0.6		12.9	
Delay (s)		32.9	5.3		57.0	
Level of Service		C	A		E	
Approach Delay (s)		32.9	5.3		57.0	
Approach LOS		C	A		E	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	430	284	310
v/c Ratio	0.58	0.28	0.81
Control Delay	35.0	5.7	62.6
Queue Delay	0.0	1.6	0.0
Total Delay	35.0	7.3	62.6
Queue Length 50th (ft)	272	43	223
Queue Length 95th (ft)	#525	89	#421
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	747	1024	416
Starvation Cap Reductn	0	558	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.58	0.61	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	694	64	52	241	302	111	0	106	0	0	0
Future Volume (vph)	0	694	64	52	241	302	111	0	106	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.93				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1446	1770	1707			1697				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1446	1770	1707			1697				
Peak-hour factor, PHF	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. Flow (vph)	0	694	64	52	241	302	111	0	106	0	0	0
RTOR Reduction (vph)	0	0	25	0	0	0	0	169	0	0	0	0
Lane Group Flow (vph)	0	694	39	52	543	0	0	48	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		73.3	73.3	9.6	66.0			9.9				
Effective Green, g (s)		73.3	73.3	9.6	66.0			9.9				
Actuated g/C Ratio		0.61	0.61	0.08	0.55			0.08				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1137	883	141	938			140				
v/s Ratio Prot		c0.37		0.03	c0.32			c0.03				
v/s Ratio Perm			0.03									
v/c Ratio		0.61	0.04	0.37	0.58			0.34				
Uniform Delay, d1		14.5	9.3	52.3	17.8			52.0				
Progression Factor		0.08	0.07	1.00	1.00			1.00				
Incremental Delay, d2		0.8	0.0	1.6	2.6			1.5				
Delay (s)		1.9	0.6	54.0	20.5			53.5				
Level of Service		A	A	D	C			D				
Approach Delay (s)		1.7			23.4			53.5			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	694	64	52	543	217
v/c Ratio	0.55	0.06	0.29	0.58	0.70
Control Delay	1.9	0.1	55.0	22.2	25.1
Queue Delay	0.2	0.3	0.0	0.0	0.6
Total Delay	2.1	0.4	55.0	22.2	25.7
Queue Length 50th (ft)	7	0	38	267	25
Queue Length 95th (ft)	36	m0	89	511	135
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1285	1024	177	938	364
Starvation Cap Reductn	139	671	0	0	0
Spillback Cap Reductn	0	0	0	12	24
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.18	0.29	0.59	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	0	230	26	0	212
Future Volume (vph)	26	0	230	26	0	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1817			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1817			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	0	230	26	0	212
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	26	0	256	0	0	212
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	38.0		56.7			38.0
Effective Green, g (s)	38.0		56.7			38.0
Actuated g/C Ratio	0.32		0.47			0.32
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	560		858			510
v/s Ratio Prot	0.01		c0.14			
v/s Ratio Perm						c0.13
v/c Ratio	0.05		0.30			0.42
Uniform Delay, d1	28.4		19.4			32.3
Progression Factor	1.00		0.18			1.00
Incremental Delay, d2	0.0		0.8			0.6
Delay (s)	28.5		4.3			32.8
Level of Service	C		A			C
Approach Delay (s)		28.5	4.3		32.8	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	26	256	212
v/c Ratio	0.05	0.30	0.42
Control Delay	28.9	4.3	35.4
Queue Delay	0.0	1.4	0.0
Total Delay	28.9	5.8	35.4
Queue Length 50th (ft)	14	18	129
Queue Length 95th (ft)	40	28	230
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	560	857	510
Starvation Cap Reductn	0	417	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.58	0.42

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	
Traffic Volume (vph)	0	381	296	0	500	0
Future Volume (vph)	0	381	296	0	500	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	381	296	0	500	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	381	296	0	500	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		34.8	56.7		38.0	
Effective Green, g (s)		34.8	56.7		38.0	
Actuated g/C Ratio		0.29	0.47		0.32	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		540	880		511	
v/s Ratio Prot		c0.20	c0.16			
v/s Ratio Perm					c0.31	
v/c Ratio		0.71	0.34		0.98	
Uniform Delay, d1		38.0	19.9		40.6	
Progression Factor		1.00	0.18		1.00	
Incremental Delay, d2		7.9	0.8		59.9	
Delay (s)		45.9	4.4		100.5	
Level of Service		D	A		F	
Approach Delay (s)		45.9	4.4		100.5	
Approach LOS		D	A		F	

Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	381	296	500
v/c Ratio	0.71	0.34	0.98
Control Delay	46.7	4.5	102.9
Queue Delay	0.1	1.3	0.0
Total Delay	46.8	5.8	102.9
Queue Length 50th (ft)	264	22	382
Queue Length 95th (ft)	#465	37	#718
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	539	879	511
Starvation Cap Reductn	0	387	0
Spillback Cap Reductn	6	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.71	0.60	0.98

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	873	38	107	282	226	43	0	94	0	0	0
Future Volume (vph)	0	873	38	107	282	226	43	0	94	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.93			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1738			1664				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1738			1664				
Peak-hour factor, PHF	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. Flow (vph)	0	873	38	107	282	226	43	0	94	0	0	0
RTOR Reduction (vph)	0	0	15	0	0	0	0	128	0	0	0	0
Lane Group Flow (vph)	0	873	23	107	508	0	0	9	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	12.0	56.7			8.0				
Effective Green, g (s)		72.8	72.8	12.0	56.7			8.0				
Actuated g/C Ratio		0.61	0.61	0.10	0.47			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	700	177	821			110				
v/s Ratio Prot		c0.47		0.06	c0.29			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.77	0.03	0.60	0.62			0.08				
Uniform Delay, d1		17.5	9.5	51.7	23.6			52.6				
Progression Factor		0.12	1.00	1.00	1.00			1.00				
Incremental Delay, d2		1.8	0.0	5.9	3.5			0.3				
Delay (s)		3.9	9.5	57.6	27.1			52.9				
Level of Service		A	A	E	C			D				
Approach Delay (s)		4.1			32.4			52.9			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	873	38	107	508	137
v/c Ratio	0.73	0.05	0.60	0.62	0.48
Control Delay	3.0	0.1	67.7	27.8	8.7
Queue Delay	1.1	0.4	0.0	0.0	0.0
Total Delay	4.1	0.5	67.7	27.8	8.7
Queue Length 50th (ft)	26	0	81	286	0
Queue Length 95th (ft)	m41	m0	#180	481	44
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1200	775	177	820	360
Starvation Cap Reductn	133	549	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.82	0.17	0.60	0.62	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	2067	104	33	2313	30	76	151	11	50	115	245
Future Volume (veh/h)	108	2067	104	33	2313	30	76	151	11	50	115	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	0.99		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	2067	104	33	2313	5	76	151	11	50	115	245
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	2289	115	208	2530	737	171	498	36	73	137	261
Arrive On Green	0.16	0.92	0.92	0.12	0.50	0.50	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4960	248	1781	5106	1488	1008	1715	125	134	471	898
Grp Volume(v), veh/h	108	1415	756	33	2313	5	76	0	162	410	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1804	1781	1702	1488	1008	0	1840	1503	0	0
Q Serve(g_s), s	6.9	22.7	23.9	2.0	50.1	0.2	0.0	0.0	9.8	22.2	0.0	0.0
Cycle Q Clear(g_c), s	6.9	22.7	23.9	2.0	50.1	0.2	27.2	0.0	9.8	32.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.07	0.12		0.60
Lane Grp Cap(c), veh/h	144	1571	833	208	2530	737	171	0	534	470	0	0
V/C Ratio(X)	0.75	0.90	0.91	0.16	0.91	0.01	0.44	0.00	0.30	0.87	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	887	208	2530	737	173	0	537	472	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.00	0.75	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.1	3.4	3.4	47.7	27.9	15.3	50.8	0.0	43.0	41.7	0.0	0.0
Incr Delay (d2), s/veh	20.3	9.8	19.2	0.4	7.2	0.0	1.4	0.0	0.2	19.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.6	6.7	10.2	1.6	28.2	0.1	4.4	0.0	8.0	20.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.4	13.2	22.6	48.1	35.2	15.3	52.2	0.0	43.2	60.9	0.0	0.0
LnGrp LOS	E	B	C	D	D	B	D	A	D	E	A	A
Approach Vol, veh/h		2279			2351			238			410	
Approach Delay, s/veh		19.0			35.3			46.1			60.9	
Approach LOS		B			D			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.7	64.5		40.8	19.0	60.2		40.8				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	8.9	52.1		34.0	4.0	25.9		29.2				
Green Ext Time (p_c), s	0.0	6.7		0.3	0.0	29.4		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			30.7									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	2251	204	35	2291	54	120	65	13	117	41	161
Future Volume (veh/h)	145	2251	204	35	2291	54	120	65	13	117	41	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.96		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	2251	204	35	2291	0	120	65	13	117	41	161
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2315	205	159	2524	783	283	429	86	168	62	193
Arrive On Green	0.17	0.98	0.98	0.09	0.49	0.00	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4727	419	1781	5106	1585	1137	1484	297	440	214	666
Grp Volume(v), veh/h	145	1606	849	35	2291	0	120	0	78	319	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1742	1781	1702	1585	1137	0	1780	1320	0	0
Q Serve(g_s), s	9.7	20.5	47.3	2.2	49.4	0.0	0.0	0.0	4.8	22.9	0.0	0.0
Cycle Q Clear(g_c), s	9.7	20.5	47.3	2.2	49.4	0.0	20.3	0.0	4.8	27.7	0.0	0.0
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.17	0.37		0.50
Lane Grp Cap(c), veh/h	148	1667	853	159	2524	783	283	0	515	423	0	0
V/C Ratio(X)	0.98	0.96	1.00	0.22	0.91	0.00	0.42	0.00	0.15	0.75	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	856	159	2524	783	286	0	519	426	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.98	0.00	0.98	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.9	0.8	1.1	50.7	27.8	0.0	47.8	0.0	40.8	40.8	0.0	0.0
Incr Delay (d2), s/veh	124.0	21.4	57.2	0.7	6.8	0.0	1.0	0.0	0.1	7.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.9	9.2	20.2	1.8	27.7	0.0	6.8	0.0	4.0	14.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	173.9	22.2	58.3	51.4	34.6	0.0	48.8	0.0	40.9	48.6	0.0	0.0
LnGrp LOS	F	C	E	D	C	A	D	A	D	D	A	A
Approach Vol, veh/h		2600			2326			198			319	
Approach Delay, s/veh		42.5			34.8			45.7			48.6	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	64.3		40.7	15.7	63.6		40.7
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0
Max Q Clear Time (g_c+I1), s	11.7	51.4		29.7	4.2	49.3		22.3
Green Ext Time (p_c), s	0.0	7.4		0.9	0.0	9.5		0.7

