Appendix TRA
Transportation Supporting Information

TRA.1 Draft Transportation Management Plan (TMP)

Howard Terminal

Draft Transportation Management Plan

Prepared for:
Oakland Athletics

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FEHR PEERS

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1. Introduction

This document details the Transportation Management Plan (TMP) for the proposed Howard Terminal Ballpark ("Ballpark"), as required in Mitigation Measure TRANS-1B of the project's environmental impact report under the California Environmental Quality Act (CEQA). The TMP fulfils the requirements of AB 743, which requires a TMP program for the Ballpark that achieves a minimum 20 percent vehicle trip reduction (VTR) compared to the number of trips that would occur without a TMP program. A separate document, the Transportation Demand Management Plan (TDM), serves as the transportation management plan for the non-ballpark development on Howard Terminal. This introduction provides a project overview and description of the TMP's purpose, goals, and objectives within the City of Oakland context, including ongoing and upcoming projects that will change the transportation system and may prompt adjustments to the TMP in the coming years. It then lists organizations and agencies with a stake in the project, naming their respective roles and responsibilities, and discusses overall TMP implementation strategy including coordination between stakeholders. To conclude, it summarizes information contained in the remainder of the TMP.

1.1. TMP Purpose, Goals, and Objectives

The purpose of the TMP is to outline improvements and operational strategies to optimize access to and from the Ballpark within the constraints inherent to a large public event, while minimizing disruption to existing land uses and communities. The TMP considers the travel characteristics of Ballpark attendees, workers, and all other visitors to the ballpark site. Its primary goal is to ensure safe and efficient access for xall people traveling to and from the site, with a focus on promoting pedestrian, bicycle, and transit access, thereby reducing vehicular impacts to the site and surrounding neighborhoods, including the Port of

Oakland. To increase the likelihood that Ballpark attendees have a positive experience traveling to and from the area, strategies to increase the use of and attractiveness of transit, walking, bicycling, scooters, and other shared mobility modes are proposed, along with traffic and ridesourcing and taxi management techniques to ensure that people who travel via car can effectively navigate to their parking, drop-off, and pick-up location with fewer delays than would occur under an unmanaged setting. The objectives of the TMP are:

- Minimize auto mode share and reduce vehicle trips and parking demand generated by the project to the maximum extent practicable.
- Facilitate and promote safe use of non-automobile transportation by people attending and supporting ball games and other events as well as other uses on-site.
- Highlight and optimize the use of transit by attendees and employees to ball games and other events.
- Facilitate and maximize bicycle use by attendees and employees to ball games and other events.
- Facilitate a high-quality and safe walking experience to the Ballpark from adjacent neighborhoods by identifying key walking routes and major street crossing locations, so that wayfinding, infrastructure improvements, and/or personnel (e.g. traffic control officers, parking control officers, or other personnel acceptable to the City) can be located at critical points to manage the interaction of pedestrians and vehicles during medium and large events.
- Maximize safety for all transportation users at key locations in and around the Ballpark and broader neighborhood during event ingress and egress.
- Minimize conflicts between ridesourcing (e.g. Lyft and Uber) and taxi operations and key transit, walking, biking, and Port truck access streets near the Ballpark.
- Facilitate the safe and efficient flow of vehicle traffic into and out of the site and the adjacent neighborhoods during event and no-event conditions.
- Minimize event-related vehicular, bicycle, and pedestrian impacts to surrounding residential and commercial areas, including warehouse and industrial operations and the Port.
- Minimize conflicts with Seaport operations, including freight movement by roadway and rail.

The TMP is intended to be a living document and will be amended periodically by the Oakland A's, in consultation with the City and Port of Oakland, and with input from key stakeholders as identified in Table 1-1. Revisions to the TMP will be subject to the review and approval of the City of Oakland. As a living document, the TMP will be updated in the future to address Ballpark operations as the context on the ground evolves with additional non-Ballpark development on the site and with changes in travel patterns, operations, and infrastructure. It is expected that amendments and adjustments to the TMP will be made

regularly as the project moves forward and agreements between agencies and private entities are finalized. The Oakland A's, the City of Oakland, and the Port of Oakland are committed to implementation of flexible strategies to advance the goals and objectives outlined in this document.

This 2021 version of the TMP is a draft plan, and many of the agreements, details, and specifics required for a document of this magnitude are still in discussions and negotiations among many parties. The public can expect that refinements to the TMP will continue up until the project hosts its first event. The TMP will be further refined during and after the first and subsequent baseball seasons of Ballpark operations as the A's, the Port, and the City learn specific details about how people travel to the Ballpark and how best to manage travel, facilitate goods movement during events, encourage sustainable access modes, and ensure a great attendee experience.

1.1.1. Transportation Vision

As part of implementing the City of Oakland's goals of creating a transportation system that prioritizes transit usage and the comfort and safety of bicyclists and pedestrians, construction of the Ballpark will be paired with improvements to corridors in the adjacent neighborhoods. These improvements will help create a more walkable and bikeable city where residents, employees, and visitors use modes other than the automobile to travel by developing a high-quality sidewalk network, all ages and abilities bikeways, and excellent access to transit.

The following are the City's overarching goals for the TMP:

1. To ensure improvements benefit the community at large and contribute to equitable opportunities for all people and communities.
2. To provide residents, workers, and visitors with safe, efficient, affordable, convenient, and reliable mobility options including public transit, walking, carpooling, and biking.
3. To manage how the project interacts with the surrounding area, including residential neighborhoods, the Port of Oakland, and local industries and businesses.

The City of Oakland has prioritized walking and public transit as critical to achieving these goals. Transit will have minimal impacts on community, neighborhood and port operations, the environment, and safely move the maximum number of people.

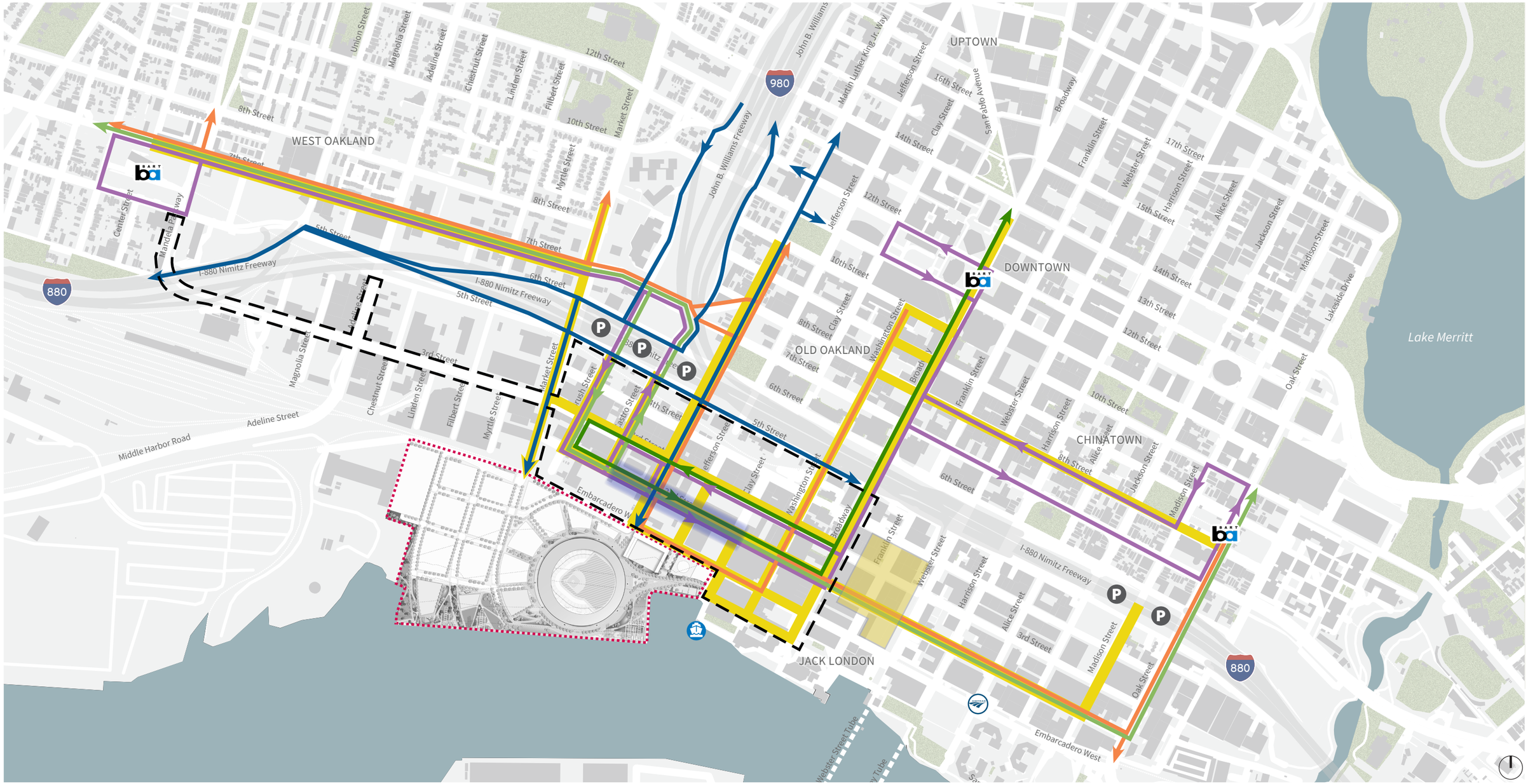
The vision for the transportation network around the Ballpark is presented in **Figure 1-1**. The highlighted corridors represent the primary routes of travel between Howard Terminal and nearby neighborhoods and transit stations. These routes will receive upgrades to improve not only the travel experience for Ballpark users, but also the everyday environment for all residents, employees, and visitors to the surrounding neighborhoods.

Broadway, Washington Street and Martin Luther King Jr. Way will provide the primary pedestrian access corridors between the Ballpark, Downtown, and Chinatown. These streets are envisioned to have consistently spacious sidewalks, high-quality pedestrian infrastructure at intersections, and pedestrian amenities like street trees and pedestrian-scale lighting to make the pedestrian experience safer and more appealing for everyone. Many other sidewalks near the project would likely also receive pedestrian improvements like the ones described for these streets.

The network would expand Oakland's high-quality bikeway network for all ages and abilities and improve the connectivity of the existing bikeway network to provide an enhanced bicycling experience for all. Buffered bicycle lanes on 7th Street and Market Street, bicycle lanes on 2nd and Washington Streets, and protected bikeways on Martin Luther King Jr. Way. These facilities would build off Let's Bike Oakland, Oakland's 2019 bike plan, to provide low-stress connections to existing and planned bicycle facilities. By helping the ambitious vision established in the Bike Plan come to fruition, the development of the Ballpark project would encourage a safe, healthy, and sustainable transportation system.

Transit will form the backbone of travel to and from Howard Terminal. By redesigning roadways to prioritize transit, providing high-quality transit facilities near the Ballpark, and implementing transit-oriented operational initiatives, the Ballpark will support the City's Transit First policy. Bus-only lanes on Broadway and a Transportation Hub on 2nd Street would dramatically improve transit operations on gamedays and for major events and benefit all transit users on these corridors by improving daily transit reliability.

Detailed implementation plans that include additional operational strategies and infrastructure improvements to help achieve a transportation vision that focuses on using walking, bicycling, and transit to travel to and from Howard Terminal and around West Oakland, Downtown Oakland, Chinatown District, and the Jack London District are provided in subsequent chapters.



LEGEND

- Potential AC Transit routing to connect West Oakland and Lake Merritt BART
- Potential AC Transit line extensions connecting to 12th Street BART
- Potential shuttle routing
- Howard Terminal Traffic
- Bike Routing
- Bike Routing Alternatives
- Pedestrian Routing
- Potential Off-Site Parking under the Freeway
- Produce Market
- Local Traffic Only Boundary on Game Days
- Project Boundary
- BART Station
- Amtrak
- Ferry

Transportation Hub (up to 120 buses per hour)

West Oakland Shuttle (if provided)
2 Loading Zones (up to 24 buses per hour)

Lake Merritt BART Shuttle (if provided)
2 or 3 Loading Zones (24 to 36 buses per hour)

Rerouting AC Transit Lines requires approval by AC Transit.
Shuttle use of bus stops requires approval by AC Transit.

AC Transit Line Extensions (10 to 12 buses per hour)

12th St BART Shuttle (up to 36 buses per hour)

AC Transit Line Rerouting (6 to 8 buses per hour)

Figure 1-1

Transportation Vision

1.1.2. City Priorities

As part of the environmental review process, the City identified the following priorities for the TMP that are consistent with the City of Oakland's Transit First Policy, as well as AB 734. The strategies in **bold** represent strategies that are expected to be implemented by opening day of the Ballpark and are expected to be adopted as project conditions of approval or mitigation measures. Strategies not in bold may still be implemented on day one, pending further development of the TMP.

1. **Extending transit service to the Transportation Hub on 2nd Street in coordination with AC Transit and the City of Oakland. (Required as Mitigation Measure TRANS-1c)**
2. Additional regular AC Transit bus service connecting the Project site to Downtown, as well as the West Oakland, 12th Street, and Lake Merritt BART stations.
3. **Bus priority lanes serving the 12th Street BART station and Downtown Oakland to increase the speed, reliability, and attractiveness of transit services. (Required as Mitigation Measure TRANS-1d)**
4. Bus priority lanes serving the West Oakland and Lake Merritt BART stations to increase speed, reliability, and attractiveness of transit services.
5. **Supplemental shuttle service (provided by AC Transit or a private operator) to the 12th Street BART station to increase frequency and capacity of transit connections to BART stations on game days.**
6. Supplemental shuttle service (provided by AC Transit or a private operator) to the West Oakland and/or Lake Merritt BART stations to increase frequency and capacity of transit connections to BART stations on game days.
7. **Pedestrian improvements along 7th Street, Market Street, Martin Luther King Jr. Way, Washington Street, and Broadway connecting the BART stations and the ballpark as well as improvements on streets serving the Transportation Hub and the Pedestrian Bridge over the railroad tracks. (Required as Mitigation Measure TRANS-1e)**
8. **Bicycle network improvements on 7th Street, Market Street, Martin Luther King Jr. Way, Washington Street, and 2nd Street. (Required as Mitigation Measure TRANS-2a, TRANS-2b, and TRANS-2c)**
9. **Wayfinding between the West Oakland BART station and the ballpark via 7th Street, between 12th Street BART station and the ballpark via Broadway and Washington Street, and between Lake Merritt BART station and the ballpark via 8th Street.**
10. **At-grade railroad crossing improvements along the project's frontage and extending to Broadway. (Required as Mitigation Measure TRANS-3a and TRANS-3b)**
11. Transit subsidies to provide free or reduced cost transit for ballpark attendees and/or employees particularly at the Transportation Hub on 2nd Street.
12. **No parking subsidies for ballpark employees.**

13. **A combination of standard, secure, and valet bicycle parking at multiple locations, identified in collaboration with the Oakland Department of Transportation (OakDOT).**

14. **Identification of geofenced micromobility parking (such as scooters and bike share), as well as priority and coordination for on-site and/or site-adjacent shared micromobility services identified in collaboration with OakDOT.**

15. **Coordination with transit providers to provide timed transit service before and/or after the game or event, including but not limited to AC Transit, BART, Amtrak, and the Water Emergency Transportation Authority (WETA).**

16. **Agreements between A's and Transportation Network Company (TNC) operators (such as Lyft and Uber) to use geofencing or similar methods to restrict pick-up and drop-off zones to designated locations significantly farther from the ballpark than bus transit and shared micromobility options.**

17. **Enforcement of local access restrictions to limit circulation of vehicles other than local traffic within the neighborhoods adjacent to the Project site before, during, and after ballgames.**

18. Implementation of TNC fee (through private agreements between A's and TNC operators) for access to designated pick-up and drop-off locations to limit demand to a number to support VTR goals.

19. **Coordination with OakDOT on management of the off-site parking garages within one mile of the Project site.**

20. **Coordination with OakDOT on the management of on-street parking on-site and in adjacent neighborhoods within one mile of the Project site, including the implementation of Residential Parking Permits (RPPs), through the OakPark parking plan described in the Parking Management Plan (PMP).**

21. Further reduction of on-site parking as needed to achieve VTR goals.

22. Additional measures and technology. With approval from the City of Oakland, the TMP may include additional or substitute measures and technology to reduce Project-generated trips that are not currently known or available, provided that the VTR plan demonstrates to the City's satisfaction that such measures are equally or more effective as existing available measures, are consistent with the City's various published plan documents, as amended, and meet the City's policy goals and values.

1.1.3. Design Objectives

The transportation-related design objectives of the Ballpark must align with the transportation vision to achieve the TMP goals and objectives. The key transportation-oriented objectives for the Ballpark design and the supporting infrastructure are as follows.

Guest Safety

- Design clear and distinct pick-up and drop-off locations for each travel mode such that zones are primarily single-purpose and potential conflict areas are minimized.
- Create pedestrian crossings that provide a safer crossing experience for pedestrians at all times on all days of the year, without requiring Traffic Control Officer (TCO) supervision.
- Prevent conflicts between pedestrians/bicyclists and drivers at driveways and parking facility entries and exits.
- Ensure pedestrians, bicyclists, and vehicles can safely cross Union Pacific Railroad (UP) tracks adjacent to the site.

Make the Preferred Choice the Easy Choice

- Facilitate transit, walking, and biking access as the easiest, safest, and fastest way to get to and from the ballpark on gamedays to encourage people to use those modes.
- Locate guest arrival areas near ballpark entrances to augment wayfinding and support non-automobile modes of transportation.
- Design plazas and other open spaces for optimal pedestrian circulation and public access.
- Restrict on-street parking near the Ballpark and on major access ways to prevent cars circling for parking and pulling in and out of travel lanes, facilitating the safe and efficient travel of pedestrians, bicycles, and transit.
- Locate drop-off and pick-up locations near each other to create a consistent and intuitive experience during pre- and post-game operations and create efficient paths of travel for patrons.
- Accommodate and manage TNCs to provide efficient operations while still prioritizing non-automobile modes of travel.

Location and Information Efficiencies

- Build a network of dynamic, up-to-the-minute transit information signage and wayfinding to aid in the efficiency and improve the attractiveness of patron arrivals and departures via AC Transit BART, WETA, and Amtrak.
- Locate secure bike parking in sight of the Ballpark entrance(s) and the bike facilities serving the site via Martin Luther King Jr. Way, the bike and pedestrian over-crossings, and Water Street.
- Locate the event shuttle stops near the grade-separated pedestrian over-crossing(s) at the railroad tracks.

Good Neighbor Policies

- Create generous pedestrian queuing areas at the Ballpark to minimize the number of pedestrians potentially impacting neighborhood areas.
- Promote pre- and post-game routes emphasizing the use of Market Street and Martin Luther King Jr. Way for vehicles.
- Ensure that access to neighborhood buildings, parking, and sidewalks for daily users in the Jack London District, Old Oakland, Chinatown and West Oakland will not be unreasonably impeded.
- Integrate the site seamlessly with the surrounding neighborhoods to create a porous, accessible, and welcoming environment.
- Minimize vehicular congestion from the project and avoid conflict between vehicular, pedestrian, and bicycle traffic generated by the project with Seaport operations, including drayage truck routes and traffic.

Media Requirements

- Locate media to provide for reliable satellite connections as per MLB guidelines while routing cables in such a way that prioritizes the safety of pedestrians

1.2. TMP Document Context

The TMP is one of three documents related to the Ballpark with a substantial transportation component. The other two documents are an Environmental Impact Report (EIR), which will be prepared in compliance with CEQA, and the technical memorandums supporting the EIR, which are appendices to the EIR and include detailed information regarding potential transportation impacts and recommendations outside the purview of CEQA.

1.3. Key Stakeholders

Overall management of the TMP will be overseen by the A's, the City of Oakland, and the Port of Oakland. The A's will have responsibility for implementation of the Plan, and the City of Oakland and Port of Oakland will provide feedback and direction to the A's to modify the TMP as needed, based on the results of monitoring reports. Any proposed revisions to the TMP will be subject to the City of Oakland approval.

In addition, like other sports and entertainment venues, it is expected the A's will seek approvals and/or enter into agreements with various agencies and/or vendors to provide the changes necessary to implement this TMP. Because the Oakland Department of Transportation (OakDOT) and the Oakland Police Department (OPD) have roles for maintaining and operating the transportation system in the project vicinity, and the

Oakland Fire Department (OFD) has a role in emergency response, they will work collaboratively with the A's to implement, operate, and/or oversee many of the strategies contained in this TMP.

Table 1-2 describes the roles and responsibilities for key agencies and entities involved in implementing the TMP. It is expected this table will change over time based on which agencies and organizations are required to play a role in the TMP.

This draft document does not identify the specific entity which will carry out certain actions because contractual, logistical, and other details have not been finalized. As these details are finalized in the future prior to the first ballgame or special event, the TMP will be updated to include more specific roles and responsibilities. The TMP provides public and City decision-makers with additional information about how the transportation system will be managed on event days, and what operational benefits can be expected from it.

Table 1-1: Key Stakeholders, Roles, and Responsibilities

Key Stakeholders	Roles and Responsibilities
Oakland A's	The Oakland A's are the project sponsor and are responsible for implementing the TMP.
City of Oakland Department of Transportation (OakDOT)	OakDOT has jurisdiction over the City's public right-of-way (ROW), traffic operations, and on-street parking. It manages all surface transportation infrastructure and systems in the City, including roads, sidewalks, bicycle lanes, parking, and traffic control. Recommendations related to physical or operational changes to the ROW and/or traffic operations or circulation must be reviewed and approved by OakDOT. OakDOT, in consultation with Planning & Building, the Port of Oakland and the A's, will approve the initial TMP prior to opening day and any subsequent/annual updates. The City may also decide to have OakDOT implement some or all aspects of the Traffic Control using personnel other than OPD.
City of Oakland Department of Planning and Building (Planning & Building)	Planning & Building manages permit review and approval across the City. It works with developers and enforces conditions of approval as part of the permit review and approval process. Planning & Building will review the TMP and any subsequent updates thereto to ensure they meet the intent of the project EIR and minimize the transportation impacts of Ballpark operations to the maximum extent feasible.
Port of Oakland	Port of Oakland is an independent department of the City of Oakland and oversees the Oakland Seaport, Oakland International Airport, and 20 miles of waterfront. Howard Terminal is within the Port Area, and the Port will need to approve development plans for the property. The TMP includes objectives and performance metrics related to Seaport operations. The Port will provide feedback and recommendations on monitoring results of and proposed revisions to the TMP.
City of Oakland Police Department (OPD)	OPD is responsible for public safety and security, emergency response, implementation of traffic control plans, incident management, and coordination with the Oakland Fire Department, as needed.

Table 1-1: Key Stakeholders, Roles, and Responsibilities

Key Stakeholders	Roles and Responsibilities
City of Oakland Fire Department (OFD)	OFD provides emergency medical service, fire and rescue response, and fire prevention to the residents, visitors, and workers within Oakland.
Caltrans	Caltrans is California's Department of Transportation and has jurisdiction over the freeways that provide regional vehicle access to the proposed Ballpark District.
California Highway Patrol (CHP)	CHP has patrol jurisdiction over all California highways. They can assist with highway closure and construction alerts, highway crime alerts in the event of an emergency in the middle of a baseball game, and escort detail for high dignitaries.
Alameda County Transportation Commission (Alameda CTC)	Alameda CTC serves as the Congestion Management Agency (CMA) for Alameda County and may review and comment on the TMP and its consistency with the Countywide Congestion Management Plan.
Union Pacific Railroad (UP)	UP holds a rail easement just north of the site and operates freight rail service to and from the Port of Oakland.
Federal Railroad Administration (FRA)	FRA oversees both passenger and freight railroad safety and operations at national level. The agency provides criteria and guidelines for establishing a "quiet zone" that could result in reduced noise from train horns.
California Public Utilities Commission (CPUC)	CPUC oversees the railroad crossings and railroad safety in California. The agency reviews and approves any facilities affecting the existing and new rail crossings. CPUC also regulates TNCs.
Alameda-Contra Costa Transit District (AC Transit)	AC Transit provides fixed-route bus service within Inner East Bay communities in Alameda and Contra Costa County as well as transbay fixed-route bus service between the East Bay and the San Francisco Peninsula. The A's will potentially contract with AC Transit to provide shuttle bus service on event days that will connect the Ballpark to the West Oakland, 12th Street, or Lake Merritt BART Stations.
Bay Area Rapid Transit (BART)	BART is a rapid transit system that serves the San Francisco Bay Area. It operates five routes with 48 stations in four counties, including three stations within roughly one mile of the Ballpark.
Capitol Corridor Rail Service	Capitol Corridor is a commuter rail line that travels between the cities of Auburn and San Jose in California. Trains serve the Jack London Station, which is about 0.6 miles from the Ballpark site, or less than a 15-minute walk. The service is governed by the Capitol Corridor Joint Powers Authority. Amtrak is the contract operator for Capitol Corridor service.
Water Emergency Transportation Authority (WETA)	WETA was established by Senate Bill (SB) 976 to improve the ability of ferries to respond in an emergency and to consolidate several regional ferry services. WETA as San Francisco Bay Ferry operates service to Alameda/Oakland, Harbor Bay, San Francisco, South San Francisco, and Vallejo. WETA's existing Jack London ferry terminal is located just east of the project site at the end of Clay Street.
United States Coast Guard (USCG)	USCG is responsible for maritime law enforcement and will assist with emergency services resources for ferry transportation.
Operations Teams from Ridesourcing Companies	The operations teams at ridesourcing companies (such as Lyft and Uber) will assist with geofencing technology, analytical reporting, and the infrastructure layout for pickup/drop-offs.

Table 1-1: Key Stakeholders, Roles, and Responsibilities

Key Stakeholders	Roles and Responsibilities
Operations Teams from Shared Mobility Service Providers	The operations teams at shared mobility service providers (such as Bay Wheels, dockless e-bike, and dockless e-scooter companies) will assist with any operational needs for providing their services to and from Howard Terminal.
Community Groups	Community groups may offer consultation and feedback on the project design and operational planning to help ensure a smooth integration into the existing neighborhood. Some community groups include the West Oakland Environmental Indicators Project, Jack London Improvement District (JLID), and other neighborhood and business groups in West Oakland, Jack London District, Chinatown District, and Old Oakland District, as well as Bike East Bay, Walk Oakland Bike Oakland, and SPUR Oakland.

1.4. Project Context

The Ballpark site is located on Port of Oakland property adjacent to West Oakland and Jack London District and is accessible by automobile from the interstate freeway system, including Interstates 880 and 980, as shown in **Figure 1-2**. The San Francisco Bay Ferry terminal is located a short walk away at the end of Clay Street on the eastern edge of the site. The Jack London Amtrak/Capitol Corridor station is about one-half mile away, and both the West Oakland and 12th Street BART Stations are approximately one mile from the site. The Lake Merritt BART Station is approximately 1.1 miles away. Several AC Transit bus lines currently serve the adjacent Jack London District via Broadway, including the Lines 72/72M/72R, Line 12, and the "Free B" Broadway shuttle. Existing bicycle access is provided via bicycle facilities on 2nd, 3rd, and Market Streets. The project site plan is illustrated in **Figure 1-3**.

There are currently around 12,900 parking spaces within one mile of the Ballpark, with 8,300 off-street and 4,600 on-street spaces. Sidewalks are present throughout much of the area surrounding the site, though effective sidewalk widths vary substantially. Union Pacific Railroad tracks are immediately adjacent to the site along Embarcadero West, and pedestrians, bikes, and vehicles must cross the tracks to access the site. The two existing roadway crossings to the site—Market Street and Martin Luther King Jr. Way—are currently at-grade. The nearest grade separated crossing providing access to Howard Terminal is a pedestrian bridge located between Clay and Washington Streets that connects the Washington Street Garage to the commercial uses and ferry terminal on the water side of the tracks.



LEGEND

- Project Boundary
- Existing Pedestrian Connection
- Seaport Access Point
- BART Station
- Amtrak
- Ferry

Figure 1-2

Project Location

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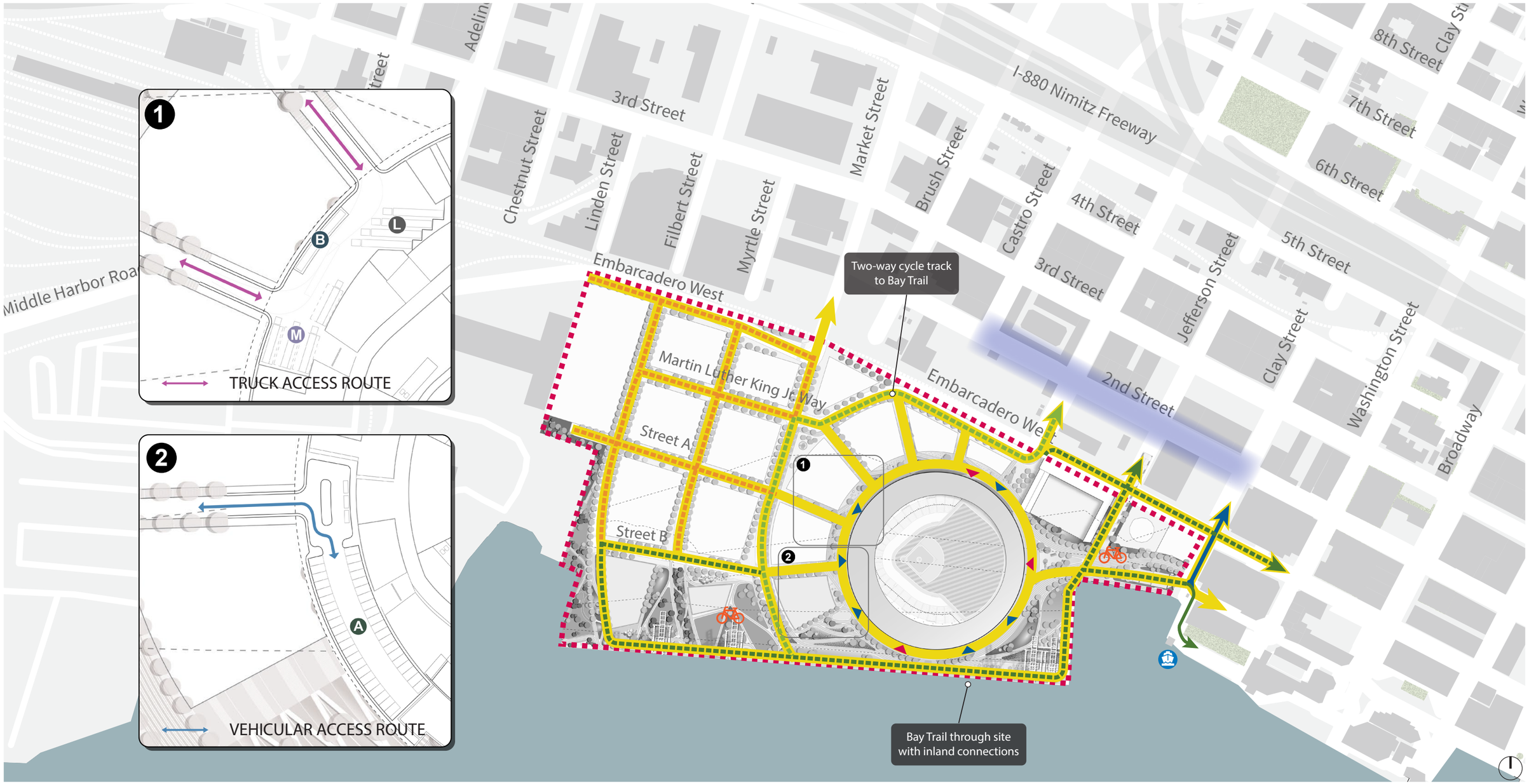


LEGEND

EXISTING BIKE NETWORK
PROPOSED BIKE NETWORK

- Multi-Use Path
- Protected Bikeway
- Buffered/Non-Buffered Bike Lanes
- Neighborhood Bike Route/ Bike Route
- Special Event Bike Parking
- Pedestrian Routing
- Gameday Pedestrian Ballpark Access
- Gameday and Non-Gameday Roof Park Pedestrian Access
- Project Boundary
- Ferry
- A Player Parking
- B Team Buses
- L Loading Docks
- M Media Trucks

Transportation Hub (up to 120 buses per hour)

West Oakland Shuttle (if provided)
2 Loading Zones (up to 24 buses per hour)

Lake Merritt BART Shuttle (if provided)
2 or 3 Loading Zones (24 to 36 buses per hour)

AC Transit Line Extensions (10 to 12 buses per hour)

12th St BART Shuttle (up to 36 buses per hour)

AC Transit Line Rerouting (6 to 8 buses per hour)

Rerouting AC Transit Lines requires approval by AC Transit.
Shuttle use of bus stops requires approval by AC Transit.

Figure 1-3

Project Site Plan

Several transportation corridors were identified for improvements (high-level summary below) in the draft EIR as required mitigation measures or non-CEQA recommendations, including:

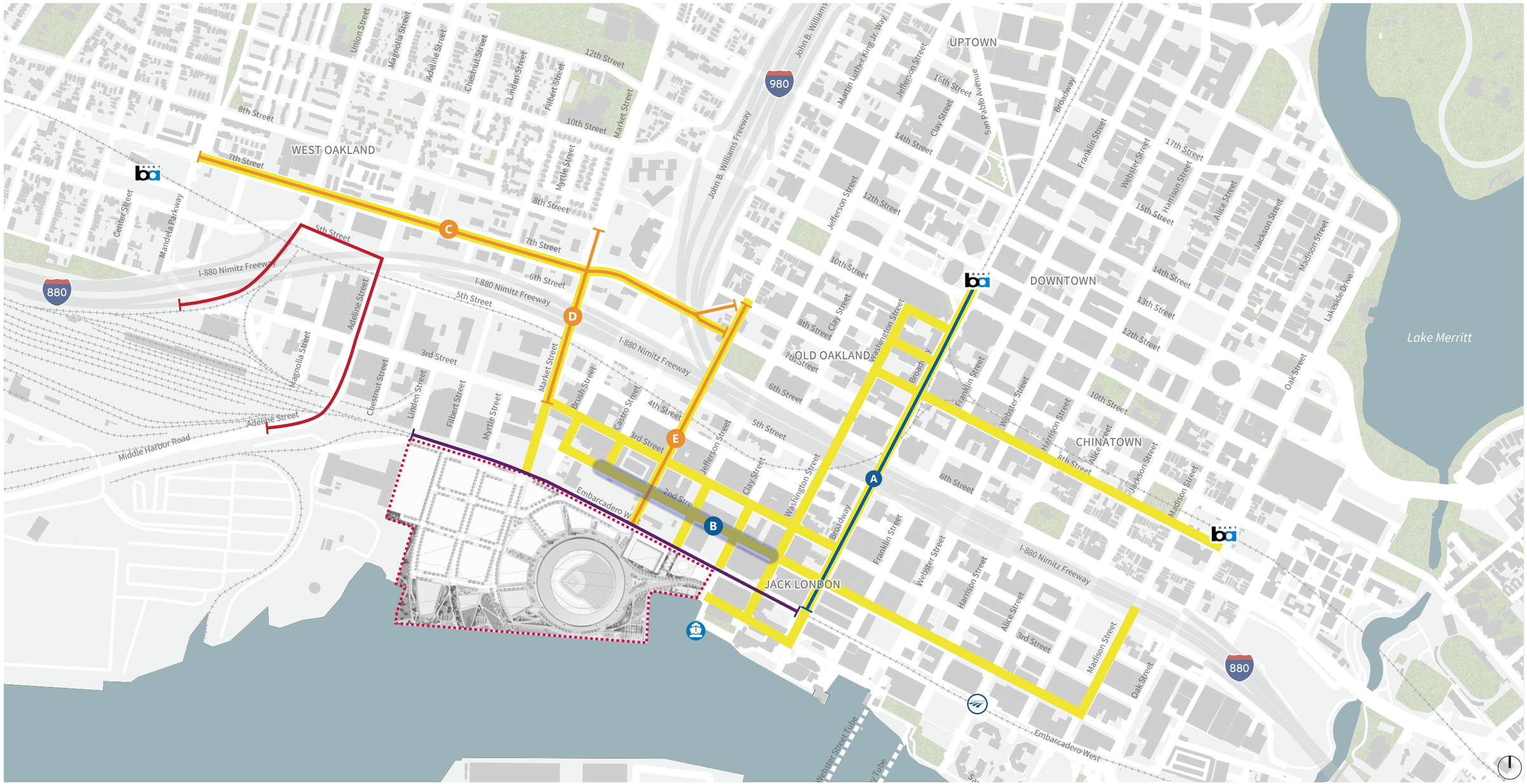
- I-880/5th Street/Adeline Street – Port Connectivity Project: This project would improve lane geometries, channelization, and signal priorities between I-880 at the Union Street interchange and the Seaport via Adeline Street.
- Market Street – Multimodal Connectivity Project: This project would add to and upgrade signal systems, upgrade pedestrian corridors, and maintain buffered bike lanes on Market Street between 3rd Street and 7th Street, while maintaining two vehicle lanes in each direction between the Ballpark site and 7th Street.
- 7th Street – Multimodal Connectivity Project: This project would upgrade signal systems, enhance pedestrian corridors between Market Street and the West Oakland BART station, and provide buffered bike lanes or protected bike lanes on 7th Street between the West Oakland BART station and Martin Luther King Jr. Way.
- Martin Luther King Jr. Way – Multimodal Connectivity Project: This project would provide a 4- to 3-lane road diet on Martin Luther King Jr. Way with protected bike lanes between the Ballpark site and 8th Street. North of 8th Street buffered bike lanes would be provided through an AHSC grant. The project would also add to and upgrade the signal system and upgrade pedestrian corridors from the site to 12th Street.
- 3rd Street Pedestrian Path of Travel Gap Closure Project: This project would close sidewalk gaps and maintain minimum pedestrian paths of travel on 3rd Street between Market Street and Broadway for people attracted to the pedestrian bridge across the railroad tracks.
- 2nd Street Transportation Hub Improvements: This project would establish a Transportation Hub on the south side of 2nd Street between Martin Luther King Jr. Way and Clay Street with expansion capabilities to Brush and Washington Streets to accommodate shuttle buses.
- Broadway – Transit and Pedestrian Connectivity Project: This project would provide bus-only lanes on Broadway between Embarcadero West and 11th Street by removing one lane of automobile traffic in each direction and provide wayfinding and pedestrian enhancements to support people walking to the ballpark from Downtown and Chinatown. The project would also add to and upgrade signal systems.
- Washington Street – Multimodal Connectivity Project: For events with more than 21,000 attendees use personnel to manage pedestrian flows. Absent an operational solution upgrade Washington Street for efficient pedestrian flow, comfort, and management. Close the bicycle lane gaps between Water and 10th Streets.

- Jefferson Street and Clay Street – Pedestrian Connectivity Projects: These projects would support access to the pedestrian bridge across the railroad tracks by enhancing pedestrian facilities and safety along Jefferson Street and Clay Street serving the bridge.

- Embarcadero West At-Grade Railroad Improvements: This project would improve at-grade crossings at Market Street, Martin Luther King Jr. Way, Clay Street, Washington Street, and Broadway, as well as provide fencing along the railroad corridor between the project's westerly property line and Broadway.

- Wayfinding – Provide signing and other wayfinding elements directing event attendees between the West Oakland, 12th Street, and Lake Merritt BART stations and the ballpark.

The locations of these projects are shown in **Figure 1-4**. A detailed list of improvements included in the projects is provided in **Appendix A**, and conceptual drawings are provided in **Appendix B** to illustrate a potential outcome of these projects.



LEGEND

- Project Boundary
- BART Station
- Amtrak
- Ferry

Project Type

- Pedestrian Corridor Improvements
- Road Corridor Improvements
- Railroad Safety Improvements

Transit Project

- A Broadway Bus Only Lanes
- B 2nd Street Transportation Hub

Bike Project

- C 7th Street Buffered Bike Lanes
- D Market Street Buffered Bike Lane + Road Improvements
- E Martin Luther King Jr. Way Protected Bike Lane + Road Improvements

Figure 1-4

Transportation Projects Recommended with Ballpark

1.5. Implementation Strategies

Traffic controls proposed in the TMP will require coordination with several of the agencies described previously in this chapter. **Table 1-2** summarizes the opportunities for collaboration between the Oakland A's, public agencies, and transit providers during Ballpark games and events and throughout the year.

Table 1-2: Proposed Control and Service Coordination Summary

Control or Service	Entity for A's to Engage	Coordination
Additional BART service	BART	Continue current coordination that occurs at the Coliseum: Communicate about event schedules so that BART can appropriately staff stations and augment post-event service by providing additional train cars post-event when train cars can be added to the system.
Commuter Rail service	Capitol Corridor Rail Service	Coordinate with Capitol Corridor Rail Service to, where feasible, align rail service with ballpark events to and from Jack London Square. The need for service that supports ballpark events will be determined through surveys of ballpark patrons conducted as part of the TMP. Service changes would be subject to approval by Union Pacific Railroad.
San Francisco Bay Ferry Service	WETA, Golden Gate Ferry, and private ferries	Coordinate with ferry service providers to align planned ferry service expansion with gameday schedules and potentially augment post-event service by providing additional ferries post-event when vessels can be accommodated at the dock.
Variable Message Signs (VMS)	Caltrans, City of Oakland	Location, installation, and operation of temporary variable message signs (VMS) alerting drivers of traffic conditions and temporary post-event lane closures. The City to request Caltrans install these changeable message signs on I-880 and I-980 upstream of key entry points onto the local street network.
Traffic management by Traffic Control Officers (TCOs) or other personnel on the streets pre-, during, and post-event	City of Oakland	Real-time communication between transportation management center that is integrated with the event command post, field supervisor, variable message sign operators, emergency services personnel, and TCOs or other personnel on the street.
Additional AC Transit service	AC Transit	Coordinate with AC Transit to provide additional service to and from the Transportation Hub to accommodate documented (i.e., attendee surveyed) demands. Coordinate real-time communication between the transportation management center and AC Transit during events so buses can be put into service at appropriate time.