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	417	94	34	531	73	13	6	5	101	33	102
Future Volume (veh/h)	165	417	94	34	531	73	13	6	5	101	33	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.90	0.98		0.97	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	165	417	87	34	531	22	13	6	5	101	33	102
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	516	424	776	1018	773	268	201	168	168	58	139
Arrive On Green	0.11	0.28	0.28	0.75	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	1536	1781	1870	1419	1224	931	775	578	266	643
Grp Volume(v), veh/h	165	417	87	34	531	22	13	0	11	236	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1536	1781	1870	1419	1224	0	1706	1487	0	0
Q Serve(g_s), s	10.9	24.9	5.2	0.0	0.0	0.0	0.0	0.0	0.6	15.5	0.0	0.0
Cycle Q Clear(g_c), s	10.9	24.9	5.2	0.0	0.0	0.0	1.5	0.0	0.6	17.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	0.43		0.43
Lane Grp Cap(c), veh/h	191	516	424	776	1018	773	268	0	369	365	0	0
V/C Ratio(X)	0.86	0.81	0.21	0.04	0.52	0.03	0.05	0.00	0.03	0.65	0.00	0.00
Avail Cap(c_a), veh/h	193	926	760	776	1018	773	360	0	498	475	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	0.00	1.00	0.39	0.00	0.00
Uniform Delay (d), s/veh	52.7	40.5	33.4	7.9	0.0	0.0	37.4	0.0	37.1	43.6	0.0	0.0
Incr Delay (d2), s/veh	37.7	14.1	1.1	0.0	1.8	0.1	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.1	19.3	3.7	0.4	0.9	0.0	0.6	0.0	0.5	9.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	54.6	34.5	7.9	1.8	0.1	37.4	0.0	37.1	43.9	0.0	0.0
LnGrp LOS	F	D	C	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		669			587			24			236	
Approach Delay, s/veh		60.8			2.1			37.3			43.9	
Approach LOS		E			A			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	50.3	38.1		31.6	17.9	70.5		31.6				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 10	* 59		35.0	13.0	* 56		35.0				
Max Q Clear Time (g_c+I1), s	2.0	26.9		19.6	12.9	2.0		3.5				
Green Ext Time (p_c), s	0.0	6.2		0.9	0.0	8.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			35.1									
HCM 6th LOS			D									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	590	36	24	514	65	23	84	33	142	22	63
Future Volume (veh/h)	56	590	36	24	514	65	23	84	33	142	22	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.73	0.94		0.94	0.95		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	590	36	24	514	65	23	84	33	142	22	63
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	694	569	535	993	618	355	325	128	219	38	80
Arrive On Green	0.08	0.37	0.37	0.24	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1534	1781	1870	1165	1240	1252	492	653	148	308
Grp Volume(v), veh/h	56	590	36	24	514	65	23	0	117	227	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1534	1781	1870	1165	1240	0	1744	1109	0	0
Q Serve(g_s), s	3.6	34.8	1.8	0.0	21.3	3.3	0.0	0.0	6.4	18.0	0.0	0.0
Cycle Q Clear(g_c), s	3.6	34.8	1.8	0.0	21.3	3.3	1.9	0.0	6.4	24.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	0.63		0.28
Lane Grp Cap(c), veh/h	138	694	569	535	993	618	355	0	453	337	0	0
V/C Ratio(X)	0.41	0.85	0.06	0.04	0.52	0.11	0.06	0.00	0.26	0.67	0.00	0.00
Avail Cap(c_a), veh/h	163	941	772	535	993	618	395	0	509	379	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.44	0.44	0.44	1.00	0.00	1.00	0.48	0.00	0.00
Uniform Delay (d), s/veh	52.7	34.7	24.3	30.1	18.2	14.0	33.6	0.0	35.2	43.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	14.0	0.2	0.0	0.9	0.2	0.0	0.0	0.1	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	25.1	1.2	0.9	12.4	1.6	0.9	0.0	5.0	9.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	48.7	24.5	30.2	19.1	14.1	33.6	0.0	35.3	45.2	0.0	0.0
LnGrp LOS	D	D	C	C	B	B	C	A	D	D	A	A
Approach Vol, veh/h		682			603			140			227	
Approach Delay, s/veh		47.8			19.0			35.1			45.2	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.7	49.5		36.8	14.3	68.9		36.8				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 9	* 60		35.0	11.0	* 58		35.0				
Max Q Clear Time (g_c+I1), s	2.0	36.8		26.4	5.6	23.3		8.4				
Green Ext Time (p_c), s	0.0	7.7		0.6	0.0	7.9		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			35.9
HCM 6th LOS			D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	325	172	85	165	2	420	121	105	0	0	0
Future Volume (vph)	6	325	172	85	165	2	420	121	105	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1573	1770	1863	571		1741				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1573	1770	1863	571		1741				
Peak-hour factor, PHF	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. Flow (vph)	6	325	172	85	165	2	420	121	105	0	0	0
RTOR Reduction (vph)	0	0	31	0	0	2	0	5	0	0	0	0
Lane Group Flow (vph)	6	325	141	85	165	0	0	641	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	20.2	98.2	8.8	27.6	27.6		76.2				
Effective Green, g (s)	1.4	20.2	98.2	8.8	27.6	27.6		76.2				
Actuated g/C Ratio	0.01	0.17	0.82	0.07	0.23	0.23		0.64				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	595	1287	129	428	131		1105				
v/s Ratio Prot	0.00	c0.09	0.07	c0.05	0.09							
v/s Ratio Perm			0.02			0.00		0.37				
v/c Ratio	0.30	0.55	0.11	0.66	0.39	0.00		0.58				
Uniform Delay, d1	58.8	45.7	2.2	54.1	39.0	35.6		12.6				
Progression Factor	1.32	1.12	1.68	1.00	1.00	1.00		1.00				
Incremental Delay, d2	2.9	1.7	0.1	9.3	1.2	0.0		2.2				
Delay (s)	80.6	53.1	3.7	63.4	40.2	35.6		14.9				
Level of Service	F	D	A	E	D	D		B				
Approach Delay (s)		36.6			48.0			14.9			0.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	6	325	172	85	165	2	420	121	105	0	0	0
Lane Group Flow (vph)	6	325	172	85	165	2	0	646	0	0	0	0
v/c Ratio	0.06	0.62	0.13	0.52	0.39	0.01		0.56				
Control Delay	72.0	58.9	0.6	64.8	41.4	0.0		14.1				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	72.0	58.9	0.6	64.8	41.4	0.0		14.2				
Queue Length 50th (ft)	4	97	3	64	102	0		263				
Queue Length 95th (ft)	m11	198	7	#140	207	0		477				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1339	162	456	213		1156				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		24				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.06	0.55	0.13	0.52	0.36	0.01		0.57				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	341	343	86	318	16	357	22	129	0	0	0
Future Volume (vph)	52	341	343	86	318	16	357	22	129	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.92				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1564	1770	1863	567		1597				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1564	1770	1863	567		1597				
Peak-hour factor, PHF	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. Flow (vph)	52	341	343	86	318	16	357	22	129	0	0	0
RTOR Reduction (vph)	0	0	63	0	0	13	0	10	0	0	0	0
Lane Group Flow (vph)	52	341	280	86	318	3	0	498	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	6.6	21.9	97.8	9.2	24.5	24.5		74.1				
Effective Green, g (s)	6.6	21.9	97.8	9.2	24.5	24.5		74.1				
Actuated g/C Ratio	0.05	0.18	0.81	0.08	0.20	0.20		0.62				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	97	645	1274	135	380	115		986				
v/s Ratio Prot	0.03	0.10	0.14	c0.05	c0.17							
v/s Ratio Perm			0.04			0.01		0.31				
v/c Ratio	0.54	0.53	0.22	0.64	0.84	0.03		0.51				
Uniform Delay, d1	55.2	44.4	2.5	53.8	45.8	38.2		12.8				
Progression Factor	1.13	1.11	2.15	1.00	1.00	1.00		1.00				
Incremental Delay, d2	2.5	1.3	0.2	7.3	18.6	0.2		1.9				
Delay (s)	65.1	50.6	5.5	61.0	64.5	38.4		14.6				
Level of Service	E	D	A	E	E	D		B				
Approach Delay (s)		30.6			62.8			14.6			0.0	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	52	341	343	86	318	16	357	22	129	0	0	0
Lane Group Flow (vph)	52	341	343	86	318	16	0	508	0	0	0	0
v/c Ratio	0.44	0.53	0.25	0.51	0.84	0.08		0.50				
Control Delay	71.9	52.1	0.8	63.2	68.4	0.8		15.0				
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0		0.1				
Total Delay	71.9	52.1	1.0	63.2	68.4	0.8		15.1				
Queue Length 50th (ft)	39	109	8	65	234	0		209				
Queue Length 95th (ft)	m79	215	14	133	#447	0		374				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	132	678	1355	177	403	199		1006				
Starvation Cap Reductn	0	0	377	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		68				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.39	0.50	0.35	0.49	0.79	0.08		0.54				

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2324	45	122	2563	9	0	0	39	0	0	20
Future Vol, veh/h	0	2324	45	122	2563	9	0	0	39	0	0	20
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2324	45	122	2563	9	0	0	39	0	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2385	0	0	-	-	1194	-	-	1326
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*449	-	-	0	0	*357	0	0	*314
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*442	-	-	-	-	*346	-	-	*302
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	16.7	17.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	346	-	-	* 442	-	-	302
HCM Lane V/C Ratio	0.113	-	-	0.276	-	-	0.066
HCM Control Delay (s)	16.7	-	-	16.2	-	-	17.8
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.4	-	-	1.1	-	-	0.2

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2169	25	143	2493	18	0	0	193	0	0	33
Future Vol, veh/h	0	2169	25	143	2493	18	0	0	193	0	0	33
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2169	25	143	2493	18	0	0	193	0	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2215	0	0	-	-	1127	-	-	1340
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*505	-	-	0	0	*402	0	0	*314
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*495	-	-	-	-	*386	-	-	*289
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	23.6	19.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	-	-	* 495	-	-	289
HCM Lane V/C Ratio	0.5	-	-	0.289	-	-	0.114
HCM Control Delay (s)	23.6	-	-	15.2	-	-	19.1
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	2.9	-	-	1.2	-	-	0.4

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

Intersection						
Int Delay, s/veh	3					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	9	67	15	60	81
Future Vol, veh/h	14	9	67	15	60	81
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	14	9	67	15	60	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	250	101	141	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	743	960	1455	-	-	-
Stage 1	928	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	709	960	1455	-	-	-
Mov Cap-2 Maneuver	709	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	884	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	6.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1455	-	790	-	-
HCM Lane V/C Ratio	0.046	-	0.029	-	-
HCM Control Delay (s)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

FUTURE BUILDOUT YEAR (2045) WITHOUT PROJECT CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	2277	158	87	2549	77	100	142	127	58	214	51
Future Volume (veh/h)	92	2277	158	87	2549	77	100	142	127	58	214	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	2277	108	87	2549	48	100	142	127	58	214	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	3208	945	108	3208	930	120	148	120	88	286	64
Arrive On Green	0.63	0.63	0.63	0.84	0.84	0.84	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	119	5106	1504	147	5106	1480	287	522	425	186	1009	224
Grp Volume(v), veh/h	92	2277	108	87	2549	48	369	0	0	323	0	0
Grp Sat Flow(s),veh/h/ln	119	1702	1504	147	1702	1480	1235	0	0	1420	0	0
Q Serve(g_s), s	46.1	35.9	3.5	39.5	29.3	0.7	9.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	75.4	35.9	3.5	75.4	29.3	0.7	34.0	0.0	0.0	24.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.27		0.34	0.18		0.16
Lane Grp Cap(c), veh/h	106	3208	945	108	3208	930	388	0	0	438	0	0
V/C Ratio(X)	0.87	0.71	0.11	0.80	0.79	0.05	0.95	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	106	3208	945	108	3208	930	388	0	0	438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.5	15.0	8.9	36.6	6.1	3.7	44.2	0.0	0.0	38.8	0.0	0.0
Incr Delay (d2), s/veh	83.8	1.4	0.2	57.9	2.2	0.1	52.4	0.0	0.0	6.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	18.7	2.0	7.6	8.7	0.4	23.3	0.0	0.0	14.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	132.3	16.3	9.2	94.4	8.2	3.8	96.5	0.0	0.0	45.5	0.0	0.0
LnGrp LOS	F	B	A	F	A	A	F	A	A	D	A	A
Approach Vol, veh/h		2477			2684			369			323	
Approach Delay, s/veh		20.3			10.9			96.5			45.5	
Approach LOS		C			B			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		77.4		26.4		77.4		36.0				
Green Ext Time (p_c), s		0.0		1.1		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			22.2									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	1969	129	92	2558	71	127	208	116	70	238	51
Future Volume (veh/h)	72	1969	129	92	2558	71	127	208	116	70	238	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	0.99		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	1969	65	92	2558	36	127	208	116	70	238	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	2773	785	113	2773	792	159	232	122	112	364	73
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	119	5106	1446	208	5106	1458	326	630	331	206	989	198
Grp Volume(v), veh/h	72	1969	65	92	2558	36	451	0	0	359	0	0
Grp Sat Flow(s),veh/h/ln	119	1702	1446	208	1702	1458	1287	0	0	1393	0	0
Q Serve(g_s), s	10.1	34.4	2.6	30.8	55.0	1.4	16.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	65.2	34.4	2.6	65.2	55.0	1.4	41.5	0.0	0.0	24.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.28		0.26	0.19		0.14
Lane Grp Cap(c), veh/h	70	2773	785	113	2773	792	513	0	0	549	0	0
V/C Ratio(X)	1.03	0.71	0.08	0.81	0.92	0.05	0.88	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	70	2773	785	113	2773	792	534	0	0	573	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.3	20.4	13.1	51.1	25.1	12.8	37.8	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	243.9	1.6	0.2	58.3	7.3	0.1	17.9	0.0	0.0	2.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.3	19.1	1.5	8.1	30.0	0.8	21.6	0.0	0.0	13.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	303.2	22.0	13.3	109.4	32.4	13.0	55.7	0.0	0.0	33.5	0.0	0.0
LnGrp LOS	F	C	B	F	C	B	E	A	A	C	A	A
Approach Vol, veh/h		2106			2686			451			359	
Approach Delay, s/veh		31.3			34.8			55.7			33.5	
Approach LOS		C			C			E			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.8		50.2		69.8		50.2				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0				
Max Q Clear Time (g_c+I1), s		67.2		26.9		67.2		43.5				
Green Ext Time (p_c), s		0.0		2.1		0.0		0.7				

Intersection Summary			
HCM 6th Ctrl Delay			35.1
HCM 6th LOS			D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	399	154	76	151	22	131	333	62	38	292	37
Future Volume (veh/h)	63	399	154	76	151	22	131	333	62	38	292	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.98		0.93	0.99		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	399	154	76	151	22	131	333	62	38	292	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	752	1483	563	501	1859	265	221	468	87	163	498	63
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.21	0.21	0.21	0.31	0.31	0.31
Sat Flow, veh/h	1198	2480	942	848	3108	444	1031	1514	282	978	1611	204
Grp Volume(v), veh/h	63	284	269	76	85	88	131	0	395	38	0	329
Grp Sat Flow(s),veh/h/ln	1198	1777	1644	848	1777	1775	1031	0	1796	978	0	1815
Q Serve(g_s), s	2.8	9.2	9.4	5.7	2.4	2.5	14.9	0.0	24.5	4.3	0.0	18.4
Cycle Q Clear(g_c), s	5.3	9.2	9.4	15.1	2.4	2.5	33.3	0.0	24.5	28.9	0.0	18.4
Prop In Lane	1.00		0.57	1.00		0.25	1.00		0.16	1.00		0.11
Lane Grp Cap(c), veh/h	752	1063	983	501	1063	1061	221	0	556	163	0	561
V/C Ratio(X)	0.08	0.27	0.27	0.15	0.08	0.08	0.59	0.00	0.71	0.23	0.00	0.59
Avail Cap(c_a), veh/h	752	1063	983	501	1063	1061	387	0	844	320	0	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.00	0.83	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	11.5	11.6	15.2	10.2	10.2	55.0	0.0	42.6	50.0	0.0	35.0
Incr Delay (d2), s/veh	0.2	0.6	0.7	0.6	0.1	0.2	0.8	0.0	0.5	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(95%),veh/ln	1.4	6.6	6.3	2.1	1.7	1.8	7.0	0.0	16.4	1.9	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	12.2	12.3	15.9	10.3	10.3	55.8	0.0	43.1	50.3	0.0	35.3
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	D
Approach Vol, veh/h		616			249			526			367	
Approach Delay, s/veh		12.1			12.0			46.3			36.9	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	77.3	42.7	77.3	42.7
Change Period (Y+Rc), s	* 5.5	* 5.6	* 5.5	* 5.6
Max Green Setting (Gmax), s	* 53	* 56	* 53	* 56
Max Q Clear Time (g_c+I1), s	11.4	35.3	17.1	30.9
Green Ext Time (p_c), s	8.3	1.9	2.9	1.3

Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	482	157	143	344	40	97	301	21	91	331	41
Future Volume (veh/h)	76	482	157	143	344	40	97	301	21	91	331	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.93	0.99		0.95	0.99		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	482	157	143	344	40	97	301	21	91	331	41
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	607	1561	504	459	1928	222	183	521	36	201	490	61
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.10	0.10	0.10	0.30	0.30	0.30
Sat Flow, veh/h	985	2584	833	779	3192	368	995	1718	120	1039	1617	200
Grp Volume(v), veh/h	76	330	309	143	190	194	97	0	322	91	0	372
Grp Sat Flow(s),veh/h/ln	985	1777	1641	779	1777	1782	995	0	1838	1039	0	1817
Q Serve(g_s), s	4.5	10.8	11.0	13.2	5.7	5.8	11.6	0.0	20.1	9.9	0.0	21.5
Cycle Q Clear(g_c), s	10.3	10.8	11.0	24.2	5.7	5.8	33.1	0.0	20.1	30.0	0.0	21.5
Prop In Lane	1.00		0.51	1.00		0.21	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	607	1074	991	459	1074	1077	183	0	557	201	0	551
V/C Ratio(X)	0.13	0.31	0.31	0.31	0.18	0.18	0.53	0.00	0.58	0.45	0.00	0.68
Avail Cap(c_a), veh/h	607	1074	991	459	1074	1077	291	0	757	314	0	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.00	0.91	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	11.5	11.6	17.5	10.5	10.5	63.2	0.0	46.7	49.1	0.0	36.6
Incr Delay (d2), s/veh	0.4	0.7	0.8	1.8	0.4	0.4	0.8	0.0	0.3	0.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	7.7	7.3	4.6	4.1	4.1	5.7	0.0	14.9	4.7	0.0	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	12.3	12.4	19.2	10.9	10.9	64.0	0.0	47.0	49.7	0.0	37.2
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	D
Approach Vol, veh/h		715			527			419			463	
Approach Delay, s/veh		12.4			13.2			50.9			39.6	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		78.0		42.0		78.0		42.0				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49				
Max Q Clear Time (g_c+I1), s		13.0		35.1		26.2		32.0				
Green Ext Time (p_c), s		10.4		1.3		6.8		1.5				
Intersection Summary												
HCM 6th Ctrl Delay			26.1									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	338	93	71	255	29	168	343	70	65	259	138
Future Volume (veh/h)	162	338	93	71	255	29	168	343	70	65	259	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		1.00	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	162	338	9	71	255	0	168	343	34	65	259	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	547	747	594	481	747	633	366	571	447	298	481	368
Arrive On Green	0.08	0.40	0.40	0.08	0.40	0.00	0.10	0.31	0.31	0.02	0.08	0.08
Sat Flow, veh/h	1781	1870	1489	1781	1870	1585	1781	1870	1463	1781	1870	1431
Grp Volume(v), veh/h	162	338	9	71	255	0	168	343	34	65	259	57
Grp Sat Flow(s),veh/h/ln	1781	1870	1489	1781	1870	1585	1781	1870	1463	1781	1870	1431
Q Serve(g_s), s	6.2	15.9	0.4	2.6	11.4	0.0	7.8	18.7	2.0	3.2	15.9	4.4
Cycle Q Clear(g_c), s	6.2	15.9	0.4	2.6	11.4	0.0	7.8	18.7	2.0	3.2	15.9	4.4
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	547	747	594	481	747	633	366	571	447	298	481	368
V/C Ratio(X)	0.30	0.45	0.02	0.15	0.34	0.00	0.46	0.60	0.08	0.22	0.54	0.15
Avail Cap(c_a), veh/h	547	747	594	496	747	633	367	642	502	310	561	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.79	0.79	0.79
Uniform Delay (d), s/veh	18.3	26.4	21.8	17.9	25.1	0.0	27.6	35.5	29.6	31.6	48.1	42.8
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.1	1.2	0.0	0.3	2.4	0.2	0.1	1.6	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(95%),veh/ln	4.6	11.9	0.3	1.9	9.0	0.0	6.0	13.7	1.3	2.5	12.4	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	28.4	21.8	17.9	26.3	0.0	27.9	37.8	29.8	31.7	49.7	43.1
LnGrp LOS	B	C	C	B	C	A	C	D	C	C	D	D
Approach Vol, veh/h		509			326			545			381	
Approach Delay, s/veh		25.1			24.5			34.3			45.6	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	53.4	16.0	36.7	14.0	53.4	10.2	42.4				
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8				
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41				
Max Q Clear Time (g_c+I1), s	4.6	17.9	9.8	17.9	8.2	13.4	5.2	20.7				
Green Ext Time (p_c), s	0.0	3.8	0.0	2.9	0.0	2.9	0.0	3.9				
Intersection Summary												
HCM 6th Ctrl Delay			32.3									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	307	101	73	306	31	132	258	89	134	275	268
Future Volume (veh/h)	148	307	101	73	306	31	132	258	89	134	275	268
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.89	0.97		1.00	0.96		0.88	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	307	35	73	306	0	132	258	52	134	275	194
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	470	695	525	459	697	591	365	609	456	383	533	390
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.00	0.10	0.33	0.33	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1413	1781	1870	1585	1781	1870	1400	1781	1870	1369
Grp Volume(v), veh/h	148	307	35	73	306	0	132	258	52	134	275	194
Grp Sat Flow(s),veh/h/ln	1781	1870	1413	1781	1870	1585	1781	1870	1400	1781	1870	1369
Q Serve(g_s), s	5.9	14.8	1.9	2.8	14.7	0.0	5.8	13.0	3.1	6.3	16.8	17.0
Cycle Q Clear(g_c), s	5.9	14.8	1.9	2.8	14.7	0.0	5.8	13.0	3.1	6.3	16.8	17.0
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	470	695	525	459	697	591	365	609	456	383	533	390
V/C Ratio(X)	0.31	0.44	0.07	0.16	0.44	0.00	0.36	0.42	0.11	0.35	0.52	0.50
Avail Cap(c_a), veh/h	472	695	525	474	697	591	367	642	481	383	561	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.68	0.68	0.68
Uniform Delay (d), s/veh	20.5	28.3	24.3	19.5	28.2	0.0	25.0	31.7	28.4	29.4	46.5	51.4
Incr Delay (d2), s/veh	0.1	2.0	0.2	0.1	2.0	0.0	0.2	1.0	0.2	0.1	1.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	11.3	1.2	2.1	11.2	0.0	4.4	10.0	1.9	5.1	12.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	30.4	24.5	19.6	30.3	0.0	25.2	32.7	28.6	29.6	47.6	52.8
LnGrp LOS	C	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		490			379			442			603	
Approach Delay, s/veh		27.0			28.2			30.0			45.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	50.1	15.9	40.0	13.9	50.2	11.0	44.9
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	4.8	16.8	7.8	19.0	7.9	16.7	8.3	15.0
Green Ext Time (p_c), s	0.0	3.7	0.1	4.1	0.0	3.4	0.0	3.3

Intersection Summary	
HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C

Notes

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

OPERATIONAL ANALYSIS - FUTURE BUILDOUT YEAR (2045) WITHOUT PROJECT CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	FUTURE BUILDOUT YEAR (2045) WITHOUT PROJECT										
	AM PEAK HOUR						PM PEAK HOUR				
		EB	WB	SB	Total			EB	WB	SB	Total
4.1 Watseka Avenue & Washington Boulevard	App Vol	26	365	67	458		App Vol	23	266	183	472
	App Delay	37.4	4.5	38.6			App Delay	27.7	4.5	31.3	
	Total Delay	973	1639	2586	5198		Total Delay	637	1197	5728	7562
	Ave Delay				11.4	B	Ave Delay				16.0 B
		EB	WB	SB	Total			EB	WB	SB	Total
4.2 Culver Boulevard & Washington Boulevard	App Vol	455	298	327	1080		App Vol	404	308	532	1244
	App Delay	33.8	5.4	69.3			App Delay	51.3	4.6	132.5	
	Total Delay	15379	1609	22661	39649		Total Delay	20725	1417	70490	92632
	Ave Delay				36.7	D	Ave Delay				74.5 E
		EB	WB	NB	Total			EB	WB	NB	Total
4.3 Irving Place & Culver Boulevard	App Vol	799	599	232	1630		App Vol	967	642	146	1755
	App Delay	2.2	23.4	54.1			App Delay	5.3	34.6	52.7	
	Total Delay	1758	14017	12551	28326		Total Delay	5125	22213	7694	35033
	Ave Delay				17.4	B	Ave Delay				20.0 B
Overall Intersection Results	App Delay	73,173					App Delay	135,227			
	App Vol	3,168					App Vol	3,471			
		23.1 LOS C						39.0 LOS D			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	0	353	12	0	67
Future Volume (vph)	26	0	353	12	0	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		1.00			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1851			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1851			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	0	353	12	0	67
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	26	0	365	0	0	67
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	26.1		66.2			26.1
Effective Green, g (s)	26.1		66.2			26.1
Actuated g/C Ratio	0.22		0.55			0.22
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	384		1021			350
v/s Ratio Prot	0.01		c0.20			
v/s Ratio Perm						c0.04
v/c Ratio	0.07		0.36			0.19
Uniform Delay, d1	37.3		15.0			38.3
Progression Factor	1.00		0.24			1.00
Incremental Delay, d2	0.1		0.9			0.3
Delay (s)	37.4		4.5			38.6
Level of Service	D		A			D
Approach Delay (s)		37.4	4.5		38.6	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	26	365	67
v/c Ratio	0.07	0.36	0.19
Control Delay	37.3	4.8	39.5
Queue Delay	0.0	1.0	0.0
Total Delay	37.3	5.8	39.5
Queue Length 50th (ft)	16	32	42
Queue Length 95th (ft)	45	52	93
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	398	1021	362
Starvation Cap Reductn	0	411	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	0.60	0.19