Table 1-2: Proposed Control and Service Coordination Summary

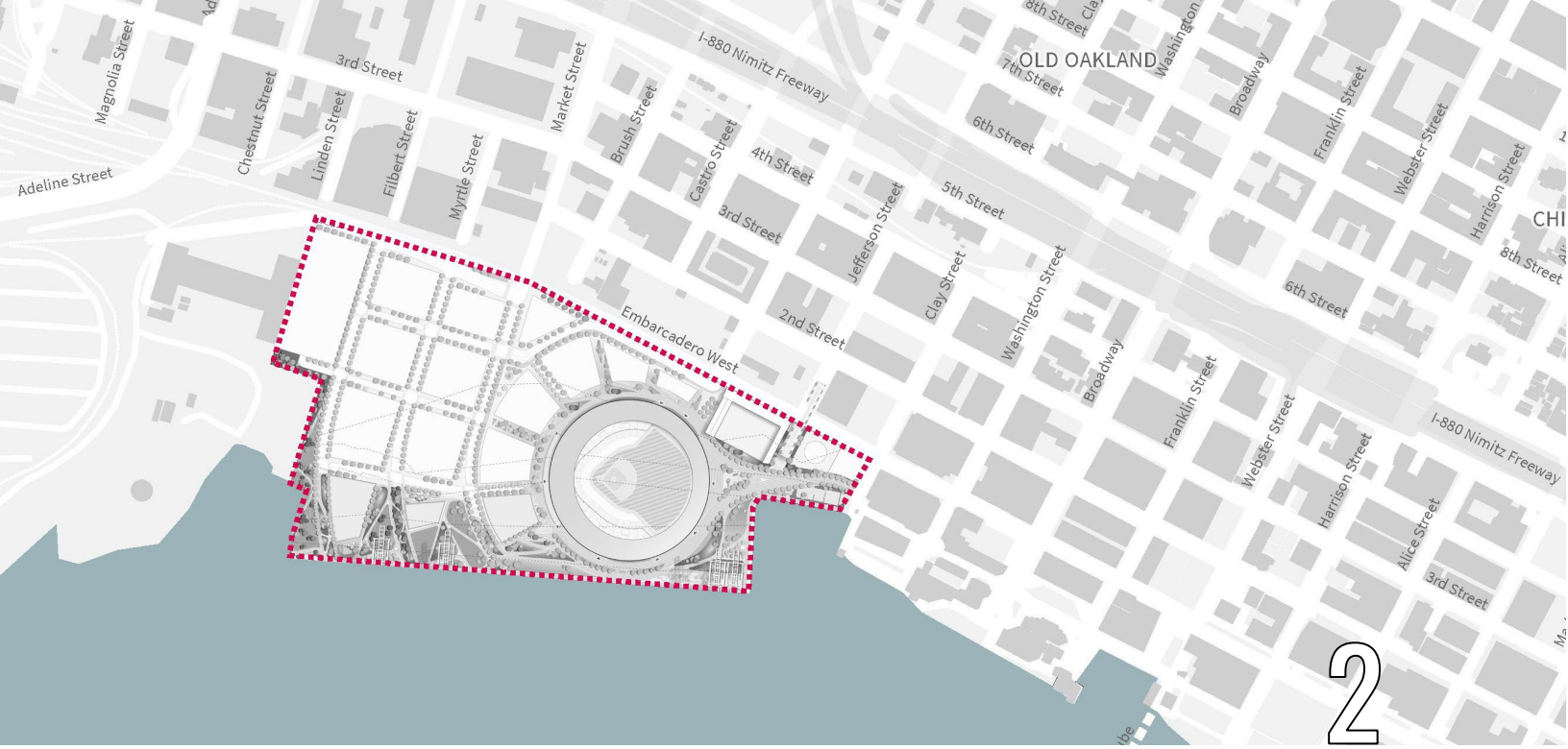
Control or Service	Entity for A's to Engage	Coordination
Pre- and/or Post-event Shuttles	AC Transit, OakDOT, private shuttle services	Provide shuttle bus service from the Transportation Hub to one or more BART station(s) to accommodate documented (i.e., attendee surveyed) demands. Coordinate real-time communication between the transportation management center and shuttle bus service providers during events so shuttle buses can be put into service at appropriate time.
Bicycle parking during events	OakDOT, Community Groups	Coordinate with OakDOT, Bike East Bay, and other service providers to provide secure and/or valet bicycle parking and/or additional temporary secure corral parking during games and events to accommodate documented (i.e. attendee surveyed) demands. Some secure bicycle parking should be provided via lockers that do not require attendants to access.
Shared mobility parking during events	Shared mobility service providers, OakDOT	Provide parking opportunities for shared mobility, such as scooters, bikes, and pedicabs.
On- and off-street special event parking pricing	OakDOT, Port	Provide event schedule to OakPark for implementation of special event pricing at on-and off-street parking during events.
Emergency response and emergency vehicle routing	OPD, OFD	Provide real-time emergency response coordinated through the event command post, as well as traffic control officer support as needed, to ensure emergency vehicle and responder access to and around the Ballpark site.

1.6. Report Organization

This document consists of the following chapters:

- **Chapter 2: Project Description** – describes the Ballpark project that will be addressed within the TMP and describes the buildout of Howard Terminal.
- **Chapter 3: Travel Characteristics of Ballpark Attendees and Site Users** – describes existing attendance and mode of travel at the Oakland-Alameda Coliseum and anticipated mode of travel at Howard Terminal without the TMP.
- **Chapter 4: Travel Demand Management** – presents strategies to reduce the number of vehicle trips to Howard Terminal for Ballpark attendees and employees.
- **Chapter 5: Transit Element** – describes existing transit service and proposed services and improvements.

- **Chapter 6: Pedestrian Element** – describes existing pedestrian facilities, primary access routes, and proposed improvements to pedestrian facilities.
- **Chapter 7: Bicycle Element** – describes existing bicycle facilities, primary access routes, and proposed improvements to bicycle facilities.
- **Chapter 8: Personal Automobile and Parking Element** – describes the roadway network, existing parking conditions, proposed parking management, and truck access to Howard Terminal.
- **Chapter 9: Ridesourcing and Taxi Element** – describes proposed operational strategies for managing taxis and ridesourcing vehicles (e.g., Uber and Lyft).
- **Chapter 10: At-Grade Rail Crossings** – describes the at-grade rail crossings near Howard Terminal and opportunities to improve safety at those crossings.
- **Chapter 11: Traffic, Parking, Transit, Ridesourcing, and Pedestrian Management** – describes pre-event and post-event plans to address traffic, parking, transit, ridesourcing, and pedestrians.
- **Chapter 12: Curb Management Strategies** – describes strategies for different vehicles competing for curb space.
- **Chapter 13: Freight Loading** – describes freight loading strategies on-site at Howard Terminal.
- **Chapter 14: Emergency Vehicle Access and Circulation** – describes emergency services access and circulation at Howard Terminal.
- **Chapter 15: Communication Plan** – describes outreach, pre-event communication, and post-event communication for Ballpark visitors.
- **Chapter 16: Monitoring, Refinement, and Performance Standards** – describes transportation monitoring methods, documentation, and performance standards for Howard Terminal.



2. Project Description

The proposed development on Howard Terminal will be phased. This version of the TMP addresses Phase 1 (see next paragraph). Although the TMP applies specifically to operations related to events at the ballpark, it has been developed to consider a transportation context that includes additional residential and commercial development at Howard Terminal. Furthermore, the project description in this TMP does not include any of the transportation management strategies or measures detailed in later chapters. As noted in Chapter 1, the strategies identified in this TMP are analyzed within the environmental documentation, as well as in the transportation impact technical memoranda. The TMP will be updated as strategies are refined.

The Project will make site improvements necessary to support a ballpark with a 35,000-attendee capacity and 2,000 parking spaces at buildout (3,500 spaces with Phase 1) and additional development including a 3,500-seat performance center, a 400-room hotel or hotels, up to 3,000 residential units, up to 1.5 million square feet of office, and up to 270,000 square feet of retail space. Phase 1 of the project will include a subset of this development including the ballpark and an up to 400-room hotel or hotels, as well as up to 540 residential units, up to 250,000 square feet of office, and 30,000 square feet of retail. Project studies assume that full buildout of the project will be completed within eight calendar years. The proposed phasing for development of the project is considered conservative. Actual build-out would be influenced by market and financing considerations and would likely occur over a longer period. A summary of the characteristics of special events anticipated to be held at Howard Terminal is presented in **Table 2-1**.

Table 2-1: Anticipated Event Characteristics

Event Type	Annual Frequency	Average Attendance	Maximum Attendance	Event Day Employees	Season	Typical Characteristics
A's Home Game						
	1-2 preseason games	25,000	35,000	1,320	Last week of March / First week of April	Preseason: Variable start times Regular Season: Typically, 7:00 PM or 12:30 PM; rarely 4:00 PM to 6:00 PM Postseason: 5:00 PM or 8:00 PM Monthly Distribution for all games: Approx. 3-4 off-days per month. All other days 50% home and 50% on road, April – September
	81 regular season games	25,000	35,000	1,320	Early April to Early October	
	Maximum 11 postseason games	35,000	35,000	1,320	October	
Ballpark Concerts	Approximately 9	25,000	35,000	1,200 [1]	Year-long	Typical Time: 7:30 to 11:00 PM.; Primarily Friday and Saturday
Other Events	Approximately 35	5,000	7,500	480	Year-long	Variable
Corporate/ Community Events	Approximately 100	300	2,000	25	Year-long	Variable
Waterfront Park Events	Approximately 16	2,400	4,000	25	Year-long	Variable
Performance Venue [2]	Approximately 100	3,000	3,500	200	Year-long	Variable

Note:

1. The ballpark could host up to nine full-capacity concerts per year, which would have the potential to require an estimated 1,200 employees.
2. The performance venue would have its own Transportation Management Plan.

Source: Athletics Investment Group, LLC, 2019.



3

3. Travel Characteristics of Ballpark Attendees and Site Users

This chapter describes the travel characteristics of current attendees to Oakland A's games at the Oakland-Alameda Coliseum and how those travel characteristics may change with the new Ballpark.

3.1. Oakland A's Ballpark Attendance

The MLB regular season consists of 162 games, with half of each team's games played at the home field. Should the A's make the playoffs, the minimum number of additional home games will be one, and the maximum will be 11. The monthly distribution of home games tends to be spread evenly, with 13 to 14 games per month over the six months from April through September. Typically, about half (six to seven per month) of A's home games are weekday evening games that start around 7:00 PM; around two to three games per month are weekday day games that start around 12:30 PM; and four to five games per month are weekend games that usually start around 1:00 PM or 6:00 PM.

The capacity of the existing Oakland-Alameda Coliseum is currently about 47,000 for typical baseball games.[1] Prior to 2017, the upper deck was not available for seating at most baseball games, so the capacity was approximately 35,000 from 2008 to 2016. Average ticket sales at home games over the past 10 years are summarized in **Table 3-1**.

[1] Capacity of 46,867 for baseball games per 2019 Oakland A's Media Guide: https://pressbox.athletics.com/Publications/MLB%20Media%20Guides/2019%20Oakland%20A's%20Media%20Guide.pdf

Table 3-1: Oakland A's Average Per Game Ticket Sales by Year at Coliseum

Season	Average Ticket Sales	Implied Occupancy[1, 2]
2019	20,521	44%
2018	19,427	41%
2017	18,219	39%
2016	18,784	54%
2015	21,829	62%
2014	24,736	71%
2013	22,227	63%
2012	20,729	59%
2011	18,232	52%
2010	17,511	50%
2009	17,392	50%

Note:

1. Implied Occupancy represents occupancy level if all ticket sales result in fan attendance. Actual attendance may be lower because not every person who buys a ticket attends the game.
2. Ballpark capacity for typical baseball games increased in 2017, as described in text above.

Sources: Baseball-Reference.com, Fehr & Peers, 2020.

Weekend games tend to have higher attendance than games in other time periods, while weekday day games tend to experience the lowest attendance. Years during which the A's performed well had many sold-out games, particularly on the weekends.

Figure 3-1 shows the geographic distribution of fan attendance in 2017, while **Figure 3-1** shows the change in distribution expected at the new Ballpark. An increase in the proportion of attendees from Oakland/Piedmont and San Francisco is expected with a move to the Howard Terminal Ballpark, with a similar decrease in the proportion of attendees from the Tri-Valley and southern Alameda County, who will experience longer trips to Howard Terminal. Later chapters address attendee distribution characteristics by mode and location in more detail.

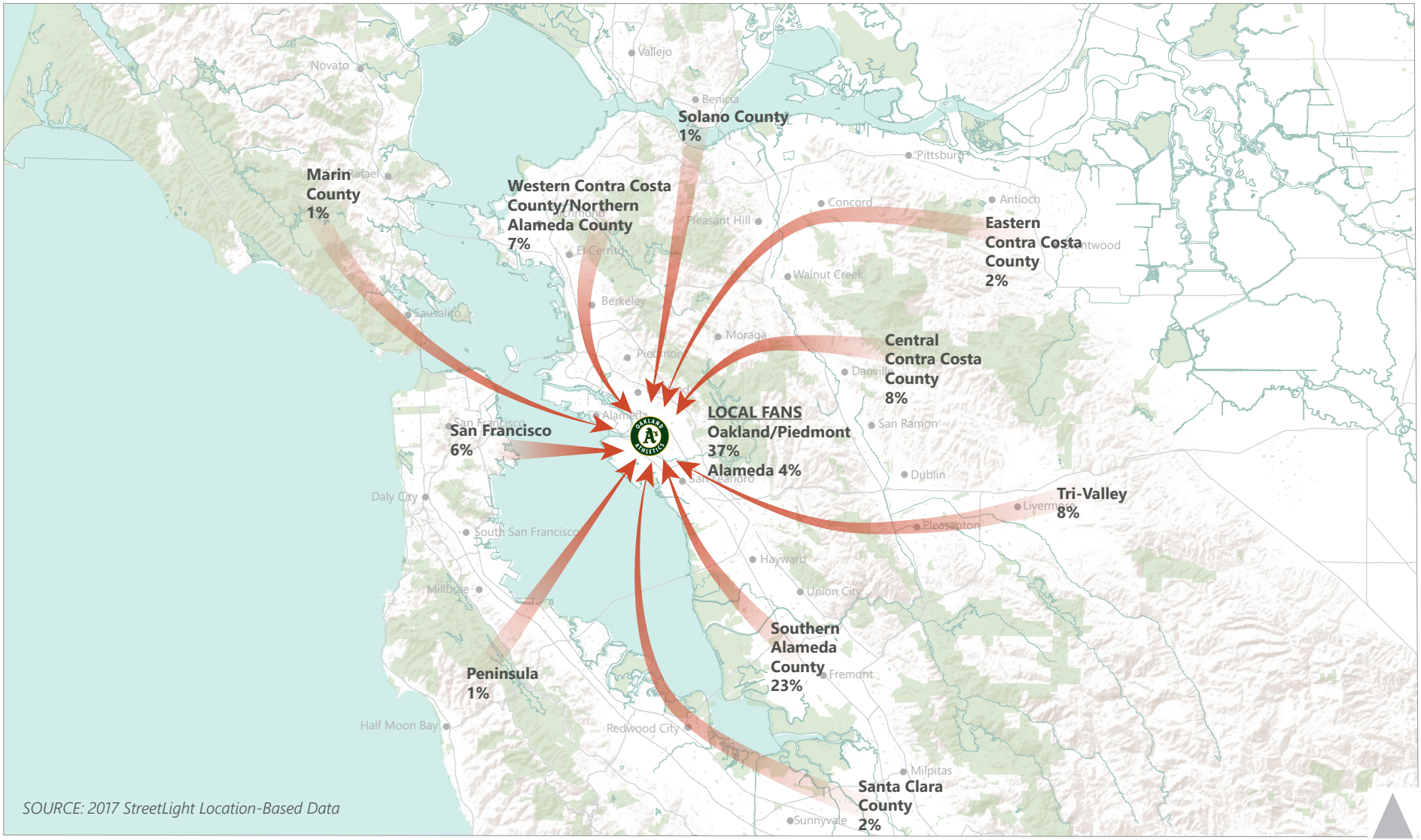


Figure 3-1

Weekday Evening Game
Existing Geographic (2017) Distribution of All Oakland A's Game Attendees

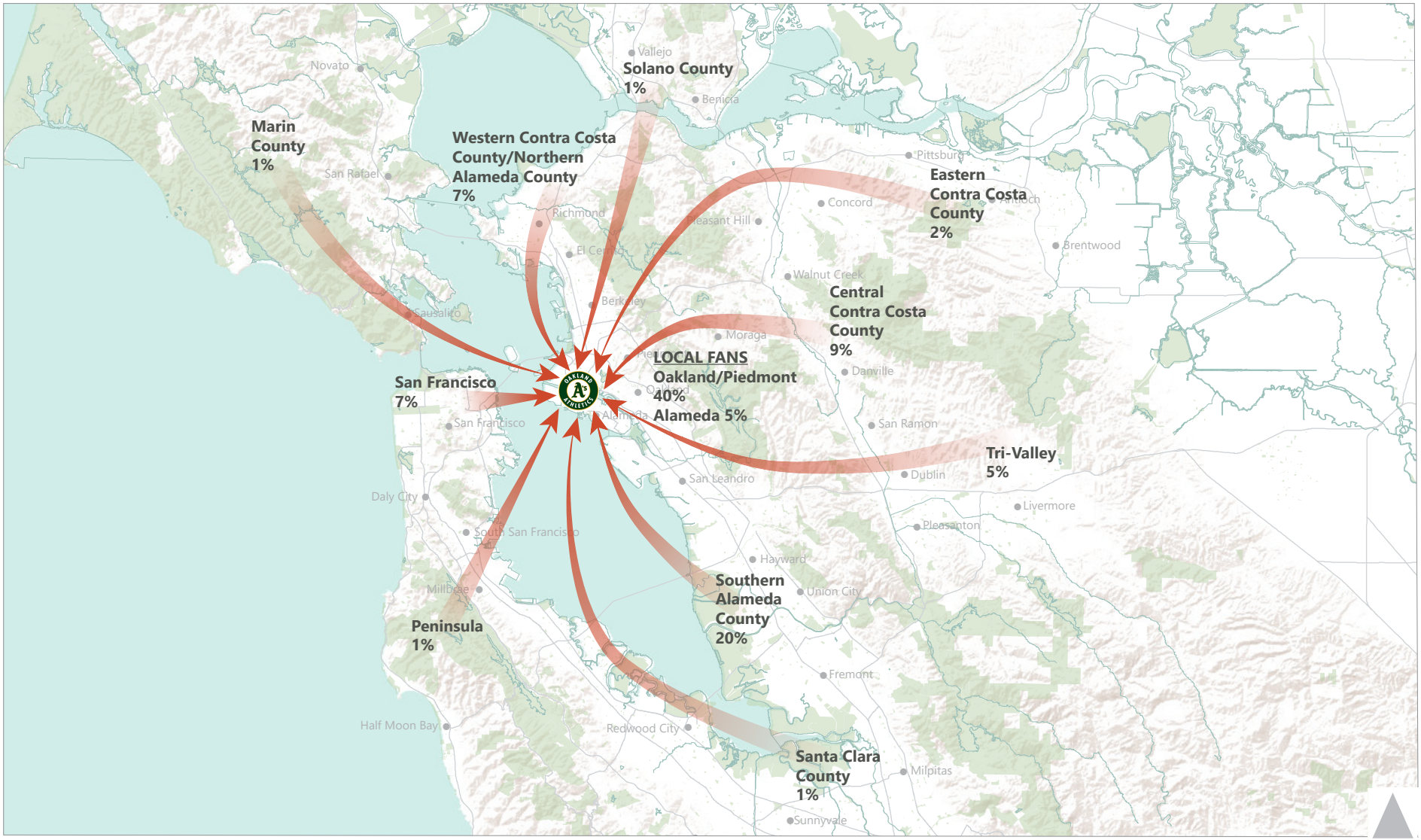


Figure 3-2

Weekday Evening Game
Howard Terminal Distribution of Oakland A's Game Attendees

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3.2. Mode of Travel

Table 3-2 summarizes the mode of travel for Oakland A's home games at the Oakland-Alameda Coliseum in 2017. The number of BART riders at games at the Oakland-Alameda Coliseum can be estimated directly from BART data. The remaining attendees can be assumed to almost all use automobiles, as land use intensity near the Oakland-Alameda Coliseum site is low, bus service is not well used by attendees, and field observations found a negligible number of attendees arriving to the main entrance on foot or by bus. Data collected at games at the Coliseum in 2018 and 2019 was used to estimate the percentage of automobiles that are ridesourcing vehicles.

Compared to the Oakland-Alameda Coliseum, the Howard Terminal site is located much closer to large, dense residential and commercial districts within easy walking or bicycling distance or where ridesourcing (e.g., Uber and Lyft, discussed in more detail in **Chapter 8**) is more prevalent. Additionally, Howard Terminal is located near an area where many AC Transit routes converge, discussed in more detail in **Chapter 5**, as well as near the Oakland Jack London Square ferry terminal and Amtrak station. The closest BART stations are farther from Howard Terminal than from the Oakland-Alameda Coliseum, though the stations near Howard Terminal are in the system's core and can be accessed without transfers or needing to wait for specific trains. Highways near Howard Terminal are more heavily congested during peak hours compared to the Coliseum. Available parking near Howard Terminal is constrained compared to the Oakland-Alameda Coliseum. These differences suggest Howard Terminal Ballpark attendees are likely to have a different mode of travel split than what is currently used at the Oakland-Alameda Coliseum.

Table 3-3 shows the projected mode of travel for attendees to games at the Howard Terminal Ballpark without using the strategies identified in this TMP. Without TMP strategies, automobile share is expected to remain relatively consistent with travel to the Oakland-Alameda Coliseum. A much larger percentage of attendees arriving by automobile are likely to arrive via ridesourcing due to Howard Terminal site's more central location and parking constraints. Howard Terminal's centralized location also means more attendees are expected to walk or bike compared to the Oakland-Alameda Coliseum. Mode share characteristics are documented in more detail in the environmental document and transportation impact technical memoranda, as discussed in **Chapter 1**.

Table 3-2: Oakland A's 2017 Home Game Mode of Travel

Game Type	# of Games[1]	Average Attendance[2]	Mode Share			
			Driving	Ridesourcing[3]	BART[4]	Other[5]
Weekday Evening	41	11,868	70%	6%	24%	<1%
Weekday Day	14	8,879	72%	6%	22%	<1%
Weekend	26	17,086	75%	6%	19%	<1%

Notes:
1. Weekend double header on September 9 only counted once in attendance.
2. Average attendance represents turnstile attendance, which is roughly 30% lower than the announced attendance based on ticket sales.
3. Based on BART origin-destination data and A's attendance data for games during the 2017 season.
4. Ridesourcing percentages are based on data collected at the Coliseum in 2018 and 2019.
5. Field observations found a negligible number of attendees arriving to the Oakland-Alameda Coliseum on foot or by bus.

Source: BART, Oakland A's, Fehr & Peers, 2020.

Table 3-3: Anticipated Mode of Travel at Howard Terminal Ballpark without TMP [1]

Game Type	Automobile Mode Share		Transit Mode Share			Active Mode Share	
	Drive [2]	Ridesourcing	BART	Ferry	Bus	Walk	Bike
Weekday Evening	57%	18%	21%	<1%	1%	2%	<1%
Weekday Day	57%	19%	20%	<1%	1%	3%	<1%
Weekend	62%	18%	17%	<1%	1%	2%	<1%

Notes:
1. Represents average of arrival and departure travel mode shares, which may vary slightly. Represents primary mode of travel.
2. Average vehicle occupancy of 2.12.

Sources: Oakland A's, BART, StreetLight Data, WETA, Fehr & Peers, 2020.

This TMP provides improvements and strategies designed to reduce vehicle trips associated with ballpark events by 20%. Rather than setting specific targets for each mode, which may not anticipate or account for future changes in transportation options and preferences, vehicle trips are assessed directly. **Table 3-4** presents the anticipated vehicle trips per attendee (including gameday employees) at the Howard Terminal Ballpark without the TMP, as well as the vehicle trips per attendee with the TMP to achieve 20% vehicle trip reduction. The effectiveness of measures presented in the TMP at reducing vehicle trips is analyzed in the CEQA documentation for the ballpark.

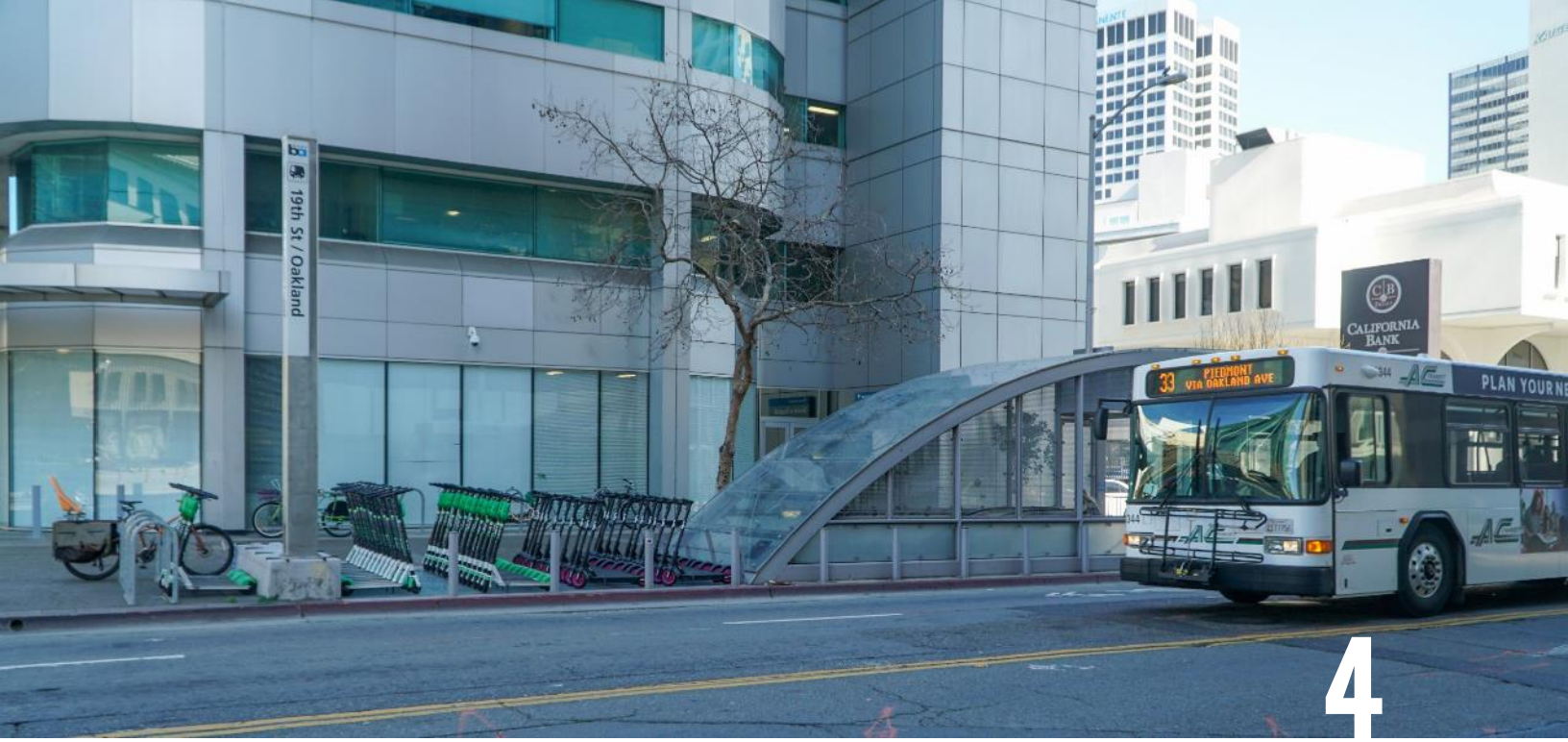
Table 3-4: Vehicle Trips per Attendee [1, 2]

Game Type	Howard Terminal without TMP	Howard Terminal with 20% Reduction
Weekday Evening	0.93	0.74
Weekday Day	0.94	0.75
Weekend	0.97	0.77

Notes:

1. Includes ballpark fans and gameday employees
2. Includes arrival and departure vehicle trips, with trips via ridesourcing counting as two trips.

Sources: Fehr & Peers, 2020.



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4. Ballpark Travel Management Strategies

The Oakland A's will work with the City of Oakland and the Port to pursue and implement commercially reasonable strategies to reduce transportation impacts related to project implementation through the TMP. This plan is required as an element of Mitigation Measure TRANS-1B in the EIR and its implementation is intended to fulfill the AB 734 legislative requirement to reduce the number of vehicle trips by 20 percent. The vehicle trip reduction requirement will be achieved with a combined approach of prioritizing non-automobile modes of travel in the public right-of-way and on the Howard Terminal site and providing attendees incentives and information to encourage use of modes besides automobiles.

The purpose of the transportation management strategies identified in this chapter is to increase the level of access to the project site by transit, bicycling, and walking while reducing the use of automobiles, particularly by solo drivers. Some of the strategies are targeted specifically to either attendees or employees at the ballpark, but many of the strategies apply to both and should be considered a menu of options that may be used to achieve the vision, goals, and objectives of the TMP. Some strategies described in this chapter may ultimately not be utilized, and they should not be considered requirements because the TMP must remain flexible to address the expected changing, and sometimes disruptive, transportation environment.

The strategies outlined in this chapter are primarily policies and programs that will inform ballpark and event attendees about their transportation options and encourage them to use non-automobile modes of travel. Strategies outlined in this chapter are preferred by the City of Oakland and are consistent with the

City of Oakland's Transit First Policy. The Oakland Athletics will work collaboratively with the City and Port of Oakland to determine which strategies will be implemented to achieve the goals of this document, although certain measures are mandatory, as described below and in the EIR. Physical improvements to the roadway network and gameday operations that manage automobiles and encourage the use of non-automobile modes of travel are described in subsequent chapters. Strategies involving physical improvements will require the necessary permits and approvals from the City of Oakland and other responsible agencies. Some strategies are also identified as mitigation measures in the EIR.

Under all circumstances, as part of the TMP implementation, the A's will be required to complete the following:

1. The A's will designate a mobility coordinator to oversee and coordinate the ongoing implementation of the Ballpark TMP. The mobility coordinator will develop and implement marketing/communications/incentives programs. The coordinator will also coordinate with the Oakland A's, other Ballpark site tenants, the City of Oakland, the Port of Oakland and the surrounding neighborhoods on policies, operations, and capital needs to support the project's sustainable trip making. The mobility coordinator is also expected to oversee the data collection and reporting for the performance standards and monitoring program described in Chapter 16. The job duties of the mobility coordinator will be further developed over time.

2. The A's will meet with the City and the Port to discuss transportation and scheduling logistics as soon as practical after scheduling any marquee events (national tournaments or championships, large conventions, etc.) or when multiple events are scheduled on the same day that would result in attendance levels similar to a large event.

3. The A's will notify the City, the Port and other transportation partners of the times, special promotions, and expected attendance for games and special events with expected attendance of over 2,000 attendees. As part of this, the A's and the Port will coordinate on a regular basis to identify and plan for any overlap of medium or large ballpark events with projected Seaport activities, such as (un)loading container ships and other night and weekend operations that may affect traffic conditions in the neighborhoods surrounding the ballpark and Seaport.

4.1. General Trip Reduction Strategies

The strategies below represent a menu of overall strategies to manage travel demand to the Ballpark site that will be applicable to employees and event attendees. Some of the strategies are mandatory requirements for the Project, as noted below.

4.2. Attendee Strategies

Attendee travel management focuses on encouraging travel options that safely and efficiently move the most people. In practice, this means encouraging walking, biking, shared mobility, and transit, while

discouraging private auto use and ridesourcing or taxis. It also includes providing information and incentives to promote non-automobile modes of transportation and manage very high demand for all transportation services during large events.

4.2.1. Attendee Public Transit Strategies

1. Provide easy access to buses and/or shuttles between the ballpark and one or more BART stations (e.g., West Oakland, 12th Street, and/or Lake Merritt). In particular, ensure that post game access to shuttles eliminates the transaction time and additional cost to attendees utilizing transit that would otherwise be associated with individual fare collection. This can be accomplished, for example, by providing free or bundled bus and/or shuttle service with a game ticket.
2. Develop a Transportation Hub with bus shelters, wayfinding guidance, real-time transit information, pedestrian and placemaking amenities, and other elements (which may include restaurant/retail uses, a bike station, shared micromobility, restrooms, water fountains, clipper vending machines and/or other amenities) to enhance the transit experience for attendees. Implementation of a Transportation Hub on 2nd Street is required as Mitigation Measure TRANS-1C in the EIR.
3. Develop bus-only lanes on Broadway. Implementation of bus-only lanes on Broadway is required as Mitigation Measure TRANS-1D in the EIR.
4. Coordinate with BART to ensure adequate resources are provided at the 12th Street, West Oakland and Lake Merritt BART stations to manage passenger flows through the stations during medium and large events at the Ballpark.
5. Provide transit ambassadors to direct attendees to and from BART stations, AC Transit stops, and the Ferry terminal.
6. Increase late-night and weekend AC Transit, Amtrak, and BART service frequencies for events based on attendee demands estimated through attendee surveys. Communicate this information to event attendees as part of ticket purchases and other communication channels.
7. Provide special event ferries through WETA between Oakland and San Francisco, Richmond, Alameda, or elsewhere to respond to demand.
8. Extend existing nearby AC Transit routes and provide bus stops closer to Howard Terminal, such as the proposed Transportation Hub (see attendee public transit strategy #2).
9. Identify Ballpark attendees arriving via transit and reward them with incentives that may include promotional items, raffle entry, access to a "fast-track" security line, or other options. Market these incentives with a robust communications strategy prior to an event so guests can make choices accordingly.
10. Distribute A's-branded Clipper Cards to encourage attendees to associate event attendance with transit usage during the trip planning process.

11. Determine the feasibility and benefits of providing BART, AC Transit, WETA and/or Amtrak transit subsidies and/or bundling the cost of a round-trip transit fare into the cost of ticketed events at the ballpark.

12. Encourage attendees at point of ticket purchase to use sustainable modes via communications on the internet and through the ticket vendor.

13. Brand transit stops/stations near the Ballpark. Utilize digital or electronic displays inside the Ballpark, at exits, and at the Transportation Hub to display real-time transit information and prominent comparisons between transportation choices available to fans, employees, and visitors to the Ballpark. Emphasize transit's lower-cost, higher sustainability, and other beneficial factors as compared with private autos.

14. Relay announcements at ballgames and concerts, and as Ballpark attendees exit the Ballpark, to notify attendees of non-auto travel options home, including real-time transit and shuttle departure times.

15. Provide additional communication of transit options and wayfinding during playoff games including through social media and digital advertisement for non-season pass holders who may be coming from out of town by providing information to, and coordinating displays within, hotels and local businesses in the Ballpark vicinity.

16. Install one or more machines to add value to Clipper Cards on-site and one or more machines at the Transportation Hub. Encourage all attendees via communication channels to purchase round-trip transit tickets to minimize wait times and crowding.

4.2.2. Attendee Micromobility Strategies

1. Provide one or more free secure and/or valet bicycle parking facilities. Identify and reward patrons using the bike parking with incentives that may include promotional items, raffle entry, access to a "fast-track" security line or one or more other options. Market these incentives with a robust communications strategy prior to an event so guests can make choices accordingly. If peak event bicycle storage demand exceeds the capacity of the enclosed parking facility and on-site bike rack capacity, provide additional temporary outdoor secure bike parking areas.

2. Provide designated spaces for shared mobility devices such as docked bicycles, dockless electric bicycles, and electric scooters. Work with shared mobility providers to include information or restrictions regarding shared mobility parking within their mobile applications.

3. Provide a bicycle map, showing routes to the Ballpark, on the Ballpark web site, mobile applications, and in event literature and advertisements, when appropriate.

4.2.3. Attendee Automobile Reduction Strategies

1. Coordinate with OakDOT on the management of on-street parking on-site and within one mile of the Project site through the *OakPark Parking Management Plan*.
2. Coordinate with OakDOT on management of the off-site parking garages within one mile of the Project site through the *OakPark Parking Management Plan* (or other entity if needed) including a parking reservation system, which is planned to include incentives for participation by private garage owners, as well as demand management through pricing.
3. Restrict total available attendee on-site parking for events at the Ballpark and the performance venue to no more than 3,500 spaces (2,000 spaces at buildout). Limiting the parking available to attendees and pricing on-site parking appropriately will incentivize attendees to use alternatives to private automobiles.
4. Coordinate with OakDOT on the implementation of RPPs in areas recommended in the *OakPark Parking Management Plan* to limit the impact to neighborhood residents.
5. Clearly communicate all parking locations, prices, and availability (if possible) to attendees to minimize traffic related to searching for parking.

4.2.4. Attendee Communication Strategies

1. Design a "Getting There" page for the venue website listing multimodal options and comparisons before showing preferred driving routes or available parking.
2. Promote transit access to the Ballpark by providing interactive trip-planning tools; transit maps with recommended stops/stations for accessing site and best routes to the Ballpark; walking directions from transit stations/stops; and information about event shuttles (including stop locations) between BART stations and the Ballpark. Promote transit information on the Ballpark web site, mobile apps, on websites of events taking place at the site (to be required as a standard part of event contract), and in event literature and advertisements, when appropriate.
3. Provide real-time transit information, including train, ferry, and bus arrivals and departures, in key Ballpark locations (exit areas, gathering areas, etc.), inside the building (on digital and electronic displays), at the Transportation Hub, and/or via mobile applications.
4. Make available additional communication of transit options and wayfinding during playoff games for non-season pass holders who may be coming from out of town by providing information to, and encouraging displays within, hotels and local businesses in the Ballpark Site vicinity.
5. Create schedules of upcoming events for display on electronic message boards, so people in the area can make alternative travel plans to the private vehicle.
6. Develop means of Ballpark, on-site, and/or neighborhood communication (radio, TV, mobile application, etc.) that provides real-time advisories about the status of the transportation system

and event schedule to facilitate convenient transportation choices. Information provided may include availability of public transit and shuttle bus service, location and capacity of bike parking facilities, best walking paths, location of ridesourcing and taxi services, and limited extent of – or high price for – available parking.

7. Create a mobile application ("Mobility App") or integrate into an existing mobile application, transportation information that promotes transit first, allows for pre-purchase of parking, provides ridesourcing tips and information, and designates suggested paths of travel that best avoid congested areas and streets. The app may also be equipped to send notifications about event times and traffic conditions. The app will be free and available to anyone who wishes to download it, and will be useful for anyone working, living, or visiting the Ballpark area.

8. Provide extensive use of real-time transit information in public assembly areas reflecting the range of transit services in the area.

9. Establish a communication strategy to inform attendees about other events such as marathons and parades happening in the area that may affect travel to and from the Ballpark, as well as a protocol for communicating protests in downtown or around the Port of Oakland.

4.2.5. Additional Attendee Strategies

1. Provide transportation management on-site and integrated into the event command post to monitor transportation conditions and communicate information to relevant agencies.

2. Identify potential tenants who may provide on-site amenities (such as food and beverage options, and/or automated banking resources) to encourage Ballpark patrons to stay on-site for longer post-event periods and spread out arrivals and departures from the Ballpark.

3. Create partnerships with local restaurant and entertainment venues (e.g. West Oakland, Jack London, Downtown Oakland, Old Oakland, and Chinatown) to encourage attendees to arrive early or stay late for dining and entertainment to support local businesses and spread out arrivals and departures from the Ballpark. These partnerships can be featured in the Mobility App, social media, various websites, etc.

4. Provide additional permanent and temporary wayfinding signage to direct people to and from the Ballpark; wayfinding will also direct people to nearby transit stops and ridesourcing and taxi pick-up zones. Pedestrian-scaled lighting could be provided along these walking routes where needed.

5. Refer to Chapter 9 for additional measures related to ridesourcing.

4.3. Employee Strategies

The Ballpark is expected to have up to 1,500-employees working at events. The travel management strategies proposed to reduce single-occupant vehicle (SOV) trips by employees is described below.

4.3.1. Employee Public Transit Strategies

1. Participate in and promote pre-tax commuter benefits, a federal program that allows employees to reduce their commuting costs by up to 40 percent using tax-free dollars to pay commuting expenses.
2. Provide free or reduced cost transit to employees by offering an employer-paid monthly transit benefit to employees, either in the form of an AC Transit EasyPass or a Clipper Card with transit funds equal in value to half the cost of a monthly AC Transit unlimited pass.
3. Provide real-time transit information systems at the Ballpark and the Transportation Hub for transit serving the Hub, as well as BART, Amtrak, and ferries.

4.3.2. Employee Bicycle Strategies

1. Provide secure bicycle parking for employees (in addition to the bicycle parking available to attendees).
2. Provide convenient outdoor space for micromobility including dockless bikes and scooters.
3. Provide shower and locker facilities for employee use.
4. Sponsor a bike share station in the project vicinity.
5. Encourage all employees and visitors to participate in public events that promote bicycling such as the annual "Bike to Work" day.

4.3.3. Employee Automobile Reduction Strategies

1. Provide an orientation for all new hires as to the different commute resources available and provide them with information on how to arrive by transit, how to form carpools, where to store bicycles, shower/locker facilities, etc.
2. Provide ongoing information to employees and designate a position (likely the mobility coordinator) to serve as an ongoing resource for employees who have questions/concerns about their commute to work.
3. Enroll in ride-matching program through www.511.org and promote use of ridesharing mobile applications such as Scoop and Waze.
4. Enroll in free-to-employers Guaranteed Ride Home program through the Alameda County Guaranteed Ride Home program (http://grh.alamedactc.org/).
5. Seek partnerships with non-TNC shared mobility services, such as GIG Car Share (https://gigcarshare.com/), bikeshare, and scooter share, and, at a minimum, provide employees with information about these services.

6. Organize and publicize community efforts, such as Spare the Air days (as declared for the Bay Area region) or a Rideshare Week.

7. Require employees to pay for on-site parking spaces, and do not offer monthly parking passes.

4.4. City Parking Demand Efforts

The strategy described below is designed to further limit transportation impacts in the project vicinity. It is the responsibility of the City of Oakland, not the Oakland A's, to implement the following option because on-street parking, including on-site on-street parking, is a City resource. It is relevant to the A's planning and ongoing coordination with public agencies and neighbors and is included here for reference. Further, in addition to any other parking-related travel management strategies detailed above, the Project shall comply with all relevant provisions of the *OakPark Parking Management Plan*, as adopted by the City of Oakland.

1. The City of Oakland will provide coordinated outreach efforts to surrounding neighborhoods to explore the need/desire for new on-street parking management strategies through its *OakPark Parking Management Plan*, which could include the installation of parking meters, pricing strategies, implementation of time limits where ballpark attendees might park for long durations, and expansion of the residential parking permit program.



5

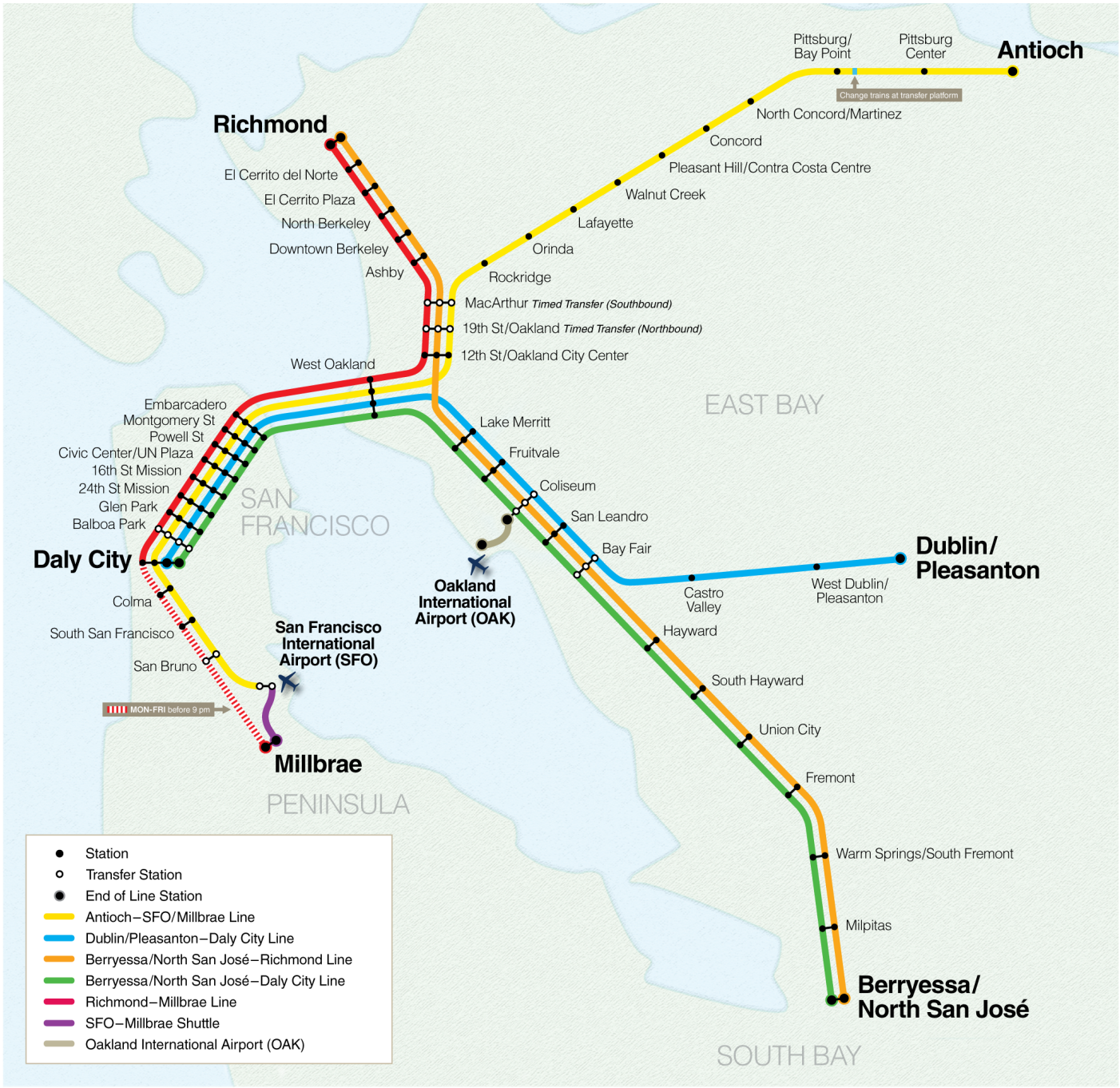
5. Transit Element

This chapter describes the existing and planned regional and local transit service to the Howard Terminal site and describes infrastructure and operational improvements to increase the efficiency and use of transit for special events and on non-event days. Local bus service is provided by AC Transit, while regional rail and ferry services are provided by BART, Amtrak, and WETA, and changes to transit operations will need to be coordinated with these agencies.