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	455	298	0	327	0
Future Volume (vph)	0	455	298	0	327	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	455	298	0	327	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	455	298	0	327	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		46.7	66.2		26.1	
Effective Green, g (s)		46.7	66.2		26.1	
Actuated g/C Ratio		0.39	0.55		0.22	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		725	1027		374	
v/s Ratio Prot		c0.24	c0.16			
v/s Ratio Perm					c0.19	
v/c Ratio		0.63	0.29		0.87	
Uniform Delay, d1		29.6	14.4		45.4	
Progression Factor		1.00	0.34		1.00	
Incremental Delay, d2		4.2	0.6		24.0	
Delay (s)		33.8	5.4		69.3	
Level of Service		C	A		E	
Approach Delay (s)		33.8	5.4		69.3	
Approach LOS		C	A		E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	455	298	327
v/c Ratio	0.61	0.29	0.87
Control Delay	35.3	5.8	75.6
Queue Delay	0.0	1.8	0.0
Total Delay	35.3	7.5	75.6
Queue Length 50th (ft)	290	48	244
Queue Length 95th (ft)	#549	95	#478
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	752	1028	387
Starvation Cap Reductn	0	558	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.61	0.63	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	731	68	55	252	292	119	0	113	0	0	0
Future Volume (vph)	0	731	68	55	252	292	119	0	113	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.93				
Flt Protected		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (prot)		1863	1446	1770	1713			1697				
Flt Permitted		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (perm)		1863	1446	1770	1713			1697				
Peak-hour factor, PHF	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. Flow (vph)	0	731	68	55	252	292	119	0	113	0	0	0
RTOR Reduction (vph)	0	0	27	0	0	0	0	168	0	0	0	0
Lane Group Flow (vph)	0	731	41	55	544	0	0	64	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	9.6	66.2			10.4				
Effective Green, g (s)		72.8	72.8	9.6	66.2			10.4				
Actuated g/C Ratio		0.61	0.61	0.08	0.55			0.09				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	877	141	945			147				
v/s Ratio Prot		c0.39		0.03	c0.32			c0.04				
v/s Ratio Perm			0.03									
v/c Ratio		0.65	0.05	0.39	0.58			0.44				
Uniform Delay, d1		15.3	9.6	52.4	17.7			52.0				
Progression Factor		0.09	0.09	1.00	1.00			1.00				
Incremental Delay, d2		0.9	0.0	1.8	2.6			2.1				
Delay (s)		2.3	0.8	54.2	20.2			54.1				
Level of Service		A	A	D	C			D				
Approach Delay (s)		2.2			23.4			54.1			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	731	68	55	544	232
v/c Ratio	0.59	0.07	0.31	0.58	0.74
Control Delay	2.1	0.1	55.4	21.6	28.9
Queue Delay	0.3	0.4	0.0	0.0	0.8
Total Delay	2.4	0.5	55.4	21.6	29.7
Queue Length 50th (ft)	8	0	40	263	36
Queue Length 95th (ft)	m38	m0	93	492	#159
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1258	1004	177	944	364
Starvation Cap Reductn	135	662	0	0	0
Spillback Cap Reductn	0	0	0	12	23
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.20	0.31	0.58	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	0	244	22	0	183
Future Volume (vph)	23	0	244	22	0	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1826			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1826			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	23	0	244	22	0	183
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	23	0	266	0	0	183
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	39.0		55.5			39.0
Effective Green, g (s)	39.0		55.5			39.0
Actuated g/C Ratio	0.32		0.46			0.32
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	575		844			523
v/s Ratio Prot	0.01		c0.15			
v/s Ratio Perm						c0.11
v/c Ratio	0.04		0.32			0.35
Uniform Delay, d1	27.7		20.3			30.8
Progression Factor	1.00		0.18			1.00
Incremental Delay, d2	0.0		0.8			0.4
Delay (s)	27.7		4.5			31.3
Level of Service	C		A			C
Approach Delay (s)		27.7	4.5		31.3	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	23	266	183
v/c Ratio	0.04	0.32	0.35
Control Delay	28.1	4.6	33.2
Queue Delay	0.0	1.7	0.0
Total Delay	28.1	6.2	33.2
Queue Length 50th (ft)	12	19	107
Queue Length 95th (ft)	36	m29	196
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	575	843	523
Starvation Cap Reductn	0	408	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.04	0.61	0.35

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	404	308	0	532	0
Future Volume (vph)	0	404	308	0	532	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	404	308	0	532	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	404	308	0	532	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		33.6	55.5		39.0	
Effective Green, g (s)		33.6	55.5		39.0	
Actuated g/C Ratio		0.28	0.46		0.32	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		521	861		525	
v/s Ratio Prot		c0.22	c0.17			
v/s Ratio Perm					c0.33	
v/c Ratio		0.78	0.36		1.01	
Uniform Delay, d1		39.7	20.8		40.5	
Progression Factor		1.00	0.18		1.00	
Incremental Delay, d2		11.6	0.9		92.0	
Delay (s)		51.3	4.6		132.5	
Level of Service		D	A		F	
Approach Delay (s)		51.3	4.6		132.5	
Approach LOS		D	A		F	

Intersection Summary			
HCM 2000 Control Delay	74.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	404	308	532
v/c Ratio	0.78	0.36	1.01
Control Delay	52.3	4.7	132.7
Queue Delay	0.5	1.6	0.0
Total Delay	52.8	6.3	132.7
Queue Length 50th (ft)	287	23	~421
Queue Length 95th (ft)	#535	41	#769
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	520	860	525
Starvation Cap Reductn	0	376	0
Spillback Cap Reductn	12	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.64	1.01

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	926	41	114	294	234	46	0	100	0	0	0
Future Volume (vph)	0	926	41	114	294	234	46	0	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.93			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1739			1664				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1739			1664				
Peak-hour factor, PHF	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. Flow (vph)	0	926	41	114	294	234	46	0	100	0	0	0
RTOR Reduction (vph)	0	0	16	0	0	0	0	136	0	0	0	0
Lane Group Flow (vph)	0	926	25	114	528	0	0	10	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.6	72.6	12.0	55.5			8.2				
Effective Green, g (s)		72.6	72.6	12.0	55.5			8.2				
Actuated g/C Ratio		0.60	0.60	0.10	0.46			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1127	698	177	804			113				
v/s Ratio Prot		c0.50		0.06	c0.30			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.82	0.04	0.64	0.66			0.09				
Uniform Delay, d1		18.6	9.6	51.9	24.9			52.4				
Progression Factor		0.15	1.00	1.00	1.00			1.00				
Incremental Delay, d2		2.3	0.0	8.1	4.3			0.3				
Delay (s)		5.2	9.6	60.0	29.1			52.7				
Level of Service		A	A	E	C			D				
Approach Delay (s)		5.3			34.6			52.7			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	926	41	114	528	146
v/c Ratio	0.77	0.05	0.64	0.66	0.51
Control Delay	3.6	0.1	70.6	29.9	10.0
Queue Delay	1.8	0.5	0.0	0.0	0.0
Total Delay	5.4	0.6	70.6	29.9	10.0
Queue Length 50th (ft)	36	0	86	307	0
Queue Length 95th (ft)	m41	m0	#196	526	54
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1197	773	177	804	360
Starvation Cap Reductn	134	546	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.18	0.64	0.66	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	2194	107	35	2421	32	81	161	12	53	122	261
Future Volume (veh/h)	115	2194	107	35	2421	32	81	161	12	53	122	261
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	1.00		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	2194	107	35	2421	5	81	161	12	53	122	261
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	2347	114	186	2520	734	153	499	37	72	132	254
Arrive On Green	0.16	0.94	0.94	0.10	0.49	0.49	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4970	240	1781	5106	1487	1000	1712	128	130	453	870
Grp Volume(v), veh/h	115	1497	804	35	2421	5	81	0	173	436	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1806	1781	1702	1487	1000	0	1839	1453	0	0
Q Serve(g_s), s	7.4	24.4	27.0	2.2	54.8	0.2	0.0	0.0	10.5	24.5	0.0	0.0
Cycle Q Clear(g_c), s	7.4	24.4	27.0	2.2	54.8	0.2	30.2	0.0	10.5	35.0	0.0	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.07	0.12		0.60
Lane Grp Cap(c), veh/h	145	1607	853	186	2520	734	153	0	536	457	0	0
V/C Ratio(X)	0.79	0.93	0.94	0.19	0.96	0.01	0.53	0.00	0.32	0.95	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	888	186	2520	734	153	0	536	457	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.00	0.66	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.2	2.4	2.5	49.1	29.3	15.4	52.1	0.0	43.2	43.3	0.0	0.0
Incr Delay (d2), s/veh	28.4	13.7	27.3	0.5	14.5	0.0	2.3	0.0	0.2	47.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.5	7.6	12.3	1.7	32.3	0.1	4.8	0.0	8.3	26.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.6	16.2	29.8	49.6	43.8	15.5	54.4	0.0	43.4	90.9	0.0	0.0
LnGrp LOS	E	B	C	D	D	B	D	A	D	F	A	A
Approach Vol, veh/h		2416			2461			254			436	
Approach Delay, s/veh		23.6			43.8			46.9			90.9	
Approach LOS		C			D			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.8	64.2		41.0	17.5	61.5		41.0				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	9.4	56.8		37.0	4.2	29.0		32.2				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	27.7		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			38.9									
HCM 6th LOS			D									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	2344	204	37	2423	58	121	69	14	124	44	172
Future Volume (veh/h)	155	2344	204	37	2423	58	121	69	14	124	44	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.97		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	155	2344	204	37	2423	0	121	69	14	124	44	172
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2323	197	153	2516	781	271	430	87	167	60	190
Arrive On Green	0.17	0.98	0.98	0.09	0.49	0.00	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4749	402	1781	5106	1585	1126	1479	300	433	206	654
Grp Volume(v), veh/h	155	1662	886	37	2423	0	121	0	83	340	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1747	1781	1702	1585	1126	0	1779	1293	0	0
Q Serve(g_s), s	10.0	54.5	58.7	2.3	55.0	0.0	0.0	0.0	5.1	25.7	0.0	0.0
Cycle Q Clear(g_c), s	10.0	54.5	58.7	2.3	55.0	0.0	20.7	0.0	5.1	30.8	0.0	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.17	0.36		0.51
Lane Grp Cap(c), veh/h	148	1665	855	153	2516	781	271	0	517	417	0	0
V/C Ratio(X)	1.04	1.00	1.04	0.24	0.96	0.00	0.45	0.00	0.16	0.82	0.00	0.00
Avail Cap(c_a), veh/h	148	1665	855	153	2516	781	272	0	519	418	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.97	0.00	0.97	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	1.3	1.2	51.2	29.4	0.0	47.8	0.0	40.8	42.1	0.0	0.0
Incr Delay (d2), s/veh	195.9	42.6	103.4	0.8	15.2	0.0	1.1	0.0	0.1	13.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.0	15.6	34.2	1.9	32.5	0.0	6.9	0.0	4.2	16.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	245.9	43.8	104.6	52.0	44.6	0.0	49.0	0.0	40.9	55.1	0.0	0.0
LnGrp LOS	F	D	F	D	D	A	D	A	D	E	A	A
Approach Vol, veh/h		2703			2460			204			340	
Approach Delay, s/veh		75.3			44.7			45.7			55.1	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	64.1		40.9	15.3	63.8		40.9				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	12.0	57.0		32.8	4.3	60.7		22.7				
Green Ext Time (p_c), s	0.0	2.0		0.5	0.0	0.0		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		59.9
HCM 6th LOS		E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	443	94	34	533	78	13	6	5	105	33	109
Future Volume (veh/h)	176	443	94	34	533	78	13	6	5	105	33	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.90	0.98		0.97	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	176	443	87	34	533	25	13	6	5	105	33	109
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	545	448	742	1024	777	268	205	171	170	56	145
Arrive On Green	0.10	0.29	0.29	0.71	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	1537	1781	1870	1420	1218	931	776	578	252	655
Grp Volume(v), veh/h	176	443	87	34	533	25	13	0	11	247	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1537	1781	1870	1420	1218	0	1706	1485	0	0
Q Serve(g_s), s	11.8	26.4	5.1	0.0	0.0	0.0	0.0	0.0	0.6	16.6	0.0	0.0
Cycle Q Clear(g_c), s	11.8	26.4	5.1	0.0	0.0	0.0	1.5	0.0	0.6	18.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	0.43		0.44
Lane Grp Cap(c), veh/h	178	545	448	742	1024	777	268	0	377	370	0	0
V/C Ratio(X)	0.99	0.81	0.19	0.05	0.52	0.03	0.05	0.00	0.03	0.67	0.00	0.00
Avail Cap(c_a), veh/h	178	941	773	742	1024	777	354	0	498	475	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	0.35	0.00	0.00
Uniform Delay (d), s/veh	53.9	39.5	31.9	9.5	0.0	0.0	37.0	0.0	36.7	43.6	0.0	0.0
Incr Delay (d2), s/veh	122.3	13.8	1.0	0.0	1.8	0.1	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.8	20.1	3.6	0.5	0.9	0.0	0.6	0.0	0.5	9.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	176.2	53.3	32.9	9.5	1.8	0.1	37.1	0.0	36.7	44.0	0.0	0.0
LnGrp LOS	F	D	C	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		706			592			24			247	
Approach Delay, s/veh		81.4			2.2			36.9			44.0	
Approach LOS		F			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	48.0	40.0		32.1	17.0	70.9		32.1
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6
Max Green Setting (Gmax), s	* 9	* 60		35.0	12.0	* 57		35.0
Max Q Clear Time (g_c+I1), s	2.0	28.4		20.6	13.8	2.0		3.5
Green Ext Time (p_c), s	0.0	6.6		0.9	0.0	8.5		0.0

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

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	627	36	24	536	69	23	84	33	140	22	67
Future Volume (veh/h)	59	627	36	24	536	69	23	84	33	140	22	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.74	0.95		0.94	0.95		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	627	36	24	536	69	23	84	33	140	22	67
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	720	591	503	1017	638	350	326	128	215	39	85
Arrive On Green	0.06	0.39	0.39	0.22	0.54	0.54	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1535	1781	1870	1174	1236	1252	492	640	149	326
Grp Volume(v), veh/h	59	627	36	24	536	69	23	0	117	229	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1781	1870	1174	1236	0	1744	1115	0	0
Q Serve(g_s), s	3.8	37.2	1.8	0.0	22.0	3.4	0.0	0.0	6.4	18.1	0.0	0.0
Cycle Q Clear(g_c), s	3.8	37.2	1.8	0.0	22.0	3.4	1.9	0.0	6.4	24.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	0.61		0.29
Lane Grp Cap(c), veh/h	115	720	591	503	1017	638	350	0	454	338	0	0
V/C Ratio(X)	0.51	0.87	0.06	0.05	0.53	0.11	0.07	0.00	0.26	0.68	0.00	0.00
Avail Cap(c_a), veh/h	178	879	722	503	1017	638	410	0	538	402	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.46	0.46	0.46	1.00	0.00	1.00	0.44	0.00	0.00
Uniform Delay (d), s/veh	54.3	34.1	23.2	32.0	17.5	13.3	33.6	0.0	35.2	43.8	0.0	0.0
Incr Delay (d2), s/veh	1.3	15.7	0.2	0.0	0.9	0.2	0.0	0.0	0.1	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	26.8	1.2	0.9	12.8	1.6	0.9	0.0	5.0	9.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	49.9	23.4	32.0	18.4	13.4	33.6	0.0	35.3	44.8	0.0	0.0
LnGrp LOS	E	D	C	C	B	B	C	A	D	D	A	A
Approach Vol, veh/h		722			629			140			229	
Approach Delay, s/veh		49.0			18.4			35.0			44.8	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	32.0	51.2		36.8	12.7	70.4		36.8
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6
Max Green Setting (Gmax), s	* 11	* 56		37.0	12.0	* 55		37.0
Max Q Clear Time (g_c+I1), s	2.0	39.2		26.5	5.8	24.0		8.4
Green Ext Time (p_c), s	0.0	7.0		0.7	0.0	8.1		0.5