5.1. Existing Transit Service and Facilities

5.1.1. BART

BART provides regional rail service in the San Francisco Bay Area, connecting Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara Counties. Downtown Oakland is centrally located in the system and is served by all five lines providing normal operations. A system map is presented in **Figure 5-1.** Daily operating hours are between 4:00 AM and 1:00 AM, with peak weekday headways of 5-15 minutes and off-peak weekday and weekend headways of 15-20 minutes for each line. BART trains range from 3 to 10 cars depending on time of day and demand.



SOURCE: San Francisco Bay Area Rapid Transit District (BART), adapted from the original work by Trucy Phan. This work is licensed under a Creative Commons Attribution 3.0 Unported License.

BART System Map

OK16-0125.05_Howard_Terminal_TMP\Graphics\ADOBE\Fig5-1_BART-System

Figure 5-1

Attendees are expected to use one of three BART stations near the Howard Terminal site: West Oakland, 12th Street Oakland City Center, or Lake Merritt. The West Oakland Station will serve passengers from San Francisco and the Peninsula, 12th Street Oakland City Center Station will serve passengers from north and east of the Ballpark, and Lake Merritt Station will serve passengers from south of the Ballpark. As the closest station to the Ballpark and the most centrally located, the 12th Street station could also serve arriving passengers who continue through the Lake Merritt and West Oakland stations. For departures, the West Oakland and Lake Merritt stations will increase their relative attractiveness for San Francisco-bound and southbound riders, respectively, as they offer twice as many trains in those directions compared to the 12th Street station. BART frequencies are generally lower for evening and weekend game departures, as two lines (Richmond-Daly City line and Warm Springs/South Fremont-Daly City line) do not run during that timeframe.

The BART stations most likely to be utilized by game attendees are described below.

West Oakland Station is in West Oakland, about 1.0 mile from the Howard Terminal site, bounded by 7th Street, Chester Street, 5th Street, and Mandela Parkway. The station is served by all four transbay lines: Richmond-Daly City/Millbrae (Red), Antioch-SFO/Millbrae (Yellow), Dublin/Pleasanton-Daly City (Blue), and Warm Springs/South Fremont-Daly City (Green). This station will be primarily used by BART riders traveling to or from San Francisco or the Peninsula. Users of this station could use an event shuttle service if provided, but those who choose to walk will spend about 20 minutes walking primarily on 7th Street and Market Street, where they will be guided by TCOs, ambassadors, and wayfinding signs.

12th Street Oakland City Center Station is located under Broadway in Downtown Oakland, with station entrances between 11th Street and 14th Street, about 0.8 miles from the Howard Terminal site. The station is served by the Richmond-Daly City/Millbrae (Red), Richmond-Warm Springs/South Fremont (Orange), and Antioch-SFO/Millbrae (Yellow) lines. This is the closest BART station to the Ballpark, and it is anticipated that it will experience the heaviest passenger volumes from Ballpark attendees due to its somewhat closer proximity to the Ballpark and a high-quality pedestrian experience. BART riders choosing to walk to or from this station will have a 15- to 20-minute walk and will travel primarily on Broadway, Washington Street, or Martin Luther King Jr. Way, where they will be guided by TCOs, ambassadors, and wayfinding signs. Even with the high-quality pedestrian experience, some attendees could take advantage of event shuttle service when provided and public buses, especially since bus-only lanes are to be constructed on Broadway.

Lake Merritt Station is in Oakland's Chinatown, with an entrance at the Oak Street/8th Street intersection about 1.1 miles from the Howard Terminal site. The station is served by the Dublin/Pleasanton-Daly City (Blue), Richmond-Warm Springs/South Fremont (Orange), and Warm Springs/South Fremont-Daly City (Green) lines. This station will be primarily used by BART riders traveling to or from points south of the Ballpark. Users of this station could use the event shuttle service if provided, but those who choose to walk

will spend about 25 minutes walking primarily on Broadway or Washington Street and 8th Street through Chinatown, where they will be guided by TCOs, ambassadors, and wayfinding signs.

5.1.2. AC Transit

AC Transit operates local and transbay bus service in western Alameda County and Contra Costa County. Routes operating in the project vicinity are shown on **Figure 5-2**.

Attendees arriving via AC Transit buses will disembark either in the Jack London District or in Downtown Oakland. The Oakland A's will coordinate with AC Transit to extend lines that currently stop in the Jack London District to travel closer to the Ballpark, stopping at the Transportation Hub on 2nd Street near Martin Luther King Jr. Way and Clay Street (required as Mitigation Measure TRANS-1c). Riders of lines that travel through Downtown Oakland will walk 10 to 15 minutes south along Broadway or Martin Luther King Jr. Way, depending on the nearest downtown stop on their line.

Departures via AC Transit will for the most part be like arrivals via AC Transit. However, the transbay routes and some local routes will no longer be in service at the end of weekday evening games. Attendees riding transit to San Francisco will need to take BART or an event ferry service if buses are not running.

AC Transit lines with stops within 0.5 miles of the Howard Terminal site are described below.

Line 12 connects the Jack London Square District and west Berkeley via Downtown Oakland, North Oakland, and Downtown Berkeley. The nearest stops on Line 12 are located about 0.2 miles from the Howard Terminal site at the Broadway/Embarcadero West intersection. Line 12 operates between 6:00 AM and 12:00 AM, with 20-minute headways on weekdays and 30-minute headways on weekends.

Line 20 connects Downtown Oakland and East Oakland via Alameda. The nearest stop on Line 20 is located about 0.5 miles from the Howard Terminal site on Martin Luther King Jr. Way at 11th Street. Line 20 operates between 5:00 AM and 10:00 PM, with 30-minute headways on weekdays and weekends.

Line 62 connects the West Oakland and Fruitvale BART stations, traveling along 7th and 8th Streets between the West Oakland BART station and Lake Merritt BART station. The nearest stops on Line 62 are located about 0.4 miles from the Howard Terminal site, at the 7th Street/Jefferson Street and 8th Street/Jefferson Street intersections. Line 62 operates between 6:00 AM and 12:30 AM, with 15-minute headways on weekdays and 20-minute headways on weekends.

Lines 72, 72M, and **72R** connect Jack London Square and San Pablo via Broadway and San Pablo Avenue. The 72M extends to Richmond, and the 72R provides rapid service with limited stops. The nearest stop on Lines 72, 72M, and 72R is located about 0.2 miles from the Howard Terminal site on 2nd Street at Washington Street. Lines 72 and 72M operate between 5:00 AM and 1:00 AM, with approximately 15-minute

combined headways on weekdays and weekends. Line 72R operates between 6:00 AM and 8:00 PM, with 12-minute headways on weekdays and 15-minute headways on weekends.

Line O connects the Fruitvale BART station and the Salesforce Transit Center in San Francisco via Alameda and Downtown Oakland. Line O makes an eastbound stop inbound from San Francisco on 5th Street at Market Street, about 0.2 miles from the Howard Terminal site. The nearest San Francisco-bound stop is 1.1 miles from the Howard Terminal site on 7th Street at Alice Street. Line O operates between 6:00 AM and 10:00 PM, with 10-minute peak and 30- to 60-minute off-peak headways on weekdays and 60-minute headways on weekends.

Line W connects eastern Alameda and the Salesforce Transit Center in San Francisco via Downtown Oakland. Line W makes an eastbound stop inbound from San Francisco on 5th Street at Market Street, about 0.2 miles from the Howard Terminal site. The nearest San Francisco-bound stop is 1.1 miles from the Howard Terminal site on 7th Street at Alice Street. Line W operates on weekdays between 5:30 AM and 8:30 AM in the westbound direction and between 4:30 PM and 8:30 PM in the eastbound direction, with 20-minute headways. No weekend service is provided.

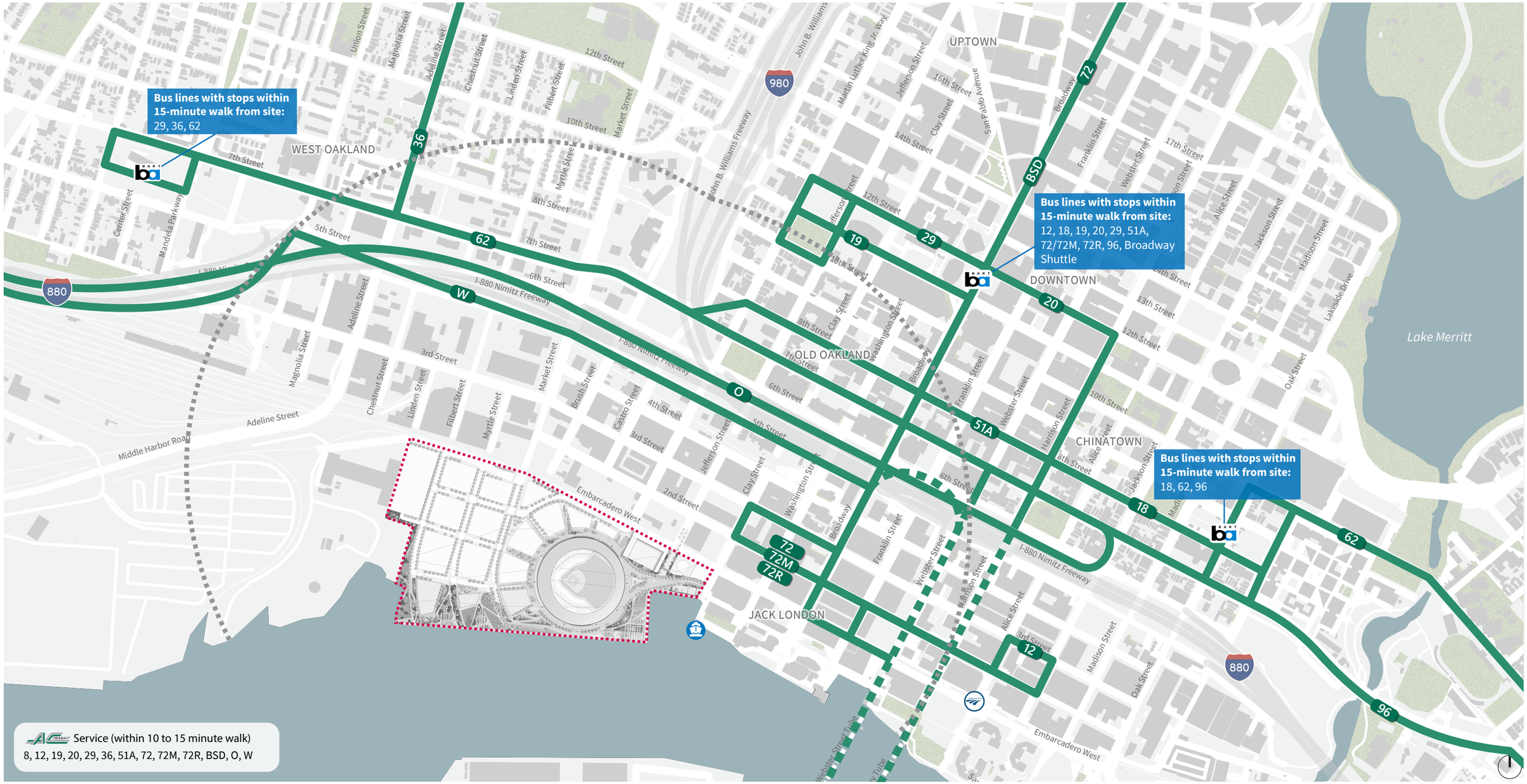
The **Broadway Shuttle** is a free shuttle connecting Jack London Square and Uptown Oakland via Broadway. The nearest stop on the Broadway Shuttle is about 0.3 miles from the Howard Terminal site, on Embarcadero West at Broadway. The Broadway Shuttle operates between 7:00 AM and 10:00 PM, with 11- to 15-minute headways on weekdays. No weekend service is provided.

Outside of the half-mile walk of the ballpark site, the three BART stations also have buses that serve them, which create potential transit centers. These lines are presented in **Table 5-1**.

Table 5-1: AC Transit Stops at Nearby BART Stations

BART Station	AC Transit Lines
West Oakland	Lines 29, 36, and 62
12th Street Oakland City Center	Lines 1T, 12, 18, 19, 20, 29, 40, 51A, 72/72M, 72R, 88, 96, Broadway Shuttle
Lake Merritt	Lines 18, 62, 88, and 96

Sources: Fehr & Peers, 2020.



LEGEND

- Project Boundary
- AC Transit
- 1/2 Mile From Project Study Area
- BART Station
- Amtrak
- Ferry

Figure 5-2

Bus Routes in Project Vicinity

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5.1.3. Amtrak

Amtrak operates regional and interregional rail service through the Oakland Jack London Square Station on 2nd Street between Harrison Street and Jackson Street, about 0.6 miles from the Howard Terminal site. The Amtrak lines providing service to the station are described below.

Capitol Corridor connects Sacramento and San Jose through Oakland. The service runs 15 trains per direction on weekdays and 11 trains per direction on weekends, with headways of approximately one hour during peak periods. All trains connect Sacramento and Oakland, with around half also serving San Jose. Scheduled trip time between Oakland Jack London Square Station and Sacramento is about two hours, and trip time between Oakland Jack London Square Station and San Jose is about one hour.

Coast Starlight connects Vancouver and Los Angeles through Sacramento, Oakland, and San Jose. The service runs one train in each direction daily. Under Amtrak's current schedule, the southbound train arrives at Oakland Jack London Square Station at 8:35 AM and therefore will not be used for game day arrivals. The northbound train departs Oakland Jack London Square Station at 9:39 PM.

San Joaquin connects Oakland and Bakersfield through Stockton. The service runs five trains in each direction using Oakland Jack London Square Station daily. Scheduled trip time between Oakland and Stockton is about one hour and forty-five minutes. Under Amtrak's current schedule, because the last southbound train departs Oakland at 5:36 PM, this service will not be used to depart typical evening games.

The relationship of the service from the north and south to arrivals and departures near typical baseball game start and end times is presented in **Table 5-2.**

Schedules for Amtrak trains currently provide for timely round-trip arrivals and departures for games to and from Sacramento but not San Jose. However, attendees could use the service for round trips to and from San Jose on weekday day games or weekend day games if they were willing to wait more than an hour for one of their legs. Amtrak is required to follow a fixed schedule approved by Union Pacific because they share tracks with freight, so adjusting schedules to accommodate a variable game end is likely not possible.

Current schedules for Capitol Corridor, Coast Starlight, and San Joaquin services provide one train from Sacramento and one train from the San Jose arriving within 30 minutes of typical weekday evening games, as well as one train from Stockton arriving less than an hour before typical game time. Weekday day games have one train arriving from the Sacramento direction within 20 minutes of typical start time, and a train arriving from the San Jose direction almost two hours before typical game start time. For weekend evening games, one train arrives from the Sacramento direction within one hour of typical game time, and one train arrives from the San Jose direction about two hours before the typical game start time.

Table 5-2: Amtrak Availability by Game Time

Game Time	Arrivals	Departures
To/From North (Sacramento)		
Weekday Day Game	Train arrives within 30 minutes before typical game start	Train departs within 30 minutes after typical game end time
Weekday Evening Game	Train arrives within 30 minutes before typical game start	Train departs within 30 minutes after typical game end time
Weekend Game	Train arrives within 30 minutes before typical game start	Train departs within one hour after typical game end time
To/From South (San Jose)		
Weekday Day Game	No train arrives within one hour before typical game start; a train arrives within two hours before typical game start	Train departs within one hour after typical game end time
Weekday Evening Game	Train arrives within 30 minutes before typical game start	No trains depart after typical game end time; latest train departs at 7:39 PM
Weekend Game	No train arrives within one hour before typical game start; a train arrives within two hours before typical game start	Train departs within 30 minutes after typical day game end time; no trains depart after typical night game end time

Source: Amtrak schedules as of October 2019. Amtrak updates schedule on a regular basis.

For departures, one train leaves the station in the Sacramento direction within 30 minutes of the typical weekday day game end time, and one train departs in the San Jose direction within an hour of average weekday day game end time, though it does not match a corresponding arrival within one hour of game start. For weekday evening games, one train departs in the Sacramento direction within 30 minutes of the typical game end time, but the last train in the San Jose direction departs at 7:39 PM, soon after the game begins. For weekend games, a train departing within an hour after average game end times provides a return service to Sacramento. One train provides return service to San Jose less than 30 minutes after the average weekend day game end time, but no trains provide return service after weekend evening games.

5.1.4. Ferry

WETA operates weekday and weekend ferry service between Oakland Jack London Square Ferry Terminal (less than 1,000 feet from the Howard Terminal site) and the Alameda Main Street Ferry Terminal, the San Francisco Ferry Building, San Francisco Pier 41, and South San Francisco. Ferries depart the Oakland Jack London Square Ferry Terminal on weekdays between 6:30 AM and 8:45 PM with typical headways of 30 to 45 minutes, and on weekends between 8:55 AM and 9:25 PM with typical headways of 45 to 60 minutes.

San Francisco-departing ferry schedule provides three ferries arriving in Oakland within one hour of start of typical weekday evening games, and attendees will likely use these ferries. Current schedules are less conducive to weekday day and weekend games, with one ferry arriving an hour before typical weekday day start time, one ferry arriving at the typical weekend evening start time, and no ferries arriving within an hour of typical weekend day game start times. No ferries departing South San Francisco currently arrive in Oakland within an hour of typical game time. Ferry schedules are expected to be revised after the pandemic, with trip durations from San Francisco to Oakland reduced to 20 minutes and headways reduced to 15 minutes during peak hours.

For departures, the current ferry schedule provides two ferries departing for San Francisco within one hour of the typical weekday day game end time and one ferry each departing within one hour of the typical weekend day and evening game end times. The last San Francisco-bound ferry on weekday evenings departs Oakland at 8:45 PM, well before the end of even the fastest-played game.

5.2. Transit Improvements and Event Operations Management

The use of transit to access the Ballpark will be encouraged through new transit services, operational improvements, new or upgraded transit infrastructure, and improved pedestrian connections to BART stations. The A's will continue to coordinate with BART, as they currently do for ballgames and events at the Coliseum, by communicating about event schedules so that BART can augment post-event service with additional train cars and station staff as-needed to manage expected crowds.

Transit improvements and event transit operations management during events at the Ballpark are described below. Conceptual exhibits of the infrastructure changes to the road network are provided in **Appendix B**. Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland and other responsible agencies.

5.2.1. BART Shuttles

The closest BART stations are a 15- to 25-minute walk from the Ballpark, which is farther than is typically considered highly convenient access to transit. To make using BART more attractive and convenient, improve the overall fan experience, and provide options for those who either cannot or prefer not to walk from a BART station to the Ballpark, shuttles between the Ballpark and 12th Street BART station will be provided before and after games. Shuttles may also be provided to the West Oakland and/or Lake Merritt BART stations, depending on demand. Shuttles to the Lake Merritt and West Oakland BART stations, if provided, will help reduce demands on the 12th Street station.

Each BART shuttle route would serve 1,000 to 2,000 riders per hour, depending on the travel time to the BART station and whether two or three shuttle (un)loading locations at the 2nd Street Transportation Hub are provided.[2] The Transportation Hub at 2nd Street is sized to handle additional shuttle loading and unloading locations for the Lake Merritt BART and West Oakland BART shuttle routes, if provided. Up to three shuttle loading and unloading locations at the 2nd Street Transportation Hub are planned for the 12th Street BART route at opening day. In lieu of shuttles, demand could also be met by extending AC Transit Lines.

At the conclusion of high-attendance games where most fans stay to the end, passenger demand may outstrip shuttle capacity. Waiting areas will be designed to accommodate the peak waiting passengers, though some may choose to walk to their BART station instead. Transit wait times will be provided. Including time spent walking between the Ballpark and shuttle stops, but not including wait time, shuttles are estimated to provide a 10- to 15-minute travel time between the ballpark exit and the BART station(s) if bus-only lanes are provided.

Shuttles will be available to the public. Shuttles provide convenient access to the Ballpark for riders connecting to nearby BART stations and AC Transit bus stops; residents or employees of nearby neighborhoods; and people who drive and park in downtown.

Figure 5-3 shows potential shuttle routes with pick-up and drop-off locations from each station. Around game and concert times, 2nd Street between Castro and Washington Streets will be a Transportation Hub and will be closed to traffic other than BART shuttle and AC Transit service to ensure their smooth operation. The final service frequencies and destinations will be determined through surveys to identify attendee preferences. If a gondola between Jack London Square and Downtown Oakland is provided, that may replace the need for shuttles to and from the 12th Street BART station.

[2] Each (un)loading location can serve 12 shuttles per hour i.e., one shuttle every 5-minutes and each shuttle is assumed to carry 50 to 60 people.



LEGEND

- Potential AC Transit routing to connect West Oakland and Lake Merritt BART
- Potential AC Transit line extensions connecting to 12th Street BART
- Potential shuttle routing
- Proposed Bus-Only Lanes
- Project Boundary
- Produce Market
- BART Station
- Amtrak
- Ferry
- Transportation Hub (up to 120 buses per hour)

West Oakland Shuttle (if provided)
2 Loading Zones (up to 24 buses per hour)

Lake Merritt BART Shuttle (if provided)
2 or 3 Loading Zones (24 to 36 buses per hour)

AC Transit Line Extensions (10 to 12 buses per hour)

12th St BART Shuttle (up to 36 buses per hour)

AC Transit Line Rerouting (6 to 8 buses per hour)

Rerouting AC Transit Lines requires approval by AC Transit.
Shuttle use of bus stops requires approval by AC Transit.

Figure 5-3

BART AC Transit and Shuttle Routing to Ballpark

5.2.2. BART Stations

The downtown BART stations will experience additional BART riders before and after events at the Ballpark. A sellout baseball game could attract up to 35,000 attendees and, according to the analysis, up to 8,000 attendees could arrive by BART. These BART riders would be geographically dispersed to the West Oakland, 12th Street, and Lake Merritt BART stations, as well as temporally dispersed over a two- to three-hour period. As a result, the crowding now experienced at the Coliseum BART station before and after a large event are not expected with the new ballpark location. The three BART stations would attract a substantial number of ballpark attendees in one hour with roughly 900 riders at West Oakland, 1,800 riders at 12th Street, and 1,400 riders at Lake Merritt. These additional BART riders would be station entries during the one hour after a weekday afternoon game (typically 4:00 p.m. to 5:00 p.m.) or station exits during the one hour before a weekday evening game (typically 5:45 p.m. to 6:45 p.m.). While these riders are not anticipated to cause station capacity to be exceeded, additional resources may be required to guide ballpark attendees through the stations. In addition, the A's and BART should continue to coordinate to provide additional BART trains, as needed, after weekday evening events and after weekend games to enhance rider experience by reducing BART station wait times.

5.2.3. Bus-Only Lanes

Efficient operation of the planned BART shuttle routes requires that shuttles do not get delayed by personal automobiles. To that end, as shown on Figure 5-3, bus-only lanes will be implemented on Broadway between Embarcadero West and 11th Street, connecting to bus-only lanes on Broadway north of 11th Street. The bus-only lanes on Broadway south of 11th Street are required as Mitigation Measure TRANS-1d in the EIR. Bus-only lanes could also be provided to the West Oakland and Lake Merritt BART stations along the 7th and 8th Street corridors consistent with the Downtown Oakland Specific Plan, although these lanes are not currently proposed as part of the opening day strategy and may be considered by the City as a separate project and/or implemented as an additional TDM strategy.

Bus-only lanes are permanent improvements that speed transit operations not only on gamedays for ballpark attendees, but also daily for all transit users on these corridors, and would especially benefit riders in more transit-dependent neighborhoods. These improvements will implement or build on the vision set forth in the Downtown Oakland Specific Plan, which also includes bus-only lanes in Downtown.

The conceptual drawings in Appendix B show bus-only lanes on Broadway and are representations of transportation improvements with the Ballpark, subject to detailed engineering analysis, review, and approval by the City of Oakland and other responsible agencies.

5.2.4. Route Modifications and New Bus Stops

The A's will coordinate with AC Transit to extend lines closer to the Ballpark to provide greater convenience for attendees to use AC Transit to access the Ballpark. In addition, other lines could be rerouted to connect Howard Terminal and the Jack London District to the West Oakland and Lake Merritt BART stations and the surrounding neighborhoods. These route modifications will be permanent changes, which improve everyday transit access for residents, employees, and guests in the non-ballpark development at Howard Terminal, as well as the Jack London District. All route extensions and modifications are to be developed with AC Transit and subject to AC Transit review and approval.

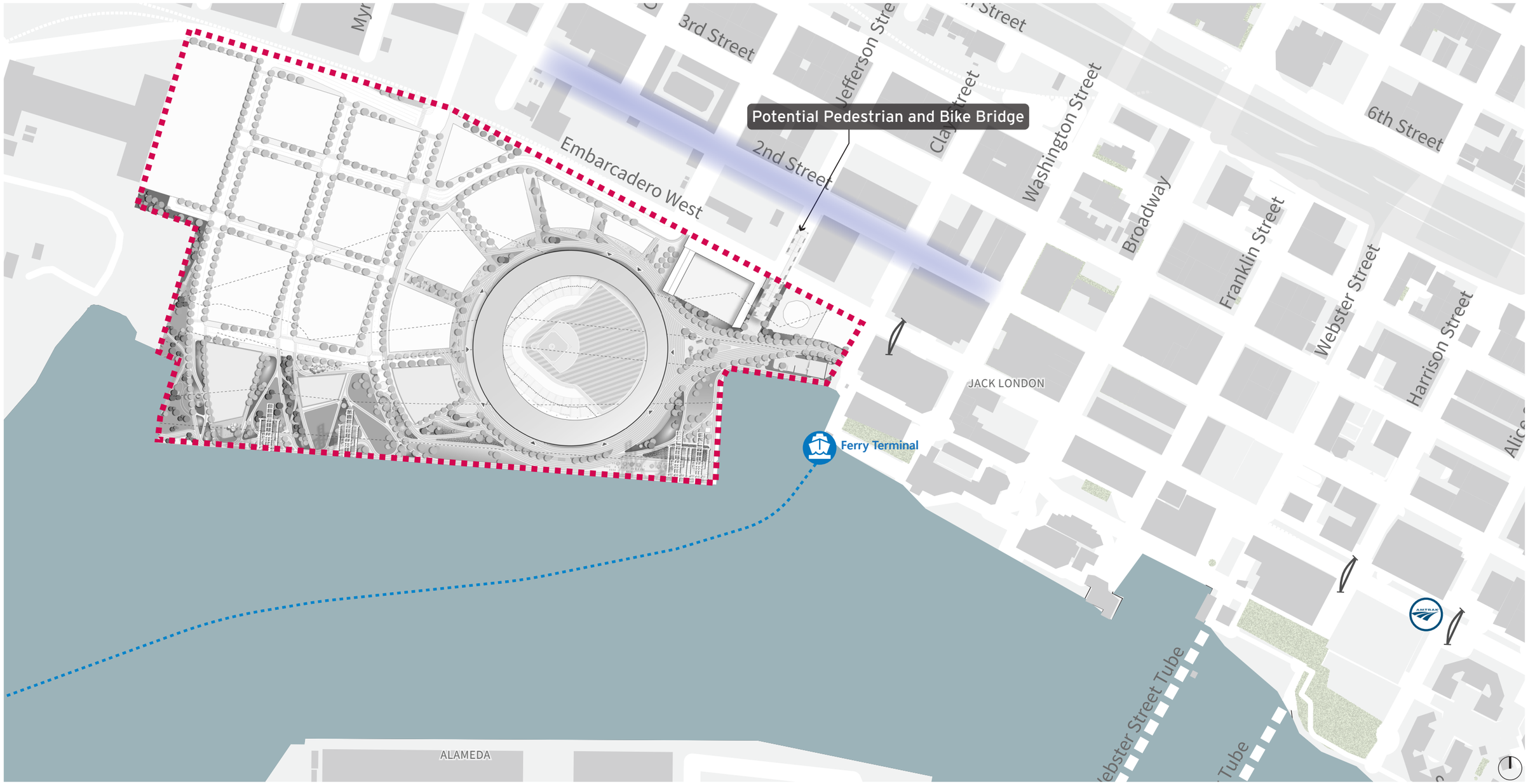
As shown on **Figure 5-4**, the bus stops for these route modifications are planned to be provided on 2nd Street between Martin Luther King Jr Way and Clay Street, which will also be a Transportation Hub. The stops will provide transit passenger amenities such as shelters, benches, real-time arrival information, and other hub features.

5.2.5. Gameday Ferry Service

WETA provides special event service between the Oakland Jack London Square Ferry Terminal and Oracle Park for San Francisco Giants weekday evening and holiday and weekend midday games. Ferries arrive at Oracle Park 20-45 minutes prior the start of weekday evening gamedays and 45 minutes prior to the start of weekend and holiday gamedays. These special event ferries depart Oracle Park 30 minutes after the last out or fireworks display on weekdays, and 20 minutes after the last out or fireworks display on weekend and holidays.

The A's are coordinating with WETA and Golden Gate Transit to potentially provide similar service for ballgames at the Howard Terminal Ballpark. This service would use the existing ferry terminal at Jack London Square, and potential ferry connections include San Francisco, Richmond, and Marin. For game start times that already receive service from San Francisco (e.g. weekday evenings), ferry schedules may be modified to better serve events at the Ballpark, or additional service may be provided, depending on demand.

Figure 5-4 shows the ferry routes at the Oakland Jack London Square Ferry Terminal, which is located just south of the Water Street/Clay Street intersection, immediately east of the Howard Terminal site (fewer than 1,000 feet to the Ballpark entrance). Attendees arriving or departing the Howard Terminal site via ferry will use Water Street.



LEGEND

- Project Boundary
- Existing Pedestrian Connection
- Existing Ferry Service to/from Alameda and San Francisco Ferry Building/Pier 41
- Transportation Hub (up to 120 buses per hour)
  - West Oakland Shuttle (if provided)
    2 Loading Zones (up to 24 buses per hour)
  - Lake Merritt BART Shuttle (if provided)
    2 or 3 Loading Zones (24 to 36 buses per hour)
  - AC Transit Line Extensions (10 to 12 buses per hour)
  - 12th St BART Shuttle (up to 36 buses per hour)
  - AC Transit Line Rerouting (6 to 8 buses per hour)
  - Rerouting AC Transit Lines requires approval by AC Transit.
    Shuttle use of bus stops requires approval by AC Transit.
- BART Station
- Amtrak
- Ferry

Figure 5-4

Transportation Hub, Ferry, and Amtrak

5.2.6. Gondola

The A's are exploring the opportunity to connect the Ballpark and Jack London District with Downtown Oakland and the 12th Street BART station via a gondola. A gondola would overcome the existing infrastructure barriers that separate Downtown Oakland and the Ballpark and Jack London District, including railroad tracks, BART tracks, and the I-880 elevated freeway. The Washington Street corridor was identified as the optimal alignment because of its proximity to the Ballpark, ferry terminal, and Jack London Square at the southern end and Old Oakland, the Convention Center, and the 12th Street BART station at the northern end. The Gondola infrastructure would include four components:

- An elevated station at the Convention Center, roughly 30 to 40 feet or potentially at roof level, accessed via escalators and elevators
- An elevated station (roughly 30 to 40 feet) at Washington Street between the railroad tracks and Water Street accessed via escalators and elevators
- One 190-foot tower located between 4th and 5th Streets along the Washington Street alignment
- A three-cable system to provide a fast and comfortable rider experience

Attendees using the gondola would access the system via escalators and board one of the 35-person passenger cars via a moving walkway. The cars would arrive every 25 to 30 seconds and rides prior to and after a ball game would be free. The Gondola would offer a 3-minute ride from station to station, with about a 3-minute walk at either end to reach the Ballpark and the 12th Street BART station.

A gondola would represent an improvement on shuttle bus travel times, which would require 10 minutes for a similar trip. This does not consider wait times, which would be substantially shorter with a gondola due to its greater capacity. The Gondola would be able to serve 5,000 to 6,000 passengers per hour in one direction, whereas maximum shuttle bus throughput is expected at roughly 1,000 to 2,000 people per hour to the 12th Street BART Station.

As a permanent feature, the Gondola would offer service outside of event times, improving connectivity between Downtown Oakland and the Jack London District, ferry terminal, and non-ballpark development at Howard Terminal. Construction of the gondola would be subject to approval by the City of Oakland, Port of Oakland, Caltrans, and other responsible agencies.



6

6. Pedestrian Element

This chapter describes the existing and planned pedestrian facilities in the vicinity of the Ballpark and describes the improvements that will be made by the project to improve pedestrian safety and provide a high-quality fan experience.

6.1. Existing Pedestrian Facilities

Pedestrian infrastructure on the Howard Terminal site is limited, as the site is currently used for Port-related industrial activities. Major pedestrian routes attendees will use to access the site, as well as pedestrian facilities on streets near the Howard Terminal site, are described below.

Primary east-west pedestrian routes connecting the Howard Terminal site and major pedestrian generators include 7th Street for the West Oakland BART station, Water Street for the Oakland Jack London Square Ferry terminal and Amtrak station, and 8th Street for the Lake Merritt BART station. The 7th Street corridor between the West Oakland BART station and Market Street generally has an effective sidewalk width of 3 to 6 feet, and Water Street has an effective sidewalk width of 20 feet. The 8th Street corridor between Brush Street and Oak Street has an effective width between 4 feet and 12 feet. There are several obstacles along 7th Street where the effective width is reduced to three feet or less.

Primary north-south pedestrian routes connecting the Howard Terminal site with Downtown Oakland and the 12th Street BART station include Martin Luther King Jr. Way, Washington Street and Broadway. The Washington Street and Broadway corridors between the 12th Street BART station and Water Street have effective sidewalk widths of six to fourteen feet, and Martin Luther King Jr. Way between 14th Street and

Howard Terminal site has effective sidewalk widths of four to ten feet. Market Street connects the Howard Terminal site to the 7th Street corridor and has effective sidewalk widths of four to ten feet.

In addition to pedestrian corridors connecting to major generators and transportation facilities, users of the Howard Terminal site are likely to walk along streets within the area bounded by Martin Luther King Jr. Way, Water Street, Broadway, and 4th Street to visit bars and restaurants near the Howard Terminal site. Effective sidewalk widths in this area are typically six to ten feet, and sidewalks are mostly provided on both sides of the street. Notable exceptions include narrower effective widths on Embarcadero West of as little as three feet and no sidewalk on portions of Embarcadero West, Clay Street, Jefferson Street and 3rd Street. There are also narrow effective sidewalk widths north of 4th Street near the I-880 underpass.

6.2. Gameday Pedestrian Demand

The pedestrian entry points to the Howard Terminal site include the at-grade rail crossings at Market Street and Martin Luther King Jr. Way, a planned grade-separated pedestrian crossing at Jefferson Street or Clay Street, and Water Street from the east. **Figure 6-1** illustrates the projected routes pedestrians will likely take as they walk from nearby parking and transit stops, stations, and terminals.

Most pedestrian traffic is expected to come from north of the Ballpark site, with the 12th Street BART station and nearby parking facilities as major generators. These pedestrians are expected to primarily walk south on Washington Street and Broadway and then west on Water Street or south on Martin Luther King Jr. Way directly to the ballpark (Mitigation Measure TRANS-1e). The planned Jefferson Street grade-separated crossing (required by Mitigation Measure TRANS-3b) may also be used by pedestrians as an alternative to crossing the railroad at grade as well as those attendees who use AC Transit or shuttle buses to access the Transportation Hub. Attendees who park in Downtown Oakland are expected to also use the Martin Luther King Jr. Way corridor.

Pedestrians from the Ferry terminal, Amtrak station, and Jack London parking facilities will also access the Howard Terminal site via Water Street, and pedestrians from the AC Transit bus stops will access the Howard Terminal site either via Water Street or Martin Luther King Jr. Way, depending on the line. The Market Street crossing will be used primarily by attendees using the West Oakland BART station and walking along the 7th and Market Street corridors (Mitigation Measure TRANS-1e).



LEGEND

- Pedestrian Routing
- Produce Market
- Potential Off-Site Parking under the Freeway
- Project Boundary
- BART Station
- Amtrak
- Ferry

Transportation Hub (up to 120 buses per hour)

West Oakland Shuttle (if provided)
2 Loading Zones (up to 24 buses per hour)

Lake Merritt BART Shuttle (if provided)
2 or 3 Loading Zones (24 to 36 buses per hour)

AC Transit Line Extensions (10 to 12 buses per hour)

12th St BART Shuttle (up to 36 buses per hour)

AC Transit Line Rerouting (6 to 8 buses per hour)

Rerouting AC Transit Lines requires approval by AC Transit.
Shuttle use of bus stops requires approval by AC Transit.

Figure 6-1

Pedestrian Desire Lines Between Transit and Parking and Howard Terminal

\\Fpok03.fpainc.local\data\Projects\2016\OK16-0125.05_Howard_Terminal_TMP\Graphics\ADOBE\06_CEQA\Report_Figures\Fig-4.15-16_Pedestrian_Routing.ai

6.3. Pedestrian Improvements

Pedestrian improvements (Mitigation Measure TRANS-1e) in the vicinity of the Ballpark would focus on identifying and upgrading corridors that are expected to experience high demand on gamedays, as well as nearby facilities that are currently deficient. While only a small percentage of attendees are expected to arrive to the project site with walking as their primary mode, most attendees will arrive using transit, off-site parking facilities, or off-site ridesourcing drop-offs, and many will likely walk the final leg of their trip.

Potential primary pedestrian corridors include:

- From West Oakland: 7th Street, Market Street
- From Downtown: Broadway, Washington Street, Martin Luther King Jr. Way
- From Chinatown/Jack London Districts: 8th Street, Broadway, and Water Street

In addition, improvements to pedestrian safety and comfort on primary pedestrian corridors could include wider sidewalks, curb extensions, high-visibility crosswalks, directional curb ramps and other accessibility enhancements, pedestrian-scale lighting, and street trees. Light pole banners or other wayfinding could be used to prioritize the primary pedestrian corridors and encourage walking on these preferred routes. Pedestrian improvements have been identified for other corridors as part of the pedestrian bridge over the railroad tracks (Mitigation Measure TRANS-3b) to close sidewalk gaps and improve access to the bridge. Finally, the A's are coordinating with the City of Oakland to explore restricting north-south vehicular traffic on Washington Street between 2nd Street and 10th Street on some gamedays to use it as a pedestrian thoroughfare and festival street.

A list describing the locations and enhancements that are identified as either Mitigation Measure TRANS-1e or non-CEQA recommendations related to pedestrian improvements is provided in **Appendix A**.



7. Bicycle Element

This chapter describes the existing and planned bicycle facilities that connect to the Ballpark area and describes improvements that would improve the safety and connectivity of the bicycle network. By providing a connected network of low stress, all ages and abilities bicycle facilities, the project will encourage the use of bicycling to access the Ballpark and improve the bicycling experience for all users in the nearby areas.

7.1. Existing Bicycle Facilities

The City of Oakland provides an extensive bicycle network and has ambitious goals to further improve its safety and connectivity, as established in the 2019 Oakland Bike Plan. While bicyclists may use all local roadways in the city, bicycle facilities improve the safety and desirability of traveling by bicycle. The classifications of bicycle facilities as defined by Caltrans and the City of Oakland are described below.

Bike Paths (Class 1) are paved rights-of-way completely separated from streets. Bike paths are often located along waterfronts, creeks, railroad rights-of-way or freeways with a limited number of cross streets and driveways. These paths are typically shared with pedestrians and often called mixed-use paths.

Bike Lanes (Class 2) are on-street facilities designated for bicyclists using stripes and stencils. Bike lanes may include buffer striping to provide greater separation between bicyclists and parked or moving vehicles. Bike lanes are the preferred treatment for all arterial and collector streets on the bikeway network, and not typically installed on low-volume, low-speed residential streets.

Bike Routes (Class 3) are streets designated for bicycle travel and shared with motor vehicles. While the only required treatment is signage, streets are designated as bike routes because they are suitable for sharing with motor vehicles and provide better connectivity than other streets.

Protected Bike Lanes (Class 4), also known as cycle tracks, provide space that is exclusively for bicyclists and separated from motor vehicle travel lanes, parking lanes, and sidewalks. Parked cars, curbs, bollards, or planter boxes provide physical separation between bicyclists and moving cars. Where on-street parking is allowed, it is placed between the bikeway and the travel lanes (rather than between the bikeway and the sidewalk, as is typical for Class 2 bike lanes).

The study area is generally flat, facilitating bicycling within and through the area. Existing and planned on-street bicycle facilities in the project vicinity are shown in **Figure 7-1**. Refer to the city's website for a comprehensive map of all existing and planned bike facilities in Oakland.[3]

The nearest Bay Wheels bike share station is currently located on Embarcadero West just west of Clay Street, adjacent to the Howard Terminal site. However, this facility provides just 27 docks. An additional 25 docks are provided on Webster Street just north of 2nd Street, about 0.4 miles from the Howard Terminal site.

7.2. Bicycle Facility Improvements

Encouraging a wide variety of attendees to travel to the Ballpark via bicycle requires a robust, connected network of high-quality bicycle facilities that provide riders of all ages and abilities a safe and enjoyable experience. The project would implement bicycle improvements on nearby roadways that provide a continuous low-stress connection between the Ballpark and the existing bicycle network.

Bicycle facility improvements will be focused on major corridors providing access to the Ballpark. As required by Mitigation Measure TRANS-2a in the EIR, buffered bike lanes will be provided on 7th Street between Mandela Parkway and Martin Luther King Jr. Way. Separated bikeways will be provided on Martin Luther King Jr. Way between 8th Street and Embarcadero West, as required by Mitigation Measure TRANS-2b. The Washington Street bike lanes, which currently have gaps, will be completed between Water and 10th Streets, as required by Mitigation Measure TRANS-2c. A multiuse path will be provided on Embarcadero West between Martin Luther King Jr. Way and Broadway, as required by Mitigation Measure TRANS-3a. Providing bicycle improvements on these roadways may require the removal of automobile travel lanes, reconfiguration or removal of street parking, and other changes to roadway design. Closing the Class 2 Bike Lane gap on 2nd Street is identified as a non-CEQA improvement.

[3] https://www.oaklandca.gov/projects/lets-bike-oakland-oaklands-bike-plan



LEGEND

- EXISTING BIKE NETWORK
- PROPOSED BIKE NETWORK PER OAKLAND BIKE PLAN
- Primary Bike Facilities used by Howard Terminal
- Multi-Use Path
- Protected Bikeway
- Buffered/Non-Buffered Bike Lanes
- Neighborhood Bike Route/ Bike Route
- Produce Market
- Project Boundary
- BART Station
- Amtrak
- Ferry

Figure 7-1

Existing and Planned Bicycle Facilities Plus Primary Circulation to Howard Terminal

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These improvements would provide seamless connections for bicyclists traveling to or from the Ballpark in all directions. The 7th Street facilities will connect to the West Oakland BART station and Martin Luther King Jr Way with existing or planned north / south facilities connecting to it from the north at Mandela Parkway, Adeline Street, Market Street, and Martin Luther King Jr. Way. The Martin Luther King Jr. Way facilities will continue as Class 2B buffered bike lanes to San Pablo Avenue through a planned project funded through an Affordable Housing and Sustainable Communities (AHSC) grant. These facilities will connect the Howard Terminal site to existing or planned facilities on 2nd, 3rd, 7th and 14th Streets.

The conceptual drawings in Appendix B show representations of the bike lane improvements, subject to detailed engineering analysis, review, and approval by the City of Oakland.

7.2.1. Consistency with 2019 Oakland Bike Plan

The bicycle improvements align with the vision established in the Let's Bike Oakland 2019 Oakland bike plan of a high-quality, safe, and connected all ages and abilities bicycle network. As noted in the Bike Plan, the unique nature of the Ballpark and the large numbers of attendees will necessitate adjustments to the precise network recommended in the Bike Plan, but the revisions described in this TMP maintain the same level of connectivity as that network. Additionally, buffered bike lanes on 7th Street on Martin Luther King Jr. Way north of 7th Street, and enhanced on Market Street north of 3rd Street, would improve safety on those segments and do not preclude future upgrades to separated bikeways.