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	345	180	89	156	2	433	129	111	0	0	0
Future Volume (vph)	7	345	180	89	156	2	433	129	111	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1572	1770	1863	572		1740				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1572	1770	1863	572		1740				
Peak-hour factor, PHF	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. Flow (vph)	7	345	180	89	156	2	433	129	111	0	0	0
RTOR Reduction (vph)	0	0	36	0	0	1	0	6	0	0	0	0
Lane Group Flow (vph)	7	345	144	89	156	1	0	667	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	21.3	96.0	11.0	30.9	30.9		72.9				
Effective Green, g (s)	1.4	21.3	96.0	11.0	30.9	30.9		72.9				
Actuated g/C Ratio	0.01	0.18	0.80	0.09	0.26	0.26		0.61				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	628	1257	162	479	147		1057				
v/s Ratio Prot	0.00	c0.10	0.07	c0.05	0.08							
v/s Ratio Perm			0.02			0.00		0.38				
v/c Ratio	0.35	0.55	0.11	0.55	0.33	0.00		0.63				
Uniform Delay, d1	58.8	45.0	2.6	52.1	36.1	33.1		15.0				
Progression Factor	1.28	1.06	1.24	1.00	1.00	1.00		1.00				
Incremental Delay, d2	3.6	1.6	0.1	2.1	0.8	0.0		2.9				
Delay (s)	79.0	49.1	3.3	54.2	36.9	33.1		17.9				
Level of Service	E	D	A	D	D	C		B				
Approach Delay (s)		34.0			43.1			17.9			0.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	7	345	180	89	156	2	433	129	111	0	0	0
Lane Group Flow (vph)	7	345	180	89	156	2	0	673	0	0	0	0
v/c Ratio	0.07	0.65	0.14	0.55	0.33	0.01		0.61				
Control Delay	70.1	56.1	0.5	66.2	39.0	0.0		16.0				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	70.1	56.1	0.5	66.2	39.0	0.0		16.0				
Queue Length 50th (ft)	5	98	2	67	95	0		286				
Queue Length 95th (ft)	m13	201	6	#150	197	0		513				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1305	162	480	219		1109				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		12				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.07	0.59	0.14	0.55	0.33	0.01		0.61				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	361	354	91	332	18	374	23	135	0	0	0
Future Volume (vph)	55	361	354	91	332	18	374	23	135	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.92				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1564	1770	1863	568		1597				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1564	1770	1863	568		1597				
Peak-hour factor, PHF	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. Flow (vph)	55	361	354	91	332	18	374	23	135	0	0	0
RTOR Reduction (vph)	0	0	71	0	0	14	0	10	0	0	0	0
Lane Group Flow (vph)	55	361	283	91	332	4	0	522	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	6.2	21.2	96.0	11.0	26.0	26.0		73.0				
Effective Green, g (s)	6.2	21.2	96.0	11.0	26.0	26.0		73.0				
Actuated g/C Ratio	0.05	0.18	0.80	0.09	0.22	0.22		0.61				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	91	625	1251	162	403	123		971				
v/s Ratio Prot	0.03	0.10	0.14	c0.05	c0.18							
v/s Ratio Perm			0.04			0.01		0.33				
v/c Ratio	0.60	0.58	0.23	0.56	0.82	0.03		0.54				
Uniform Delay, d1	55.7	45.3	2.9	52.2	44.8	37.1		13.7				
Progression Factor	1.12	1.10	1.61	1.00	1.00	1.00		1.00				
Incremental Delay, d2	6.7	1.8	0.2	2.7	16.0	0.2		2.1				
Delay (s)	69.4	51.8	4.9	54.9	60.8	37.3		15.8				
Level of Service	E	D	A	D	E	D		B				
Approach Delay (s)		31.5			58.6			15.8			0.0	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	55	361	354	91	332	18	374	23	135	0	0	0
Lane Group Flow (vph)	55	361	354	91	332	18	0	532	0	0	0	0
v/c Ratio	0.49	0.60	0.27	0.56	0.82	0.09		0.54				
Control Delay	74.9	54.5	0.7	66.9	65.5	0.9		15.4				
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0		0.2				
Total Delay	74.9	54.5	0.9	66.9	65.5	0.9		15.6				
Queue Length 50th (ft)	41	115	0	69	250	0		219				
Queue Length 95th (ft)	m81	225	12	#155	#487	0		385				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	118	648	1331	162	403	199		992				
Starvation Cap Reductn	0	0	382	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		92				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.47	0.56	0.37	0.56	0.82	0.09		0.59				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2476	26	91	2726	10	0	0	31	0	0	21
Future Vol, veh/h	0	2476	26	91	2726	10	0	0	31	0	0	21
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2476	26	91	2726	10	0	0	31	0	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2518	0	0	-	-	1270	-	-	1408
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*394	-	-	0	0	*313	0	0	*270
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*388	-	-	-	-	*304	-	-	*260
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	18.2	20.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	304	-	-	* 388	-	-	260
HCM Lane V/C Ratio	0.102	-	-	0.235	-	-	0.081
HCM Control Delay (s)	18.2	-	-	17.1	-	-	20.1
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	0.9	-	-	0.3

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2309	22	146	2640	19	0	0	143	0	0	35
Future Vol, veh/h	0	2309	22	146	2640	19	0	0	143	0	0	35
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2309	22	146	2640	19	0	0	143	0	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2352	0	0	-	-	1197	-	-	1414
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*449	-	-	0	0	*357	0	0	*292
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*440	-	-	-	-	*343	-	-	*269
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	22.9	20.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	343	-	-	* 440	-	-	269
HCM Lane V/C Ratio	0.417	-	-	0.332	-	-	0.13
HCM Control Delay (s)	22.9	-	-	17.2	-	-	20.4
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	2.1	-	-	1.5	-	-	0.4

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

FUTURE BUILDOUT YEAR (2045) PLUS PROJECT CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	2297	158	87	2549	77	101	142	127	58	214	51
Future Volume (veh/h)	92	2297	158	87	2549	77	101	142	127	58	214	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	2297	107	87	2549	48	101	142	127	58	214	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	3208	945	107	3208	930	120	147	120	88	286	64
Arrive On Green	0.63	0.63	0.63	0.84	0.84	0.84	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	119	5106	1504	144	5106	1480	289	519	423	187	1011	225
Grp Volume(v), veh/h	92	2297	107	87	2549	48	370	0	0	323	0	0
Grp Sat Flow(s),veh/h/ln	119	1702	1504	144	1702	1480	1231	0	0	1422	0	0
Q Serve(g_s), s	46.1	36.5	3.4	38.9	29.3	0.7	9.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	75.4	36.5	3.4	75.4	29.3	0.7	34.0	0.0	0.0	24.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.27		0.34	0.18		0.16
Lane Grp Cap(c), veh/h	106	3208	945	107	3208	930	387	0	0	438	0	0
V/C Ratio(X)	0.87	0.72	0.11	0.81	0.79	0.05	0.96	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	106	3208	945	107	3208	930	387	0	0	438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	48.5	15.1	8.9	37.1	6.1	3.7	44.3	0.0	0.0	38.8	0.0	0.0
Incr Delay (d2), s/veh	83.8	1.4	0.2	62.2	2.2	0.1	55.3	0.0	0.0	6.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	18.9	2.0	7.8	8.7	0.4	23.7	0.0	0.0	14.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	132.3	16.5	9.2	99.3	8.2	3.8	99.6	0.0	0.0	45.5	0.0	0.0
LnGrp LOS	F	B	A	F	A	A	F	A	A	D	A	A
Approach Vol, veh/h		2496			2684			370			323	
Approach Delay, s/veh		20.4			11.1			99.6			45.5	
Approach LOS		C			B			F			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 75		34.0		* 75		34.0				
Max Q Clear Time (g_c+I1), s		77.4		26.4		77.4		36.0				
Green Ext Time (p_c), s		0.0		1.1		0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			22.5
HCM 6th LOS			C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	1973	129	92	2558	71	132	208	116	70	238	51
Future Volume (veh/h)	72	1973	129	92	2558	71	132	208	116	70	238	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.92	0.99		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	1973	63	92	2558	36	132	208	116	70	238	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	69	2752	779	112	2752	786	164	231	122	114	370	74
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	119	5106	1445	208	5106	1457	336	619	326	208	992	199
Grp Volume(v), veh/h	72	1973	63	92	2558	36	456	0	0	359	0	0
Grp Sat Flow(s),veh/h/ln	119	1702	1445	208	1702	1457	1282	0	0	1400	0	0
Q Serve(g_s), s	9.2	34.8	2.5	29.9	55.5	1.4	17.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	64.7	34.8	2.5	64.7	55.5	1.4	42.1	0.0	0.0	24.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.29		0.25	0.19		0.14
Lane Grp Cap(c), veh/h	69	2752	779	112	2752	786	516	0	0	557	0	0
V/C Ratio(X)	1.04	0.72	0.08	0.82	0.93	0.05	0.88	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	69	2752	779	112	2752	786	532	0	0	574	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.4	20.8	13.3	51.6	25.5	13.1	37.7	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	261.7	1.6	0.2	62.8	8.1	0.1	18.8	0.0	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.8	19.3	1.5	8.3	30.4	0.8	22.0	0.0	0.0	13.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	321.1	22.4	13.5	114.4	33.6	13.2	56.5	0.0	0.0	32.9	0.0	0.0
LnGrp LOS	F	C	B	F	C	B	E	A	A	C	A	A
Approach Vol, veh/h		2108			2686			456			359	
Approach Delay, s/veh		32.4			36.1			56.5			32.9	
Approach LOS		C			D			E			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.3		50.7		69.3		50.7				
Change Period (Y+Rc), s		* 4.6		6.0		* 4.6		6.0				
Max Green Setting (Gmax), s		* 63		46.0		* 63		46.0				
Max Q Clear Time (g_c+I1), s		66.7		26.5		66.7		44.1				
Green Ext Time (p_c), s		0.0		2.2		0.0		0.6				

Intersection Summary			
HCM 6th Ctrl Delay			36.2
HCM 6th LOS			D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	407	154	78	155	23	131	333	74	38	292	37
Future Volume (veh/h)	63	407	154	78	155	23	131	333	74	38	292	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.97	0.98		0.93	0.99		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	407	154	78	155	23	131	333	74	38	292	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	747	1491	556	496	1852	269	222	452	101	153	499	63
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.21	0.21	0.21	0.31	0.31	0.31
Sat Flow, veh/h	1193	2495	930	842	3099	451	1031	1460	324	969	1611	204
Grp Volume(v), veh/h	63	288	273	78	88	90	131	0	407	38	0	329
Grp Sat Flow(s),veh/h/ln	1193	1777	1647	842	1777	1773	1031	0	1784	969	0	1815
Q Serve(g_s), s	2.8	9.3	9.6	5.9	2.5	2.6	14.9	0.0	25.6	4.4	0.0	18.3
Cycle Q Clear(g_c), s	5.4	9.3	9.6	15.5	2.5	2.6	33.3	0.0	25.6	30.0	0.0	18.3
Prop In Lane	1.00		0.56	1.00		0.25	1.00		0.18	1.00		0.11
Lane Grp Cap(c), veh/h	747	1062	985	496	1062	1060	222	0	553	153	0	562
V/C Ratio(X)	0.08	0.27	0.28	0.16	0.08	0.09	0.59	0.00	0.74	0.25	0.00	0.59
Avail Cap(c_a), veh/h	747	1062	985	496	1062	1060	387	0	839	309	0	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.00	0.82	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	11.6	11.6	15.4	10.2	10.2	55.0	0.0	43.0	51.0	0.0	34.9
Incr Delay (d2), s/veh	0.2	0.6	0.7	0.7	0.2	0.2	0.8	0.0	0.6	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(95%),veh/ln	1.4	6.7	6.4	2.2	1.8	1.8	7.0	0.0	16.9	1.9	0.0	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	12.2	12.3	16.1	10.4	10.4	55.7	0.0	43.6	51.3	0.0	35.3
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	D
Approach Vol, veh/h		624			256			538			367	
Approach Delay, s/veh		12.2			12.1			46.5			36.9	
Approach LOS		B			B			D			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		77.2		42.8		77.2		42.8				
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6				
Max Green Setting (Gmax), s		* 53		* 56		* 53		* 56				
Max Q Clear Time (g_c+I1), s		11.6		35.3		17.5		32.0				
Green Ext Time (p_c), s		8.4		1.9		3.0		1.3				
Intersection Summary												
HCM 6th Ctrl Delay			27.6									
HCM 6th LOS			C									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	76	483	157	155	367	45	97	301	23	91	331	41
Future Volume (veh/h)	76	483	157	155	367	45	97	301	23	91	331	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.93	0.99		0.95	0.99		0.93	0.98		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	483	157	155	367	45	97	301	23	91	331	41
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	590	1562	503	459	1915	233	183	517	40	200	490	61
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.10	0.10	0.10	0.30	0.30	0.30
Sat Flow, veh/h	960	2586	832	778	3170	385	995	1705	130	1038	1617	200
Grp Volume(v), veh/h	76	330	310	155	204	208	97	0	324	91	0	372
Grp Sat Flow(s),veh/h/ln	960	1777	1641	778	1777	1778	995	0	1835	1038	0	1817
Q Serve(g_s), s	4.6	10.9	11.0	14.6	6.2	6.3	11.6	0.0	20.2	10.0	0.0	21.5
Cycle Q Clear(g_c), s	10.9	10.9	11.0	25.6	6.2	6.3	33.1	0.0	20.2	30.2	0.0	21.5
Prop In Lane	1.00		0.51	1.00		0.22	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	590	1073	992	459	1073	1074	183	0	557	200	0	551
V/C Ratio(X)	0.13	0.31	0.31	0.34	0.19	0.19	0.53	0.00	0.58	0.46	0.00	0.67
Avail Cap(c_a), veh/h	590	1073	992	459	1073	1074	291	0	756	312	0	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.00	0.91	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	11.5	11.6	17.8	10.6	10.6	63.2	0.0	46.7	49.2	0.0	36.6
Incr Delay (d2), s/veh	0.5	0.7	0.8	2.0	0.4	0.4	0.8	0.0	0.3	0.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	7.7	7.3	5.0	4.4	4.5	5.7	0.0	15.0	4.7	0.0	14.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	12.3	12.4	19.8	11.0	11.0	64.0	0.0	47.1	49.9	0.0	37.2
LnGrp LOS	B	B	B	B	B	B	E	A	D	D	A	D
Approach Vol, veh/h		716			567			421			463	
Approach Delay, s/veh		12.5			13.4			51.0			39.7	
Approach LOS		B			B			D			D	

Timer - Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		78.0		42.0		78.0		42.0
Change Period (Y+Rc), s		* 5.5		* 5.6		* 5.5		* 5.6
Max Green Setting (Gmax), s		* 60		* 49		* 60		* 49
Max Q Clear Time (g_c+I1), s		13.0		35.1		27.6		32.2
Green Ext Time (p_c), s		10.5		1.3		7.3		1.5

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	338	93	71	255	29	168	353	70	65	261	138
Future Volume (veh/h)	164	338	93	71	255	29	168	353	70	65	261	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		1.00	0.97		0.92	0.97		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	164	338	9	71	255	0	168	353	34	65	261	56
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	546	746	594	480	746	632	365	572	447	292	482	369
Arrive On Green	0.08	0.40	0.40	0.08	0.40	0.00	0.10	0.31	0.31	0.02	0.09	0.09
Sat Flow, veh/h	1781	1870	1489	1781	1870	1585	1781	1870	1463	1781	1870	1431
Grp Volume(v), veh/h	164	338	9	71	255	0	168	353	34	65	261	56
Grp Sat Flow(s),veh/h/ln	1781	1870	1489	1781	1870	1585	1781	1870	1463	1781	1870	1431
Q Serve(g_s), s	6.3	15.9	0.4	2.6	11.4	0.0	7.8	19.4	2.0	3.2	16.1	4.4
Cycle Q Clear(g_c), s	6.3	15.9	0.4	2.6	11.4	0.0	7.8	19.4	2.0	3.2	16.1	4.4
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	546	746	594	480	746	632	365	572	447	292	482	369
V/C Ratio(X)	0.30	0.45	0.02	0.15	0.34	0.00	0.46	0.62	0.08	0.22	0.54	0.15
Avail Cap(c_a), veh/h	547	746	594	495	746	632	366	642	502	303	561	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	18.4	26.5	21.8	17.9	25.1	0.0	27.6	35.7	29.6	31.7	48.1	42.7
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.1	1.3	0.0	0.3	2.6	0.2	0.1	1.6	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(95%),veh/ln	4.6	11.9	0.3	1.9	9.0	0.0	6.0	14.1	1.3	2.5	12.5	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	28.5	21.9	18.0	26.4	0.0	27.9	38.3	29.8	31.8	49.7	43.1
LnGrp LOS	B	C	C	B	C	A	C	D	C	C	D	D
Approach Vol, veh/h		511			326			555			382	
Approach Delay, s/veh		25.2			24.5			34.6			45.7	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	53.4	16.0	36.7	14.0	53.4	10.2	42.5
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41
Max Q Clear Time (g_c+I1), s	4.6	17.9	9.8	18.1	8.3	13.4	5.2	21.4
Green Ext Time (p_c), s	0.0	3.8	0.0	2.9	0.0	2.9	0.0	3.9

Intersection Summary	
HCM 6th Ctrl Delay	32.4
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	307	101	73	306	31	132	260	89	134	285	270
Future Volume (veh/h)	148	307	101	73	306	31	132	260	89	134	285	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.89	0.97		1.00	0.96		0.88	0.94		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	307	35	73	306	0	132	260	52	134	285	196
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	470	694	524	459	696	590	360	610	457	382	534	391
Arrive On Green	0.08	0.37	0.37	0.08	0.37	0.00	0.10	0.33	0.33	0.02	0.09	0.00
Sat Flow, veh/h	1781	1870	1412	1781	1870	1585	1781	1870	1400	1781	1870	1370
Grp Volume(v), veh/h	148	307	35	73	306	0	132	260	52	134	285	196
Grp Sat Flow(s),veh/h/ln	1781	1870	1412	1781	1870	1585	1781	1870	1400	1781	1870	1370
Q Serve(g_s), s	5.9	14.8	1.9	2.8	14.7	0.0	5.8	13.1	3.1	6.3	17.4	17.2
Cycle Q Clear(g_c), s	5.9	14.8	1.9	2.8	14.7	0.0	5.8	13.1	3.1	6.3	17.4	17.2
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	470	694	524	459	696	590	360	610	457	382	534	391
V/C Ratio(X)	0.32	0.44	0.07	0.16	0.44	0.00	0.37	0.43	0.11	0.35	0.53	0.50
Avail Cap(c_a), veh/h	471	694	524	473	696	590	362	642	481	382	561	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.68	0.68	0.68
Uniform Delay (d), s/veh	20.6	28.4	24.3	19.6	28.3	0.0	25.1	31.7	28.3	29.4	46.7	51.4
Incr Delay (d2), s/veh	0.1	2.1	0.2	0.1	2.0	0.0	0.2	1.0	0.2	0.1	1.2	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	11.3	1.2	2.1	11.2	0.0	4.4	10.0	1.9	5.1	13.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	30.4	24.6	19.6	30.3	0.0	25.3	32.7	28.5	29.5	48.0	52.9
LnGrp LOS	C	C	C	B	C	A	C	C	C	C	D	D
Approach Vol, veh/h		490			379			444			615	
Approach Delay, s/veh		27.1			28.3			30.0			45.5	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	50.0	15.9	40.1	13.9	50.1	11.0	44.9				
Change Period (Y+Rc), s	4.0	* 5.5	4.0	* 5.8	4.0	* 5.5	4.0	* 5.8				
Max Green Setting (Gmax), s	11.0	* 42	12.0	* 36	10.0	* 43	7.0	* 41				
Max Q Clear Time (g_c+I1), s	4.8	16.8	7.8	19.4	7.9	16.7	8.3	15.1				
Green Ext Time (p_c), s	0.0	3.7	0.1	4.2	0.0	3.4	0.0	3.3				
Intersection Summary												
HCM 6th Ctrl Delay			33.9									
HCM 6th LOS			C									
Notes												

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

OPERATIONAL ANALYSIS - FUTURE BUILDOUT YEAR (2045) PLUS PROJECT CONDITIONS
Intersection #4 - Watseka Av/Irving Pl & Washington Bl/Culver Boulevard

Intersection	FUTURE BUILDOUT YEAR (2045) WITH PROJECT										
	AM PEAK HOUR					PM PEAK HOUR					
		EB	WB	SB	Total		EB	WB	SB	Total	
4.1 Watseka Avenue & Washington Boulevard	App Vol	46	391	73	510.4	App Vol	27	271	223	521	
	App Delay	37.9	4.5	38.8		App Delay	27.8	4.5	32.3		
	Total Delay	1759	1760	2832	6350	Total Delay	751	1220	7203	9173	
	Ave Delay				12.4 B	Ave Delay				17.6 B	
		EB	WB	SB	Total		EB	WB	SB	Total	
4.2 Culver Boulevard & Washington Boulevard	App Vol	455	298	327	1080	App Vol	404	308	532	1244	
	App Delay	33.8	5.4	69.3		App Delay	51.3	4.6	132.5		
	Total Delay	15379	1609	22661	39649	Total Delay	20725	1417	70490	92632	
	Ave Delay				36.7 D	Ave Delay				74.5 E	
		EB	WB	NB	Total		EB	WB	NB	Total	
4.3 Irving Place & Culver Boulevard	App Vol	799	625	232	1656	App Vol	967	647	146	1760	
	App Delay	2.2	24	54.1		App Delay	5.3	34.8	52.7		
	Total Delay	1758	15000	12551	29309	Total Delay	5125	22516	7694	35335	
	Ave Delay				17.7 B	Ave Delay				20.1 C	
Overall Intersection Results	App Delay	75,309				App Delay	137,140				
	App Vol	3,246				App Vol	3,525				
		23.2 LOS C					38.9 LOS D				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	46	0	353	38	0	73
Future Volume (vph)	46	0	353	38	0	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1829			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1829			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	0	353	38	0	73
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	46	0	391	0	0	73
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				3		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	26.1		66.2			26.1
Effective Green, g (s)	26.1		66.2			26.1
Actuated g/C Ratio	0.22		0.55			0.22
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	384		1008			350
v/s Ratio Prot	0.03		c0.21			
v/s Ratio Perm						c0.05
v/c Ratio	0.12		0.39			0.21
Uniform Delay, d1	37.7		15.3			38.5
Progression Factor	1.00		0.23			1.00
Incremental Delay, d2	0.1		1.0			0.3
Delay (s)	37.9		4.5			38.8
Level of Service	D		A			D
Approach Delay (s)		37.9	4.5		38.8	
Approach LOS		D	A		D	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	46	391	73
v/c Ratio	0.12	0.39	0.21
Control Delay	38.1	4.7	39.8
Queue Delay	0.0	1.1	0.0
Total Delay	38.1	5.8	39.8
Queue Length 50th (ft)	29	33	46
Queue Length 95th (ft)	69	53	100
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	398	1009	362
Starvation Cap Reductn	0	383	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.62	0.20