The following modifications from the Bike Plan are proposed:

- The existing bicycle facilities on 2nd Street between Martin Luther King Jr. Way and Clay Street will interfere with transit access to the Transportation Hub during periods when transit buses are most active. Bike lanes will remain on 2nd Street, but bike riders traveling though the Jack London District during these times will be routed to Embarcadero West via Martin Luther King Jr. Way and Washington Street to minimize conflicts with buses before and after events at the Ballpark. The parallel bike route on 3rd Street as it currently exists is not recommended for use during ballgames and events because of the potential for conflicts with the Produce Market and drayage trucks utilizing the 3rd Street overweight truck corridor.

- The proposed bike lanes on Adeline Street between 3rd and 7th Streets would not be constructed because additional lanes are needed to accommodate safe truck movement to and from the Seaport. North-south bicycle travel will be facilitated from the north via bike lanes on Mandela Parkway, Adeline Street, Market Street, and Martin Luther King Jr. Way, all of which connect with the east / west buffered bike lanes on 7th Street.

- The proposed protected bikeways on Market Street between Embarcadero West and 3rd Street would not be constructed because additional lanes are needed to accommodate truck access to Schnitzer Steel and automobile access to Howard Terminal. Primary bicycle access to Howard

Terminal will be provided at the Martin Luther King Jr. Way entrance, where a two-way protected bikeway will be provided, and bicyclists on Market Street would be able to access Martin Luther King Jr. Way via 7th Street.

- The proposed bike lanes on Broadway between 4th and 6th Streets would not be constructed because lanes are needed to accommodate bus only lanes on Broadway. Primary bicycle access will be provided on Washington Street between Water and 10th Streets, one block west of Broadway, where motor vehicle traffic and speed is less and there are no bus / bike rider conflicts.

7.3. Gameday Bicycle Access

Bicycle parking will be provided for peak events and conveniently located within a short walk to Ballpark entrances without having to cross public streets. Depending on demand, up to one thousand attended, free, secure bicycle parking spaces will be provided on game days in staffed temporary outdoor bike parking facilities. Potential locations for these facilities have been identified near the proposed Jefferson Street overcrossing and on the southwest side of the ballpark, adjacent to the two-way protected bikeway that extends from Martin Luther King Jr Way into and around the site, and next to the Bay Trail. Additionally, some secure bicycle parking will be provided via lockers or behind locked doors that do not require attendants to access so that event attendees can take their time going to restaurants after events and not have to rush to get their bikes before attendants leave.

Bicyclists traveling between the Howard Terminal site and Downtown Oakland are expected to use the existing bicycle facilities on Washington Street and the proposed bicycle facilities on Martin Luther King Jr. Way. From Washington Street bicyclists will use the multi-use path on Embarcadero West, south of the railroad tracks, to access the ballpark. Martin Luther King Jr. Way would also serve bicyclists using 14th Street connecting to West and East Oakland.

Bicyclists traveling to or from West Oakland for ballgames and events are expected to primarily use the bicycle facilities on 7th Street. Bicyclists traveling to or from East Oakland are expected to use the proposed bicycle facilities on Embarcadero, Oak Street, and 2nd Street. Bicyclists traveling between the Ballpark and Emeryville or Berkeley will likely use Mandela Parkway, Adeline Street, or Market Street to access the east /west bicycle facilities on 7th Street to Martin Luther King Jr. Way.

Pedicabs either do not currently operate or are a small presence in Oakland, but there may be a market for such services at the Howard Terminal site. Bicycle facilities serving Howard Terminal could also support pedicabs, although they would not be permitted to drive through pedestrian plazas.

7.4. Emerging Mobility Trends

Several point-to-point mobility services have emerged in Oakland. These services, which include scooters and bicycles, allow people to pick them up, ride, and drop them off within a specified service area or at a specific docking location. The City of Oakland has permitted up to 3,500 electric scooters in Oakland as of July 2019.[4]

Providing a safe and organized environment for these services is in many ways like what is needed for personal bicycles, with dedicated lanes protected from automobile traffic. However, these services require their bicycles and scooters to be parked in locations that are publicly accessible for other potential riders, which has the potential to clutter public walkways and obstruct pedestrians.

Transportation planning for the Ballpark site will be welcoming to point-to-point mobility services by providing designated parking areas to minimize the blocking of pedestrian pathways.

[4] https://www.oaklandca.gov/news/2019/oakdot-announces-permits-for-shared-e-scooters



8. Personal Automobile Element and Parking Management Plan

Although attendees will be encouraged to travel to and from the Ballpark using transit, on foot, and by bicycle, many will still choose to arrive by personal automobile. Parking will be provided on site, and there are many garages in Downtown Oakland, the Chinatown District and the Jack London District that also provide public parking that can be used by attendees. As described in previous chapters, automobile use will be deprioritized on nearby streets, which makes the automobile circulation plan even more important to ensure that vehicle traffic does not overwhelm local roadways, interfere with Seaport operations, or substantially degrade the fan experience.

8.1. Existing Roadway Network

The local roads and regional highways that provide access to the Howard Terminal Site are described below.

8.1.1. Local Access

Since the Howard Terminal site is located along the Oakland Estuary, the street network serving it extends only to the north, east, and west.

2nd Street is a two-lane east-west roadway that extends between Brush and Oak Streets. Class 2 Bike lanes are provided on 2nd Street except in front of the Amtrak station where eastbound bikes share the road with motorized traffic. On-street parking is permitted on both sides of the street. AC Transit Lines 72, 72M, and 72R operate eastbound on 2nd Street between Clay Street and Broadway.

3rd Street is a two-lane east-west roadway that extends between Mandela Parkway and Oak Street. 3rd Street provides Class 2 Bike Lanes with painted buffers west of Brush Street. 3rd Street and Mandela Parkway transition seamlessly without an intersection. On-street parking is permitted on both sides of the street east of Union Street with angle parking on some blocks east of Market Street. Sidewalk gap locations include portions just west of Market Street; just east of Brush Street; between Castro Street and Martin Luther King Jr. Way; the entire north side of the block between Jefferson Street and Clay Street; a portion just east of Webster Street; and nearly the entire south side of the block between Madison Street and Oak Street. AC Transit Lines 72, 72M, and 72R operate westbound on 3rd Street between Broadway and Clay Street.

4th Street is a two-lane east-west roadway that extends between Market Street and Oak Street. On-street parking is permitted on both sides of the street. The north side of 4th Street between Washington Street and Mandela Parkway is adjacent to the BART track alignment.

5th Street is an east-west roadway that extends between Peralta Street and Franklin Street. West of Kirkham Street, 5th Street is a two-way undivided roadway providing two automobile travel lanes and on-street parking on both sides of the street. Between Kirkham Street and Adeline Street, 5th Street is a two-way divided roadway providing four through-lanes and left-turn pockets and some on-street parking. East of Adeline Street, 5th Street is a one-way, eastbound roadway providing two automobile travel lanes between Adeline Street and Market Street and three automobile travel lanes east of Market Street and on-street parking on the south side of the street east of Brush Street. 5th Street provides access to I-880 northbound at Union Street and to I-880 southbound at Adeline Street and at Broadway. I-880 southbound provides access to 5th Street at Union Street. AC Transit Lines O and W operate on 5th Street in the project vicinity.

7th Street is an east-west roadway that extends between Port View Park at the Port of Oakland and East 8th Street. East of Castro Street, 7th Street is a one-way, eastbound roadway providing four automobile travel lanes. Between Castro Street and Adeline Street, 7th Street is a two-way, six-lane divided roadway with left-turn pockets, and between Adeline Street and Mandela Parkway, 7th Street is a two-way four-lane divided roadway with left-turn pockets. On-street parking is typically permitted on both sides of the street. AC Transit Lines 29, 36, and 62 operate on 7th Street in the project vicinity. 7th Street also provides access to the West Oakland BART station.

8th Street is a one-way, westbound roadway that extends between Fallon Street and Castro Street. 8th Street provides two to four automobile travel lanes depending on location. A Class 2 bikeway is provided on the north side of the street between Broadway and Jefferson Street. On-street parking is permitted on both sides of the street with some blocks providing angle parking. AC Transit Line 62 operates on 8th Street in the project vicinity. 8th Street continues through West Oakland, starting at Market Street, as a two-lane residential neighborhood street.

Adeline Street is a north-south roadway that extends between Middle Harbor Road at the Port of Oakland and Shattuck Avenue in Berkeley. Between 10th Street and 19th Street, Adeline Street provides two automobile travel lanes and buffered Class 2 bikeways. Elsewhere in the project vicinity, Adeline Street provides two to four automobile travel lanes and no bicycle facilities. On-street parking is permitted on both sides of the street in the project vicinity north of 3rd Street. AC Transit Line 36 operates between 7th Street and 40th Street. Adeline Street provides the primary truck entrance to the Seaport.

Broadway is primarily a four-lane north-south roadway that extends between Water Street and the Caldecott Tunnel on-ramp. Broadway provides divided lanes south of 11th Street and between 15th Street and 17th Street in the project vicinity. No bicycle facilities are provided on Broadway in the project vicinity. On-street parking is permitted on both sides of the street south of 5th Street. Between 5th Street and 17th Street, on-street parking is typically not permitted on the west side of the street. AC Transit Lines 6, 12, 18, 19, 33, 51A, 72, 72M, 72R, and 96, as well as the Broadway Shuttle, operate on Broadway in the project vicinity. Broadway also provides access to the 12th Street and 19th Street BART stations. Broadway provides an at-grade rail crossing at Embarcadero West and is rated for fire apparatus crossing the tracks.

Brush Street is a north-south roadway that extends between 2nd Street and San Pablo Avenue. Brush Street does not connect to Embarcadero West adjacent to the project site. North of 5th Street, Brush Street is a one-way southbound roadway providing three travel lanes south of 18th Street. South of 5th Street, Brush Street is a two-way, two-lane street. I-980 southbound off-ramps provide access to Brush Street at 12th Street and 18th Street, and Brush Street provides access to I-980 southbound on-ramps at 11th Street and 17th Street. Brush Street is as a Class 2 bikeway between 2nd Street and 3rd Street and is part of the on-street Bay Trail alignment. On-street parking is permitted on both sides of the street south of 5th Street and on the west side of the street north of 5th Street in the project vicinity.

Castro Street is a north-south roadway that extends between 2nd Street and West Grand Avenue. Castro Street does not connect to Embarcadero West adjacent to the project site. North of 5th Street in the project vicinity, Castro Street is a one-way, three-lane northbound roadway. South of 5th Street, Castro Street is a two-way, two-lane street. Castro Street provides access to I-980 northbound on-ramps at 12th Street and 18th Street, and I-980 northbound off-ramps provide access to Castro Street at 11th Street and 17th Street. On-street parking is permitted on both sides of the street south of 5th Street and on the east side of the street north of 5th Street.

Clay Street is a two-lane north-south roadway that extends between Water Street and 4th Street. Clay Street provides Class 2 bikeways between 2nd Street and Water Street. Clay Street connects to the San Francisco Bay Trail at Water Street. On-street parking is permitted on the street. There are sidewalk gaps between 2nd and 3rd Streets. AC Transit Lines 72, 72M, and 72R operate southbound between 3rd Street and 2nd Street. Clay Street also provides access to the San Francisco Bay Ferry Terminal. Clay Street provides an at-grade rail crossing at Embarcadero West and is rated for fire apparatus crossing the tracks.

Embarcadero West is an east-west roadway that extends between the Howard Terminal site and Embarcadero at the Embarcadero Bridge. Embarcadero West ends west of the project site at Schnitzer Steel and there is no public access road between Adeline Street and Market Street south of the railroad tracks. Between Jefferson Street and Webster Street, Embarcadero West is a two-lane roadway divided by railroad tracks. On-street parking is permitted on the south side of the street at select locations between Martin Luther King Jr. Way and Clay Street. AC Transit Line 12 and the Broadway Shuttle operate on Embarcadero West between Broadway and Webster Street.

Water Street is an east-west local road that extends between Clay Street and Harrison Street. East of Washington Street, Water Street is a pedestrian and bicycle shared use path restricted to emergency and service vehicles. It provides emergency vehicle access to existing buildings in Jack London Square and is rated for fire apparatus. There is an active fire station at the Water Street/Clay Street intersection.

Market Street is primarily a four-lane north-south divided roadway with left-turn pockets that extends between the Howard Terminal site and Lowell Street. Class 2 bikeways are provided north of 3rd Street in the project vicinity, and painted buffers are provided north of 7th Street. South of 3rd Street, Market Street is undivided and provides no bicycle facilities. On-street parking is permitted on both sides of the street north of 3rd Street. AC Transit Line 88 operates on Market Street north of 10th Street. Market Street provides an at-grade rail crossing at Embarcadero West and is one of two north-south streets providing access to the project site and will be rated for fire apparatus crossing the tracks.

Martin Luther King Jr. Way is a four-lane north-south roadway that extends between the Howard Terminal site and San Pablo Avenue. On-street parking is permitted on both sides of the street. AC Transit Line 20 operates northbound between 10th Street and 11th Street, and AC Transit Lines 19 and 40 operate southbound between 12th Street and 11th Street. Martin Luther King Jr. Way provides an at-grade rail crossing at Embarcadero West and is one of two north-south streets providing access to the project site and will be rated for fire apparatus crossing the tracks.

The **Webster Street** and **Posey Tubes** extend under the Oakland Estuary between Oakland and Alameda. The Webster Street Tube provides two southbound automobile travel lanes and can be accessed from 5th Street and Webster Street. The Posey Tube provides two northbound automobile travel lanes providing access to Harrison Street and 7th Street. AC Transit Lines 19, 20, 51A, 96, O, and W operate through the Webster Street and Posey Tubes.

Washington Street is a two-lane north-south roadway that extends between Water Street and 10th Street. Washington Street provides Class 2 bikeways between 2nd Street and 6th Street and transitions to a designated Class 3 bikeway at 7th Street. On-street parking is permitted on both sides of the street north of 2nd Street. Washington Street provides an at-grade rail crossing at Embarcadero West and is rated for fire apparatus crossing the tracks.

8.1.2. Regional Access

Interstate 880 (I-880): I-880 connects the project with points north and south in the East Bay, as well as with San Francisco via an interchange with Interstate 80 (I-80) at the Bay Bridge. In addition to I-80, I-880 also connects with Interstate 580 (I-580) and Interstate 980 (I-980). In the project vicinity, I-880 typically has eight lanes, four in each direction. On- and off-ramps serving the site are as follows:

- Off-ramps:
    - Northbound: 6th Street at Market Street (primary) and 6th Street at Broadway (secondary)
    - Southbound: Union Street at 5th Street
- On-ramps:
    - Northbound: Union Street at 5th Street
    - Southbound: 5th Street at Adeline Street (secondary) and 5th Street at Broadway (primary)

The on- and off-ramps at Broadway currently experience heavy congestion during peak commute periods. Southbound mainline traffic congestion during commute periods is heavy where the I-980 and I-880 merge and the congestion often continues south through much of Oakland past 66th Avenue. Some southbound drivers exit the freeway at Union Street and use 7th Street to bypass the freeway congestion. Northbound congestion occurs as drivers maneuver either to I-980 or continue to I-880, and there is substantial slowing through the I-980 interchange.

Interstate 980 (I-980): I-980 connects I-880 with I-580 and California 24 (CA 24) through Downtown Oakland. On- and off-ramps serving the site are located as follows:

- Off-ramps:
    - Northbound: Castro Street at 11th Street and 17th Street
    - Southbound: Brush Street at 18th and at 12th Street
- On-ramps:
    - Northbound: Castro Street at 12th Street and at 17th Street
    - Southbound: Brush Street at 17th Street and 11th Street

The on- and off-ramps do not experience congestion during peak commute periods. Nor does the I-980 mainline. Freeway mainline congestion occurs during the afternoon commute on northbound I-980, north of the point at which I-980 intersects with CA 24.

8.2. Roadway Network Improvements

As described in Chapters 5 through 7, improvements to roadway network in the vicinity of the Ballpark have been identified to improve the safety, connectivity, and efficiency of transit, walking, and bicycling. Some of the improvements are identified as mitigation measures required to reduce significant transportation impacts identified in the EIR, while others are identified as non-CEQA recommendations for the City's consideration. Many of these improvements would permanently reduce capacity for personal automobiles and/or reduce on-street parking supply, such as bus-only lanes on Broadway and bicycle facilities on 7th Street and Martin Luther King Jr. Way. Other permanent improvements would reduce vehicle delay, such as the installation and upgrade of traffic signals along Adeline Street, Market Street, and Martin Luther King Jr. Way and the restriping of travel lanes to provide dedicated turn lanes. The conceptual drawings in Appendix B show the potential road network and are representations of transportation features if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland and other responsible agencies.

During events at the Ballpark, automobile travel in the Ballpark area will be directed to travel along a few primary corridors to minimize conflicts with Seaport and transit operations, pedestrians, and bicyclists. Vehicle traffic will be restricted entirely on some corridors (e.g. 2nd Street) and will have turn restrictions on others (e.g. Martin Luther King Jr. Way). Traffic control officers and/or special event signal timings may be utilized to ensure efficient operations. Details of the event roadway management plan can be found in Chapter 11.

Due to the reduction in roadway capacity proposed by the project and the increased daily and peak demand caused by the non-ballpark development at Howard Terminal and Ballpark events, roadway operations were analyzed in depth to assess vehicle congestion and delay in the Ballpark area during peak hours with the project. A discussion of the methodology and results can be found in the CEQA document and its supporting appendices.

8.3. On-Site Parking Management

In Phase 1 of the development plan for Howard Terminal, up to 3,500 surface parking spaces will be provided on-site. In addition, 400 parking spaces in the 950-space Washington Street Parking Garage, located just north of the railroad tracks, will be reserved for Ballpark attendees on game days, with additional spaces provided as available. The on-site parking spaces will be accessed via Market Street and Martin Luther King Jr. Way. Based on the observed arrival pattern of event attendees at the Coliseum, about half of all vehicles will arrive in the hour preceding game time. Later phases of the project will convert surface parking around the Ballpark to commercial space, office space, and residential uses with structured parking

to serve the Ballpark and non-Ballpark development. At buildout, up to 2,000 on-site parking spaces will be provided for the Ballpark.

The limited number of entrances to Howard Terminal will constrain the entry rate to on-site parking facilities. On-site parking for the Ballpark will use a reservation system to require attendees seeking to drive to the Ballpark to obtain a space ahead of time and ensure that they do not search for a parking space within the parking area at the Ballpark. With a reservation system, about 1,700 vehicles per hour can be processed to and from the on-site ballpark parking.

Existing vehicle routes to Howard Terminal for on-site parking cross the railroad tracks at-grade, which could result in vehicle and train conflicts. At this time, grade separation feasibility studies are being conducted. See Chapter 9 for a discussion of the at-grade railroad safety improvements proposed with the project.

8.4. Off-Site Parking Management

The City of Oakland prepared a Parking Management Plan (PMP) that addresses daily on- and off-street parking management in Oakland, with additional details for parking management near the Project site on game days. The PMP identifies the following principles to guide parking and curb management decisions:

- Parking is part of a multimodal approach to developing neighborhood transportation infrastructure.
- Parking should be actively managed to maximize efficient use of a public resource.
- Parking should be easy for customers.
- Parking policy and regulations should help the City meet other transportation, land use, and environmental goals.

Due to the limited on-site parking provided at the Ballpark, many attendees who choose to drive to events will park in nearby off-site spaces. There are approximately 2,900 publicly available parking spaces within 0.5 miles of the Ballpark and about 13,000 spaces within one mile.[5] Around 4,700 of the parking spaces within one mile of the Ballpark are on-street, while 8,300 are in off-site garages or surface lots.

Surveys were performed to determine the availability of parking at nearby off-site parking facilities. Nearby off-site parking is utilized by workers in Downtown Oakland and the Jack London and Chinatown Districts, so about 4,200 of the total parking spaces within one mile of the Ballpark are available around the time

[5] There are approximately 300 on-street spaces in residential parking permit programs within 0.5 miles of the Ballpark and 800 within one mile. These spaces are not included in the parking supply and availability numbers.

attendees will park for midday weekday games. Evenings experience greater parking availability; about 7,600 spaces are available when attendees arrive for evening games.

Off-street parking is concentrated around downtown and the 12th Street BART station, but a substantial number of garage spaces are also located in the Jack London District. Both areas also provide a substantial amount of on-street parking. Much of West Oakland is covered by residential parking permit programs, and there are few publicly available parking garages or lots. The off-site parking seeks to reduce racial disparities by protecting neighborhoods with historical inequities from the negative impacts of vehicles using parking spaces otherwise used by residents and the emissions and safety issues cause by vehicles circling looking for parking.

8.4.1. On-Street Parking

Surveys were performed to determine the amount of on-street parking available in the vicinity of the ballpark at times when games or events are scheduled to occur. Existing on-street parking near the Howard Terminal site includes a mix of free parking, paid parking, and two- or four-hour time restrictions, all which end at 6:00 PM. Within one mile of Howard Terminal, there are roughly 1,300 on-street parking spaces available during weekday day games and 2,300 available at other game times. Some on-street parking will be permanently eliminated with the project due to roadway, transit, bicycle, and pedestrian improvements. Additional on-street parking may be eliminated on gamedays to provide improved gameday operations.

On-street parking in Downtown Oakland, the Jack London and Chinatown Districts, and West Oakland is used by residents and visitors to these areas, and the high demand expected during game times will make finding parking for those uses challenging.

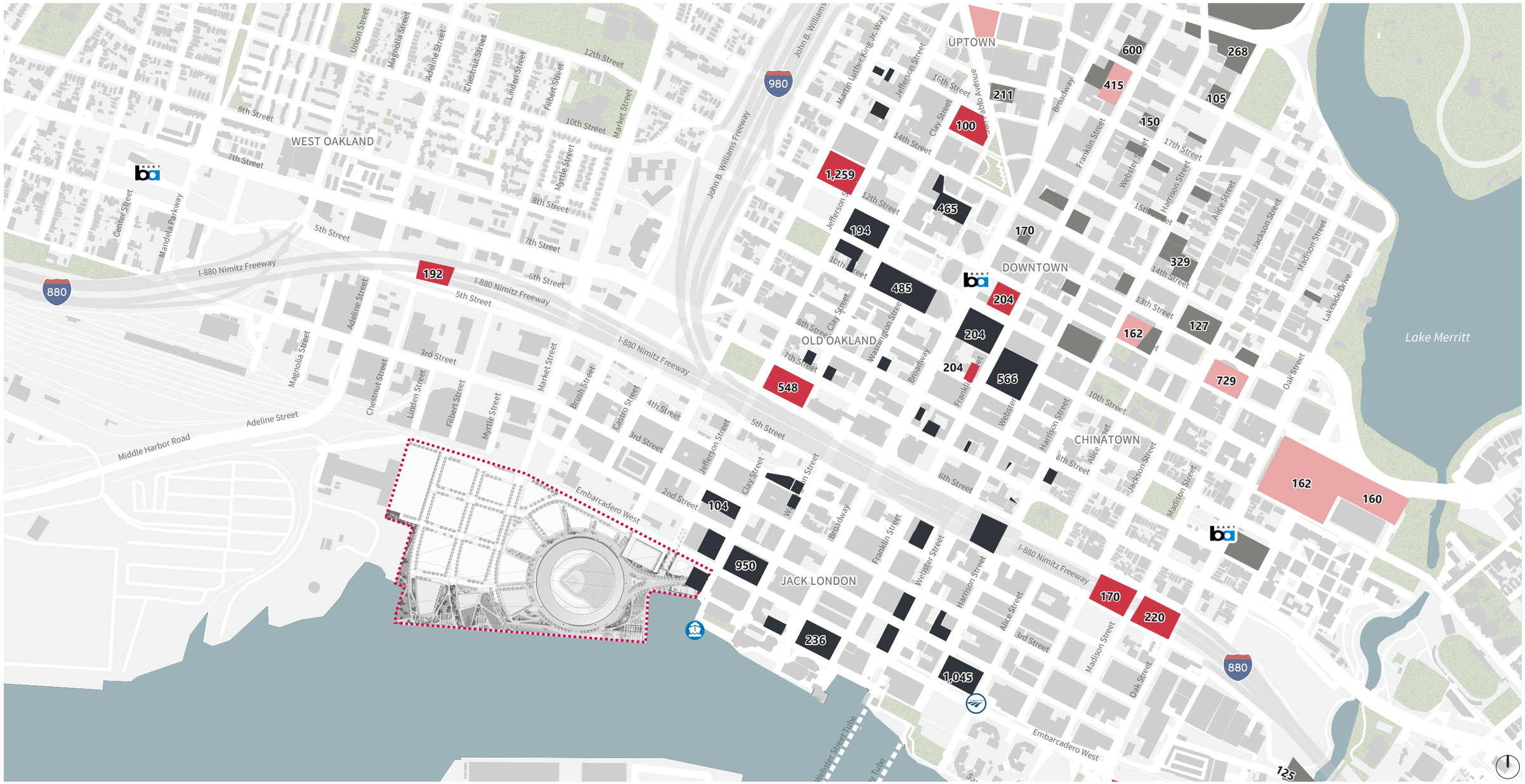
For on-street parking management, the PMP recommends enforcing on-street meters 362 days a year including Sundays and extending enforcement hours depending on the hours of adjacent businesses and demand for parking, with the goal of approximately 85 percent maximum occupancy per block. These changes are applicable where parking meters are needed and would support parking management efforts at the Project site by having on-street parking management during all days and times when there would be baseball games or other events. The PMP recommends new on-street meters for all block faces that do not have Residential Parking Permits (RPP) where the City of Oakland anticipates people may park for events at the Project site. It also includes potential new RPP areas to protect on-street parking for Oakland residents, especially in areas of West Oakland, and extending enforcement hours of RPP like on-street meters.

8.4.2. Off-Street Parking

Parking garages and lots within one mile of the Howard Terminal site supply a total of 8,300 publicly available parking spaces, 2,900 of which are expected to be available during weekday day games and 5,300 of which are expected to be available during weekday evening and weekend games.

See **Figure 8-1** for a map of publicly available off-street parking in the project vicinity. Major parking facilities within one mile of Ballpark site include the 1,259-space City Center West Garage, the 1,045-space Amtrak Jack London Garage, and the 950-space Washington Street Parking Garage. Moderate-sized parking facilities include the 566-space Renaissance Plaza Parking Garage at 9th & Franklin, the 548-space structure at 7th Street and Jefferson Street, the 485-space structure at the Convention Center, and the 465-space City Center Garage at 12th Street.

For off-street publicly available parking management, the PMP recommends prohibiting monthly and daily pricing, while avoiding or eliminating permit and discount programs, and requires that parking be sold by the hour. It also recommends time-of-day pricing at off-street parking locations and the ability to charge higher special event rates. The PMP also recommends implementing an off-street parking garage reservation system for special events to minimize congestion and conflicts caused by people who drive directly to the ballpark and circle to find parking.



LEGEND

WITHIN ONE MILE WALKSHED OF THE PROJECT SITE

BEYOND ONE MILE WALKSHED

- # City/County-owned Parking (Total Parking Supply, 100 spaces or more)
- # Non-City/County Owned Parking (Total Parking Supply, 100 spaces or more)
- Project Boundary
- BART Station
- Amtrak
- Ferry

NOTE: Parking supply was measured in 2015 and updated in 2019 to reflect known parking supply removed from inventory

Figure 8-1

Publicly Available Off-Street Parking

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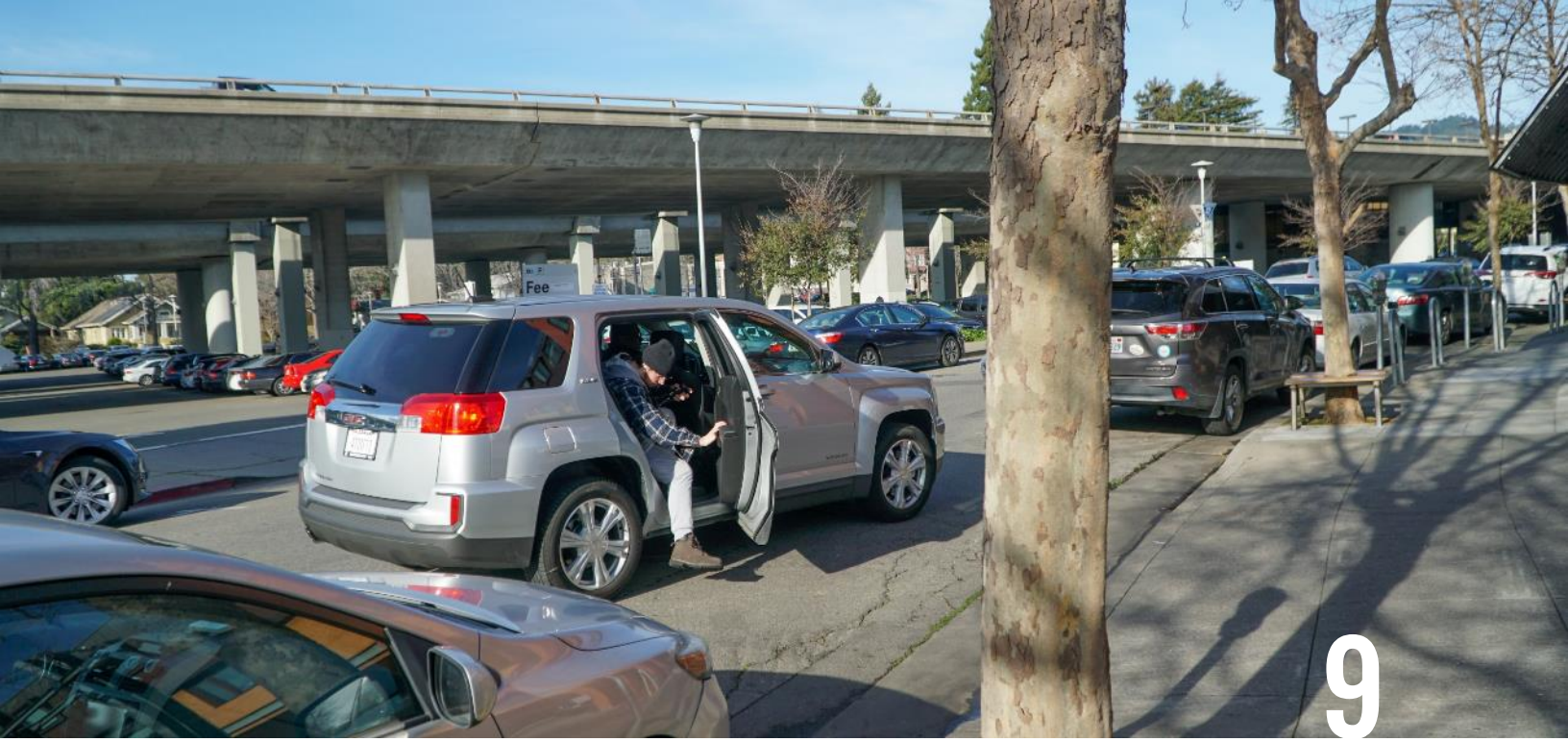


9

9. Ridesourcing and Taxi Element

This chapter discusses plans to manage taxis and ridesourcing, also referred to as Transportation Network Companies or TNCs (e.g., Lyft and Uber) for trips to and from the Ballpark vicinity. While many of these strategies are focused on ridesourcing, some apply to taxis. Like other chapters, these management strategies will be evaluated and updated as needed.

Ridesourcing companies provide a taxi-like service using smartphone apps for hailing. Ridesourcing use in the Bay Area is high relative to other parts of the country, and a June 2017 report from the San Francisco County Transportation Authority found that ridesourcing accounts for approximately 15% of all vehicle trips and 9% of all person trips within the City of San Francisco on a typical weekday. Additionally, Fridays and Saturdays were found to have the highest volumes of ridesourcing use. Oakland-specific ridesourcing data is not available. While it is more difficult and expensive to drive and park a personal vehicle in San Francisco than in Oakland, San Francisco also has a more robust transit network and higher transit mode share. Based on these factors, ridesourcing usage levels in Oakland may be comparable to those in San Francisco.

While ridesourcing will play a substantial role in transporting attendees to and from the Ballpark, these trips pose unique challenges. From an operational perspective, each ridesourcing trip is composed of two individual trips: one trip entering the area to pick up or drop off the passenger and one trip leaving the area. Ridesourcing vehicles will be managed to improve operational efficiency, but ridesourcing access to the Ballpark area will be de-prioritized compared to transit, bicycling, and walking due to the TMP's goal of reducing vehicle trips. The strategies and best practices that will be used are set forth below. These strategies have proven effective at other locations (e.g. airports and other event venues) where ridesourcing and taxi modes are prevalent.

9.1. Strategies and Best Practices

Strategies will be utilized to manage ridesourcing and taxi congestion and curb space demands during pre- and post-event conditions. The primary outcomes sought from this management include:

- Dispersing demand away from congested curb spaces and streets expected to have heavy traffic loads
- Shifting ridesourcing and taxi operations away from major traffic corridors providing access to freeways or transit service by establishing clear staging locations and ingress/ egress routes
- Reducing the likelihood that improper pick-ups and drop-offs will block travel lanes, transit stops/lanes, bike lanes, or crosswalks
- Encouraging the use of non-automobile modes of transportation

The ridesourcing and taxi strategies listed below will be combined with the demand management strategies described in Chapter 4 to ensure the area near Howard Terminal is not unreasonably burdened with vehicles before and after events. The A's will make good faith attempts to enter into agreements with ridesourcing companies to employ the following primary ridesourcing and taxi management strategies:

- **Pick Up/Drop Off Restrictions**: Using a mix of traffic and / or parking control officers or other personnel acceptable to the City, physical barriers, and, if possible, management agreements with ridesourcing operators, the area near the Ballpark will be restricted such that ridesourcing vehicles are not able to pick up or drop off passengers on-site, except under special circumstances, or in the nearby area with the highest density of transit vehicles, bicyclists, pedestrians, and personal vehicles.
- **Designated Pick-up/Drop-off Areas**: Designated pick-up/drop-off areas will be provided and managed to increase ridesourcing capacity and improve predictability compared to operations without these areas and provide a convenient, well-lit area for passengers to more efficiently load and unload.
- **Ridesourcing Fees**: If feasible, fees for operators to utilize these staging areas will be implemented to reduce demand for ridesourcing via pricing.

9.2. Ridesourcing Gameday Operations

Traffic control officers will be stationed at all entrances to the Ballpark area, directing ridesourcing vehicles towards pick-up/drop-off areas, potentially located under the I-880 overpass between Market and Castro Streets, in the vicinity of the Produce Market, or in one of the surface parking lots in Jack London District. Additional pick-up/drop-off areas in the Jack London District are also planned, but specific locations have not yet been identified.

The A's will make good faith efforts to enter into agreements with ridesourcing companies to provide first-in/first-out operations or use ambassadors coupled with letter/zone matching to reduce time spent by passengers and drivers searching for each other.



10

10. At-Grade Rail Crossings

Railroad tracks serving passenger and freight services lie parallel to the north of Embarcadero West. Passenger rail currently runs 42 trains per weekday and 34 trains per weekend day on these tracks. Freight rail does not operate on a set schedule, but field observations conducted the week of July 22 through 28 (2019) at the Market Street and Martin Luther King Jr. Way at-grade crossings found that an average of six freight trains passed through the corridor each day between 11:00 AM and 11:00 PM. Several at-grade crossings for pedestrians and vehicles exist in the project vicinity and are described below.

Broadway crosses two tracks and provides two gates. The southbound approach provides a single-arm gate and overhead flashing lights, and the northbound approach provides a single-arm gate. Both approaches provide pedestrian-level flashing warning lights on both sides of the street. Crosswalks are marked across the tracks on both sides of the street, although the crosswalks are outside of the crossing arms.

Washington Street crosses two tracks and provides two gates. Both southbound and northbound approaches provide a single-arm gate. Crosswalks are marked across the tracks on both sides of the street. Both crosswalks are outside of the crossing arms and do not provide additional warnings to pedestrians about oncoming trains.

Clay Street crosses two tracks and provides two gates. Both southbound and northbound approaches provide a single-arm gate. Pedestrians are directed by signage to cross using a marked crosswalk across the tracks on the east side of the street. However, this crosswalk is on the outside of the crossing arms and does not provide additional warnings to pedestrians about oncoming trains.

Martin Luther King Jr. Way crosses two tracks and provides two gates. The southbound approach provides a single-arm gate and overhead flashing lights, and the northbound approach provides a single-arm gate. The crossing provides direct access to the Howard Terminal site. Pedestrian crossing areas are designated by painted lines, though the east side is not completely blocked by a lowered crossing arm.

Market Street crosses three tracks and provides two gates. The southbound approach provides a single-arm gate, and the northbound approach utilizes a median gate to provide two arms. The crossing provides direct access to the Howard Terminal site. No pedestrian infrastructure or barriers are provided at the Market Street crossing. There is a third track through the Market Street crossing that is a spur serving the Port of Oakland. Train cars are attached to each other within the Port and then directed to this spur to access the mainline traveling south. Freight trains will sometimes wait on this third track, blocking Market Street, until passenger trains have cleared the mainline tracks and the freight train can proceed.

10.1. Train Crossing Gate Downtimes

Field observations in July 2019 looked at gate downtimes for at-grade crossings from passenger and freight trains. Observations revealed a median gate downtime for trains between 11:00 AM and 11:00 PM of 58 seconds, with an average of four downtimes per hour. There was a wide range of gate downtimes within the observations, with differences between passenger and freight trains. Gate downtimes for passenger trains were typically less than two minutes, with three to four trains per hour. Gate downtimes for freight trains were typically five to seven minutes, with five to six trains per day. There were 13 observed instances during the seven-day study period where gate down times at the Market Street crossing exceeded seven minutes, and there were seven similar instances at the Martin Luther King Jr. Way crossing. All these observations were associated with freight trains. There were six instances during the week when the gates were down at both crossings simultaneously, with the longest being about 19 minutes and the shortest being about seven minutes.

10.2. At-Grade Crossing Improvements

All existing bicycle routes and most existing pedestrian routes to Howard Terminal cross the railroad tracks at-grade, as do pedestrian and bike crossings in the Jack London District. Increased vehicle, bicycle, and pedestrian Ballpark demand could result in conflicts with trains. As a result, at-grade railroad crossing infrastructure improvements are required as Mitigation Measure TRANS-3a in the EIR. At-grade crossing improvements include four-quadrant gates, pedestrian gates, and fencing to more effectively block off crossings when a train is arriving and are described below.

- Install fencing along both sides of the railroad corridor extending along the project's frontage starting at the Schnitzer Steel boundary and continuing to Broadway. This change will alter Embarcadero West circulation as follows:

- Between Market Street and Schnitzer Steel, Embarcadero West remains two-way with a signalized intersection at Market Street.
- Between Market Street and Martin Luther King Jr. Way the street is abandoned such that there will no longer be a motor vehicle intersection at Martin Luther King Jr. Way.
- The portion of Embarcadero that is south of the active UPRR tracks and between Martin Luther King Jr. Way to Washington Street (and potentially to Broadway) would be physically separated from the railroad tracks by a fence to accommodate a multi-use path. The multi-use path would replace the vehicle street that exists today (emergency vehicles would be accommodated to the extent feasible). The fence line separating the railroad tracks and Embarcadero would be offset from the active track or third track by approximately 10 feet, or the minimum allowable by UPRR. The multi-use path would be up to 30 feet wide between the fence and the existing buildings if the fence is offset from the active track. The portion of Embarcadero between Washington Street and Broadway could also accommodate a multi-use path between the fence and the existing buildings, to the extent feasible, if the existing 12-foot wide vehicle lane were combined with the 8-foot wide sidewalk. On the north side of the railroad Embarcadero West would remain one-way westbound with forced right turns at Jefferson, Clay, and Washington Streets as well as at Broadway. Vehicle access to the Vistra Plant could be via an extension of Water Street at Clay Street or driveway easement and used infrequently solely for site access.

- Upgrade the existing at-grade railroad crossings at Market Street, Martin Luther King Jr. Way, Clay Street, Washington Street and Broadway with quad gates (or equivalent) for motor vehicles and separate signals and gates for pedestrians and bicyclists. Provide improved pedestrian and bicycle surfaces at each crossing as well as ADA features and clearly defined staging areas for pedestrians and bicyclists to wait as a train passes by. Ensure that at-grade crossings are rated for fire apparatus.
- Install a traffic signal at the Market Street at-grade crossing and its intersection with Embarcadero West as well as a traffic signal on Market Street at 3rd Street. These signals, and any others provided on-site, will be part of the railroad preemption system[6] and include queue cutter loops[7] on Market Street that will be tied to both traffic signals to minimize the potential for motor vehicles to queue across the railroad tracks. Also, install blankout turn restriction signs for the eastbound right turn and the westbound left turn at 3rd Street that are activated during railroad preemption.

[6] A railroad preemption system provides an opportunity for vehicles to clear the track area before the train arrives at the crossing.

[7] A queue cutter loop signal is a traffic signal installed at a highway-rail grade crossing in a manner similar to a pre-signal; its function is to provide a means to prevent vehicles from stopping on the tracks or within the railroad right-of-way as a result of traffic queuing from a downstream signalized intersection.

- While there is no motor vehicle intersection at the Martin Luther King Jr. Way at-grade crossing, install a traffic signal at the at-grade crossing as well as traffic signals at 2nd Street where left turns will be prohibited and at 3rd Street where a left-turn lane will be provided to separate left turning and through movement traffic. These signals will be part of the railroad preemption system and include a queue cutter loop on Martin Luther King Jr. Way that will be tied to all three traffic signals to minimize the potential for motor vehicles to queue across the railroad tracks. Also, install blankout turn restriction signs for the eastbound right turn and the westbound left turn at 3rd Street that are activated during railroad preemption.

Modifications to an existing at-grade rail crossing are subject to CPUC approval and must follow the CPUC General Order 88-B (GO 88-B) process to obtain CPUC authorization. This process includes conducting an on-site diagnostic meeting with interested parties to review proposed changes, updating plans based on reviews by interested parties, and obtaining written concurrence of the rail organization and/or roadway authority with the jurisdiction at the crossing. Grade separated crossings for motor vehicles are under study.

As required by Mitigation Measure TRANS-3b in the EIR, the project also provides a pedestrian and bicycle overcrossing at Clay Street, Jefferson Street, or comparable nearby location to create a safe and accessible route for pedestrians and bicyclists traveling to the site on gamedays and non-gamedays. The overcrossing has not been specifically designed but could include some combination of stair and elevator system, with ADA-compliant ramping that could also be used by bicycle riders.

It is expected that design and construction of the overcrossing will be completed by opening day; however, it will require review and approval of the CPUC, Union Pacific Railroad, consultation with the Capital Corridor Joint Powers Authority, the City of Oakland, and the Port of Oakland.



11

11. Pre- and Post-Event Management

An integrated approach for managing people walking and biking, using transit, and driving or riding in cars is necessary within the Ballpark vicinity. This chapter presents recommended management activities by corridor. Compared to other chapters of the TMP, this chapter is more detailed so that TMP readers and users of the TMP understand the details and rationale for recommended strategies.

People using different modes of transportation will be competing for the right of way, which will require active management before and after events at Howard Terminal to encourage smoother operations. The A's will work with the City of Oakland and Port of Oakland to create and maintain a multi-agency Transportation Operations Committee (TOC), to discuss operations for each event, including what has worked well and opportunities for improvement from past events.

Event operations management and controls will vary depending on the size of the event. Large events like high-attendance baseball games and concerts necessitate a comprehensive suite of traffic controls to ensure a smooth travel experience for all attendees, whereas more limited interventions are enough for smaller events like speaking engagements and graduation ceremonies. Attendance thresholds identified in this chapter are meant to provide a starting point to guide the TMP team as they approach opening day. The initial thresholds are conservative to ensure the system operates well even at smaller events, and thresholds will be adjusted to reflect actual operations.

The management strategies in this chapter describe using personnel i.e., traffic and/or parking control officers or other personnel acceptable to the City for managing and directing traffic. The current City of Oakland policy requires the use of uniformed police officers to manage traffic. In many locations, uniformed police officers could be substituted with parking control officers or other personnel acceptable to the City,

depending on the job requirements, but City policy would need to be modified to allow non-police personnel to manage motorized and non-motorized traffic.

Blank-out turn restriction signs are also used to manage traffic in some locations. These signs indicate that turns are prohibited and can be turned off for all times other than pre- and post-event operations. In general, blank out signs can be used at intersections where there is no valid reason to make a turn, whereas traffic and/or parking control officers or other personnel acceptable to the City are needed to manage intersections where some drivers may still be turning.

This chapter describe the resources that will be deployed for small, medium, and large events. These assignments are preliminary and may be adjusted over time based on observed transportation needs. For example, personnel assigned to an intersection may be deployed to another intersection if the latter intersection has been experiencing congestion or unsafe conditions. Additionally, more personnel may be needed, or it may be determined that certain intersections do not require personnel. The adjustment of attendance thresholds and the deployment of personnel over time are examples of the living, adaptable nature of this TMP.

11.1. Small Event Management

The Ballpark is anticipated to host numerous small events with 2,000 to 9,000 attendees throughout the year. These events include corporate/community events (e.g. small conventions, conferences, cultural events, civic events, and private events), and plaza events (e.g. fan appreciation days, holiday celebrations, and outdoor exhibitions or festivals for arts, food, technology, or similar activities). Each year, the ballpark is expected to host approximately 100 corporate/community events with 300 to 2,000 attendees, around 16 plaza events with an average attendance of 2,400, and approximately 35 other events with an average attendance of 5,000. **Figure 11-1** illustrates the initial set of management strategies and personnel locations for small events.

Due to the relatively small number of attendees at these events, they are not expected to put substantial strain on the nearby transportation system and therefore do not warrant a large-scale intervention. However, one personnel may be placed at each of the following locations:

- Each of the railroad crossings at Market Street, Martin Luther King Jr Way, Clay Street, Washington Street, and Broadway to help ensure pedestrian and bicycle safety crossing the tracks
- The Adeline Street/3rd Street and 5th Street intersections to help ensure that Port of Oakland operations are not affected by increased vehicle, pedestrian, and bicycle traffic
- The Mandela Parkway/5th Street intersection to allow local traffic only on Mandela Parkway and 3rd Street and direct pedestrian, bicycle, and vehicle traffic to 7th Street to improve safety and minimize conflicts with Seaport traffic at the 3rd Street/Adeline Street intersection.



LEGEND

- Project Boundary
- Traffic or Parking Control Officer (or other personnel acceptable to the City)
- BART Station
- Amtrak
- Ferry

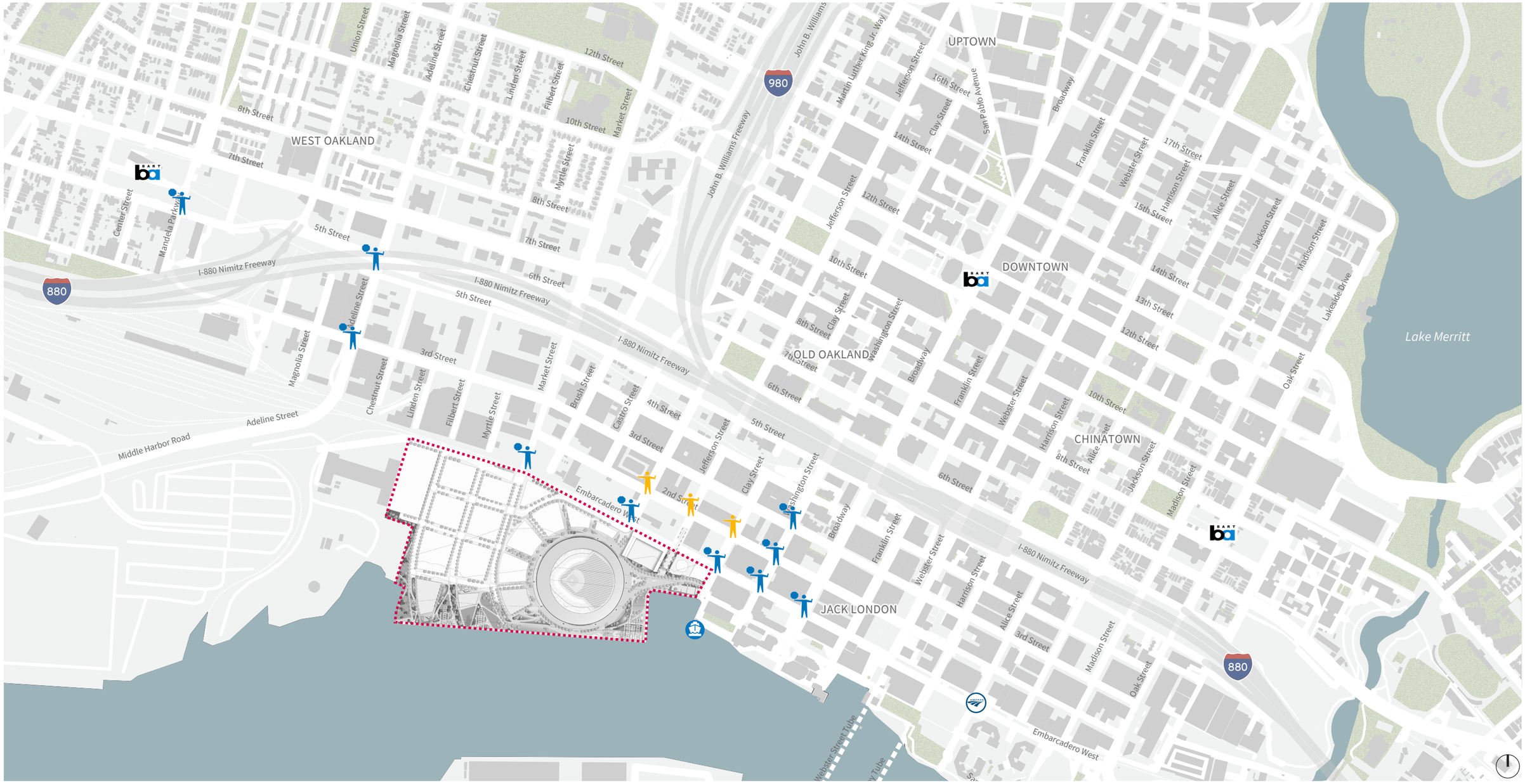
Figure 11-1

Traffic Management for Small Event

11.2. Medium Event Management

Events with between 9,000 and 17,500 attendees, or two or more simultaneous small events with a similar total attendance, warrant a more extensive set of traffic controls than smaller events. These events are expected to include lower-attendance baseball games. The lower threshold for inclusion as a medium-size event is conservative to ensure that the transportation system operates well from the start, and that threshold will likely be adjusted based on actual operations, including the type of event and day of the week. **Figure 11-2** illustrates the initial set of management strategies and personnel locations for medium events.

Traffic controls for these medium-size events would include all controls described for small events plus additional strategies. Events of this size may include shuttles transferring attendees between BART and the Ballpark. If shuttles are provided, one personnel may be stationed at the Washington Street/2nd Street and Washington Street/3rd Street intersections to facilitate shuttle operations, and ambassadors may be provided at the BART stations and the Transportation Hub on 2nd Street to direct pedestrian traffic, provide passengers with information, and assist with operations. To the extent possible, the A's will coordinate with ridesourcing companies to provide riders with only designated location(s) as options for pick-ups and drop offs on gamedays using an in-app geofence, which will apply to medium-size events.



LEGEND

- Project Boundary
- Traffic or Parking Control Officer (or other personnel acceptable to the City)
- Ambassadors
- BART Station
- Amtrak
- Ferry

Figure 11-2

Traffic Management for Medium Event

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11.3. Large Event Management

For events with greater than 17,500 people, or two or more simultaneous smaller events with similar attendance levels, a comprehensive set of management and control strategies will be employed. Depending on actual attendance levels, the full set of strategies may be employed at up to two pre-season games, 81 regular season games, and up to 11 post-season games. The regular season lasts from early April to early October, with about half of regular season games occurring on weekday evenings, one-sixth on weekday middays, and one-third on weekends. Additionally, about nine concerts large enough to warrant the complete set of strategies are expected to be held at the Ballpark each year.

Figure 11-3 illustrates the initial set of management strategies for large events, and **Figure 11-4** shows where personnel will be positioned for these events. Measures will typically begin two hours prior to the event's start time until the start of the event and then again be put in place prior to the event's conclusion typically until one to two hours after the end of the event, depending on how long it takes for all attendees to exit the Ballpark site.

11.3.1. Corridor Management

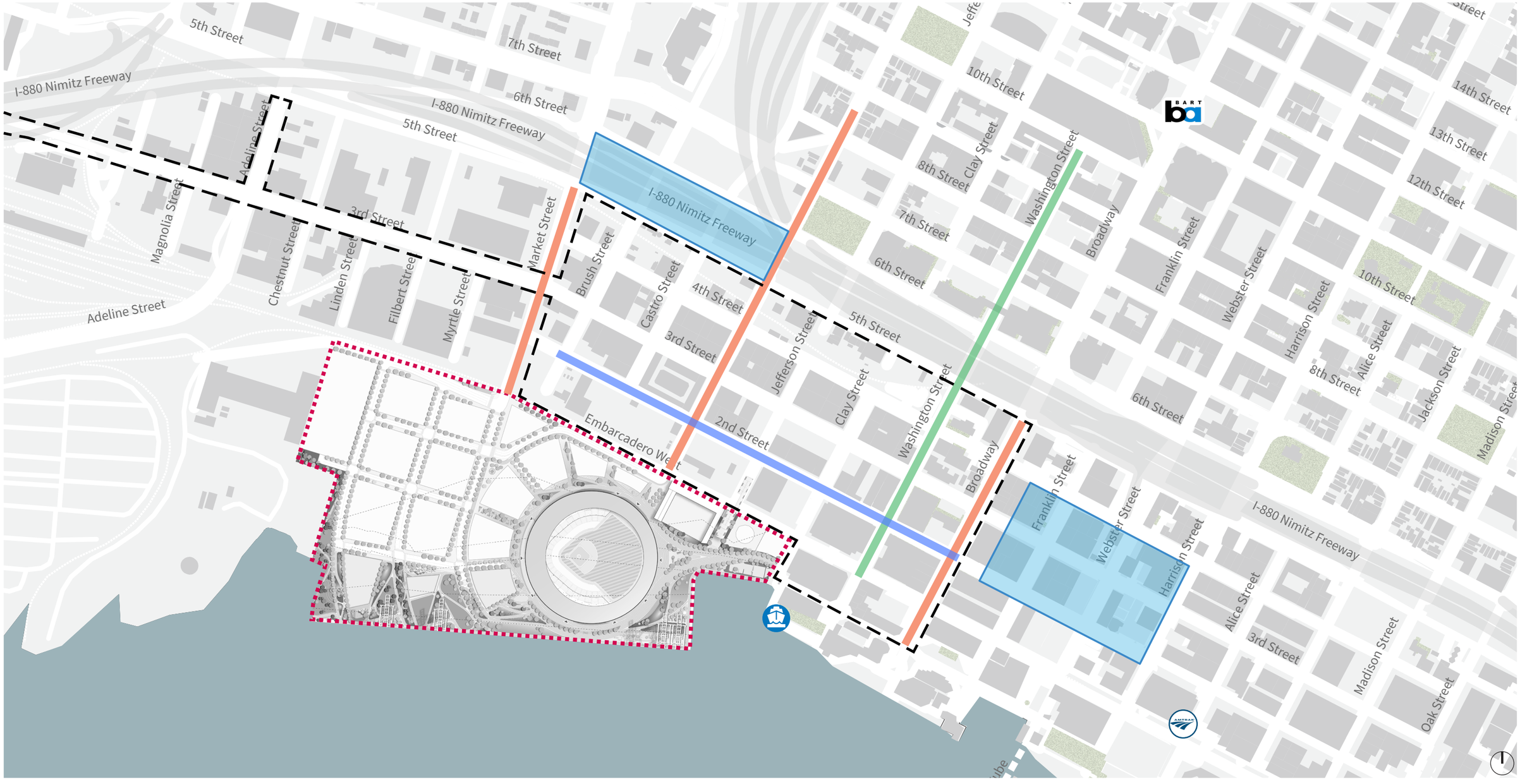
How each of the major corridors in the vicinity of the Ballpark may be managed before and after events via temporary improvements and traffic and/or parking control offices or other personnel acceptable to the City, is described below. The locations and staffing levels of these personnel described below represent one potential configuration that will be further refined in coordination with the City of Oakland and the Port of Oakland as the opening season approaches.

Market Street

Market Street will serve as a primary route for vehicles and pedestrians. Vehicle turn restrictions will be enforced between 5th Street and Embarcadero West, which will reduce conflicts between vehicles and pedestrians and eliminate delay associated with turning vehicles. Turn restrictions will also shift ballpark-destined traffic away from the Seaport.

One personnel each may be stationed at 4th Street and Embarcadero West, and blank-out turn restriction signs activated at 5th and 3rd Streets, to enforce the turn restrictions and allow east-west through traffic.

During pre-game operations, variable message signs will be installed north of 6th Street to direct southbound vehicles without a Ballpark or local parking pass (including ridesourcing vehicles) to turn at 5th or 6th Streets. Ticket checking staff will be provided between 6th and 5th Streets, and vehicles without a parking pass will be forced to turn left on 5th Street.



LEGEND

- Project Boundary
- Potential Pedestrian/Bicycle Festive street
- Bus-only and Local Traffic street
- Potential TNC opportunity areas
- Turns prohibited
- Local Traffic Only Boundary on Game Days
- BART Station
- Amtrak
- Ferry

Figure 11-3

Traffic Control Strategy



LEGEND

- Project Boundary
- Blank Out/Turn Restriction Signs
- Traffic or Parking Control Officer (or other personnel acceptable to the City)
- Ticket checking staff if neighborhood streets restricted to local traffic only
- Ambassadors
- BART Station
- Amtrak
- Ferry

Figure 11-4

Traffic Management for Capacity Ballpark Event

Brush and Castro Streets

Castro Street may serve as a primary route for transit vehicles (including shuttles), and both Brush and Castro may also serve as the primary routes for ridesourcing vehicles utilizing the potential ridesourcing lots under the I-880 overpass.

One personnel each may be stationed on Brush and Castro Streets south of 5th Street to enforce the restriction of southbound through movements and eastbound right turns to vehicles with a local parking pass only. One personnel may be stationed at the Castro Street/4th Street intersection to prevent drop-offs on 4th Street and direct ridesourcing vehicles diverted off Martin Luther King Jr. Way to travel north on Castro Street. Half barricades will be provided on southbound Brush and Castro Streets south of 3rd Street to restrict access to 2nd Street to transit vehicles only.

During pre-game operations, variable message signs will be installed on Brush Street north of 7th Street to direct southbound vehicles without a Ballpark or local parking pass (including ridesourcing vehicles) to turn at 7th or 6th Streets.

Martin Luther King Jr. Way

Martin Luther King Jr. Way will serve as a primary route for automobiles, bicycles, and pedestrians. Vehicle turn restrictions will be enforced between 5th Street and Embarcadero West, and at 7th Street and 8th Street during post-game operations, which will reduce conflicts between vehicles and pedestrians and eliminate delay associated with turning vehicles.

One personnel may be stationed at the 5th Street and Embarcadero West intersections, and blank-out turn restriction signs provided at 8th, 7th, 5th and 3rd Streets, to enforce the turn restrictions and allow east-west through traffic, including transit vehicles on 2nd and 3rd Streets. Transit vehicle movements will be prioritized at those locations. One or more personnel may be provided at the Transportation Hub on 2nd Street during events with shuttle service to provide information and assist with operations.

During pre-game operations, variable message signs will be provided north of 6th Street to direct southbound vehicles without a Ballpark or local parking pass (including ridesourcing vehicles) to turn left on 7th Street or right on 6th Street. Ticket checking staff will be provided between 6th and 5th Streets, and vehicles without a parking pass will be forced to turn right on 4th Street and then right on Castro Street.

On high-attendance gamedays, Martin Luther King Jr. Way may be converted to one southbound traffic lane only between 5th Street and 2nd Street during pre-event hours to allow for a second ticket-checking lane. Because all outbound traffic from the Howard Terminal site will be forced to use Market Street, this option may become less viable as more of the non-ballpark development at Howard Terminal is built out; however, build-out of the non-ballpark development is also expected to coincide with an approximately 40% reduction in on-site parking for the Ballpark.

Washington Street

Washington Street may be closed to vehicle traffic and serve as a primary bicycle and pedestrian route and festival street between Downtown Oakland and the Ballpark on high attendance gamedays. Barricades could also be provided on 10th Street between Broadway and Washington Streets, eliminating vehicle traffic. If Washington Street is closed, barricades and personnel will be provided between 10th and 2nd Streets to prevent vehicles from turning onto Washington Street.

If Washington Street remains open, one personnel may be stationed at each intersection between 4th Street and Embarcadero West, and blank-out turn restriction signs provided at each intersection between 8th Street and 5th Street, to allow east-west through traffic. However, pedestrian travel will be prioritized along Washington Street.

Broadway

Broadway will serve as a primary route for transit vehicles (including shuttles) and pedestrians. One personnel may be stationed at Embarcadero West, and blank-out turn restriction signs provided between 4th Street and 2nd Street, to prevent vehicles without a local pass from traveling westbound on these streets and to prioritize transit vehicle operations. During pre-game operations, vehicles with a parking pass to the Washington Street garage will be allowed to turn right onto 2nd Street westbound to access the garage via Clay Street.

Embarcadero West

One personnel may be provided at the Market Street and Martin Luther King Jr. Way crossings to assign right-of-way among vehicles, bicycles, and pedestrians and help to keep the tracks clear. One personnel each may also be assigned at the Clay Street, Washington Street, and Broadway crossings primarily to be a visible presence and ensure the people crossing the tracks obey the traffic control.

2nd and 3rd Streets

2nd Street and 3rd Street between Castro Street and Broadway will serve as primary routes for transit vehicles (including shuttles) through the area. Bus transit stops will be provided at the Transportation Hub on 2nd Street between Castro and Washington Streets, and on-street parking on 2nd Street between Brush Street and Broadway will be prohibited during events to ensure smooth transit operations.

One personnel may be stationed at the Washington Street intersections to allow transit vehicles and trucks to cross. Blank-out turn restriction signs will be provided at the Broadway intersections to prioritize transit vehicles and trucks and prohibit westbound travel for vehicles without a local pass. Blank-out signs will also be provided on 3rd Street at the Market Street and Martin Luther King Jr. Way intersections to enforce the turn restrictions and allow east-west through travel for transit vehicles (Martin Luther King Jr. Way only) and

vehicles with a local parking pass. Half barricades will be provided south of 3rd Street across southbound Brush, Castro, Jefferson, and Clay Streets to restrict access to 2nd Street to transit vehicles only. One ambassador each may be provided at the Transportation Hub on 2nd Street at intersections with Martin Luther King Jr. Way, Jefferson, Street, and Clay Street during events with shuttle service to provide information and assist with operations. One personnel may be stationed at the Adeline Street/3rd Street intersection to help ensure Port of Oakland operations are not affected by increased vehicle traffic in the area.

5th Street

5th Street will serve as the primary route for exiting vehicles to access the Webster Street tube to Alameda or I-880 southbound. 5th Street will remain open to through traffic, but vehicle right-turn restrictions will be enforced between Brush Street and Martin Luther King Jr. Way for all vehicles without a local parking pass, preventing travel through the neighborhood to the south. Right-turn restrictions will also be enforced at Market Street for vehicles without a local parking pass or on-site ballpark parking pass. A permanent sign west of Adeline Street will direct Howard Terminal traffic to Market Street. In addition, a blank-out sign will be installed that directs ballpark traffic straight on 5th Street at the Adeline Street intersection.

One personnel may be stationed at Mandela Parkway to direct pedestrian, bicycle, and vehicle traffic away from 3rd Street and, along with other personnel stationed at Adeline Street, minimize conflicts with the Port traffic. Personnel may also be stationed at Brush Street and Castro Street, and blank-out turn restriction signs provided at Market Street, Martin Luther King Jr. Way, and Washington Street, to enforce turn restrictions and allow through traffic. Pedestrian travel will be prioritized at Washington Street.

During pre-game operations, variable message signs will be provided west of Market Street and west of Adeline Street to direct vehicles without a Ballpark or local parking pass (including ridesourcing vehicles) to turn left on Market Street or continue through the intersection. Ticket checking staff will be provided in the eastbound right turn lane at the Market Street intersection, and vehicles without a parking pass will be forced to continue through the intersection.

11.3.2. Personal Automobile Operations

Before and after games, personal automobiles will be prohibited from accessing the area surrounding the Ballpark unless they have a parking pass for the on-site parking, the Washington Street Parking Garage, a local pass, or are local visitors. Information will be communicated to drivers using variable message signs.

All vehicles traveling to the on-site parking must access the site via Market Street or Martin Luther King Jr. Way, turning onto Market Street at 5th Street or further north and onto Martin Luther King Jr. Way at 6th Street or further north. Departing the site during post-game operations, vehicles must travel on Market

Street at least to 7th Street or Martin Luther King Jr. Way at least as far north as 8th Street to minimize turning conflicts with pedestrians and bike riders traveling north/south.

Vehicles carrying ballpark attendees without a parking pass for the on-site parking that attempt to travel southbound on Market Street or Martin Luther King Jr. Way south of 7th Street during the pre-game hours will be directed by variable message signs to depart the area. Vehicles will be prohibited from entering the vicinity of the Ballpark—south of 5th Street between Market Street and Broadway—from the east or west by personnel, except for those with a parking pass to the Washington Street garage or a local pass.

Event attendees without a parking pass for the on-site parking or Washington Street garage will be able to park in garages and on-street outside the area bounded by Market Street, Broadway, 5th Street, and Embarcadero West. The A's will coordinate with the City of Oakland and private garage operators to develop a reservation system for off-site garages and with the City of Oakland to manage on-street parking spaces. The reservation system is part of the City's Parking Management Plan.

Vehicles displaying a local pass or carrying local visitors will not be subject to the various access and turning restrictions in the Ballpark vicinity, apart from the barriers preventing automobile travel on Washington Street. These vehicles will be allowed to park on-street in places where parking is not prohibited except along the Transportation Hub on 2nd Street.

11.3.3. Ridesourcing Operations

Ridesourcing vehicles could be accommodated in managed lots located under the I-880 overpass between Market and Castro Streets, and in the Jack London District east of Broadway near the Produce Market. TNC loading zones could also be provided on-street in areas designated for commercial loading weekday mornings and then either commercial or passenger loading at other times. The A's will coordinate with ridesourcing companies to provide riders only these locations as options for pick-ups and drop offs on gamedays using a geofence. A private agreement between the A's and ridesourcing companies would ensure an efficient and high-quality experience for all fans using ridesourcing vehicles, but the planned operations for ridesourcing vehicles established in this TMP would be enforced by personnel and physical barriers, regardless of whether ridesourcing companies provide an in-app geofence.

The two managed lots at the I-880 underpass, if provided, will be accessed via Brush Street between 6th and 5th Streets, with entrances on either side of Brush Street. Upon picking up or dropping off riders in those lots, ridesourcing vehicles will be directed to exit the area by turning left eastbound on 5th Street and then left northbound on Castro Street.

Ridesourcing vehicles traveling southbound on Market Street or Martin Luther King Jr. Way south of 6th Street will be forced to turn onto 5th or 4th Streets, respectively, by ticket checkers. Ridesourcing vehicles will be prevented from picking up or dropping off passengers on these streets by personnel and directed

to turn north onto Castro Street to depart the area. Some ridesourcing vehicles, under specific circumstances, may be allowed onto the Howard Terminal site. These exceptions will be determined in coordination with the A's, the City of Oakland, and the Port of Oakland.

The A's will provide information on their website that explains that ridesourcing vehicles will not be able to pick up or drop off passengers at the ballpark, or within roughly one-half mile of the ballpark, in order to reduce traffic congestion in the area. This information will show where the designated pick up/drop off areas are located, along with a statement of the walking distance and estimated walk time to the ballpark.

11.3.4. Transit Operations

Shuttle service between the Ballpark and the 12th Street BART station, and potentially the West Oakland and/or Lake Merritt BART stations, will be provided during pre- and post-game hours. West Oakland BART and Lake Merritt BART shuttles, if provided, would be services that only operate on gamedays. The shuttle to the 12th Street BART station will likely also be a game day service only, but as the area develops, the existing Broadway Shuttle route could be modified to serve the area.

Shuttle stops and AC Transit bus stops will be provided at the Transportation Hub on 2nd Street between Castro and Washington Streets, with the two systems organized based on destination. All shuttles from 12th Street and Lake Merritt BART stations will travel westbound on 3rd Street to Castro Street and then eastbound on 2nd Street. Shuttles from West Oakland BART station, if provided, will travel on 7th Street and Castro Street to access the Transportation Hub. The 12th Street and Lake Merritt BART shuttles will utilize bus-only lanes on Broadway. Although 2nd and 3rd Streets will not have bus-only lanes, other traffic on those streets will be minimal during hours of shuttle operation due to the restriction of automobile travel in the area to those with a local pass and trucks passing through the area.

Events at the Ballpark will overlap with peak commuting hours for arriving attendees for weekday evening games/events and departing attendees from weekday midday games/events. The A's will coordinate with BART to ensure adequate resources are provided to manage pedestrian flows during these times.



12. Curb Management Strategies

The curb management goal is to rationally allocate curb access to match fluctuating demand for the curb from users, including passenger loading, commercial delivery, and access for pedestrians and bicyclists. For the purposes of this document, this chapter will focus on passenger loading and commercial vehicle access. Due to Howard Terminal's urban location and proximity to housing and transit, additional curbside management strategies will be needed to address demand for passenger loading and commercial vehicles from residential, office, and other uses introduced in subsequent phases of the project.

The site will incorporate several access restrictions pertinent to overall curbside management. Specific demands for curbside space and accompanying strategies for physical access and demand management are considered below. The Howard Terminal site plan for Phase 1 provides flexible space near the Ballpark, which could be reallocated for different uses depending on event types and experiences at initial events.

12.1. Ridesourcing Curb Management

Ridesourcing refers to a variety of services, including Lyft and Uber, that provide door-to-door transportation using smartphone applications. Due to the Bay Area's standing as a major market for ridesourcing and with limited parking availability, ridesourcing vehicles are expected to be a major component of access to Howard Terminal for special events and games. However, as described in Chapters 8 through 10, ridesourcing vehicles would not, with limited exceptions, be allowed to access the Ballpark site for baseball games or large concerts or special events. By keeping ridesourcing vehicles off site, efficiency for all other modes and curbside uses at the Ballpark can be maintained, but this will need to be weighed against the ability to manage and control ridesourcing vehicles in the area surrounding the

ballpark. The A's will explore curb management strategies with the City of Oakland for example, loading zones could be identified for commercial loading in the morning and then passenger loading at other times to meet the needs of the neighborhoods throughout the year and the Ballpark before and after events.

12.2. Event Shuttles

Loading facilities located within the project site's boundaries will be limited, because the planned high-frequency shuttle service between Howard Terminal and nearby BART stations would overload available on-site streets considering the day-to-day and ballpark event traffic needs, reducing the effectiveness of the service. Shuttle services on-site could also get delayed by train activity, further reducing effectiveness. Therefore, passenger loading for shuttle operations are currently planned to occur on 2nd Street at the Transportation Hub, as detailed in **Figure 5-4**. Passengers will then reach Howard Terminal through a short walk via Martin Luther King Jr. Way or the pedestrian overcrossing at either Jefferson or Clay Streets.

12.3. Accessible Passenger Loading

Accessible passenger loading considers the needs of passengers with mobility impairments and other issues that affect safe travel to and from Howard Terminal. Considerations for accessible curbside access include necessary space for the loading and unloading of wheelchairs, the potential for longer duration of loading, proximity to entrances, and visibility of passengers accessing loading facilities.

Loading spaces will consider all ADA and City requirements for accessible loading, and ADA-compliant parking and/or loading will be available directly across from major entrances into the Ballpark if parking is provided in these locations. In addition to parking, time restrictions can allow these spaces to operate as passenger loading by encouraging turnover. To facilitate travel into the Ballpark, well-marked pedestrian connections near these ADA-compliant parking facilities are critical to allow the safe travel of all users.

Passenger loading for event shuttles and ridesourcing vehicles will be located off-site, which could be challenging for people with mobility impairments. The A's will evaluate passenger loading services that could utilize any planned grade-separated crossings and will be required to offer shuttle service for mobility impaired individuals from off-site to ensure equal access.

12.4. Media Trucks

Media trucks are a common feature at most Ballpark events in a broadcast compound. While the quantity and need for media trucks varies, a typical event requires four to five television trucks. The potential for a greater number of media trucks exists for post-season and marquee events. Media truck staging with the potential to expand will be available at the Ballpark. One option being considered is locating the compound near the loading dock and freight area.

12.5. Specialty Buses

Specialty buses, including chartered buses and hotel shuttles, will be accommodated in the on-site parking facilities. There are currently few events at the Oakland-Alameda Coliseum with specialty buses. However, for these events, which include Little League Days and Home Run Readers, there may be over 70 buses, which may require reconfiguring on-site parking. Off-site parking may also be provided for specialty buses. This will be coordinated with the on-site parking and ridesourcing services.

12.6. Team Buses and Trucks

Team buses and trucks arrive for each game and require a team compound with proximate access to visiting team player facilities. While the quantity and needs vary, a typical game requires one to two buses and no trucks. The potential for a greater number of buses and trucks exists for special non-baseball events. Some special "non-baseball" events may require four or more buses and ten or more trucks. Team bus staging will be available at the Ballpark, and additional staging for special events will be identified. For example, the team and coach parking adjacent to the ballpark could be designed to handle buses and similar sized vehicles for non-baseball events.

12.7. Tailgating

Tailgating is an integral part of the fan experience, and that tradition will continue at the Ballpark at Howard Terminal. The A's intend to make space available on-site for early game day arrivals to set up and tailgate, and the site's expansive surface area provides flexibility to right-size tailgating. Tailgating will be managed over time as surface lots on Howard Terminal are developed, and it will be directed in such a way as to avoid spillover at other public locations, such as Middle Harbor Shoreline Park.



13

13. Freight Element

The Ballpark's layout constrains the road alignment for Martin Luther King Jr. Way onto Howard Terminal such that regular use by Ballpark and non-Ballpark freight vehicles will be difficult but possible. Freight deliveries will arrive primarily via Market Street due to its more generous cross sections and alignment serving both the Ballpark and non-ballpark development. These trucks will use Market, 5th and 6th Streets to access the site from the I-880 freeway, the same routes Howard Terminal trucks use today; however, the number of trucks driving to Howard Terminal will be substantially reduced.

13.1. Freight Loading

Freight will travel through the site to a delivery area located behind home plate where loading docks and support facilities will be provided. Four loading docks capable of handling 70-foot long trucks are planned to be provided along with four dedicated spaces for media trucks and the ability to park one or two team buses. Further site plan development will be coordinated with Ballpark operations staff to ensure adequate area is allocated for freight loading and support facilities such as staging, and storage are provided as needed at the loading docks. The A's will follow Security Requirements in MLBs' best practices document that limits the times deliveries can be made, as well as protocols from the Department of Homeland Security.

13.2. Port and Truck Access

The Howard Terminal site is located near the Seaport, which requires high truck volumes to move freight. As a result, there are several key routes used by truck drivers between the Port and the freeway network in the project vicinity. Port trucks will continue to use these established truck routes. I-880 has a particularly

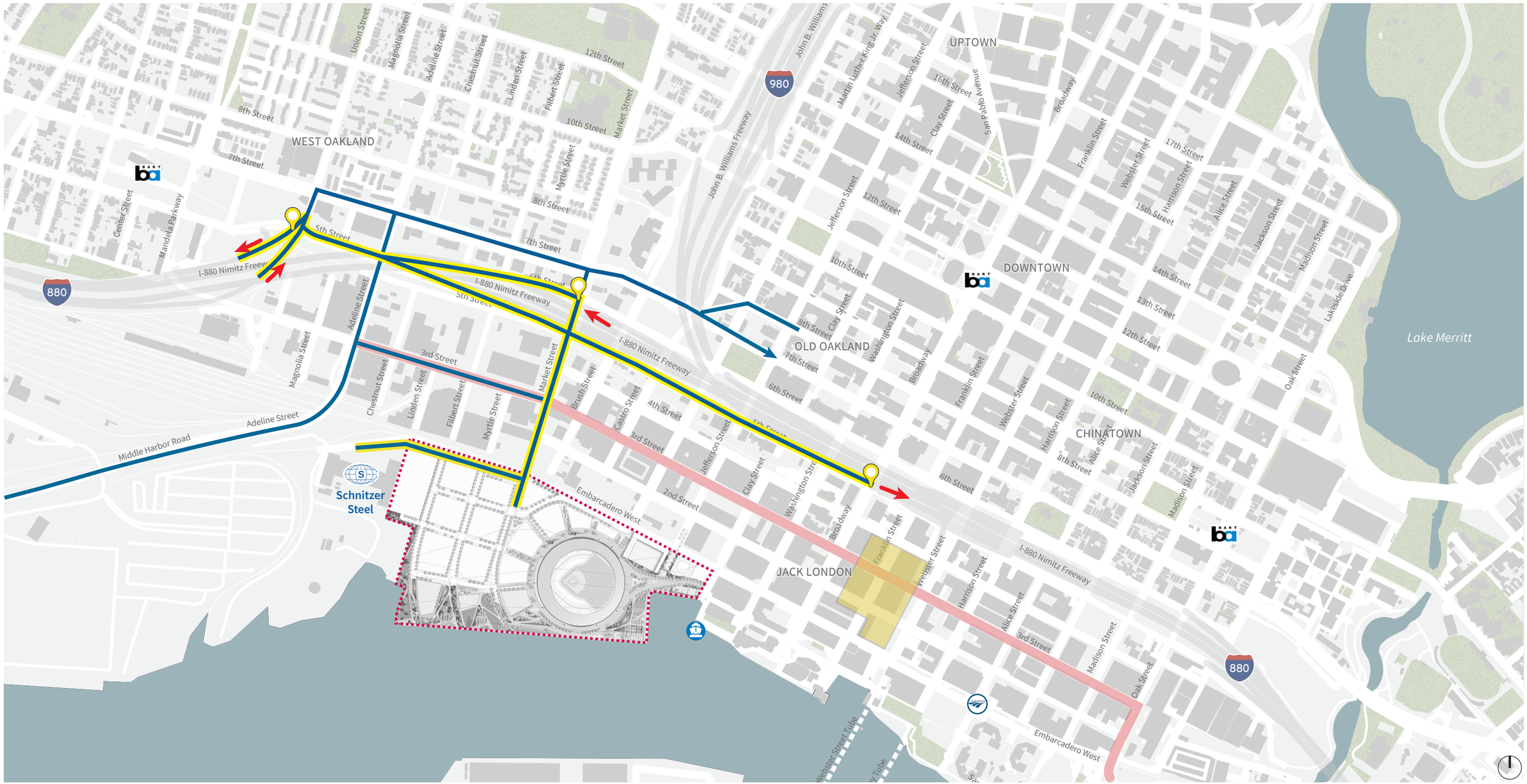
high volume of freeway truck traffic, as trucks are prohibited on I-580 in Oakland east of Grand Avenue. See **Figure 13-1** for a map showing several of the existing local truck routes near Howard Terminal site and the proposed truck routes for the Ballpark and non-Ballpark freight activities.

There are several important routes used by drivers from the nearby freeways and destined to the Port. These routes, listed below, will be monitored through the TMP to ensure drive times (or other metrics) are maintained at acceptable levels. In addition, the TMP will monitor Howard Terminal site traffic to ensure that it is being effectively deterred from using internal Port roadways.

- Matson Terminal/Middle Harbor Road to and from Union Street/5th Street/I-880 ramps
- Matson Terminal/Middle Harbor Road to Adeline/5th Street/I-880 southbound on-ramp
- I-880/7th Street off-ramp to 7th Street/Maritime Street
- Market Street/6th Street/I-880 off-ramp to Matson Terminal/Middle Harbor Road
- EverPort Terminal entrance on 7th Street to and from the 7th Street/I-880 ramps
- EverPort Terminal entrance to and from the West Grand Avenue/Maritime Street/I-80 ramps

Trucks associated with the Project are anticipated to mostly use I-880 to access and depart the project site. These trucks will access I-880 using the routes and on/off-ramps described previously in this chapter. Few trucks are anticipated to use I-980, but those that do will travel along Castro Street to go from Howard Terminal northbound on I-980 and along Brush Street to go southbound off I-980 to Howard Terminal. The truck routes used by the project will be the same as those used by trucks from Howard Terminal today, except for Martin Luther King Jr. Way between 8th Street and Embarcadero West.

In addition, trucks accessing the Schnitzer Steel plant to the west of the Howard Terminal site currently use Embarcadero West to access the truck route. These activities will continue with the project, including during ballgames and events.



LEGEND

- Freeway Ramps for Project and Schnitzer Steel Trucks
- Existing Local Street Truck Circulation
- Overweight Truck Corridor
- Truck Routes Used by Howard Terminal and Schnitzer Steel
- Project Boundary
- Produce Market
- BART Station
- Amtrak
- Ferry

Figure 13-1

Truck Routes for Ballpark and Non-Ballpark Development

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13.3. West Oakland Truck Management Plan

The West Oakland Truck Management Plan was released in May 2019 as a joint effort between the City of Oakland and the Port of Oakland to reduce the impacts of transport trucks on local streets in West Oakland. The TMP goals including reducing disruptions from truck circulation and truck parking on residents and businesses in West Oakland and increasing safety along designated truck routes. The TMP supports the implementation of West Oakland Truck Management Plan Strategy 1 (Improve Safety at Street Intersections Near the Port) by including the following improvements:

- I-880 southbound off-ramp: Crosswalk enhancements, signal and striping modifications, and a tighter turning radius to improve pedestrian safety.
- Adeline Street/3rd Street and Adeline Street/5th Street intersections: Traffic signal upgrades, additional lanes on Adeline Street, turn restrictions, sidewalk and curb ramp improvements, and crosswalk enhancements to reduce the impacts of trucks moving through the intersection and improve pedestrian safety.



14. Emergency Vehicle Access and Circulation

Primary emergency vehicle access will be provided via the existing vehicle entrances on Market Street, Martin Luther King Jr. Way, and Clay Street, as well as via the extension of Water Street at Fire Station No. 2. Because access to Howard Terminal via Market Street, Martin Luther King Jr. Way, and Clay Street require vehicles to cross the railroad tracks at-grade, emergency vehicle access to or from Howard Terminal could be impeded by a train. However, grade-separated emergency vehicle access would also be provided via Middle Harbor Road, and when gates are down, emergency vehicles could still access the site via Embarcadero West or Water Street south of any train stopped on the tracks via at-grade crossings at Washington Street, Broadway, Franklin Street, Webster Street, Oak Street, 5th Avenue and the grade-separated crossing at 16th Avenue.

Fire Station No. 2 at the Water Street/Clay Street intersection would remain and have direct access to Howard Terminal via an extension of Water Street as A's Way into the site which would be rated for fire apparatus. The emergency access routes would not change if Fire Station No. 2 is relocated in the future. Water Street is rated for fire apparatus, serving the buildings in Jack London Square, and the at-grade railroad improvements at Market Street, Martin Luther King Jr. Way, Clay and Washington Streets, and Broadway would be designed for fire apparatus.

An additional emergency vehicle access point on the west side of Howard Terminal would be constructed on an alignment to be determined by the Port that connects the west end of Embarcadero West to Middle Harbor Road. Middle Harbor Road connects to Adeline Street, which contains an above-grade rail overpass.

This emergency vehicle access would be made available to police, fire, ambulance and other emergency service providers only for the purpose of responding to an emergency at Howard Terminal when other means of access to and from the area are unavailable or sub-optimal.

The Oakland Fire Department has requested the following general transportation features to serve events at the Ballpark:

- Designated space for dispatching emergency services personnel within the Ballpark. This could be a room for EMT personnel or a similar facility.
- A grade-separated crossing over the railroad tracks that can serve a light vehicle, such as an ATV.
- A clear path to the Ballpark through all non-motorized areas.
- Emergency vehicle access around the entire Ballpark.

Collaboration with the Oakland Fire Department is ongoing, and this document will be updated to reflect the discussions. An incident command staging area may be provided to provide multiple emergency vehicles with clear in/out access to reduce response times. The mobility coordinator will communicate with the Oakland Fire Department for changes to operational needs.



15. Communication Plan

Communication before, during, and after events at the Ballpark can improve the visitor experience and encourage people to walk, bike, and take transit to and from Howard Terminal by increasing awareness of the transportation options in the area.

15.1. Outreach

Outreach can provide useful trip planning information to guests and employees to minimize confusion and the risk of conflicts. Advanced information on transportation choices for accessing the Ballpark, as well as alerting attendees to the location and purpose of temporary controls and measures, will allow everyone accessing the ballpark to adequately respond to the transportation environment in the area during events and make an informed decision about their mode of travel. Following is an outreach strategy to accompany Ballpark events.

Ticket purchase confirmation will include the following information:

- Parking at the Ballpark will be by pre-purchase reservation only, and on-street parking will be managed to reduce or eliminate its use by Ballpark attendees. All attendees will receive a statement explaining that parking will be extremely limited in the area and available at the Ballpark by reservation only. Attendees will also receive an explanation of transit and bicycle resources, and detailed information about options for getting to the Ballpark, including:
    - List of transit options available, including links to trip planning tools, schedules, fare information, and forms of payment (i.e., Clipper card brochure)

- Location of real time transit information displays at the Ballpark
- Links to web-based trip planning tools and resources (by transit, walking, bicycling, shared mobility, driving, and parking)
- Information on how to use transit (fare and payment information), best stops and stations for accessing the Ballpark, and walking routes to the Ballpark from transit hubs
- Instructions on how to use shuttles or gondola from BART stations, if provided
- Recommended walking routes to the Ballpark from off-site parking for those who drive
- Information on bicycle routes and free secure bicycle parking services
- Directions to general pick-up/drop-off locations for ridesourcing services
- Information on parking availability and pricing, and procedures for pre-purchasing parking on-site at the Ballpark and off-site garages

- For attendees who purchase Ballpark parking with their ticket:
  - Directions to the Ballpark from different origins and instructions describing the best path to access the Ballpark parking
  - Information on controls that will be in place following game's end and how to most effectively exit the Ballpark garage toward desired destinations

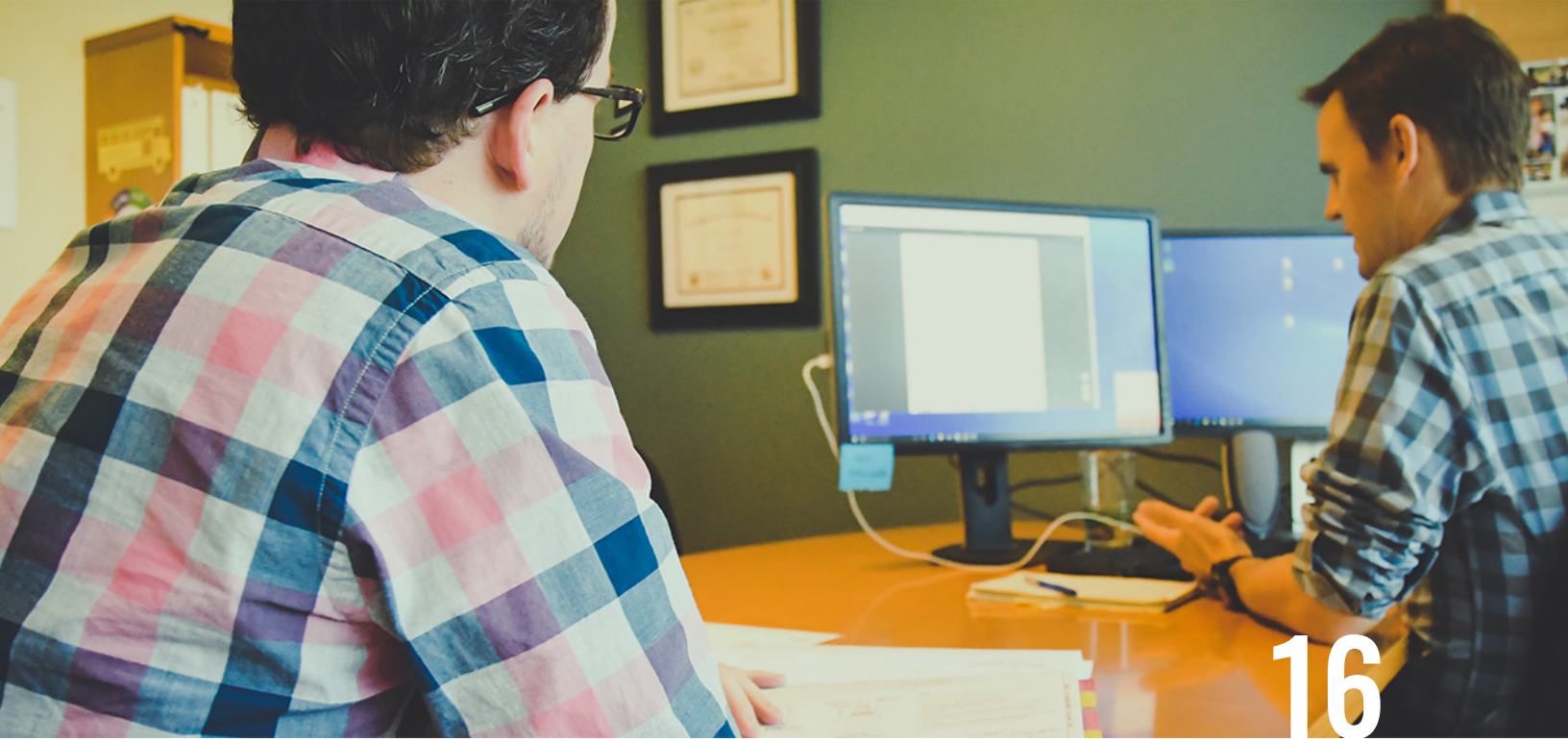
15.2. Wayfinding

Wayfinding can support easy, safe walking and bicycling trips, and reduce the risk of conflicts for all modes by directing people away from potential conflict points. The following is a wayfinding strategy to accompany Ballpark events.