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	455	298	0	327	0
Future Volume (vph)	0	455	298	0	327	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.97	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1722	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	455	298	0	327	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	455	298	0	327	0
Confl. Peds. (#/hr)					12	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		46.7	66.2		26.1	
Effective Green, g (s)		46.7	66.2		26.1	
Actuated g/C Ratio		0.39	0.55		0.22	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		725	1027		374	
v/s Ratio Prot		c0.24	c0.16			
v/s Ratio Perm					c0.19	
v/c Ratio		0.63	0.29		0.87	
Uniform Delay, d1		29.6	14.4		45.4	
Progression Factor		1.00	0.34		1.00	
Incremental Delay, d2		4.2	0.6		24.0	
Delay (s)		33.8	5.4		69.3	
Level of Service		C	A		E	
Approach Delay (s)		33.8	5.4		69.3	
Approach LOS		C	A		E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	455	298	327
v/c Ratio	0.61	0.29	0.87
Control Delay	35.3	5.8	75.6
Queue Delay	0.0	2.0	0.0
Total Delay	35.3	7.8	75.6
Queue Length 50th (ft)	290	48	244
Queue Length 95th (ft)	#549	95	#478
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	752	1028	387
Starvation Cap Reductn	0	573	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.61	0.65	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	731	68	55	252	318	119	0	113	0	0	0
Future Volume (vph)	0	731	68	55	252	318	119	0	113	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.91	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.92			0.93				
Flt Protected		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (prot)		1863	1446	1770	1707			1697				
Flt Permitted		1.00	1.00	0.95	1.00			0.97				
Satd. Flow (perm)		1863	1446	1770	1707			1697				
Peak-hour factor, PHF	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. Flow (vph)	0	731	68	55	252	318	119	0	113	0	0	0
RTOR Reduction (vph)	0	0	27	0	0	0	0	168	0	0	0	0
Lane Group Flow (vph)	0	731	41	55	570	0	0	64	0	0	0	0
Confl. Peds. (#/hr)			29	29			12					
Confl. Bikes (#/hr)			6									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.8	72.8	9.6	66.2			10.4				
Effective Green, g (s)		72.8	72.8	9.6	66.2			10.4				
Actuated g/C Ratio		0.61	0.61	0.08	0.55			0.09				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1130	877	141	941			147				
v/s Ratio Prot		c0.39		0.03	c0.33			c0.04				
v/s Ratio Perm			0.03									
v/c Ratio		0.65	0.05	0.39	0.61			0.44				
Uniform Delay, d1		15.3	9.6	52.4	18.1			52.0				
Progression Factor		0.09	0.09	1.00	1.00			1.00				
Incremental Delay, d2		0.9	0.0	1.8	2.9			2.1				
Delay (s)		2.3	0.8	54.2	21.0			54.1				
Level of Service		A	A	D	C			D				
Approach Delay (s)		2.2			24.0			54.1			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	731	68	55	570	232
v/c Ratio	0.59	0.07	0.31	0.61	0.74
Control Delay	2.1	0.1	55.4	22.4	28.9
Queue Delay	0.3	0.4	0.0	0.0	0.8
Total Delay	2.4	0.5	55.4	22.5	29.7
Queue Length 50th (ft)	8	0	40	282	36
Queue Length 95th (ft)	m38	m0	93	532	#159
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1258	1004	177	941	364
Starvation Cap Reductn	135	662	0	0	0
Spillback Cap Reductn	0	0	0	12	23
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.20	0.31	0.61	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	0	244	27	0	223
Future Volume (vph)	27	0	244	27	0	223
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		8.3			5.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		0.99			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	1.00		0.99			0.86
Flt Protected	0.95		1.00			1.00
Satd. Flow (prot)	1770		1818			1611
Flt Permitted	0.95		1.00			1.00
Satd. Flow (perm)	1770		1818			1611
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	0	244	27	0	223
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	27	0	271	0	0	223
Confl. Peds. (#/hr)	37			37		
Confl. Bikes (#/hr)				7		
Turn Type	Prot		NA			Perm
Protected Phases	2		4			
Permitted Phases						2
Actuated Green, G (s)	39.0		55.5			39.0
Effective Green, g (s)	39.0		55.5			39.0
Actuated g/C Ratio	0.32		0.46			0.32
Clearance Time (s)	5.0		8.3			5.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	575		840			523
v/s Ratio Prot	0.02		c0.15			
v/s Ratio Perm						c0.14
v/c Ratio	0.05		0.32			0.43
Uniform Delay, d1	27.8		20.4			31.7
Progression Factor	1.00		0.18			1.00
Incremental Delay, d2	0.0		0.8			0.6
Delay (s)	27.8		4.5			32.3
Level of Service	C		A			C
Approach Delay (s)		27.8	4.5		32.3	
Approach LOS		C	A		C	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	WBT	SBR
Lane Group Flow (vph)	27	271	223
v/c Ratio	0.05	0.32	0.43
Control Delay	28.2	4.5	34.9
Queue Delay	0.0	1.7	0.0
Total Delay	28.2	6.2	34.9
Queue Length 50th (ft)	14	19	135
Queue Length 95th (ft)	40	m29	240
Internal Link Dist (ft)		92	
Turn Bay Length (ft)			
Base Capacity (vph)	575	840	523
Starvation Cap Reductn	0	402	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.05	0.62	0.43

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	404	308	0	532	0
Future Volume (vph)	0	404	308	0	532	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		9.6	8.3		5.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00		0.91	
Frt		1.00	1.00		1.00	
Flt Protected		1.00	1.00		0.95	
Satd. Flow (prot)		1863	1863		1616	
Flt Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		1863	1863		1616	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	404	308	0	532	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	404	308	0	532	0
Confl. Peds. (#/hr)					39	
Turn Type		NA	NA		Perm	
Protected Phases		8	4			
Permitted Phases					2	
Actuated Green, G (s)		33.6	55.5		39.0	
Effective Green, g (s)		33.6	55.5		39.0	
Actuated g/C Ratio		0.28	0.46		0.32	
Clearance Time (s)		9.6	8.3		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		521	861		525	
v/s Ratio Prot		c0.22	c0.17			
v/s Ratio Perm					c0.33	
v/c Ratio		0.78	0.36		1.01	
Uniform Delay, d1		39.7	20.8		40.5	
Progression Factor		1.00	0.18		1.00	
Incremental Delay, d2		11.6	0.9		92.0	
Delay (s)		51.3	4.6		132.5	
Level of Service		D	A		F	
Approach Delay (s)		51.3	4.6		132.5	
Approach LOS		D	A		F	

Intersection Summary			
HCM 2000 Control Delay	74.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	60		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	404	308	532
v/c Ratio	0.78	0.36	1.01
Control Delay	52.3	4.7	132.7
Queue Delay	0.5	1.7	0.0
Total Delay	52.8	6.4	132.7
Queue Length 50th (ft)	287	23	~421
Queue Length 95th (ft)	#535	m41	#769
Internal Link Dist (ft)	335	77	107
Turn Bay Length (ft)			
Base Capacity (vph)	520	860	525
Starvation Cap Reductn	0	381	0
Spillback Cap Reductn	12	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.64	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	926	41	114	294	239	46	0	100	0	0	0
Future Volume (vph)	0	926	41	114	294	239	46	0	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	8.6	8.3			4.0				
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00				
Frpb, ped/bikes		1.00	0.73	1.00	1.00			1.00				
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00				
Frt		1.00	0.85	1.00	0.93			0.91				
Flt Protected		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (prot)		1863	1155	1770	1737			1664				
Flt Permitted		1.00	1.00	0.95	1.00			0.98				
Satd. Flow (perm)		1863	1155	1770	1737			1664				
Peak-hour factor, PHF	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. Flow (vph)	0	926	41	114	294	239	46	0	100	0	0	0
RTOR Reduction (vph)	0	0	16	0	0	0	0	136	0	0	0	0
Lane Group Flow (vph)	0	926	25	114	533	0	0	10	0	0	0	0
Confl. Peds. (#/hr)			112	112			39					
Confl. Bikes (#/hr)			14									
Turn Type		NA	Perm	Prot	NA		Split	NA				
Protected Phases		2 8		7	4		1	1				
Permitted Phases			2 8									
Actuated Green, G (s)		72.6	72.6	12.0	55.5			8.2				
Effective Green, g (s)		72.6	72.6	12.0	55.5			8.2				
Actuated g/C Ratio		0.60	0.60	0.10	0.46			0.07				
Clearance Time (s)				8.6	8.3			4.0				
Vehicle Extension (s)				3.0	3.0			3.0				
Lane Grp Cap (vph)		1127	698	177	803			113				
v/s Ratio Prot		c0.50		0.06	c0.31			c0.01				
v/s Ratio Perm			0.02									
v/c Ratio		0.82	0.04	0.64	0.66			0.09				
Uniform Delay, d1		18.6	9.6	51.9	25.0			52.4				
Progression Factor		0.15	1.00	1.00	1.00			1.00				
Incremental Delay, d2		2.3	0.0	8.1	4.4			0.3				
Delay (s)		5.2	9.6	60.0	29.4			52.7				
Level of Service		A	A	E	C			D				
Approach Delay (s)		5.3			34.8			52.7			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBT
Lane Group Flow (vph)	926	41	114	533	146
v/c Ratio	0.77	0.05	0.64	0.66	0.51
Control Delay	3.6	0.1	70.6	30.2	10.0
Queue Delay	1.8	0.5	0.0	0.0	0.0
Total Delay	5.4	0.6	70.6	30.2	10.0
Queue Length 50th (ft)	36	0	86	312	0
Queue Length 95th (ft)	m41	m0	#196	534	54
Internal Link Dist (ft)	77			317	248
Turn Bay Length (ft)		50	100		
Base Capacity (vph)	1197	773	177	803	360
Starvation Cap Reductn	134	546	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.18	0.64	0.66	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	2202	109	35	2457	32	81	161	12	53	122	261
Future Volume (veh/h)	115	2202	109	35	2457	32	81	161	12	53	122	261
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.94	1.00		0.95	0.97		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	2202	109	35	2457	5	81	161	12	53	122	261
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	2349	115	185	2520	734	153	499	37	72	132	254
Arrive On Green	0.16	0.95	0.95	0.10	0.49	0.49	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4966	244	1781	5106	1487	1000	1712	128	130	453	870
Grp Volume(v), veh/h	115	1504	807	35	2457	5	81	0	173	436	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1806	1781	1702	1487	1000	0	1839	1453	0	0
Q Serve(g_s), s	7.4	24.6	27.3	2.2	56.4	0.2	0.0	0.0	10.5	24.5	0.0	0.0
Cycle Q Clear(g_c), s	7.4	24.6	27.3	2.2	56.4	0.2	30.2	0.0	10.5	35.0	0.0	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.07	0.12		0.60
Lane Grp Cap(c), veh/h	145	1610	854	185	2520	734	153	0	536	457	0	0
V/C Ratio(X)	0.79	0.93	0.95	0.19	0.98	0.01	0.53	0.00	0.32	0.95	0.00	0.00
Avail Cap(c_a), veh/h	148	1674	888	185	2520	734	153	0	536	457	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.00	0.66	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.2	2.4	2.4	49.2	29.7	15.4	52.1	0.0	43.2	43.3	0.0	0.0
Incr Delay (d2), s/veh	28.4	14.1	28.2	0.5	19.5	0.0	2.3	0.0	0.2	47.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.5	7.7	12.5	1.8	34.3	0.1	4.8	0.0	8.3	26.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.6	16.5	30.7	49.7	49.2	15.5	54.4	0.0	43.4	90.9	0.0	0.0
LnGrp LOS	E	B	C	D	D	B	D	A	D	F	A	A
Approach Vol, veh/h		2426			2497			254			436	
Approach Delay, s/veh		24.1			49.1			46.9			90.9	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.8	64.2		41.0	17.4	61.6		41.0
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0
Max Q Clear Time (g_c+I1), s	9.4	58.4		37.0	4.2	29.3		32.2
Green Ext Time (p_c), s	0.0	0.6		0.0	0.0	27.4		0.3

Intersection Summary

HCM 6th Ctrl Delay 41.5

HCM 6th LOS D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	2394	214	37	2429	58	121	69	14	124	44	172
Future Volume (veh/h)	155	2394	214	37	2429	58	121	69	14	124	44	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		1.00	0.97		0.91	0.93		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	155	2394	214	37	2429	0	121	69	14	124	44	172
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	2357	204	153	2516	781	271	430	87	167	60	190
Arrive On Green	0.17	1.00	0.98	0.09	0.49	0.00	0.10	0.10	0.10	0.29	0.29	0.29
Sat Flow, veh/h	1781	4738	411	1781	5106	1585	1126	1479	300	433	206	654
Grp Volume(v), veh/h	155	1699	909	37	2429	0	121	0	83	340	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1744	1781	1702	1585	1126	0	1779	1293	0	0
Q Serve(g_s), s	10.0	59.7	59.7	2.3	55.2	0.0	0.0	0.0	5.1	25.7	0.0	0.0
Cycle Q Clear(g_c), s	10.0	59.7	59.7	2.3	55.2	0.0	20.7	0.0	5.1	30.8	0.0	0.0
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.17	0.36		0.51
Lane Grp Cap(c), veh/h	148	1694	868	153	2516	781	271	0	517	417	0	0
V/C Ratio(X)	1.04	1.00	1.05	0.24	0.97	0.00	0.45	0.00	0.16	0.82	0.00	0.00
Avail Cap(c_a), veh/h	148	1694	868	153	2516	781	272	0	519	418	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.98	0.00	0.98	1.00	0.00	0.00
Uniform Delay (d), s/veh	50.0	0.3	0.5	51.2	29.5	0.0	47.8	0.0	40.8	42.1	0.0	0.0
Incr Delay (d2), s/veh	195.9	47.0	117.9	0.8	16.0	0.0	1.1	0.0	0.1	13.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.0	16.7	38.7	1.9	32.8	0.0	6.9	0.0	4.2	16.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	245.9	47.3	118.3	52.0	45.4	0.0	49.0	0.0	40.9	55.1	0.0	0.0
LnGrp LOS	F	F	F	D	D	A	D	A	D	E	A	A
Approach Vol, veh/h		2763			2466			204			340	
Approach Delay, s/veh		81.8			45.5			45.7			55.1	
Approach LOS		F			D			D			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	64.1		40.9	15.3	63.8		40.9				
Change Period (Y+Rc), s	* 5	* 5		6.0	* 5	* 4.8		6.0				
Max Green Setting (Gmax), s	* 10	* 59		35.0	* 10	* 59		35.0				
Max Q Clear Time (g_c+I1), s	12.0	57.2		32.8	4.3	61.7		22.7				
Green Ext Time (p_c), s	0.0	1.7		0.5	0.0	0.0		0.7				
Intersection Summary												
HCM 6th Ctrl Delay			63.4									
HCM 6th LOS			E									
Notes												