15.2.1. Pre- and Post-Event Wayfinding

- Signage, in accordance with Oakland standards, will direct visitors to the Ballpark, transit, taxi stands, bikeways, locations of bicycle parking, bike share stations, etc. within one-half mile of the Ballpark.
- Permanent, intuitive wayfinding network that highlights local transit hubs and major destinations and includes estimates of walking times along the most comfortable pedestrian corridors. Corridors with permanent wayfinding may include West Oakland BART station to the ballpark via 7th Street, Downtown Oakland via Martin Luther King Jr. Way, 12th Street BART station via Washington Street and Broadway, and Lake Merritt BART station via 8th Street.

- Wayfinding efforts will be increased or emphasized during playoff MLB games due to these events attracting out-of-town attendees who will presumably be unfamiliar with the transportation network and transit options. These efforts may include additional temporary signage in the Ballpark vicinity.
- Signage at all corners of the site will direct walk-up attendees to Ballpark entrances along routes that minimize pedestrian crossings of vehicle routes.
- Signage will direct bicyclists to the outdoor or indoor valet bicycle parking.
- Signage will direct vehicles toward the Ballpark parking lot or other nearby garages/lots, including wayfinding signage on I-980 and I-880 to direct vehicles to the best exit to access the site, which may not necessarily be the closest exit due to existing congestion.
- Variable message signs will alert vehicles about roadways designated for Ballpark traffic and direct ridesourcing vehicles to designated ridesourcing lots.
- Coordinate the temporary and permanent turn restrictions and temporary street closures which comply with the California Vehicle Code with navigational applications such as Waze, Google Maps, and vehicle-based GPS systems so that users are directed to use those routes that comply with the California Vehicle Code.
- Signage will be provided at Ballpark exits that helps people leaving the site at doors, including away from the Ballpark parking exits and toward key destinations such as BART stations, Amtrak, WETA, AC Transit, and shuttle routes if applicable.
- Signage will be provided outside secure bicycle parking directing bicyclists to key routes leaving the site.
- Signage will direct drivers toward the suggested post-event routes, including parking exits.



16. Monitoring, Refinement, and Performance Standards

The A's will monitor and refine the TMP as needed in conjunction with the City and Port of Oakland until transportation patterns are established and annually thereafter. If annual surveying and reporting after the first two years indicates any issues with achieving the standards, the City or the Port may require more frequent monitoring. The TMP will be continually refined by improving existing measures and introducing new strategies. All proposed and approved changes to the TMP will be reported to the City of Oakland and referenced in an Annual Report.

16.1. Monitoring Methods

Methods that will be employed to monitor TMP strategies include, but are not limited to, the following:

1. Coordination Meetings – the on-site mobility coordinator and key Ballpark staff will meet quarterly with the City's designated representative, the Port of Oakland, other key City staff, and other transportation service providers to evaluate the TMP strategies throughout the life of the project. These meetings will occur quarterly during the first two years of the project, and then annually thereafter, to coordinate transportation efforts and adjust, remove, or add measures to refine the TMP.
2. Inaugural Event Monitoring – a designated team of Ballpark, City, and Port staff will establish and implement the TMP, monitor pre-event and post-event conditions at every event until transportation patterns are established, debrief, and collaboratively adjust the TMP as needed. The full complement of data collection to measure whether the standards listed in this chapter have

been met may not be collected during inaugural events until transportation patterns are established.

3. Subsequent Event Monitoring – after transportation patterns are established in the inaugural event monitoring, a designated team of Ballpark, City, and Port staff will meet quarterly to monitor pre-event and post-event transportation conditions. Quarterly monitoring will occur for two to four years, or until transportation conditions are stable. At that point, annual monitoring will occur in perpetuity.
4. Curb Pick-Up and Drop-Off Operations – the on-site mobility coordinator will regularly monitor curb operations during the first year of operation and collaborate with the City and Port staff to resolve issues that arise.
5. Event Attendee Surveys – travel surveys of at least 1,000 attendees will be conducted at a minimum of five weekday evening games, one weekday day game, and one weekend game at the Ballpark. The surveys will include questions regarding pre-event origin and post-event destination, arrival and departure times, arrival and departure modes, use of shuttles and other transportation management measures, transit providers, parking or pickup/drop-off location, and number of vehicle occupants. The survey will be developed in coordination with the City of Oakland. Alternatively, and with approval from the City, the A's may conduct on-line surveys.
6. Ballpark Employee Surveys – travel surveys will also be given to permanent and temporary employees to identify the same travel information for A's employees, as well as to determine their awareness of alternative modes and travel demand management programs available to them. The A's will commit to a minimum of 40 percent survey completion rate for employees. The survey will be developed in coordination with the City of Oakland.
7. Parking Strategies – data will be collected on parking utilization rates and the effectiveness of on-site and off-site parking strategies.

16.2. Monitoring Documentation

The results of the monitoring process will be documented as follows:

1. TMP Event Monitoring Memoranda – a memorandum will be prepared within three months of the inaugural events (MLB game, special event) that documents the results of the initial event monitoring and associated adjustments and improvements to the TMP. This documentation will continue quarterly until the transportation patterns stabilize.
2. Annual Monitoring Report – a report will be submitted to the City of Oakland annually, beginning one year following commencement of project construction and continuing for the life of the project. The Annual Monitoring Report will summarize the current implementation and compliance status at the time of the report for all mitigation and improvement measures, as well as all TMP measures for which the A's have been assigned some or all reporting responsibility. For measures that another entity (e.g., a transit service provider) is responsible for implementing, the A's will only report on readily available information provided by the entity about the implementation and compliance status. The Annual Monitoring Report will also document the actual VTR achieved by the project

during operation and may include monitoring surveys and reports that addresses how effectively the TMP is meeting the monitoring objectives described above as well as each performance standard described below, while also proposing changes, adjustments, and improvements to the TMP as needed. If deemed necessary, the City of Oakland may elect to have a peer review consultant, paid for by the project applicant, review the annual report.

16.3. Performance Standards and Goals

The TMP is oriented towards the achievement of a 20 percent vehicle trip reduction performance standard mandated by AB 734 legislation, with various goals related to the performance of the transportation system also used to assess whether further refinements to the TMP are warranted.

The following performance standard related to vehicle trips apply to the project:

1. Event automobile trips per attendee reduced by 20 percent from expected operations without the TMP. See Table 3-4 for corresponding vehicle trips per attendee rates.

The foregoing performance standard shall be achieved within one year following completion of the first baseball season.

Once the project is in operation and initial monitoring results are available, the results will be measured against these criteria. If the 20 percent vehicle trip reduction standard is not achieved, the A's will be required to work with the City of Oakland to ensure the standard is met.

In addition to the trip reduction performance standards mandated by AB 734 legislation, the project has additional standards related to the performance of the transportation system. These standards help support the trip reduction performance standard and overall transportation operations in the project area, but unlike the trip reduction performance standards, they may be adjusted in response to observed conditions rather than strict requirements.

The following standards have been developed for the project, and the A's, through implementation of the TMP monitoring, will be responsible for collecting the data necessary to determine if the standards are being met, as well as preparing the performance monitoring reports documenting whether each standard was met and what, if any, changes are necessary to meet each standard:

1. Railroad Safety: Traffic entering and exiting the site on event days does not block railroad tracks and people follow the railroad crossing warning devices regardless of whether a train is present.
2. Intersection Safety: Drivers comply with event day turning restrictions, reducing conflicts between pedestrians and automobiles at those intersections.
3. Pedestrian and Bicycle Safety: Key safety indicators (for example, the rate of drivers yielding to people walking and bicycling) are met to ensure that event attendees are encouraged to walk and bike because they feel safe doing so.

4. Port of Oakland Safety: Near-miss events between Port vehicles and non-Port people and vehicles at the Adeline Street/3rd Street and Adeline Street/7th Street intersections are not more frequent on event days compared to a non-event day baseline.
5. Transit Accessibility: All AC Transit and special event shuttle passengers wishing to access transit within 60 minutes following an event can board their bus transit vehicle.
6. Good Neighbor: AC Transit routes serving the site continue to maintain capacity for simultaneous neighborhood use on event days.
7. Transportation Network Companies: TNC vehicles use designated areas for pickup and drop-off of passengers on event days and do not use local streets within the area managed by TCOs or other personnel and traffic barriers.
8. Micromobility Storage and Use: Electric scooters, dockless bikeshare bicycles, and other micromobility devices are stored in designated areas that do not obstruct pedestrian flows and use on-street facilities for travel instead of sidewalks on event days.
9. Local On-Street Parking: On-street parking is reasonably available for the use of residents, workers, and visitors of and to surrounding neighborhoods during event times consistent with the Parking Management Plan.
10. Port of Oakland Operations: Vehicle travel times for trucks traveling between Port entry points and nearby freeways or key truck routes are at reasonable and acceptable levels. The routes evaluated may include, but are not limited to, the following:
    a. Matson Terminal/Middle Harbor Road intersection to and from Union Street/5th Street/I-880 ramps
    b. Matson Terminal/Middle Harbor Road intersection to Adeline/5th Street/I-880 southbound on-ramp
    c. I-880/7th Street off-ramp to 7th Street/Maritime Street
    d. Market Street/6th Street/I-880 off-ramp to Matson Terminal/Middle Harbor Road intersection
    e. EverPort Terminal entrance on 7th Street to and from the 7th Street/I-880 ramps
    f. EverPort Terminal entrance to and from the W Grand Avenue/Maritime Street/I-80 ramps
11. Port of Oakland Cut-Through Traffic: Howard Terminal site traffic is being effectively deterred from using internal Port roadways.

The A's will be responsible for collecting the data that will be used to assess whether these standards are being met. The methods and procedures for data collection have not yet been determined and will be established collaboratively by the A's, the City, and the Port. Data collection will be robust during the initial event monitoring, and adjustments will be made as determinations of the usefulness and need for the data are made.

The TMP has been developed conservatively to plan for worst-case scenarios, and the performance standards are expected to be met with the implementation of the strategies outlined in Chapter 4 and described previously in this TMP. However, if ongoing monitoring shows the performance standards outlined above are not being met, the A's will explore additional travel demand strategies, operational efforts, or minor redesigns with City and Port staff. Together, the A's, City and Port will collaboratively determine the appropriate course of action to meet the goals of this TMP. In addition to implementing strategies outlined in Chapter 4 or described previously in this TMP that have not already been implemented, other strategies may also be considered, including:

1. Increase the A's contribution to AC Transit to directly fund or contract with a private entity to provide incremental, event-only service, which may include additional shuttle bus purchases and/or expanded hours of operation.
2. Facilitate charter bus/private shuttle program purchases for group ticket sales and/or suite purchases for events. Reduce the project parking demand through a variety of mechanisms, including pricing to incentivize higher vehicle occupancies.
3. Expand media campaigns, including social media, to promote walking and bicycling to the Ballpark.
4. Conduct cross-marketing strategies with Ballpark businesses (e.g. a discount on merchandise/food if patrons arrive by transit and/or bike or on foot).
5. Carry out public education campaigns.
6. Provide transit fare subsidies or a parking cash out program to event ticket holders.
7. In consultation with City of Oakland, remove street furniture or landscaping obstructing pedestrian paths of travel or AC Transit staging areas, and potentially modify landscaping to widen sidewalks.
8. Cooperate with future City efforts for active interventions to effectively manage and price the parking supply in the project vicinity (up to one mile) to reduce traffic congestion.
9. Provide additional personnel and signage and designate additional "local traffic only" roadways.
10. Add temporary or permanent traffic diverters to local roadways to prevent cut-through traffic or guide attendees away from key Port truck routes.

As a living document, this TMP may also be updated to reflect plans, policies, and strategies defined in future, yet-to-be-determined studies that may occur over the lifetime of the Ballpark. Proposed revisions to this TMP are subject to the review and approval of the City of Oakland Department of Transportation. OakDOT will consult with Planning & Building, the Port of Oakland, the A's, and, as needed, other key stakeholders as previously identified in Table 1-1 before approving any revisions to this TMP to ensure its continued conformance with the stated goals and operational needs of each party.

APPENDIX A
OFF-SITE IMPROVEMENTS MATRIX

FEHR PEERS

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
A	**I-880 / 5th / Adeline - Port Connectivity Project**				
Description: Improve lane geometry, channelization, and signal priorities between I-880 at Union I/C and Seaport via Adeline Street.					
A1	- Union at 5th - Restripe off-ramp for right turns plus overlap phasing; modify off-ramp corner radius; and include pedestrian features.			X	**Recommendation (Non-CEQA):** These improvements a) benefit Port access (whether or not the Ballpark is built) and b) accommodate ballpark traffic for evening game arrivals along 5th Street between the I-880 off-ramp and Market Street.
A2	- Adeline at 5th - Restripe EB and NB approaches for right turns plus overlap phasing; prohibit EB left turns and signal protect all others; add signs to direct ballpark traffic to proceed straight; and include pedestrian features.			X	
A3	- Adeline at 3rd - Stripe Adeline for two lanes each way (between Seaport and 7th Street); add SB signal protect left-turn and prohibit NB left turn; no right turns on red from 3rd Street; and include pedestrian features.			X	
A4	- Bike Lane Designation - Provide alternative bike route because bike lanes can not be installed between 3rd and 7th Streets (Requires bike lanes on 7th so riders on Adeline can shift to either Mandela or Market to reach 3rd)	X			**Mitigation Measure TRANS-2a:** Provide Bike Lanes, either Class 2B Buffered or Class 4 Protected Bike Lanes, on 7th Street, between Mandela Parkway and MLK.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
B	**Market Street - Site Connectivity Project**				
Description: Market, 3rd to 8th, add to and upgrade signal systems and upgrade pedestrian corridors while maintaining two vehicle lanes each way.					
B1	- Market at 3rd Streets - Install traffic signal with communication; signal protect SB left turn and prohibit NB left; provide blank-out turn restriction signs for games and railroad preemption; and include pedestrian features.	X		X	**Mitigation Measure TRANS-3a:** Railroad crossing and associated corridor improvements a) improve safety at railroad crossing for ballpark drivers and walkers to/from the site and benefit Schnitzer Steel traffic and b) shift traffic leaving the site away from 3rd and Adeline Streets.
B2	- Market at 5th Streets - Signal protect left turn; provide signal communications; provide blank-out turn restriction signs for games; and include pedestrian features.			X	**Recommendation (Non-CEQA):** These improvements a) benefit ballgame drivers and walkers to/from the site and benefit Schnitzer Steel traffic, b) respond to high rate of collisions, and c) shifts both non-ballpark and ballpark traffic leaving the site away from the 3rd and Adeline Street corridors.
B3	- Market at 6th Streets - Signal protect left turn; provide signal communications; and include pedestrian features.			X	
B4	- Market at 7th Streets - Add NB through lane and WB left turn lane; Signal protect left turns; provide signal communications; and include pedestrian features. (Same as C1)			X	
B5	- Railroad to 7th Street - Provide two lanes each direction; Maintain existing bike lane between 3rd and 7th Streets; Consider right turn lane removals; Install traffic signal coordination and special event timing plans (requires communication system)			X	
B6	- Freeway Underpass - Relocate the fence line to enhance freeway underpass including wider sidewalks, lighting, aesthetics, "placemaking" and wayfinding.			X	
B7	- Railroad to 7th Streets - Upgrade sidewalks (both sides) to correct tripping hazards and provide at least 8-foot effective width at obstacles; maximize waiting area within 30 feet at intersections with 15-foot crosswalks; and daylight intersections and driveways.		X		**Mitigation Measure TRANS-1e:** Widen sidewalks, expanded waiting areas at intersections, and wider crosswalks accommodate pedestrian demands between West Oakland BART station and the ballpark.
B8	- Railroad to 3rd Street - Reconstruct and maximize sidewalk width between curb and right-of-way (both sides).		X		
B9	- Provide alternative bike route for bike riders because bike lanes are not provided between railroad and 3rd Street (Requires bike lanes on 7th and MLK so riders on Market can shift to MLK to access the site)	X			**Mitigation Measure TRANS-2a:** Provide Bike Lanes, either Class 2B Buffered or Class 4 Protected Bike Lanes, on 7th Street, between Mandela Parkway and MLK. **Mitigation Measure TRANS-2b:** Provide Class 4 Protected Bike Lanes on MLK between 8th Street and the Project site.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
C	**7th Street - Multimodal Connectivity Project**				
Description: 7th Street, between West Oakland BART and Martin Luther King, upgrade signal systems, enhance pedestrian corridor, and provide bike lanes.					
C1	- Market at 7th Streets - Add NB through lane and WB left turn lane; Signal protect left turns; provide signal communications; and include pedestrian features. (Same as B4)			X	**Recommendation (Non-CEQA):** These improvements benefit ballgame drivers to/from the site and the I-980 freeway.
C2	- 7th at Brush Streets - Signal protect left turn; provide signal communications; and include pedestrian features.			X	
C3	- 7th at Castro Streets - Maintain EB two left turn lanes and signal protect left turns; provide signal communications; and include pedestrian features.			X	
C4	- 7th at MLK - Signal protect left turns; provide signal communications; and include pedestrian features. (same as D5)			X	
C5	- Market to MLK - Install traffic signal coordination and special event timing plans (requires communication systems)			X	
C6	- Mandela to MLK - Provide Class 2B buffered bike lanes (both ways) unless bike lanes have been installed.	X			**Mitigation Measure TRANS-2a:** Required mitigation for precluding Adeline Street bike lanes between 3rd Street and 7th Streets.
C7	- West Oakland BART to Market - Upgrade sidewalks to correct tripping hazards (both sides) and provide at least 6-foot effective width at obstacles on the south side; maximize waiting area within 30 feet at signals; daylight intersections and driveways; provide wayfinding to the ballpark.		X		**Mitigation Measure TRANS-1e:** Widen sidewalks and expanded waiting areas at intersections accommodate pedestrian demands between West Oakland BART station and the ballpark.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
D	**Martin Luther King Jr Way - Site Connectivity Project**				
Description: Martin Luther King Jr Way, railroad to 14th, provide a 4- to 2-lane road diet with Class 4 and/or Class 2 Bike Lanes, add to and upgrade signal system, and upgrade pedestrian corridors.					
D1	- MLK at 2nd Street - Install traffic signal with communication and preemption; prohibit NB and SB left turns; provide bike phase; and include pedestrian features.	X		X	**Mitigation Measure TRANS-3a:** Railroad crossing and associated corridor improvements improve safety at railroad crossing for ballpark drivers and walkers to/from the site.
D2	- MLK at 3rd Street - Install traffic signal with communication and preemption; signal protect NB and SB left turns; provide blank-out turn restriction signs for games and railroad preemption; and include pedestrian features.	X		X	
D3	- MLK at 5th Street - Signal protect SB left turn; provide signal communications; provide blank-out turn restriction signs for games; and include pedestrian features.			X	**Recommendation (Non-CEQA):** These improvements benefit ballgame drivers and walkers to/from the site and respond to high rate of collisions. Note that some of these improvements would be required with **Mitigation Measure TRANS-2b** to accommodate the Class 4 Bike Lanes (see D11).
D4	- MLK at 6th Street - Prohibit NB left turn; provide signal communications; and include pedestrian features.			X	
D5	- MLK at 7th Street - Signal protect SB left turn; provide signal communications; provide blank-out turn restriction signs for games; and include pedestrian features. (same as C4)			X	
D6	- MLK at 8th Street - Signal protect NB left turn; provide signal communications; and include pedestrian features.			X	
D7	- Freeway Underpass - Relocate the fence line and curb to enhance freeway underpass including wider sidewalks, lighting, aesthetics, "placemaking" and wayfinding.			X	
D8	- MLK at 11th Street - Signal protect SB left turn; provide signal communications; and include pedestrian features.			X	**Recommendation (Non-CEQA, Additional Transportation Improvements, Non-Ballpark Development):** These improvements would benefit the corridor as traffic increases from the non-ballpark development.
D9	- MLK at 12th Street - Signal protect NB left turn; provide signal communications; and include pedestrian features.			X	
D10	- Railroad to 12th Street - Install traffic signal coordination and special event timing plans (requires communication system)			X	
D11	- Railroad to 8th Street - Provide Class 4 protected bike lanes; modify traffic signals for the bike lanes at 2nd, 3rd, 5th, 6th, 7th, and 8th.	X			**Mitigation Measure TRANS-2b:** Required mitigation for precluding Market Street bike lanes between railroad tracks and 3rd Street. Class 4 bike lanes are consistent with Bike Plan. Class 2 buffered bike lanes would be an option if community does not want Class 4.
D12	- 8th to 14th Streets - Install Class 2B buffered bike lanes unless already installed by ACHS grant.			X	**Recommendation (Non-CEQA):** These improvements are consistent with the Bike Plan and respond to high rate of collisions at 8th, 11th, and 14th. They also add bike connectivity between the site and the planned bike lanes on 14th Street through Downtown and West Oakland.
D13	- Railroad to 12th Streets - Upgrade sidewalks (both sides) to correct tripping hazards and provide at least 8-foot effective width at obstacles on east side (6-foot on west side); maximize waiting area within 30 feet at intersections and with 15-foot crosswalks; daylight intersections and driveways; and remove west side sidewalk between railroad and 2nd.		X		**Mitigation Measure TRANS-1e:** Widen sidewalks and expanded waiting areas at intersections to accommodate pedestrian demands between Downtown, 12th Street BART, and the ballpark.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
E	**3rd Street Pedestrian Gap Closure Project**				
Description: 3rd Street, between West Oakland BART and Clay Street, close sidewalk gaps and maintain minimum sidewalk widths.					
E1	- 3rd Street - Close sidewalk gaps converting angle and perpendicular parking to parallel; Provide pedestrian path of travel between buildings and parking; Maintain cross section width for future Class 4 protected bike lanes.	X			**Mitigation Measure TRANS-3b:** Corridor improvements provide continuous connections that serve the pedestrian bridge at railroad tracks for ballpark walkers to/from the site.
F	**2nd Street Transit and Mobility Hub Improvements**				
Description: Repurpose sidewalk on south side of 2nd Street, between Martin Luther King Jr. Way and Clay Street, to establish a transportation hub.					
F1	- Clay and Jefferson Streets - 2nd Street sidewalk, Jefferson and Clay Streets - Remove landscape and expand sidewalk on the south side of the street		X		**Mitigation Measure TRANS-1c:** The 2nd Street Hub is a required element to support transit access to the site and aligns with the City's transit first policies. This is the closest transit opportunity without crossing the railroad tracks.
F2	- Martin Luther King Jr Way to Clay Street - Provide transportation hub (south side of 2nd Street) with transit amenities within the public right of way to support the ballpark; maximize sidewalk width; provide bus pads at stops.		X		
F3	- Broadway at 2nd Street - Install traffic signal with communication; signal protect SB left turn and prohibit NB left; potentially provide railroad preemption; and include pedestrian features. (Same as G2)		X		
F4	- Provide bike riders an alternative route to 2nd Street through the Jack London District between Martin Luther King Jr. Way and Washington Street via the Class 1 Multi-Use Path on Embarcadero West.	X			**Mitigation Measure TRANS-2c and TRANS-3a:** Bus and shuttle stops on 2nd Street conflict with bike lanes on event days. The parallel 3rd Street bike route, per Let's Bike Oakland Plan, was considered but bikes would conflict with overweight trucks through the area as well as the Produce Market. The Class 1 Multi-Use Path on Embarcadero West was identified as the alternative bike route through Jack London District between Martin Luther King Jr. Way and Washington Street for event days.
F5	- Close bike lane gap on eastbound 2nd Street between Harrison and Alice Streets potentially converting the angle parking to either back-in angle or parallel parking.			X	**Recommendation (Non-CEQA):** This improvement closes a bike lane gap on 2nd Street so Class 2 Bike Lanes are continuous between Brush and Oak Streets.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
G	**Broadway - Transit and Pedestrian Connectivity Project**				
Description: Broadway, railroad to 11th Street, provide bus only lanes by removing one lane of automobile traffic each way.					
G1	- Broadway from Embarcadero to 11th Street - Provide bus only lanes each way modifying corridor to facilitate transit through area; consider transit signal priority system		X		**Mitigation Measure TRANS 1d:** Broadway is a Tier 1 transit corridor and bus only lanes support transit access between the ballpark, Jack London, Chinatown, Downtown, and 12th Street BART station. Bus only lanes also align with the City's transit first polies. **Mitigation Measure TRANS-1e:** is also applicable for new traffic signals and for signal protected left turn lanes which separate turning traffic from pedestrians crossing the street.
G2	- Broadway at 2nd Street - Install traffic signal with communication; signal protect SB left turn and prohibit NB left; potentially provide railroad preemption; and include pedestrian features. (Same as F3)		X		
G3	- Broadway at 3rd - Provide signal protected WB left-turn with communication to support bus only lane; and include pedestrian features		X		
G4	- Broadway at 4th - Install traffic signal with communication to support bus only lane; signal protect SB left turn and prohibit NB left; and include pedestrian features		X		
G5	- Broadway at 5th Street - Modify traffic signal with communication to support bus only lanes; potentially remove EB right turn; and include pedestrian features		X		
G6	- Broadway at 6th Street - Remove NB left turn; modify traffic signal with communication to support bus only lane; remove WB right turn; and include pedestrian features		X		
G7	- Broadway at 7th Street - Provide SB protected left turn lane; modify traffic signal with communication to support bus only lane; and include pedestrian features		X		
G8	- Broadway at 8th Street - Prohibit NB protected left turn lane at peak times; modify traffic signal with communication to support bus only lane; and include pedestrian features		X		
G9	- Freeway Underpass - Replace public art; expand sidewalks both sides; maximize corner space at intersections; enhancing pedestrian lighting, aesthetics, and "placemaking"			X	**Recommendation (Non-CEQA):** This improvement benefits pedestrians walking between the site, downtown, Chinatown, and 12th Street and Lake Merritt BART before and after a ballpark event.
G10	- Railroad to 11th Street - Upgrade sidewalks (both sides) to correct tripping hazards and provide at least 8-foot effective width at obstacles; maximize waiting area within 30 feet at intersections; and daylight intersections and driveways; and provide pedestrian wayfinding to direct patrons to the ballpark.		X		**Mitigation Measure TRANS-1e:** Widened sidewalks and expanded waiting areas at intersections to accommodate pedestrian demands between Downtown, 12th Street and Lake Merritt BART, Chinatown and ballpark.
G11	- Bike Lane Designation - Provide alternative bike route because bike lanes can not be installed between 4th and 6th Streets (Requires bike lanes on Washington)	X			**Mitigation Measure TRANS-2c:** Provide Class 2 Bike Lanes on Washington Street which has lower traffic volumes, no buses, and fewer trucks than Broadway.

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
H	**Washington Street - Pedestrian Connectivity Project**				
Description: Upgrade Washington Street for efficient pedestrian flow, comfort, and management (alternatively use operational strategies) and complete the bike lane gap.					
H1	- Railroad to 10th Street - Upgrade sidewalks (both sides) to correct tripping hazards and provide at least 8-foot effective sidewalk widths at obstacles; maximize waiting area within 30 feet at intersections; and daylight intersections and driveways; and provide pedestrian wayfinding to direct patrons to the ballpark.		X		**Mitigation Measure TRANS-1e:** Widen sidewalks and provide pedestrian facilities for pedestrian safety during events with high pedestrian demand between the ballpark and Downtown, Chinatown, and the 12th Street and Lake Merritt BART stations. Alternative, correct tripping hazards and use personnel to manage pedestrians.
H2	- Freeway Underpass - Remove parking and widen the sidewalk both sides; maximize corner space at intersections; enhance pedestrian lighting, aesthetics, and "placemaking"			X	**Recommendation (Non-CEQA):** This improvement benefits pedestrians walking between the site, downtown, Chinatown, and 12th Street and Lake Merritt BART before and after a ballpark event.
H3	- Blank-out right turn restrictions - Provide blank out signs at 5th and 7th Streets activated before and after ballpark events to separate right turning and pedestrian crossing traffic.			X	**Recommendation (Non-CEQA):** This improvement benefits pedestrians walking between the site, downtown, Chinatown, and 12th Street and Lake Merritt BART before and after a ballpark event.
H4	- Provide bike riders continuous bike lanes - Close the bike lane gap between Water and 2nd Streets; replace NB right turn at 7th Street with bike lane; and install all-way stop control at 4th Street.	X			**Mitigation Measure TRANS-2c:** Bike lanes on Washington Street are equivalent to bike lanes on Broadway because there is less traffic, no buses, fewer trucks and speeds are generally slower. Washington Street provides similar access to east / west bike corridors

		Required per CEQA		Established through TIRG	Notes
		Plan Consistency	VMT		
I	**Additional Transportation Features**				
I1	- At-grade Railroad Improvements - At-grade crossing improvements at Market, MLK, Clay, Washington, and Broadway; fencing between Schnitzer Steel and Broadway; a multiuse path on the south side of the tracks; and a pedestrian bridge over the tracks.	X		X	**Mitigation Measure TRANS-3a and TRANS-3b:** Railroad crossing and corridor improvements would provide improved safety at railroad crossings and reduce the frequency of people crossing the railroad tracks between designated crossings.
I2	- Castro Street at 5th Street - Install a traffic signal			X	**Recommendation (Non-CEQA):** Traffic signal benefits drivers in the area as well as drivers traveling between the Project site and the area freeways via 5th Street, as well as pedestrians walking between the site and areas under the freeway transportation functions may be provided. Traffic signal also responds to high rate of collisions.
I3	- Clay Street and Jefferson Street - Enhance pedestrian facilities that support the pedestrian bridge over the railroad tracks at a minimum to correct sidewalk tripping hazards; daylight intersections and driveways; consider replacing decomposed granite with concrete sidewalks; remove parking and expand Clay Street sidewalk (west side).	X		X	**Mitigation Measure TRANS-3b:** These improvements benefit pedestrians walking between the Project site and Jack London District via the pedestrian bridge over the railroad tracks served by the Jefferson and Clay Street corridors.
I4	- Enhance pedestrian walking experience including wayfinding between Lake Merritt BART station and ballpark along 8th Street corridor through Chinatown.			X	**Recommendation (Non-CEQA):** This improvement benefits ballpark attendees who use the Lake Merritt BART station and walk to the Project site.
I5	- Brush Street at 17th Street and at 18th Street - Upgrade traffic signals			X	**Recommendation (Non-CEQA):** Responds to high rate of collisions.

APPENDIX B
OFF-SITE IMPROVEMENTS CONCEPTUAL DRAWINGS

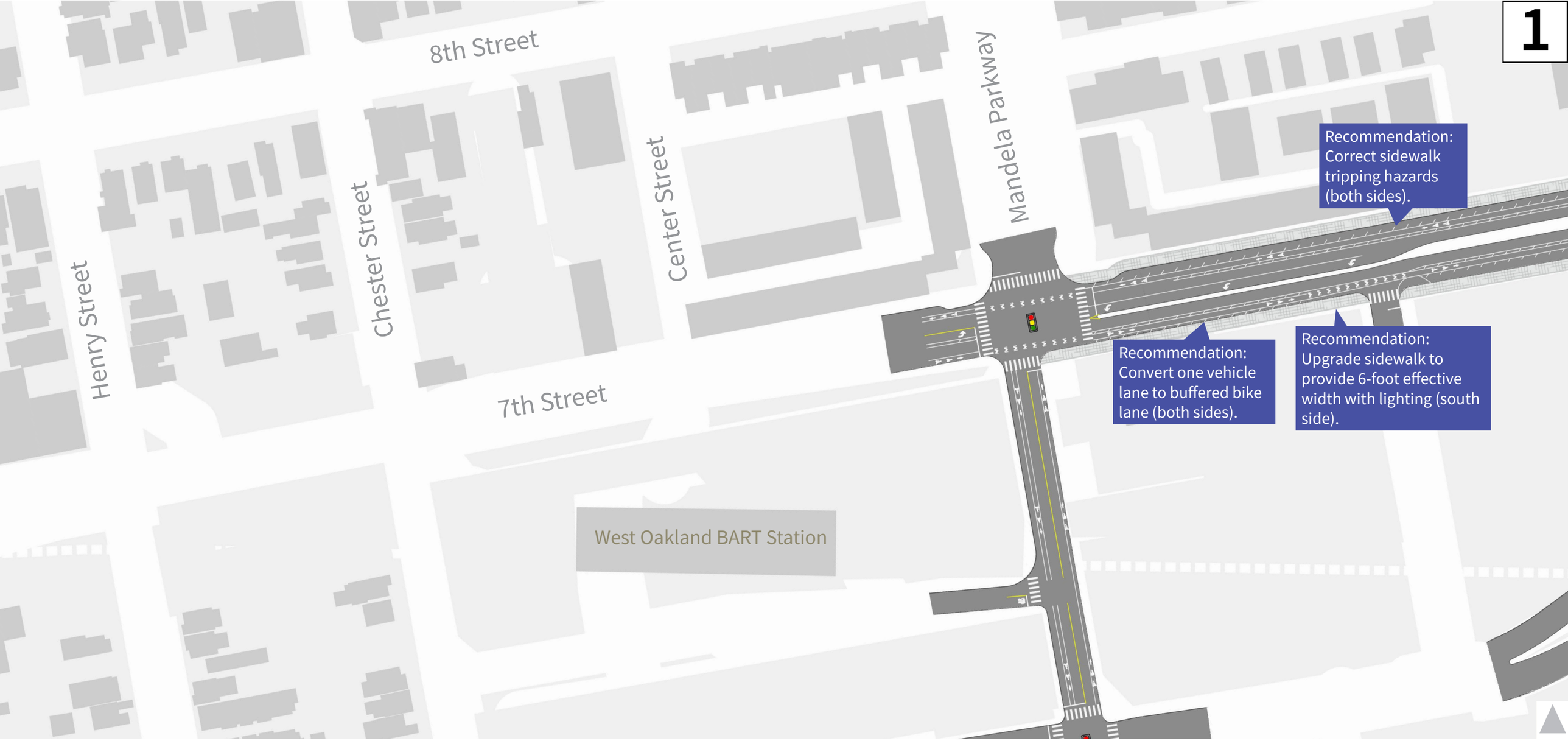
FEHR PEERS



Figure 4.15-22

Off-Site Transportation Features Key Map

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-23

Off-Site Transportation Features - Grid 1

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

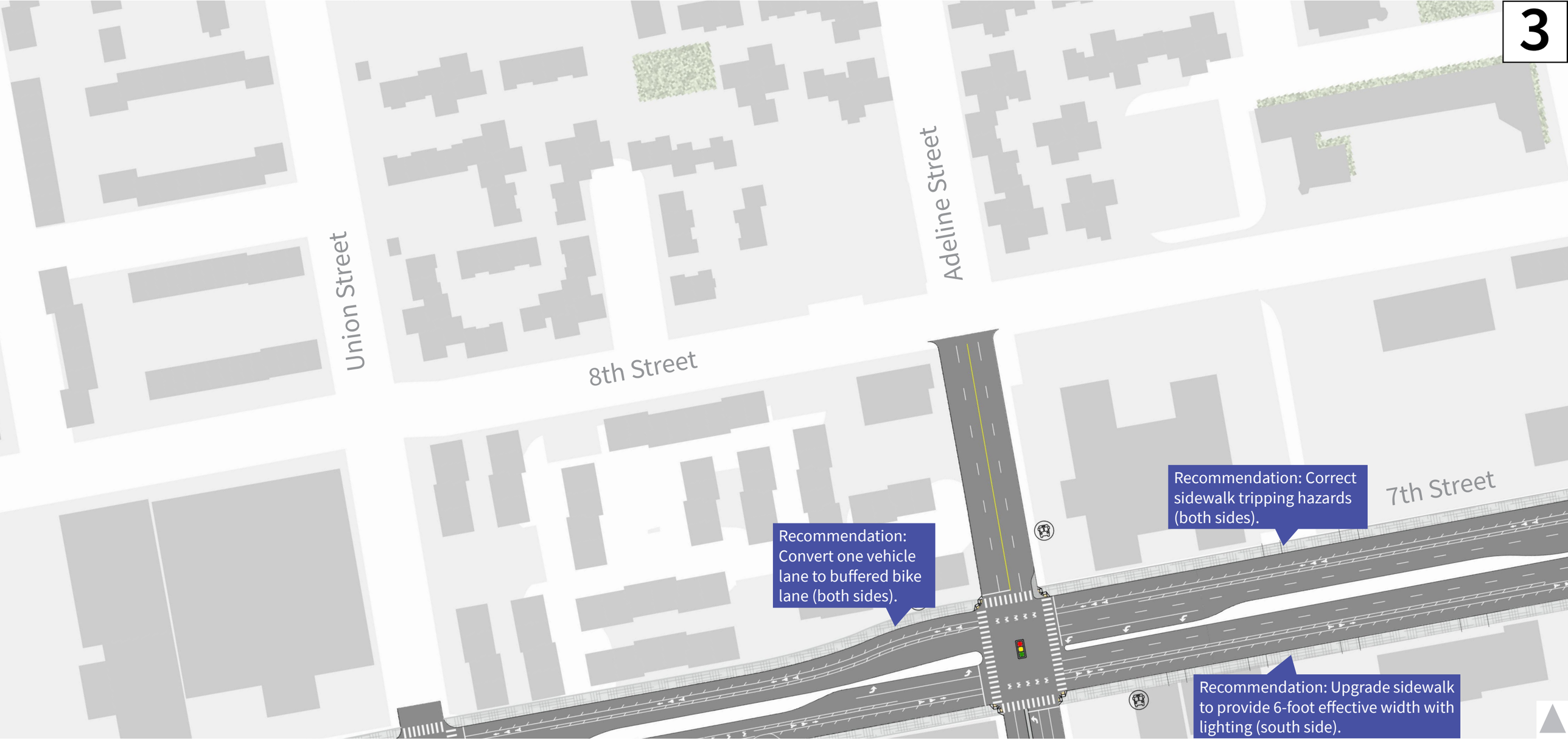
- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-24

Off-Site Transportation Features - Grid 2

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-25

Off-Site Transportation Features - Grid 3

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

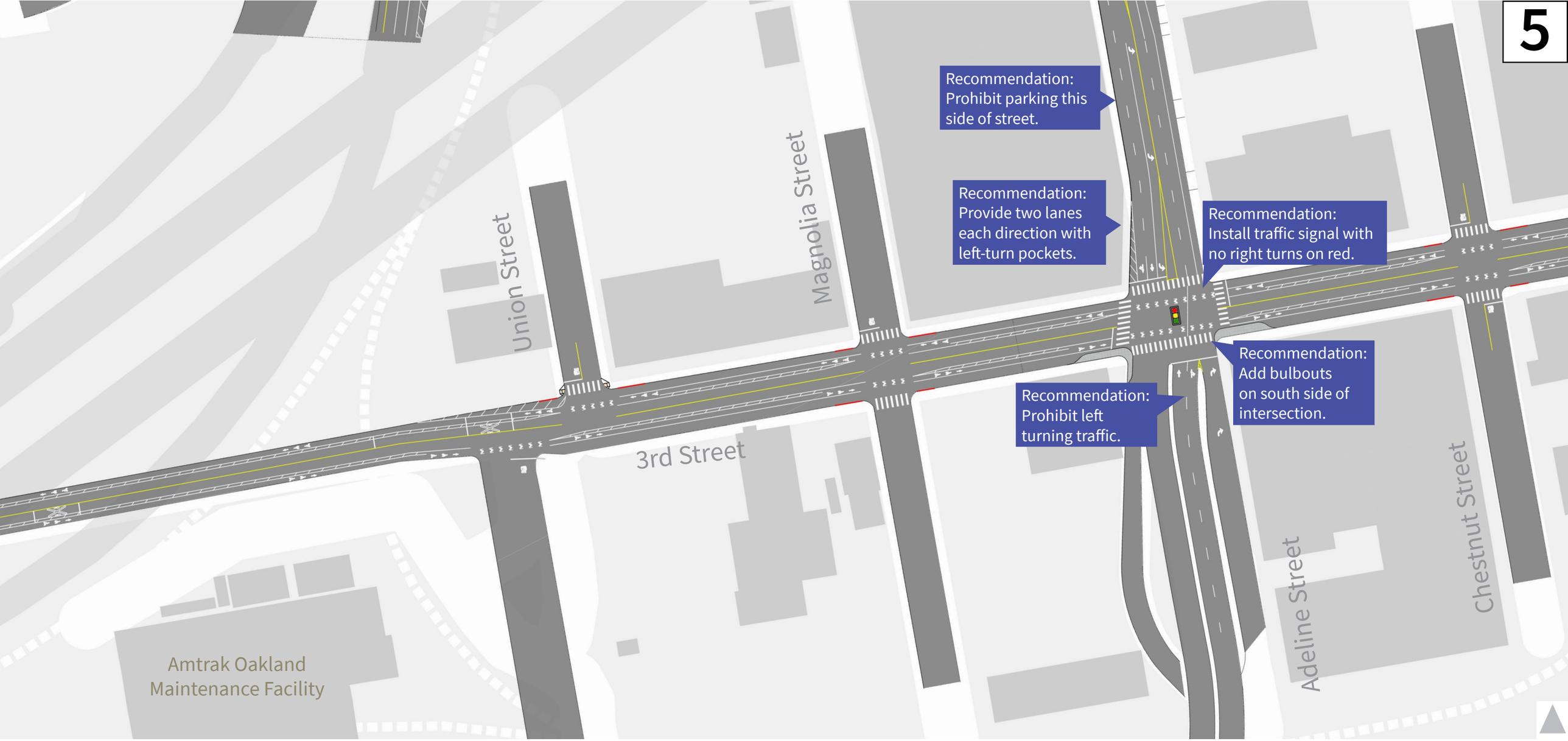
- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-26

Off-Site Transportation Features - Grid 4

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

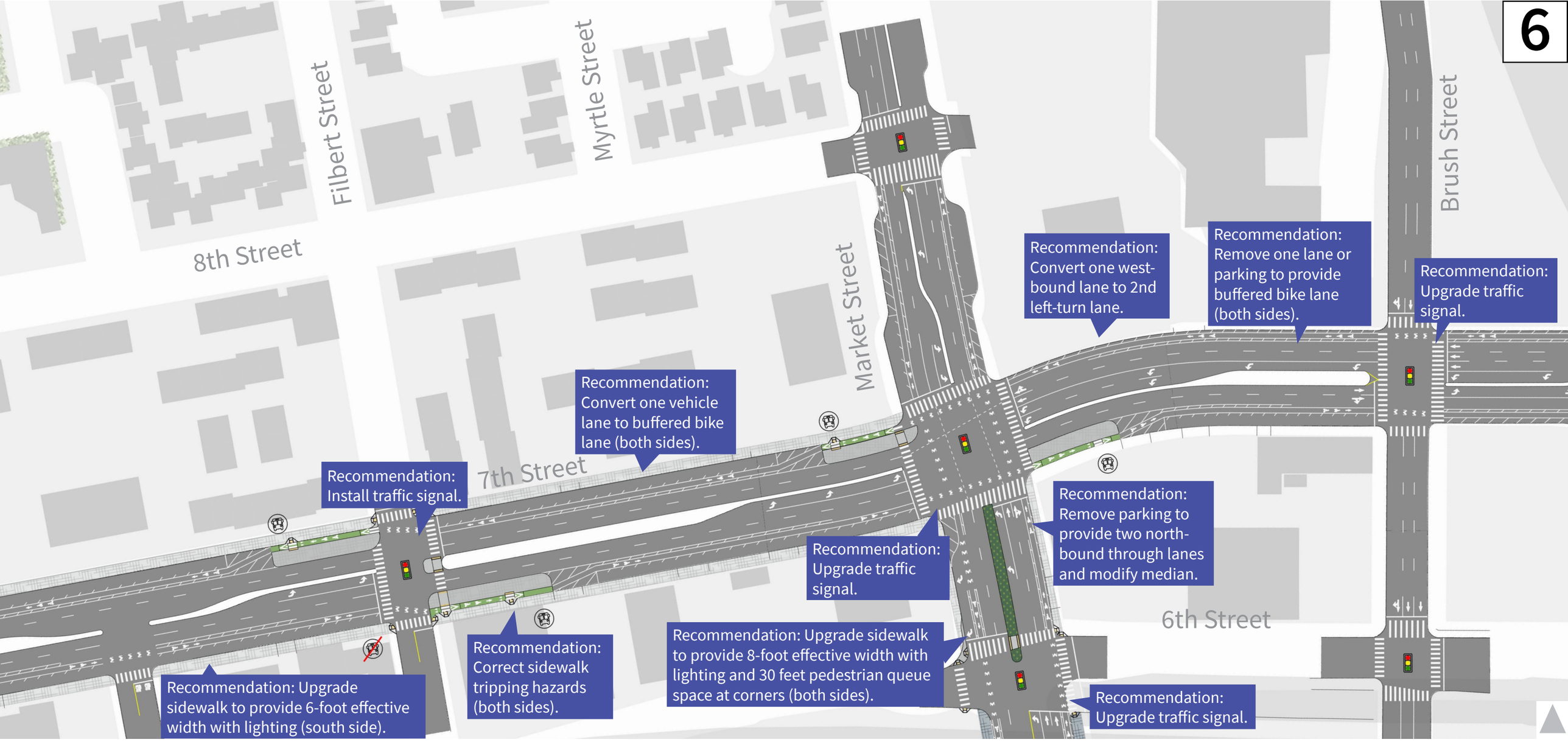
- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-27

Off-Site Transportation Features - Grid 5

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-28

Off-Site Transportation Features - Grid 6

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-29

Off-Site Transportation Features - Grid 7

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-30

Off-Site Transportation Features - Grid 8

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

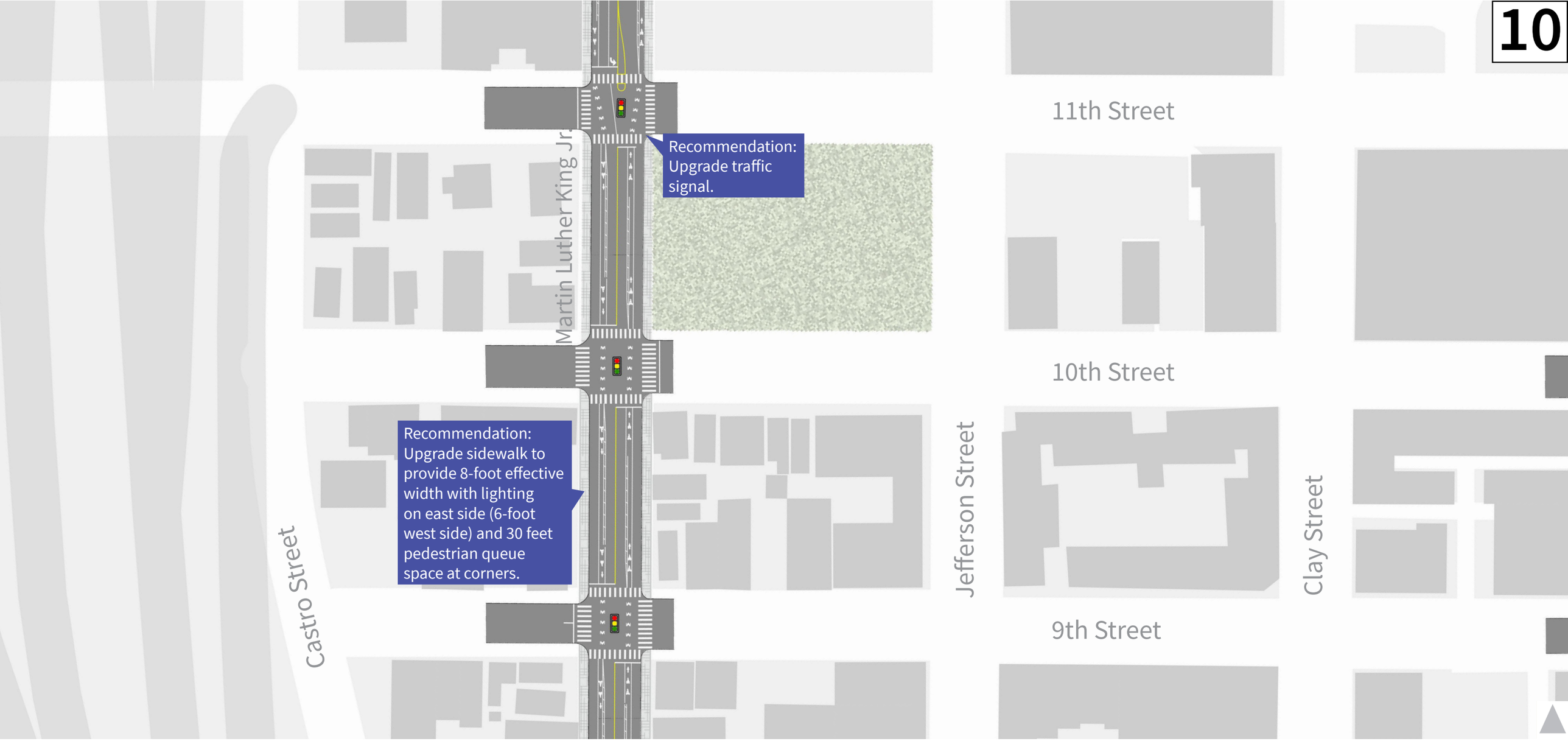
- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-31

Off-Site Transportation Features - Grid 9

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-32

Off-Site Transportation Features - Grid 10

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.

Recommendation: Upgrade sidewalk to provide 8-foot effective width with lighting on east side (6-foot west side) and 30 feet pedestrian queue space at corners.

Recommendation: Remove one lane and provide a buffered bike lane.

Recommendation: Upgrade traffic signal.

Recommendation: Conform at Jefferson Street.

Recommendation: Remove one lane or parking to provide buffered bike lanes (both sides).

Recommendation: No parking this block for left turn lanes (both sides).

Recommendation: Upgrade traffic signal.

Recommendation: Upgrade traffic signal.

Recommendation: Remove one lane each way and provide protected bike lanes with raised features and 8-foot effective sidewalk width with lighting on east side (6-foot west side) and 30 feet pedestrian queue space at corners (both sides).

Recommendation: Upgrade traffic signal.

Castro Street

Martin Luther King Jr

Jefferson Street

Clay Street

8th Street

7th Street

6th Street

LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-33

Off-Site Transportation Features - Grid 11

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.

Recommendation: Remove parking on this block for left turn lane.

Recommendation: Widen east side sidewalk by 6 feet on this block.

Recommendation: Install traffic signal.

Recommendation: Upgrade traffic signal.

Recommendation: Remove parking to widen sidewalk this block face.

Recommendation: Install all-way stop.

Recommendation: Install all-way stop.

Recommendation: Install all-way stop.

Recommendation: Remove parking on this block for left turn lane.

Recommendation: Remove one lane each way and provide protected bike lanes with raised features and 8-foot effective sidewalk width with lighting on east side (6-foot west side) and 30 feet pedestrian queue space at corners (both sides).

I-880 Nimitz Freeway

Jefferson Street

5th Street

Clay Street

Martin Luther King Jr.

4th Street

Castro Street

LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-34

Off-Site Transportation Features - Grid 12

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.

Recommendation: Close sidewalk gap.

Recommendation: Close sidewalk gap.

Recommendation: Install traffic signal.

3rd Street

Recommendation: Close sidewalk gap.

Castro Street

Recommendation: Install all-way stop.

Recommendation: Remove parking and widen sidewalk by 8 feet and 30 feet pedestrian queue space at corners (both sides).

Jefferson Street

Clay Street

Recommendation: Remove parking for left turn lane.

2nd Street

Recommendation: Install traffic signal.

Recommendation: Install all-way stop.

Recommendation: Install all-way stop.

Martin Luther King Jr.

Recommendation: Convert existing sidewalk to landscaping.

Recommendation: Provide transit hub.

Recommendation: Provide transit hub.

Recommendation: Remove landscaping and widen sidewalk.

Recommendation: Remove parking and widen sidewalk 8 feet.

Recommendation: Upgrade railroad crossing and maximize pedestrian queue space.

Recommendation: Install traffic signal and upgrade railroad crossing and maximize pedestrian queue space.

Recommendation: Remove parking and one lane each direction to provide a 16-foot sidewalk, landscape, and two-way cycle track and 30 feet pedestrian queue space at corners (both sides).

Embarcadero West

Recommendation: Pedestrian overcrossing to ballpark.

Recommendation: Provide multi-use path.

Approx. 1:100 Scale

LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Figure 4.15-35

Off-Site Transportation Features - Grid 13

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



LEGEND

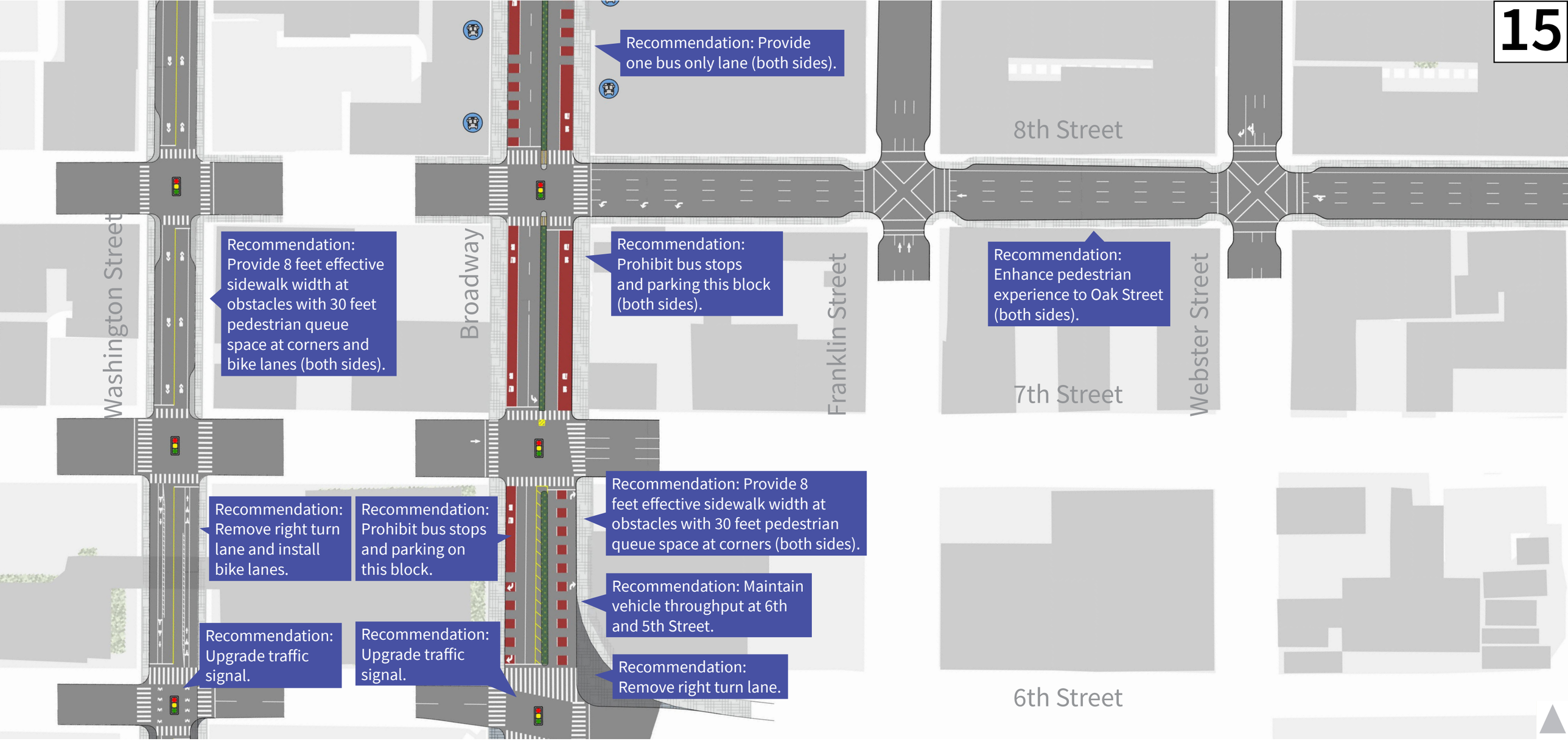
- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Approx. 1:100 Scale

Figure 4.15-36

Off-Site Transportation Features - Grid 14

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



Approx. 1:100 Scale

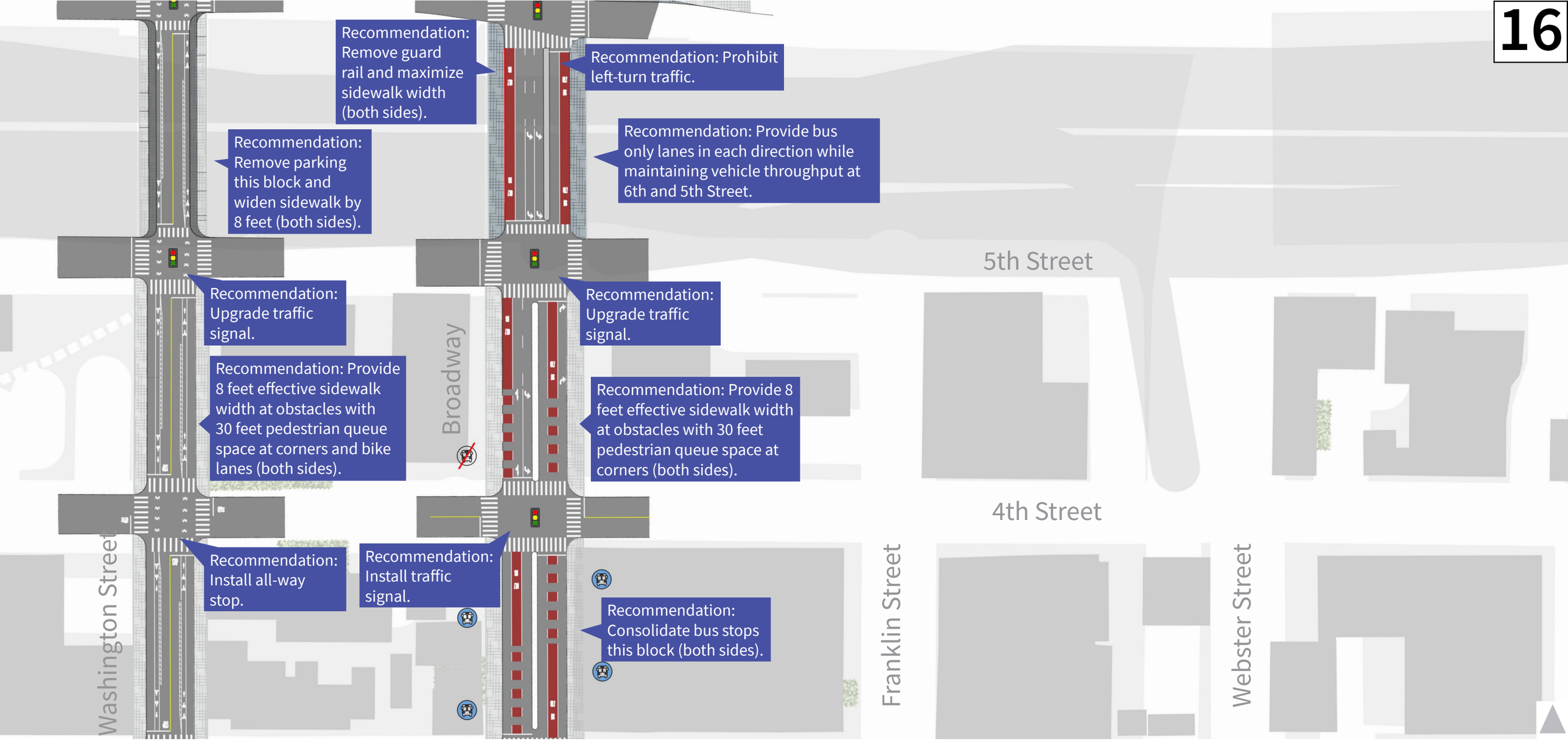
LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Figure 4.15-37

Off-Site Transportation Features - Grid 15

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



Approx. 1:100 Scale

LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Figure 4.15-38

Off-Site Transportation Features - Grid 16

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.



Approx. 1:100 Scale

LEGEND

- High visibility crosswalk striping
- Bus only lane
- Bus priority lane
- Protected bike lane
- Traffic signal
- Curb extension
- Concrete Buffer
- Sidewalk enhancement/ upgrade
- New/widened sidewalk
- Landscape opportunity area
- Existing bus stop
- Proposed bus stop
- Proposed bus stop removal

Figure 4.15-39

Off-Site Transportation Features - Grid 17

Conceptual drawings are representations of transportation improvements if all features are implemented, subject to detailed engineering analysis, review, and approval by the City of Oakland.

TRA.2 Transportation and Parking Demand Management Effectiveness Analysis

FEHR PEERS

MEMORANDUM

Date: December 1, 2020

To: Pete Vollmann, City of Oakland
Nicole Ferrara, City of Oakland

From: Rob Rees and Lee Reis, Fehr & Peers

Subject: Howard Terminal – Transportation and Parking Demand Management Effectiveness Analysis

OK16-0125.06

The Oakland A's are proposing a ballpark and non-ballpark development on the Howard Terminal site. To meet the requirements of AB 734, the Project must implement a Transportation Demand Management (TDM) Plan for non-ballpark development that achieves a 20 percent vehicle trip reduction (VTR) compared to operations without a TDM Plan. The ballpark must also achieve a 20 percent VTR compared to operations without a Transportation Management Plan (TMP).

This memorandum evaluates the effectiveness of TDM Plan and the TMP in terms of the travel demand management strategies as relates to this goal (20 percent VTR) to illustrate that the plans as contemplated will be successful.

Section 1 of this memorandum describes the Project. Section 2 describes the TDM strategies for non-ballpark development, evaluates effectiveness of TDM strategies, and describes monitoring, evaluation, and enforcement of the TDM strategies. Section 3 describes and evaluates the effectiveness of the TMP strategies for the ballpark development. A detailed discussion of the monitoring evaluation, and enforcement of the TMP strategies, goals and standards can be found in the TMP, which is provided as an appendix to the Draft Environmental Impact Report (DEIR) for the Project.

As described in both Sections 2 and 3 below, the TDM strategies for the non-ballpark development and the TMP strategies for the ballpark development are both anticipated to achieve 20 percent VTR. The TDM strategies and the TMP align with the City's desire to prioritize transit, biking, and walking to achieve the vehicle trip reduction goals for the Project. Given this Memorandum's length, the following Table of Contents is provided to assist the reader:

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1. Project Description

The proposed Project is located at Howard Terminal in the Jack London District. The Project would include a 35,000-attendee capacity ballpark, as well as non-ballpark development that includes a 3,500-seat performance venue, up to 3,000 residential units, up to 1.5 million square feet of office space, up to 400 hotel rooms, and up to 270,000 square feet of commercial space.

2. Trip Reduction Measures for Non-Ballpark Development

The TDM strategies for the Project's non-ballpark development consist of both one-time physical improvements and on-going operational strategies. Physical improvements are anticipated to have a one-time capital cost. Operational strategies provide on-going incentives to support the use of non-auto transportation modes and have on-going costs.

To meet the requirements of AB 734, the non-ballpark development must implement a Transportation Demand Management (TDM) Plan that achieves a 20 percent VTR compared to operations without a TDM Plan. This section evaluates the effectiveness of TDM travel demand management strategies as relates to this goal.

2.1. Establishing a Baseline for Non-Ballpark Development Trip Generation

Trip generation is the process of estimating the number of new vehicle trips that would be generated by the proposed Project. Trip generation data published by the Institute of Transportation Engineers (ITE) in the Trip Generation Manual (Tenth Edition) was used as a starting point to estimate the vehicle trip generation. The ITE data is based on data collected at mostly single-use suburban sites where the automobile is often the only travel mode. However, the Project is in a dense, mixed-use urban environment where many trips are walk, bike, or transit trips. As set forth in the City of Oakland Transportation Impact Review Guidelines (TIRG), adjustments are made to the ITE data to establish a Project's trip generation.

The Project is in a moderately dense area with a mix of industrial, residential, and neighborhood-serving retail land uses. The Project is located near Downtown Oakland, the Jack London Square District, and Chinatown, all of which are dense employment and residential centers. There are 13 AC Transit local lines, two Transbay lines, and a Broadway shuttle which operate within a 10- to 15-minute walk from the Project site. Three BART stations are within about one mile from the Project

site: West Oakland Station, 12th Street Station, and Lake Merritt Station. Additionally, Amtrak provides regional rail service within about one-half mile of the site and WETA provides ferry service to Jack London Square adjacent to the site.

The Project's proximity to local and regional transit and to dense employment centers is likely to result in relatively high rates of walking, bicycling, and transit use by residents and visitors. This is evidenced in part by the travel patterns of the area's existing residents and workers.

Table 1 and **Table 2** summarize the commute mode splits for residents and employees, respectively, in the Jack London neighborhood and part of the Chinatown neighborhood. These census tracts were chosen because they cover all the Jack London neighborhood, which includes the Project site and represents the best available data that is representative of the area. About 38

Table 1: Journey to Work for Employed Residents

Transportation Mode	Percent of Employed Residents
Drove Alone	38%
Carpooled	4%
Public Transportation	37%
Bicycle	1%
Walked	18%
Other	2%
Total	**100%**

Source: U.S. Census, American Community Survey, 2013-2017 5-Year Estimates, Alameda County Census Tracts 4033 and 9832, Table B08301; Fehr & Peers, 2020.

Table 2: Journey to Work for Employees

Transportation Mode	Percent of Employees
Drove Alone	60%
Carpooled	10%
Public Transportation	22%
Bicycle	3%
Walked	4%
Other	1%
Total	**100%**

Source: U.S. Census, Census Transportation Planning Products, 2012-2016 5-Year Estimates, Alameda County Census Tracts 4033 and 9832, Table A202105; Fehr & Peers, 2020.

percent of residents and 60 percent of employees in these neighborhoods report driving alone to work, and approximately 56 percent of residents and 29 percent of employees use non-automobile modes like public transit, walking, or bicycling.

These observed shares of non-automobile use are generally consistent with the City of Oakland's policy guidance set forth in the TIRG, which indicates that assumed ITE-based trip generation rates should be reduced by 36.7 percent for development in an urban environment located between 0.5 and 1.0 miles of a BART station. The TIRG reduction is based on the US Census Committee Data for Alameda County from the 2014 5-Year Estimate of the American Community Survey (ACS), which shows that the non-automobile mode share within one mile of a BART Station in Alameda County is about 36.7 percent.[1]

Table 3 summarizes the net automobile trip generation for the Project's non-ballpark development without and with a TDM Plan; with the TDM plan, the number of trips would achieve the required 20 percent reduction. At buildout, the baseline trip generation against which the TDM would be measured is 31,960 daily, 2,340 AM peak hour, and 2,900 PM peak hour automobile trips. Table 3 uses these figures to calculate the 20 percent VTR reduction that must be achieved under AB 734, and the resulting maximum total vehicle trips that would occur with the implementation of the TDM Plan. **Table 4** summarizes the baseline automobile trips as well as the transit, bike, and walk trips for the Project without a TDM Plan and **Table 5** summarizes the same data with a TDM Plan and 20 percent VTR, where the reduced vehicle trips were proportionately redistributed to the other travel modes.

[1] The TIRG considers ferry terminals as well as rail stations in its analysis, and the Jack London Square Ferry Terminal and Amtrak Station are within 0.5 miles of the project site. However, due to the scale of the project compared to the capacity of the ferry and rail service, this study also considers BART and uses 0.5 to 1.0 miles as the distance category to apply from the TIRG.

Table 3: Automobile Trip Generation - Non-Ballpark Development

Land Use, ITE Code[1]	Units[2]	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Residential, 222[3]	3,000 du	12,040	206	654	860	628	401	1,029
Office, 710[4]	1,564 ksf	15,290	1,287	210	1,497	248	1,304	1,552
Retail, 820[5]	180 ksf	8,970	150	92	242	403	437	840
Restaurant, 932[6]	90 ksf	10,100	492	403	895	546	334	880
Hotel, 310[7]	400 rooms	4,090	115	80	195	140	134	274
ITE Trip Generation Subtotal		50,490	2,250	1,439	3,689	1,965	2,610	4,575
Non-Auto Reduction (36.7%)[8]		-18,530	-826	-528	-1,354	-721	-958	-1,679
Total Vehicle Trips without TDM Plan		31,960	1,424	911	2,335	1,244	1,652	2,896
TDM Plan VTR (-20%)		-6,390	-285	-182	-467	-249	-330	-579
Total Vehicle Trips with TDM Plan		25,570	1,139	729	1,868	995	1,322	2,317

Notes:

1. The performance venue was not included in this trip generation because it is expected to have about 50 events per year, many of which would occur on weekends. Additionally, it would be expected to generate negligible weekday AM peak hour trips and few PM peak hour trips due to the likely event schedules.
2. DU = Dwelling Units, KSF = 1,000 square feet.
3. ITE Trip Generation (10th Edition) land use category 222 (High Rise Housing):
   Daily: T = 3.94 * X + 211.81
   AM Peak Hour: T = 0.28 * X + 12.86 (24% in, 76% out)
   PM Peak Hour: T = 0.34 * X + 8.56 (61% in, 39% out)
4. ITE Trip Generation (10th Edition) land use category 710 (General Office)
   Daily: Ln(T) = 0.97 * ln(X) + 2.5
   AM Peak Hour: T = 0.94 * X + 26.49 (86% in, 14% out)
   PM Peak Hour: Ln(T) = 0.95 * ln(X) +0.36 (60% in, 40% out)
5. ITE Trip Generation (10th Edition) land use category 820 (Shopping Center)
   Daily: Ln(T) = 0.68 * ln(X) + 5.57
   AM Peak Hour: T = 0.5 * X + 151.78 (62% in, 38% out)
   PM Peak Hour: Ln(T) = 0.74 * ln(X) + 2.89 (48% in, 52% out)
6. ITE Trip Generation (10th Edition) land use category 820 (High-Turnover Sit-Down Restaurant)
   Daily: T = 112.18 * X
   AM Peak Hour: T = 9.94 * X (55% in, 45% out)
   PM Peak Hour: Ln(T) = 9.77 * X (62% in, 38% out)
7. ITE Trip Generation (10th Edition) land use category 310 (Hotel)
   Daily: T = 11.29 * X - 426.97
   AM Peak Hour: T = 0.5 * X - 5.34 (59% in, 41% out)
   PM Peak Hour: T = 0.75 * X - 26.02 (51% in, 49% out)
8. The 36.7% reduction is based on data from the April 2017 City of Oakland TIRG for development in an urban environment between 0.5 and 1.0 mile of a BART Station, Ferry or Rail Terminal, or major transit corridor.

Source: Fehr & Peers, 2020.

Table 4: Trip Generation by Travel Mode – Non-Ballpark Development without TDM Plan

Travel Mode	Mode Share Adjustments[1]	Weekday Daily	Weekday AM Peak Hour	Weekday PM Peak Hour
Automobile	63.3%	31,960	2,335	2,896
Transit	25.0%			
BART		8,550	625	775
AC Transit		2,140	156	194
Ferry		1,400	102	127
Amtrak		510	38	47
Bike	5.2%	2,620	191	237
Walk	6.6%	3,310	242	300
Total Trips		50,490	3,689	4,575

Notes:
1. Based-on Oakland TIRG assuming Project site is in an urban environment between 0.5 and 1.0 mile of a BART Station, Ferry Terminal or Rail Station, with "other" modes proportionally assigned to transit, bicycling, and walking. Transit mode share was assigned to BART, AC Transit, Ferry, and Amtrak based on 2013-2017 American Community Survey 5-Year Estimates, Table B08006, Alameda County Tract 9832.

Source: Fehr & Peers, 2020.

Table 5: Trip Generation by Travel Mode – Non-Ballpark Development with TDM Plan

Travel Mode	Mode Share Adjustments[1]	Weekday Daily	Weekday AM Peak Hour	Weekday PM Peak Hour
Automobile (Without TDM)		31,960	2,335	2,898
Automobile	50.6%	25,570	1,868	2,317
Transit	33.6%			
BART		11,500	840	1,042
AC Transit		2,880	210	260
Ferry		1,880	138	171
Amtrak		690	51	63
Bike	7.0%	3,520	257	319
Walk	8.8%	4,450	325	403
Total Trips		50,490	3,689	4,575

Notes:
1. Based-on Oakland TIRG assuming Project site is in an urban environment between 0.5 and 1.0 mile of a BART Station, Ferry Terminal or Rail Station, with "other" modes assigned proportionally to transit, bicycling, and walking. TDM Plan vehicle trip reductions were redistributed to transit, bicycling, and walking proportionately. Transit mode share was assigned to BART, AC Transit, Ferry, and Amtrak based on 2013-2017 American Community Survey 5-Year Estimates, Table B08006, Alameda County Tract 9832.

Source: Fehr & Peers, 2020.

2.1.1. Baseline Parking Demand

Baseline parking demand in the Project area was assessed using census data for the Jack London District neighborhood and part of the Chinatown District neighborhood. These census tracts, 4033 and 9832, were chosen because they cover all the Jack London neighborhood, which includes the Project site, and represent the best available data that is representative of the area. Residential parking demand was estimated using the average vehicle ownership in these neighborhoods, and employee parking demand was estimated using commute mode shares.

Table 6 summarizes vehicle ownership for households in census tracts 4033 and 9832. About 74 percent of households have a vehicle that they keep at home, and the average automobile ownership is about 0.94 vehicles per household.

Table 6: Average Vehicle Ownership

Vehicles Available	Percent of Households
No vehicle available	26%
1 vehicle available	56%
2 vehicles available	17%
3+ vehicles available	1%
Average Vehicles per Household	**0.94**

Source: U.S. Census, American Community Survey, 2013-2017 5-Year Estimates, Alameda County Census Tracts 4030 and 9832, Table B08201; Fehr & Peers, 2020.

For employees, parking demand was estimated using the commute mode shares presented in Table 2. Employees who drove alone to work represent parking demand of one vehicle, whereas those who carpool contribute to parking demand by either one-half or one-third of a vehicle, depending on whether they were part of a two- or three-or-greater-person carpool. All other commute modes do not contribute to parking demand. Based on this calculation, parking demand in the Jack London and Chinatown neighborhoods is about 0.65 spaces per worker, or about 2.9 spaces per thousand square feet of office space.[2]

2.2. Mandatory and Optional TDM Strategies

This section describes the available TDM strategies that may be implemented as part of the Project per the City's TIRG. Per AB 734, the Project would be required to achieve a VTR of 20 percent from the baseline trip generation provided in Table 4.

[2] Using an estimated average of 225 square feet per worker per the Downtown Oakland Specific Plan.

To ensure implementation of the TDM Plan, the building owners or managers shall actively participate in a Transportation Management Association (TMA) to be established by the Project sponsor prior to occupancy of the first non-ballpark building. The TMA at a minimum covers the non-ballpark development for the site but could also cover the ballpark or additional development in Jack London District and potentially downtown. A TMA is a non-profit, membership-funded organization made up of employers, developers, and/or property managers working together to improve travel for its members, increase car-free travel options, and provide education informing the site users about the diverse benefits of transit and shared mobility. Local TMA examples include:

- Alameda Point TMA, focusing on transit service, AC Transit Easypass program, and TDM monitoring.
- Emeryville TMA, focusing on providing a "last-mile" shuttle service connecting employees, residents, and visitors of Emeryville from the MacArthur BART Station to various locations in Emeryville.

2.2.1. Mandatory TDM Strategies

Mandatory strategies identified in this section shall be implemented by non-ballpark development and for employees of the ballpark development.[3] Some mandatory strategies in this section shall be directly implemented by the TMA or building management, while others shall be implemented by individual tenants or other entities or agencies. **Table 7** lists the strategies that are part of the City's *Transportation Impact Review Guidelines* (TIRG)[4] (dated April 14, 2017), identifies whether the TDM strategy applies to the Project and indicates how applicable TDM strategies will be implemented. The infrastructure improvements are consistent with the City of Oakland's adopted Complete Streets Policy, which directs the City to plan, design, construct, operate, and maintain the street network to accommodate safe, convenient, comfortable travel for all modes, including pedestrians, bicyclists, transit users, motorists, trucks, and emergency vehicles.

[3] Refer to the ballpark's Transportation Management Plan (TMP) for a discussion of attendee transportation management strategies applicable to ballpark events.
[4] See TIRG Table 4: Required/Mandatory TDM Strategies.

Table 7: Mandatory TDM Program Components

Improvement	Required by code or when . . .	Required for Proposed Project?
1. Bus boarding bulbs or islands	• A bus boarding bulb or island does not already exist, and a bus stop is located along the project frontage; and/or • A bus stop along the project frontage serves a route with 15 minutes or better peak hour service and has a shared bus-bike lane curb	**Yes.** The Transportation Hub (Mitigation Measure TRANS-1c) on 2nd Street would, depending on design, provide bus boarding bulbs or islands.
2. Bus shelter	• A stop with no shelter is located within the project frontage, or • Project is located within 0.10 miles of a flag stop with 25 or more daily boardings	**Yes.** The Transportation Hub (Mitigation Measure TRANS-1c) on 2nd Street would include bus shelters or other, comparable amenities.
3. Concrete bus pad	• A bus stop is located along the project frontage and a concrete bus pad does not already exist	**Yes.** The Transportation Hub (Mitigation Measure TRANS-1c) on 2nd Street would incorporate concrete bus pads.
4. Curb extensions or bulb-outs	• Identified as an improvement within site analysis	**Yes.** Project would construct bulb-outs where additional pedestrian waiting space is needed at intersections and where truck and emergency access can still be accommodated (Mitigation Measure TRANS-1e).
5. Implementation of a corridor-level bikeway improvement	• A buffered Class 2 or Class 4 bikeway facility is in a local or county adopted plan within 0.10 miles of the project location; and • The project would generate 500 or more daily bicycle trips	**Yes.** Bike lanes on Martin Luther King Jr. Way between the site and 8th Street (Mitigation Measure TRANS-2b); on 7th Street between Mandela Parkway and Martin Luther King Jr. Way (Mitigation Measure TRANS-2a); on Embarcadero West, south side of the railroad tracks, between Martin Luther King Jr. Way and Washington Street and potentially to Broadway (Mitigation Measure TRANS-3a); and completed bike lanes on Washington Street between Embarcadero West and 10th Street (Mitigation Measure TRANS-2c) would constitute multiple corridor-level bikeway improvements.

Table 7: Mandatory TDM Program Components

Improvement	Required by code or when . . .	Required for Proposed Project?
6. Implementation of a corridor-level transit capital improvement	• A high-quality transit facility is in a local or county adopted plan within 0.25 miles of the project location; and • The project would generate 400 or more peak period transit trips	**Yes.** The Transportation Hub on 2nd Street (Mitigation Measure TRANS-1c) together with bus-only lanes on Broadway to connect the Transportation Hub and the 12th Street BART Station (Mitigation Measure TRANS-1d) would constitute a corridor-level transit capital improvement.
7. Installation of amenities such as lighting; pedestrian-oriented green infrastructure, trees, or other greening landscape; and trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.	• Always required	**Yes.** Pedestrian amenities to be installed throughout the site together with off-site upgrades to sidewalks, lighting, curb ramps, and crosswalks on several transportation corridors serving the Project (Mitigation Measure TRANS-1e).
8. Installation of safety improvements identified in the Pedestrian Master Plan (such as crosswalk striping, curb ramps, count down signals, bulb outs, etc.)	• When improvements are identified in the Pedestrian Master Plan along project frontage or at an adjacent intersection	**Yes.** Construct railroad safety improvements between Schnitzer Steel and Broadway which requires CPUC approval (Mitigation Measure TRANS-3a). Pedestrian safety improvements to be installed throughout the site together with off-site upgrades to sidewalks, lighting, curb ramps, and crosswalks on several transportation corridors serving the Project (Mitigation Measure TRANS-1e).
9. In-street bicycle corral	• A project includes more than 10,000 square feet of ground floor retail, is located along a Tier 1 bikeway, and on-street vehicle parking is provided along the project frontages.	**Yes.** In-street bicycle corrals or bicycle parking of similar ease and density to be provided on-site.
10. Intersection improvements [1]	• Identified as an improvement within site analysis	**Yes.** On- and off-site intersections would be designed to address these concerns.
11. New sidewalk, curb ramps, curb and gutter meeting current City and ADA standards	• Always required	**Yes.** All on-site sidewalks, curb ramps, curbs, and gutters would meet current City and ADA standards.

Table 7: Mandatory TDM Program Components

Improvement	Required by code or when . . .	Required for Proposed Project?
12. No monthly permits and establish minimum price floor for public parking [2]	• If proposed parking ratio exceeds 1:1000 sf. (commercial)	**Yes.** In commercial developments where the parking ratio exceeds 1:1000 s.f., no monthly permits would be offered for publicly available spaces, and a price floor would be established for all publicly available parking.
13. Parking garage is designed with retrofit capability	• Optional if parking ratio exceeds 1.25 spaces per unit (residential) or 1:1000 sf. (commercial)	**Yes.** Residential parking would be limited to 1 space per unit. Commercial developments with parking more than 1:1000 s.f. could be designed with retrofittable garages.
14. Parking space reserved for car share	• If a project is providing parking and a project is located within downtown. One car share space reserved for buildings between 50 – 200 units, then one car share space per 200 units.	**Yes.** Project would include car share parking that meets these residential ratios and car share parking for commercial parking at one car share space per 200 parking spaces. And regularly monitor car share parking usage and adjust, as necessary.
15. Paving, lane striping or restriping (vehicle and bicycle), and signs to street section midpoint	• Typically required	**Yes.** All on-site streets would be newly constructed.
16. Pedestrian crossing improvements	• Identified as an improvement within site analysis	**Yes.** New on-site streets and intersections as well as off-site transportation improvements would include the pedestrian crossing features.
17. Pedestrian-supportive signal changes [3]	• Identified as an improvement within operations analysis	**Yes.** All new and modified on- and off-site signals would have pedestrian supportive signal features.
18. Real-time transit information system	• Project frontage includes a bus stop or BART station and is on a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better	**Yes.** The Transportation Hub (Mitigation Measure TRANS-1c), each building, and the ballpark would make real time transit information available for transit serving the Hub, BART, Amtrak, and ferries.

Table 7: Mandatory TDM Program Components

Improvement	Required by code or when . . .	Required for Proposed Project?
19. Relocating bus stops to far side	• A project is located within 0.10 mile of any active bus stop that is currently near side	**Yes.** Construct Transportation Hub on 2nd Street (Mitigation Measure TRANS-1c). Bus stops would either have parallel pull-in or saw-tooth designs depending on Class 2 Bike Lanes and parking priorities.
20. Signal upgrades [4]	• Project size exceeds 100 residential units, 80,000 sf. of retail, or 100,000 sf. of commercial; and • Project frontage abuts intersection with signal infrastructure older than 15 years	**Yes.** All new and upgraded traffic signals, whether on- or off-site, would meet city standards in effect at the time of installation or upgrade.
21. Transit queue jumps	• Identified as a needed improvement within operations analysis of project with frontage along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better	**Yes.** The bus-only lanes on Broadway between Embarcadero West and 11th Street (Mitigation Measure TRANS-1d) function as transit queue jumps.
22. Trenching and placement of conduit for providing traffic signal interconnect	• Project size exceeds 100 units, 80,000 sf. retail, or 100,000 sf. commercial; and • Project frontage is identified for signal interconnect as part of a planned ITS improvement; and • A major transit improvement is identified within operations analysis requiring traffic signal interconnect	**Yes.** New and modified traffic signal installations, whether on- or off-site, would be interconnected to City standards at the time of installation or upgrade.
23. Unbundled parking	• If proposed parking ratio exceeds 1.25 spaces per unit (residential)	**Yes.** Residential parking would be limited to 1 space per unit. Therefore, unbundled parking not required.

Notes:
1. Such as visibility improvements, shortening corner radii, pedestrian safety islands, pedestrian desire lines.
2. May also provide a cash incentive or transit pass alternative to a free parking space in commercial properties.
3. Including but not limited to reducing signal cycle lengths to less than 90 seconds to avoid pedestrian crossings against the signal, providing a leading pedestrian interval, provide a "scramble" signal phase where appropriate.
4. Including typical traffic lights, pedestrian signals, bike actuated signals, transit-only signals.

Sources: City of Oakland Transportation Impact Review Guidelines, 2017 and City of Oakland Municipal Code, 2020.

Table 8 on the following page lists additional TDM strategies that the City intends to apply to the Project and the effectiveness of each strategy based on research compiled in Quantifying Greenhouse Gas Mitigation Measures by the California Air Pollution Control Officers Association (CAPCOA, August 2010). The CAPCOA report is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies. Following Table 8 is a

description of the measures listed in the table. For purposes of illustrating the effectiveness of the TDM strategies, only those strategies shown through research to be effective are discussed. The measures listed in Table 8 are generally required as a matter of City policy, but may be adjusted over time, as necessary, to achieve the 20 percent vehicle trip reduction on an on-going basis.

As shown in Table 8 the TDM strategies are estimated to reduce the overall automobile trips generated by the non-ballpark components of the Project. The efficacy of these strategies varies based on location and other factors. Due to the location of the Project in an area that has very good transit, bicycle, and pedestrian access, it is expected that the higher end of the VTR range would be achieved with these TDM strategies. However, even if all strategies were only moderately effective, the non-ballpark development with TDM would still achieve the 20% VTR required by AB 734 legislation. The TDM strategies in Table 8 include on-going operational strategies. Operational strategies provide on-going incentives and support for the use of non-auto transportation modes. These TDM measures have monthly or annual costs and will require on-going management.

The TDM program ultimately implemented by the non-ballpark development will be required to achieve a 20 percent vehicle trip reduction on an on-going basis. The strategies listed in Table 7 and Table 8 are required as a matter of City policy but may be adjusted over time, as necessary, to achieve this goal.