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	443	94	34	559	78	13	6	5	107	33	109
Future Volume (veh/h)	176	443	94	34	559	78	13	6	5	107	33	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.90	0.98		0.97	0.97		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	176	443	87	34	559	24	13	6	5	107	33	109
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	545	448	741	1023	776	269	206	172	173	55	144
Arrive On Green	0.10	0.29	0.29	0.71	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	1537	1781	1870	1419	1218	931	776	586	249	650
Grp Volume(v), veh/h	176	443	87	34	559	24	13	0	11	249	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1537	1781	1870	1419	1218	0	1707	1484	0	0
Q Serve(g_s), s	11.8	26.4	5.1	0.0	0.0	0.0	0.0	0.0	0.6	16.8	0.0	0.0
Cycle Q Clear(g_c), s	11.8	26.4	5.1	0.0	0.0	0.0	1.5	0.0	0.6	18.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	0.43		0.44
Lane Grp Cap(c), veh/h	178	545	448	741	1023	776	269	0	378	371	0	0
V/C Ratio(X)	0.99	0.81	0.19	0.05	0.55	0.03	0.05	0.00	0.03	0.67	0.00	0.00
Avail Cap(c_a), veh/h	178	941	773	741	1023	776	355	0	498	475	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	1.00	0.35	0.00	0.00
Uniform Delay (d), s/veh	53.9	39.5	31.9	9.5	0.0	0.0	36.9	0.0	36.6	43.6	0.0	0.0
Incr Delay (d2), s/veh	122.3	13.8	1.0	0.0	2.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.8	20.1	3.6	0.5	1.0	0.0	0.6	0.0	0.5	9.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	176.2	53.3	32.9	9.5	2.0	0.1	37.0	0.0	36.6	44.0	0.0	0.0
LnGrp LOS	F	D	C	A	A	A	D	A	D	D	A	A
Approach Vol, veh/h		706			617			24			249	
Approach Delay, s/veh		81.4			2.3			36.8			44.0	
Approach LOS		F			A			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	47.9	40.0		32.2	17.0	70.8		32.2				
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6				
Max Green Setting (Gmax), s	* 9	* 60		35.0	12.0	* 57		35.0				
Max Q Clear Time (g_c+I1), s	2.0	28.4		20.7	13.8	2.0		3.5				
Green Ext Time (p_c), s	0.0	6.6		0.9	0.0	9.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			44.3									
HCM 6th LOS			D									

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	627	36	24	541	69	23	84	33	150	22	67
Future Volume (veh/h)	59	627	36	24	541	69	23	84	33	150	22	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.73	0.95		0.94	0.95		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	627	36	24	541	69	23	84	33	150	22	67
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	720	591	499	986	613	358	328	129	221	35	81
Arrive On Green	0.08	0.39	0.39	0.22	0.53	0.53	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1535	1781	1870	1162	1239	1252	492	657	134	308
Grp Volume(v), veh/h	59	627	36	24	541	69	23	0	117	239	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1535	1781	1870	1162	1239	0	1744	1099	0	0
Q Serve(g_s), s	3.8	37.2	1.8	0.0	23.1	3.6	0.0	0.0	6.4	19.6	0.0	0.0
Cycle Q Clear(g_c), s	3.8	37.2	1.8	0.0	23.1	3.6	1.9	0.0	6.4	26.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	0.63		0.28
Lane Grp Cap(c), veh/h	140	720	591	499	986	613	358	0	457	337	0	0
V/C Ratio(X)	0.42	0.87	0.06	0.05	0.55	0.11	0.06	0.00	0.26	0.71	0.00	0.00
Avail Cap(c_a), veh/h	178	879	722	499	986	613	415	0	538	397	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.45	0.45	0.45	1.00	0.00	1.00	0.44	0.00	0.00
Uniform Delay (d), s/veh	52.7	34.1	23.2	32.1	18.9	14.2	33.4	0.0	35.0	44.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	15.7	0.2	0.0	1.0	0.2	0.0	0.0	0.1	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	26.8	1.2	0.9	13.4	1.7	0.9	0.0	5.0	9.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	49.9	23.4	32.2	19.9	14.4	33.4	0.0	35.1	45.9	0.0	0.0
LnGrp LOS	D	D	C	C	B	B	C	A	D	D	A	A
Approach Vol, veh/h		722			634			140			239	
Approach Delay, s/veh		48.8			19.7			34.8			45.9	
Approach LOS		D			B			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.7	51.2		37.1	14.5	68.5		37.1
Change Period (Y+Rc), s	* 5.2	* 5		5.6	5.0	* 5.2		5.6
Max Green Setting (Gmax), s	* 11	* 56		37.0	12.0	* 55		37.0
Max Q Clear Time (g_c+I1), s	2.0	39.2		28.0	5.8	25.1		8.4
Green Ext Time (p_c), s	0.0	7.0		0.7	0.0	8.1		0.5

Intersection Summary		
HCM 6th Ctrl Delay		36.7
HCM 6th LOS		D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	345	182	89	171	2	443	129	111	0	0	0
Future Volume (vph)	7	345	182	89	171	2	443	129	111	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1572	1770	1863	572		1741				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1572	1770	1863	572		1741				
Peak-hour factor, PHF	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. Flow (vph)	7	345	182	89	171	2	443	129	111	0	0	0
RTOR Reduction (vph)	0	0	36	0	0	1	0	6	0	0	0	0
Lane Group Flow (vph)	7	345	146	89	171	1	0	677	0	0	0	0
Confl. Peds. (#/hr)			2			354			66			
Confl. Bikes (#/hr)			13			14			8			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	1.4	21.3	96.0	11.0	30.9	30.9		72.9				
Effective Green, g (s)	1.4	21.3	96.0	11.0	30.9	30.9		72.9				
Actuated g/C Ratio	0.01	0.18	0.80	0.09	0.26	0.26		0.61				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	20	628	1257	162	479	147		1057				
v/s Ratio Prot	0.00	c0.10	0.07	c0.05	0.09							
v/s Ratio Perm			0.02			0.00		0.39				
v/c Ratio	0.35	0.55	0.12	0.55	0.36	0.00		0.64				
Uniform Delay, d1	58.8	45.0	2.6	52.1	36.4	33.1		15.1				
Progression Factor	1.28	1.10	1.33	1.00	1.00	1.00		1.00				
Incremental Delay, d2	3.6	1.6	0.1	2.1	1.0	0.0		3.0				
Delay (s)	78.7	51.1	3.6	54.2	37.4	33.1		18.2				
Level of Service	E	D	A	D	D	C		B				
Approach Delay (s)		35.3			43.1			18.2			0.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	7	345	182	89	171	2	443	129	111	0	0	0
Lane Group Flow (vph)	7	345	182	89	171	2	0	683	0	0	0	0
v/c Ratio	0.07	0.65	0.14	0.55	0.36	0.01		0.62				
Control Delay	69.9	58.2	0.5	66.2	39.6	0.0		16.3				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.1				
Total Delay	69.9	58.2	0.5	66.2	39.6	0.0		16.3				
Queue Length 50th (ft)	5	102	2	67	105	0		293				
Queue Length 95th (ft)	m13	214	6	#150	214	0		527				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	103	589	1306	162	480	219		1109				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		31				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.07	0.59	0.14	0.55	0.36	0.01		0.63				

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	361	364	91	335	18	376	23	135	0	0	0
Future Volume (vph)	55	361	364	91	335	18	376	23	135	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.36		0.92				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00				
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.97				
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (prot)	1770	3539	1564	1770	1863	568		1598				
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.97				
Satd. Flow (perm)	1770	3539	1564	1770	1863	568		1598				
Peak-hour factor, PHF	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. Flow (vph)	55	361	364	91	335	18	376	23	135	0	0	0
RTOR Reduction (vph)	0	0	73	0	0	14	0	10	0	0	0	0
Lane Group Flow (vph)	55	361	291	91	335	4	0	524	0	0	0	0
Confl. Peds. (#/hr)			11	11		354			336			
Confl. Bikes (#/hr)			8			16			12			
Turn Type	Prot	NA	custom	Prot	NA	Perm	Perm	NA				
Protected Phases	5	2	8	1	6			4				
Permitted Phases			2			6	4					
Actuated Green, G (s)	6.2	21.2	96.0	11.0	26.0	26.0		73.0				
Effective Green, g (s)	6.2	21.2	96.0	11.0	26.0	26.0		73.0				
Actuated g/C Ratio	0.05	0.18	0.80	0.09	0.22	0.22		0.61				
Clearance Time (s)	4.0	5.0	4.0	4.0	5.0	5.0		5.8				
Vehicle Extension (s)	2.0	5.0	0.2	2.0	5.0	5.0		2.0				
Lane Grp Cap (vph)	91	625	1251	162	403	123		972				
v/s Ratio Prot	0.03	0.10	0.15	c0.05	c0.18							
v/s Ratio Perm			0.04			0.01		0.33				
v/c Ratio	0.60	0.58	0.23	0.56	0.83	0.03		0.54				
Uniform Delay, d1	55.7	45.3	2.9	52.2	44.9	37.1		13.7				
Progression Factor	1.12	1.12	1.79	1.00	1.00	1.00		1.00				
Incremental Delay, d2	6.6	1.8	0.2	2.7	17.0	0.2		2.2				
Delay (s)	68.9	52.5	5.5	54.9	61.9	37.3		15.9				
Level of Service	E	D	A	D	E	D		B				
Approach Delay (s)		31.7			59.5			15.9			0.0	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	60		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Adj. Flow (vph)	55	361	364	91	335	18	376	23	135	0	0	0
Lane Group Flow (vph)	55	361	364	91	335	18	0	534	0	0	0	0
v/c Ratio	0.49	0.60	0.27	0.56	0.83	0.09		0.54				
Control Delay	74.3	55.2	0.8	66.9	66.5	0.9		15.5				
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0		0.3				
Total Delay	74.3	55.2	1.0	66.9	66.5	0.9		15.7				
Queue Length 50th (ft)	41	124	7	69	253	0		220				
Queue Length 95th (ft)	m81	221	9	#155	#493	0		387				
Internal Link Dist (ft)		358			158			245			134	
Turn Bay Length (ft)	74		225	110								
Base Capacity (vph)	118	648	1333	162	403	199		992				
Starvation Cap Reductn	0	0	380	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		105				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.47	0.56	0.38	0.56	0.83	0.09		0.60				

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
    Queue shown is maximum after two cycles.

m   Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2476	46	127	2726	10	0	0	41	0	0	21
Future Vol, veh/h	0	2476	46	127	2726	10	0	0	41	0	0	21
Conflicting Peds, #/hr	0	0	16	16	0	20	0	0	16	0	0	20
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2476	46	127	2726	10	0	0	41	0	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2538	0	0	-	-	1270	-	-	1408
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*394	-	-	0	0	*313	0	0	*270
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*388	-	-	-	-	*304	-	-	*260
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	18.7	20.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	304	-	-	* 388	-	-	260
HCM Lane V/C Ratio	0.135	-	-	0.327	-	-	0.081
HCM Control Delay (s)	18.7	-	-	18.8	-	-	20.1
HCM Lane LOS	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	1.4	-	-	0.3

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

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2309	26	152	2640	19	0	0	202	0	0	35
Future Vol, veh/h	0	2309	26	152	2640	19	0	0	202	0	0	35
Conflicting Peds, #/hr	0	0	21	21	0	42	0	0	21	0	0	42
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	60	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	2	2	2	2	2	0	0	2	0	0	2
Mvmt Flow	0	2309	26	152	2640	19	0	0	202	0	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	2356	0	0	-	-	1197	-	-	1414
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	5.34	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.12	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	*449	-	-	0	0	*357	0	0	*292
Stage 1	0	-	-	-	-	-	0	0	-	0	0	-
Stage 2	0	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-	1	-	-			1			1
Mov Cap-1 Maneuver	-	-	-	*440	-	-	-	-	*343	-	-	*269
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	30.2	20.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	343	-	-	* 440	-	-	269
HCM Lane V/C Ratio	0.589	-	-	0.345	-	-	0.13
HCM Control Delay (s)	30.2	-	-	17.5	-	-	20.4
HCM Lane LOS	D	-	-	C	-	-	C
HCM 95th %tile Q(veh)	4.1	-	-	1.6	-	-	0.4

Notes

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

Intersection						
Int Delay, s/veh	2.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	9	67	17	64	81
Future Vol, veh/h	14	9	67	17	64	81
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	14	9	67	17	64	81

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	256	105	145	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	151	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	737	955	1450	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	882	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	702	955	1450	-	-	-
Mov Cap-2 Maneuver	702	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	882	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	6.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1450	-	783	-	-
HCM Lane V/C Ratio	0.046	-	0.029	-	-
HCM Control Delay (s)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	4.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	87	58	13	41	165	15
Future Vol, veh/h	87	58	13	41	165	15
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	87	58	13	41	165	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	240	173	180	0	-	0
Stage 1	173	-	-	-	-	-
Stage 2	67	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	753	876	1408	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	746	876	1408	-	-	-
Mov Cap-2 Maneuver	746	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1408	-	746	876	-	-
HCM Lane V/C Ratio	0.009	-	0.117	0.066	-	-
HCM Control Delay (s)	7.6	0	10.5	9.4	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	0.2	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	87	58	13	39	154	15
Future Vol, veh/h	87	58	13	39	154	15
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	87	58	13	39	154	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	227	162	169	0	-	0
Stage 1	162	-	-	-	-	-
Stage 2	65	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	766	888	1421	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	759	888	1421	-	-	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1421	-	759	888	-	-
HCM Lane V/C Ratio	0.009	-	0.115	0.065	-	-
HCM Control Delay (s)	7.6	0	10.4	9.3	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	0.2	-	-