Table 8: Transportation and Parking Demand Management Plan Effectiveness

TDM Strategy	Description	Estimated Vehicle Trip Reduction[1]		
		Residents	Workers	Non-Event Visitors
Infrastructure Improvements	Various improvements	4 – 8%[2]	4 – 8%[2]	5 – 10%[2]
Limited Parking Supply	Provide 1.0 space per residential unit, compared to average vehicle ownership of 0.94 spaces in the surrounding neighborhood	0%	10 – 20%	2 – 6%
	Provide 2.0 space per KSF of office, compared to the average of 2.9 spaces per KSF			
	Provide 2.6 spaces per KSF of retail and restaurant, compared to average of 2.8 spaces per KSF for non-December period			
Off-street Parking Management	For publicly accessible parking, no monthly permits and establish minimum price floor.			
On-street Parking Management	Parking Management Plan includes pricing control of on-street parking			
Unbundled Parking	Parking spaces leased separately from unit rent	1 – 5%	N/A	N/A
Carshare Parking Spaces	Dedicated on-site carshare parking spaces	<1%	<1%	N/A
Transit Operations	Contribute to AC Transit service enhancement	--[3]	--[3]	--[3]
Transit Fare Subsidy	Provide transit subsidy to residents (per bedroom) and employees at least equal to an unlimited AC Transit EasyPass or half a monthly unlimited bus pass	2 – 6%	10 – 15%	N/A
Pre-Tax Commuter Benefit	Encourage employers to enroll in a service to assist employees to use pre-tax income for transit passes			
TDM Marketing and Education	Active marketing of carpooling, BART, AC Transit, bikeshare, and other non-auto modes and services such as guaranteed ride home programs	1 – 2%	1 – 2%	1 – 2%
TDM Representatives	Representatives of building tenants and building management responsible for disseminating information from the TMA about the TDM Plan to employees, residents, and visitors			

Table 8: Transportation and Parking Demand Management Plan Effectiveness

TDM Strategy	Description	Estimated Vehicle Trip Reduction[1]		
		Residents	Workers	Non-Event Visitors
Transportation Management Association (TMA)	TMA for the non-ballpark development made up of its employers, developers, and/or property managers responsible for implementing and managing TDM Plan for non-ballpark development			
	Estimated Vehicle Trip Reduction	8 – 21%	25 – 45%	8 – 18%
	Percent of Total Trip Generation	24%	34%	42%
Total Vehicle Trip Reduction (based on Project land use mix)		**14 - 28% (Required 20%)**		

Notes:

1. The focus of the CAPCOA document is reductions to VMT but the research used to generate the reductions also indicates vehicle trip reductions are applicable as well. For the purposes of this analysis the VTR is assumed to equal the VMT reduction. See the cited CAPCOA research for more information and related information on page 8 of the BAAQMD Transportation Demand Management Tool User's Guide (June 2012).
2. Estimated based on mode shift associated with protected bike lanes, bus only lanes, and expanded bus transit services
3. The effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that at the time of the CAPCOA report development, existing literature did not provide a robust methodology for calculating its effectiveness. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.

Source: Fehr & Peers, 2020.

The measures listed in Table 8 above are described on the following pages:

- *Infrastructure Improvements* – Implement the infrastructure improvements listed in Table 7 above.
- *Limited Parking Supply* – Establish parking maximums for residential, office, and retail/restaurant components that are substantially lower than parking demand. Do not apply parking minimums.[5]
    - Office parking demand in the neighborhood is 2.9 spaces per ksf.
    - Retail and restaurant parking demand in the neighborhood is 2.8 spaces per ksf.
    - Residential parking demand in the neighborhood is 0.94 spaces per unit.
- *Off-street Parking Management* – Implement the off-street parking management strategies outlined in "Toward a High-Performance Parking Management System for a

[5] Parking demand sources: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Alameda County Census Tract 4033 and 9832, Table B08201; 2012-2016 Census Transportation Planning Products 5-Year Data Set, Alameda County Census Tracts 4033 and 9832, Table A202105; City of Oakland.

Thriving Oakland: a Plan" (September 2019, the Parking Management Plan or PMP)[6] to reach off-street parking occupancy goals in commercial parking. Prohibit monthly parking passes for commercial parking. Establish a minimum price floor for publicly accessible parking.

- *On-street Parking Management* – Implement the on-street parking management strategies outlined in the Parking Management Plan to reach on-street parking occupancy goals of 85 percent within the site on non-event days.
- *Bicycle Parking* – Provide long-term and short-term bicycle parking spaces. The exact number of spaces would be established through design and permit review. Bicycle parking should be conveniently located near the Project entrances. Building management shall monitor the usage of these facilities and provide additional bicycle parking if necessary.
- *Unbundled Parking* – Unbundle parking costs from housing costs (as required by Oakland Municipal Code, Section 17.116.310). This would result in residents paying one price for the residential unit and a separate price for parking, should they opt for a space. The price of a parking space would be adjusted so that resident parking demand matches the building's parking supply. Similarly, offices would not be allowed to include parking as part of the rent and would instead rent out office space and parking spaces separately.
- *Carshare Parking Spaces* – For residential developments, dedicate for free at least the minimum number of on-site parking spaces the City of Oakland Municipal Code Section 17.116.105 requires be made available for carsharing in downtown zones. For office developments, dedicate at least one on-site parking space for carsharing. For hotel developments, dedicate for free at least one on-site parking space for carsharing, if on-site parking is provided.
- *Transit Operations* – Provide ongoing contribution to transit service in the area between the Project and the nearest mass transit station, prioritized as follows: 1) Contribution to AC Transit bus service; 2) Contribution to an existing area shuttle service; or 3) Establishment of new shuttle service. The amount of contribution (for any of the above scenarios) would be based upon the cost of establishing new shuttle service (Scenario 3).
- *Transit Fare Subsidy*– Provide transit subsidy to employees or residents in the form of an AC Transit EasyPass or Clipper Card loaded with the equivalent of half of an AC Transit unlimited monthly pass
- *Pre-tax Commuter Benefits* – Encourage Project tenants to enroll in WageWorks or other service to help with pre-tax commuter savings. This strategy allows employees to deduct monthly transit passes or other amount using pre-tax dollars. This can help to lower payroll taxes and allows employees to save on transit.

[6] The parking management plan builds on the City's recent efforts to become more effective at managing the City's parking resources providing staff the strategies, tools, organizational capacity, and operational efficiency to manage parking more effectively.

- *TDM Marketing and Tenant/Worker Education* - Provide resident, employee and worker information about transportation options in the area and TDM strategies provided by the building or employer. This information would also be posted at central location(s) and updated as necessary. Marketing strategies can promote alternative trips by making commuters aware of the options and incentives for using non-automobile transportation. Implementing commute trip reduction strategies with a complementary marketing strategy increases overall effectiveness of the program. This information shall include:
    - Commuter Benefits Program – Provide information on the Bay Area Commuter Benefits Program to all building employees. As of September 30, 2014, Bay Area employers with 50 or more full-time employees within the Bay Area Air Quality Management District (BAAQMD, or Air District) geographic boundaries are required to register and offer commuter benefits to their employees in order to comply with Air District Regulation 14, Rule 1, also known as the Bay Area Commuter Benefits Program. Employers must select one of four Commuter Benefit options to offer their employees: a pre-tax benefit, an employer-provided subsidy, employer-provided transit, or an alternative commute benefit. (Information about Commute Benefits Program is at 511.org/employers/commuter/overview.)
    - Transit Routes – Promote the use of transit by providing user-focused maps. These maps provide employees with wayfinding to nearby transit stops and transit-accessible destinations and are particularly useful for those without access to portable mapping applications. The Project should consider installing TransitScreen real-time transit information in a visible location in the building lobby to provide employees with up-to-date transit arrival and departure times.
    - Transit Fare Discounts – Provide information about local discounted fare options offered by BART and AC Transit, including discounts for youth, elderly, persons with disabilities, and Medicare cardholders.
    - Ridesharing – Provide employees with phone numbers and contact information for ride sharing options including Uber, Lyft, and Oakland taxicab services.
    - Carpooling – Provide employees with phone numbers and contact information for carpool matching services such as the Metropolitan Transportation Commission's 511 RideMatching.
    - Walking and Biking Events – Provide information about local biking and walking events, such as Oaklavia, as events are planned.
    - Bikeshare – Educate employees about nearby bike sharing station locations and membership information. Currently, the nearest bikeshare station is about one block east of the Project site on Embarcadero West at Clay Street.
    - Guaranteed Ride Home – Encourage Project employees to register for the Guaranteed Ride Home (GRH) program. Employees may be hesitant to commute by any other means besides driving alone since they lose the flexibility of leaving

work in case of an emergency. GRH programs encourage alternative modes of transportation by offering free rides home in the case of an illness or crisis, if the employee is required to work unscheduled overtime, if a carpool or vanpool is unexpectedly unavailable, or if a bicycle problem arises. The Alameda County Transportation Commission offers a GRH service for all registered permanent employees who are employed within Alameda County, live within 100 miles of their worksite, and do not drive alone to work. The GRH program is offered at no cost to the employer, and employers are not required to register for their employees to enroll in and use the program.

- *TDM Representative* – Each tenant shall designate a staff person as their TDM representative to coordinate, monitor, and publicize TDM activities. Building management shall also designate a "Building TDM representative." These representatives should work with the overarching Transportation Management Association to implement and monitor this plan.
- *Transportation Management Association (TMA)* – Form a TMA made up of employers, developers, and/or property managers working together to improve travel for its members, increase car-free travel options, and provide education informing the site users about the diverse benefits of transit and shared mobility.

2.2.2. Other TDM Strategies

The City considers the following additional optional strategies to reduce a Project's vehicle trips:

- *Additional Long- and Short-term Bicycle Parking* – Provide long-term and short-term bicycle parking and (for commercial uses) shower and locker facilities more than the minimums set forth in chapter 17.117 of the Oakland Planning Code.
- *Carpool and Ride-Matching Assistance Program* – Offer personalized ride-matching assistance to pair employees interested in forming commute carpools. As an enhancement, building management may consider using specific services such as ZimRide, ComoVee, or 511.org RideShare.
- *Alternative Work Schedule/Flexible Hours/Telecommuting* – Encourage Project employers to offer alternative work schedules, flexible hours, and/or telecommuting, which can eliminate employee trips or shift them to non-peak periods, subject to employer discretion.

2.3. Monitoring, Evaluation, and Enforcement

Pursuant to AB 734, the Project is required to achieve a 20 percent VTR from a baseline with no TDM Plan within one year after completion. The specific methods to be used to monitor compliance with the 20 percent trip reduction and Oakland Municipal Code Chapter 10.68, Employer-Based

Trip Reduction Program, shall be established in each TDM Plan for the non-ballpark development and are generally described in the following paragraphs.

For strategies involving physical improvements related to a specific building, development site, or parcel (not off-site improvements), the building owner or manager shall obtain the necessary permits/approvals from the City and install the improvements prior to occupancy.

The owner or manager for each building of the non-ballpark development, through the TMA, shall submit an annual compliance report each year through and including the fifth year following buildout of the non-ballpark development, for review and approval by the City. At a minimum, each TDM Plan requires evaluation to determine if the program successfully reduces trips by at least 20 percent, complies with Oakland Municipal Code Chapter 10.68, Employer-Based Trip Reduction Program, and to assess the effectiveness of the various strategies implemented. Each building or phase shall conduct annual travel mode and parking demand surveys of its workers, residents, and/or visitors to monitor the percentage of site trips that are made by driving. The TMA shall be responsible for compiling the compliance reports from each building, summarizing the findings to determine whether the vehicle trip reduction is achieved for the total non-ballpark development, and submitting the findings as well as each building's (or phase's) report to the City for acceptance. Each building will be independently responsible for its own 20 percent VTR unless otherwise approved in writing by the City.

Based on the results of each building survey, TDM strategies shall be refined if the VTR goal for the subject building is not met, or if the program as implemented does not comply with Oakland Municipal Code Chapter 10.68, Employer-Based Trip Reduction Program. Implementation of the TDM Plan and related requirements will be required for compliance with the Mitigation Monitoring and Reporting Program for the Project. If timely reports are not submitted and/or the annual reports indicate that the building has failed to achieve the VTR goal, additional measures shall be implemented until the goal is met. If deemed necessary, the City may elect to have a peer review consultant review the annual report. The peer review consultant shall be paid for by the project, building or phase sponsor, as appropriate.

If in two successive years the VTR goals are not satisfied, the building's owner or manager shall prepare and submit for City Staff approval a Corrective Action Plan to bring the building's TDM Plan into conformance with VTR goals. The Corrective Action Plan shall detail the additional measures for the building to be implemented and their expected vehicle trip reduction.

If the required automobile trip reduction target is still not being met one year after the Corrective Action Plan is implemented, or if the building's owner or manager fails to submit the reports described above, or if the reports do not meet City requirements, the building will be considered

in violation of Mitigation Measure and the City may initiate enforcement action as provided for in the Project's Conditions of Approval and Oakland Planning Code Chapter 17.152, including but not limited to imposition of a penalty, in an amount to be determined by the City, at least sufficient to fund and manage transportation improvements that would bring vehicle trips to the targeted level.

If in five successive years after buildout of the non-ballpark development, the building is found to meet the stated VTR goal, additional surveys and monitoring shall be suspended until such a time as the City deems they are needed.

3. Trip Reduction Measures for Ballpark Development

To meet the requirements of AB 734, the ballpark must implement a Transportation Management Plan (TMP) that achieves a 20 percent VTR compared to operations without a TMP. This section evaluates the effectiveness of TMP travel demand management strategies as relates to this goal.

The TMP outlines improvements and operational strategies to optimize access to and from the ballpark within the constraints inherent to a large public event. It considers the travel characteristics of ballpark attendees, workers, and all other visitors to the site. Its primary goal is to ensure safe and efficient access for all people traveling to and from the site, with a focus on promoting pedestrian, bicycle, and transit access, thereby reducing motor vehicle impacts to the site and surrounding neighborhoods. To increase the likelihood that ballpark attendees have a positive experience traveling to and from the area, strategies to increase the use of and attractiveness of transit, walking, bicycling, scooters, and other shared micro-mobility are proposed, along with attendee and employee traffic and TNC and taxi management techniques to ensure that people who travel via car can effectively navigate to their parking, drop-off, and pick-up location with fewer delays than would occur under an unmanaged setting.

Many of the demand management strategies described in the previous section for the non-ballpark development would also apply to the ballpark and are further described in the TMP. However, given the special event nature of the ballpark, a comprehensive TMP is also needed to guide the on-going management of transportation systems before, during, and after ball games or other events at the ballpark. The TMP is a living document implemented by the ballpark management with active participation by key stakeholders, as defined in the TMP, to respond to the evolving transportation needs each year throughout the life of the ballpark.

3.1. Establishing a Baseline for Ballpark Trip Generation

The 35,000-attendee capacity ballpark would host 81 regular season baseball games, one to two pre-season games, and up to 11 post-season games. Up to nine concerts would occur each year, and there would be about 35 other small events, 100 corporate/community events, and up to 16 events at the plaza adjacent to the ballpark. Three types of gameday scenarios were studied: weekday evening games, which typically start around 7:00 PM; weekday day games, which typically start around 12:30 PM; and weekend games, which typically start at either 1:00 PM or 6:00 PM. Around half of A's home games are weekday evening games, about one-sixth are weekday day games, and about one-third are weekend games.

Absent a TMP, the ballpark at Howard Terminal would operate like the A's existing ballpark at the Oakland-Alameda Coliseum, where 9,100 parking spaces are provided for a 47,100-seat baseball capacity. The ballpark at Howard Terminal would have a 35,000-seat capacity. If the same capacity-to-parking ratio per seat is used, a 35,000-seat stadium translates to 6,800 parking spaces.

3.1.1. Existing Coliseum Site Travel Behavior

The existing A's ballpark is located at the Oakland-Alameda Coliseum, in the southern portion of the City of Oakland, roughly 6 miles southeast from the proposed new ballpark location at Howard Terminal. This section describes the existing travel patterns of ballpark attendees as a way of establishing a baseline for the new ballpark's transportation analysis. Existing travel characteristics for attendees to Oakland Arena is also presented as it establishes a baseline for concerts and similar events.

A variety of data describing the existing travel behavior of attendees to A's games at the Oakland-Alameda Coliseum and to larger events at Oakland Arena was collected to help develop Ballpark trip generation estimates for the Project. A brief description of the data, the data provider, and what the data was used for is presented in **Table 9**.

The Oakland Coliseum seats up to 47,100 baseball fans and provides 9,100 parking spaces for private vehicles. Private vehicles are the primary travel mode to the Oakland Coliseum. Baseball fans who drive were observed during site investigations to park on-site; likely because there is ample on-site parking within 1,200 feet of the Coliseum. The Coliseum BART station is located approximately 800 feet from a major entrance providing access via a pedestrian bridge over San Leandro Boulevard and the railroad tracks. BART is the second largest travel mode to the Oakland-Alameda Coliseum. Although several bus lines serve the Oakland-Alameda Coliseum, most operate

at headways of 15 minutes or greater and field observations found a negligible number of attendees arriving by bus or any other mode besides automobiles and BART.

The geographic distribution of fans attending a baseball game was captured using 2017 season data for home games, including location-based data obtained from Streetlight and station origin and destination data provided by BART. **Figure 1** shows the geographic distribution of attendees who BART for a typical weekday evening game and **Figure 2** shows the same information for attendees who drive. **Figure 3** shows the fan distribution combining the BART riders and the attendees who drive.

The Oakland-Alameda Coliseum seats up to 47,100 fans for events and provides 9,100 parking spaces for private vehicles, and private vehicles are the primary travel mode to the Oakland-Alameda Coliseum. There are overflow parking areas off-site, but these are used for football games and similarly sized special events. Baseball fans who drive were observed during site investigations

For home games during the 2017 season, BART hourly ridership data by origin-destination pairs was used to calculate the average number of exits at the Coliseum BART station on each of the three gameday types, i.e., weekday day game, weekday evening game, and weekend game, for three hours before the scheduled start time to one hour after the scheduled start time. The average volume of Coliseum exits during those times on days without a game was then subtracted to estimate BART riders traveling to the Oakland Coliseum for the A's game. Days on which other events occurred at either the Coliseum or Oakland Arena were excluded from the calculations. Variable game end times make it difficult to accurately describe departure mode split using historical data, so departure mode split was estimated to be the same as the arrival mode split.

Table 9: Data Sources Used for Ballpark Trip Generation

Data	Data Provided	Use
BART Hourly Origin-Destination Volumes[1]	BART	Existing Gameday/Event BART Mode Share Geographic Distribution of BART Rider Attendees
Coliseum Game Day Attendance[2]	Oakland A's	Existing Gameday Mode Share at Coliseum
Oakland Arena Concert Attendance[3]	Billboard	Existing BART Mode Share for High-Demand Concerts at Oakland Arena
Vehicle Origin-Destination Distribution for A's and Oakland Arena[4]	StreetLight Data	Geographic Distribution of Vehicle Attendees
Driveway Counts[5]	IDAX	Gameday/Event TNC Mode Share Driver Second-Choice Mode Preferences
Vehicle Occupancy[6]	Fehr & Peers	Gameday/Event Vehicle Occupancy
Downtown Oakland Parking Supply and Occupancy[7]	City of Oakland	Parking Spaces Available for Ballpark Attendees

Notes:

1. BART hourly origin-destination volumes can be found at http://64.111.127.166/origin-destination/. Data collected for A's games during the 2017 season.
2. Per-game data collected at entrances for Oakland A's games during 2017 season. Game-day attendance differs from published attendance data, which represents ticket sales.
3. Six large weekend evening concerts at Oakland Arena in 2017 were studied, using data from Billboard Boxscore:
   - Red Hot Chili Peppers (3/12)
   - Panic! At the Disco (3/25)
   - Roger Waters (6/10)
   - Arcade Fire (10/21)
   - Enrique Iglesias and Pitbull (10/28)
   - Jay-Z (12/16)
4. Based on cell phone location-based services data collected for A's games played between July 2016 and September 2017. More information on the data source can be found at https://www.streetlightdata.com/.
5. Driveway counts of entering and exiting vehicles were collected at the main gate and gates with significant traffic on one game day for each type (weekday evening, weekday day, and weekend) during September 2018 and June and July 2019. Counts were collected from two hours prior to the game's start time to two hours after the final out.
6. Field observations of vehicle occupancy were collected at the main gate on one game day for each type (weekday evening, weekday day, and weekend) during September 2018 and June and July 2019. Counts were collected from two hours prior to the game's start time to 30 minutes after the start time.
7. Parking supply data included on-street and publicly available off-street spaces. Occupancy data included availability on each block and lot/garage at 1:00 PM and 7:00 PM on weekdays and Saturday at 1:00 PM. Supply and occupancy data were collected in 2015. Parking supply was adjusted to reflect parking lots developed since 2015 and the parking demand associated with the removed lots was dispersed to other available parking supply.

Sources: Fehr & Peers, BART, 2020.

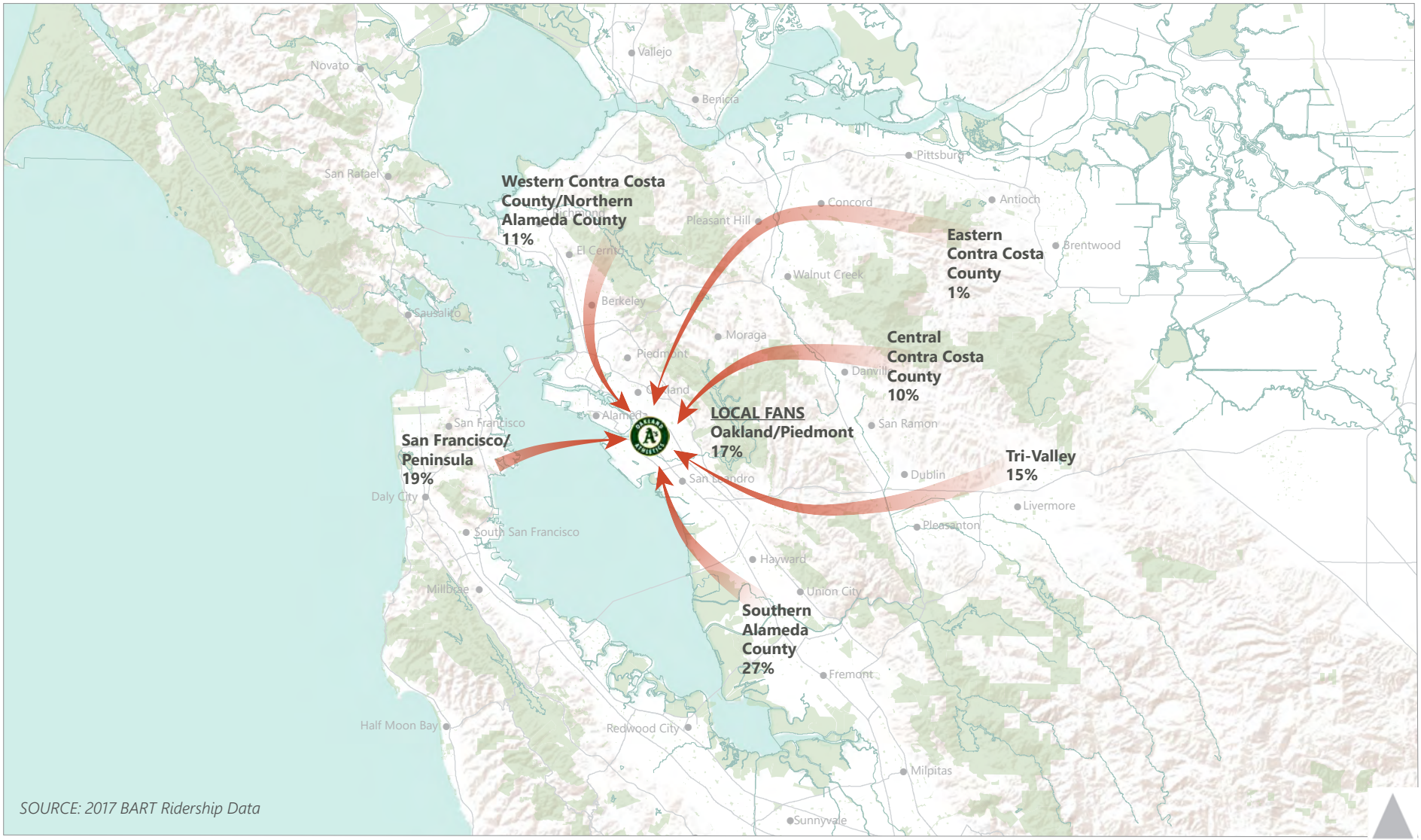


Figure 1

Weekday Evening Game
Geographic Distribution (2017) of Oakland A's Game Attendees Who BART

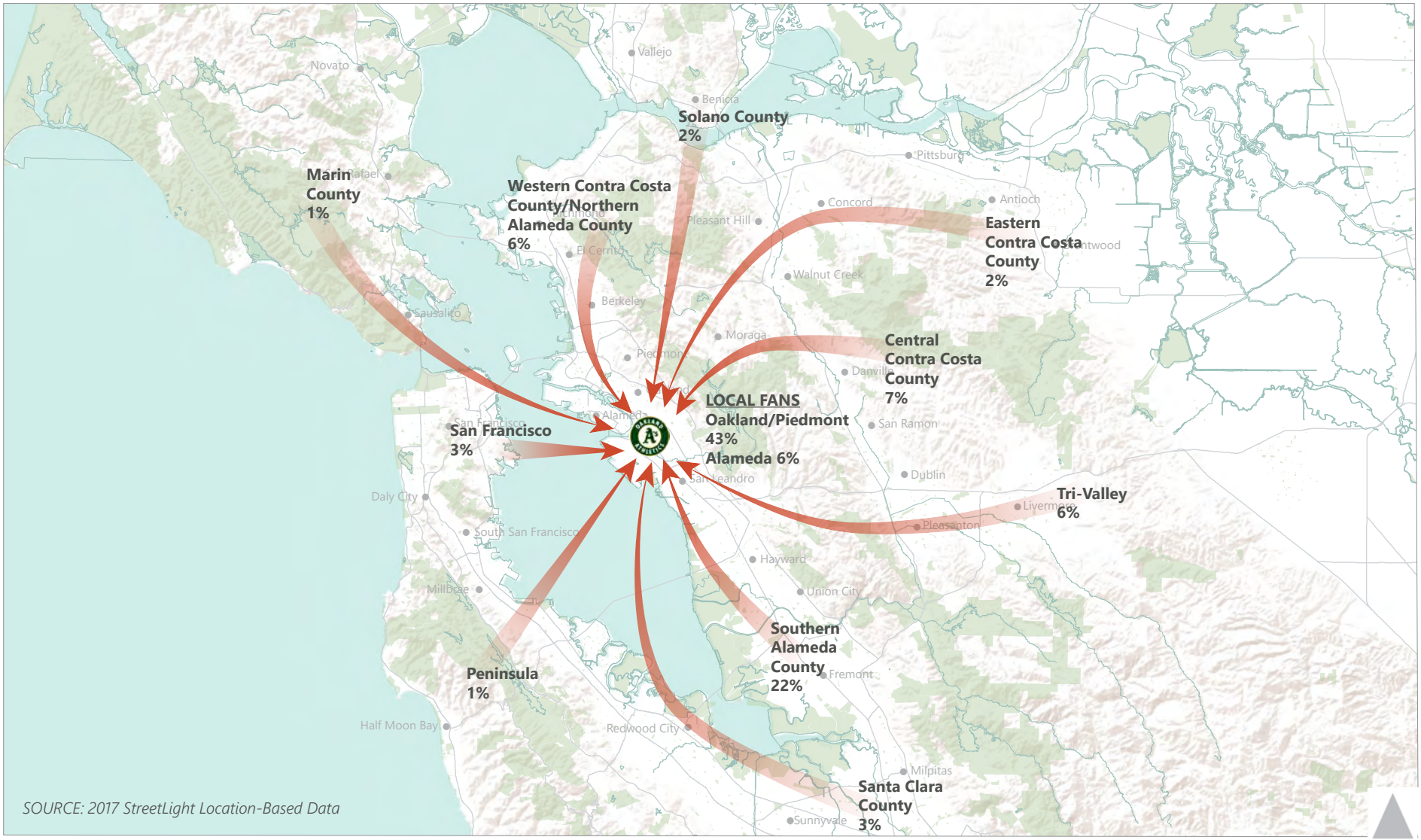


Figure 2

Weekday Evening Game
Geographic Distribution of (2017) Oakland A's Game Attendees Who Drive

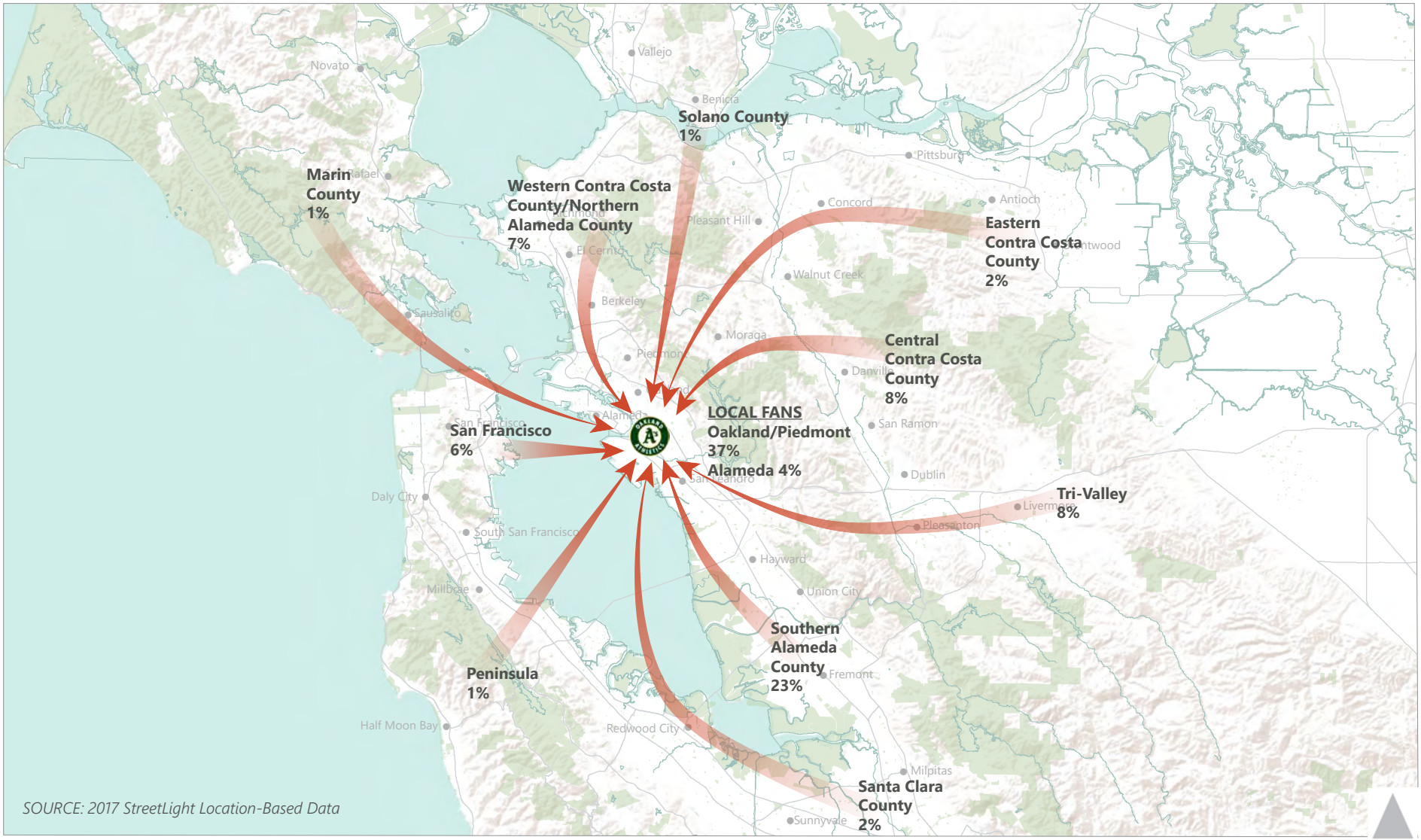


Figure 3

Weekday Evening Game
Existing Geographic (2017) Distribution of All Oakland A's Game Attendees

BART ridership numbers were compared against average turnstile attendance in the 2017 season for each game type to calculate the BART mode share, as presented in **Table 10**. All other attendees were assumed to travel to games at the Oakland-Alameda Coliseum by automobile because land use intensity near the Oakland-Alameda Coliseum is low, bus service is limited with only 6 lines, and field observations found a negligible number of attendees arriving on foot or by bus.

Table 10: Existing Oakland-Alameda Coliseum BART Ridership Calculations

Mode	Non-Game day[1]	Game day[1]	Estimated BART Attendees[2]	Average Attendance[3]	BART Mode Share[4]
Weekday Evening	1,991	4,786	2,795	11,868	24%
Weekday Day	600	2,590	1,990	8,879	22%
Weekend	397	3,618	3,221	17,086	19%

Notes:
1. Coliseum BART Station Ridership
2. Calculated by subtracting gameday ridership from non-gameday ridership
3. Average turnstile attendance for the 2017 season
4. Calculated by dividing estimated number of attendees using BART by the turnstile attendance

Sources: Fehr & Peers, BART, 2020.

Transportation Network Companies (TNCs), such as Uber and Lyft, were observed arriving at the Oakland-Alameda Coliseum main gate and were waved through to drop off passengers and then return to the main gate to exit the site. The share of attendees arriving by TNC was estimated by using driveway counts from one game of each game type (weekday evening, weekday day, weekend) in September 2018 and June and July 2019. Vehicles exiting the Oakland-Alameda Coliseum between two hours prior and one hour after game start were observed to be TNCs, and that number was compared to the total number of vehicles entering the site during that time. The exiting percentage across the three game types was averaged due to the small sample size, and the average TNC rate was established and applied to all three game types.

Table 11 presents modes of access for attendees of the Oakland-Alameda Coliseum ballpark for each of the time when baseball games are typically played: weekday evening, weekday day and weekend. A similar process was followed to establish the modes of access for events at Oakland Arena, which is also presented in the table.

Table 11: Existing Oakland-Alameda Coliseum Ballpark Mode of Access

Mode	Weekday Evening[1]	Weekday Day[1]	Weekend[1]	Oracle Event[2]
Drive	70%	72%	75%	74%
TNC[3]	6%	6%	6%	6%
BART	24%	22%	19%	20%
Walk/Bike/Other Transit[4]	*	*	*	*

Notes:
1. Reflects average mode of travel during 2017 baseball season
2. Based on BART and Billboard data for the following high demand concerts at Oakland Arena in 2017:
   - Red Hot Chili Peppers (3/12)
   - Panic! At the Disco (3/25)
   - Roger Waters (6/10)
   - Arcade Fire (10/21)
   - Enrique Iglesias and Pitbull (10/28)
   - Jay-Z (12/16)
3. Based on driveway count data, TNCs were estimated to comprise 9 percent of total vehicle use
4. Negligible use of other modes observed during field visits

Sources: Fehr & Peers, BART, 2020.

3.1.2. Howard Terminal Site Travel Behavior

A travel mode choice model was developed to estimate trip generation at the ballpark by mode. Mode choice was based on specific geographies of ball game attendees. This information was used to estimate how modes would shift as compared to mode split at the existing Oakland-Alameda Coliseum. Compared to the Oakland-Alameda Coliseum/Oakland Arena, a ballpark at Howard Terminal would induce three primary changes in the travel patterns of attendees, each of which were addressed in the model:

- Attendees who currently take BART to the Oakland-Alameda Coliseum from origins in and around downtown Oakland would shift modes to access a ballpark at Howard Terminal, to walking, bicycling, transit buses, or TNC.
- Attendees who currently drive to the Oakland-Alameda Coliseum from origins near Howard Terminal would shift modes to access a ballpark at Howard Terminal, to walking, bicycling, transit, or TNC.
- Attendees from south or southeast of the Oakland-Alameda Coliseum site, for whom the Project site represents a longer travel distance, may no longer attend games, replaced by those for whom games would be more conveniently located. Alternatively, those who traveled to the Oakland-Alameda Coliseum site by walking, bicycling, or transit, may now drive to a ballpark at Howard Terminal.

Most attendees from outside a five-mile radius of Howard Terminal were modeled as experiencing zero mode shift from a move to Howard Terminal. Mode choice estimation models like the Alameda

County Transportation Commission (Alameda CTC) Travel Model predict mode split based on travel preferences for typical trip purposes and are therefore not well-suited to predict mode share for ballpark events, which have unique travel characteristics and attendee desires. So, the observed travel preferences of attendees were used to estimate mode shares, except for attendees for whom the move represented a substantial change in the desirability or feasibility of their travel options.

The 35,000-person capacity ballpark would be constructed on the eastern portion of the Project site. The existing Oakland-Alameda Coliseum has 9,100 parking spaces and a capacity of 47,100 attendees, a ratio of 19.4 percent. If the same ratio (parking spaces to ballpark capacity) were applied at Howard Terminal, the Project would provide about 6,800 parking spaces (35,000 attendees x 19.4 percent). The Project proposes 3,500 ballpark parking spaces in Phase 1, reducing to 2,000 parking spaces for full build-out. The Project is therefore designed to encourage transportation modes other than private automobiles traveling to, and parking at, the ballpark.

Vehicle occupancy data was collected at entrances to the Coliseum from two hours prior to the start of the game to 30 minutes after game start on September 8, 2018 and June 16, July 2, and July 19, 2019. The average observed vehicle occupancy across these four games was 2.2 occupants per vehicle for all vehicles observed. TNCs within this mix were estimated to represent 8 percent of all vehicles based on entering and exiting vehicle volumes from driveway counts collected at these four games, plus at games on September 19 and September 20, 2018. Therefore, the estimated existing average vehicle attendee occupancy was calculated as 2.12 attendees per vehicle (2.2 occupants – 1 TNC driver x 8 percent of vehicles).

The location of the Project in a more urban environment with fewer easily accessible parking spaces is expected to increase average vehicle occupancy, particularly with a TMP. Based on data collected at event centers with TMPs, including at the Golden 1 Center in Sacramento, Oracle Park in San Francisco, Key Arena in Seattle, and Providence Park in Portland, average vehicle occupancies ranged from 2.3 to 2.7. To present a conservative analysis, an average vehicle attendee occupancy of 2.3 attendees per vehicle was used for the Project with a TMP.

Three types of game day scenarios were studied: weekday evening games, which typically start around 7:00 p.m.; weekday day games, which typically start around 12:30 p.m.; and weekend games, which typically start at either 1:00 p.m. or 6:00 p.m. Around half of Oakland A's home games are weekday evening games, about one-sixth are weekday day games, and about one-third are weekend games. The ballpark is anticipated to occasionally host large special events, such as concerts, with at most 35,000 people attending. These events would be like the concert events that now occur at the Oakland Arena. Like the baseball games, vehicle trips for these events were estimated under a scenario without and with vehicle trip reduction measures.

Mode Shift of Current BART Riders

Some attendees who currently take BART to the Oakland-Alameda Coliseum would switch modes to attend games at Howard Terminal. Depending on the origin station, varying proportions of attendees would switch to TNCs, walking, bicycling, [7] buses, or ferries. Attendees who currently use BART to attend games were estimated to continue to be non-drivers, and therefore none would switch to driving a personal vehicle, because driving will be much more inconvenient at Howard Terminal, where on-site parking is limited and many of those using a personal vehicle will be required to park off-site and walk up to one mile; compared to the Oakland-Alameda Coliseum where parking is plentiful and within 1,200 feet of the stadium.

Attendees who take BART from the three Downtown Oakland BART stations or the West Oakland BART station to games at the Oakland-Alameda Coliseum would not utilize BART if games were played at Howard Terminal. West Oakland, 12th Street Oakland City Center, and Lake Merritt stations are the three closest stations to Howard Terminal and are roughly equidistant to the site. The 19th Street Oakland station is also close to Howard Terminal, and attendees would not ride BART to travel from 19th Street to 12th Street. Without a TMP strategy, those using BART to travel to the Project site would alight at the three closest stations and mostly either walk to the ballpark, take a TNC, or use micro-mobility such as a bike or scooter with a small percentage taking AC Transit or the Broadway Shuttle (for weekday games only, as the Broadway Shuttle does not operate on weekends).

Some riders who currently take BART to the Oakland-Alameda Coliseum from MacArthur, Ashby, Rockridge, or Fruitvale BART stations would switch modes to TNCs, as the closer location makes these rides more economical, and the ability to use local roads and the greater distance of the ballpark from BART stations makes TNC rides more time attractive. Lastly, some attendees who currently take BART from the Embarcadero and Montgomery stations would switch to ferries for game types and times when convenient ferry service is provided. This is primarily arrivals for weekday evening games and departures from weekend games without a TMP strategy, as ferry service for other time periods is either not provided or not well-timed to game attendance needs.

Mode Shift of Current Drivers

Some attendees who currently drive to the Coliseum from areas near Howard Terminal would also switch modes to attend games at Howard Terminal. Most attendees within one mile of the Howard Terminal Ballpark would switch to walking or using micro-mobility, with a small number taking a bus. At one to two miles from Howard Terminal, most current drivers would switch to TNCs, use micro-mobility, or take the bus, with a small number continuing to drive themselves. For current

[7] Bicycling includes shared micro-mobility options like docked and dockless bike share and e-scooters.

drivers between two and five miles from the Howard Terminal site, the majority would remain drivers to a ballpark at Howard Terminal, with those switching modes using TNCs.

In addition to attendees close to Howard Terminal, some who drive to the Oakland-Alameda Coliseum from locations less than about 1.5 miles away from it would change modes to BART or TNCs, as driving from those locations becomes more onerous with a move to Howard Terminal.

Geographic Shift of Attendees

Moving to a new ballpark at Howard Terminal would not only cause mode shift for some current attendees, but also result in a new geographic distribution of attendees. Fewer attendees would hail from areas south or southeast of the Coliseum, as travel distances and travel times would increase for those fans, while areas with shorter travel times and distances to Howard Terminal would have a larger distribution of attendees. See **Appendix A** for supporting evidence regarding trip distribution changes from ballpark geographic relocation

Travel times for BART riders from south of the Coliseum station would increase by at least 30 minutes to get to Howard Terminal compared to the Oakland-Alameda Coliseum, taking into consideration both time on BART and time walking to the Project site. Additionally, all riders at stations from Castro Valley and beyond along the Dublin/Pleasanton line, and some riders at stations from Hayward and beyond along the Warm Springs/South Fremont line, would either change trains at Lake Merritt to get to 12th Street, continue to the West Oakland station, or walk the distance (about 1.1 miles) from the Lake Merritt station to the ballpark. Because of these factors, ridership from stations south or southeast of Bay Fair was reduced.

Drivers from south of the Oakland-Alameda Coliseum would also see their travel times increased with the move to the Project site. Although the Project site is only about six miles north of the Oakland-Alameda Coliseum, that travel would be during peak commuting hours for arrivals to weekday evening games and departures from weekday day games. Uncongested travel times to cover the six miles is about 10 minutes, while congested travel times are between 18 and 40 minutes depending on traffic conditions. In addition, drivers would need to park up to one mile from the Project site and walk up to 20 minutes to the Project site. As a result, relocating the ballpark to the Project site could add anywhere from 30 to 60 minutes to travel times, depending on game type. As such, the number of drivers from locations more than 20 miles south or southeast of Howard Terminal were reduced. Traffic on weekends is less peaked, but the longer travel distances would still discourage some people from those locations from attending.

Geographic locations with gains in attendance, by contrast, would be concentrated in close-in areas in Oakland and Alameda, as well as other areas where the Project site represents a more convenient trip, like San Francisco, northern Alameda County, and central and northern Contra Costa County.

The distribution of these attendance gains was taken from a proprietary analysis performed by the A's. The mode split of attendees from these locations varied depending on availability and ease of transportation options.

Estimated Ballpark Mode Split and Trip Generation

The Oakland-Alameda Coliseum attendee travel characteristics were adjusted to reflect the mode shift of current BART riders, mode shift of current drivers, and geographic shift from relocating the ballpark to Howard Terminal. Available parking supply—from on-site, plus on-street spaces and off-site garages within one-mile walking distance of the ballpark—was enough to provide a parking space to all attendees who would prefer to drive during each game time. **Figure 4** summarizes the resulting distribution of drivers and BART riders to a 35,000-capacity baseball game at Howard Terminal.

Absent a TMP, ample parking would be available for those whose primary mode preference is driving and **Table 12** summarizes the calculated automobile trip generation for each game type at Howard Terminal. TNC trips were adjusted to account for the fact that each TNC trip must both enter and exit the area when dropping off or picking up passengers. Consistent with the legislative requirements set forth in AB 734, the ballpark is required to reduce the number of vehicle trips by 20 percent compared to the scenario without a TMP. **Table 13** and **Table 14** summarize the calculated mode share for maximum capacity events at the ballpark without and with a TMP.



Figure 4

Weekday Evening Game

Anticipated Geographic Distribution of Oakland A's Game Attendees at Howard Terminal

Table 12: Automobile Trip Generation for Ballpark

	Weekday Evening[1]		Weekday Day[1]		Weekend[1]		Concert[2]	
	Attendee Mode Share	Total Vehicle Trips[3]	Attendee Mode Share	Total Vehicle Trips[3]	Attendee Mode Share	Total Vehicle Trips[3]	Attendee Mode Share	Total Vehicle Trips[3]
Drive	57%	20,590	57%	20,360	62%	22,230	58%	20,610
Ride-sourcing[4]	18%	11,850	19%	12,600	18%	11,590	19%	12,840
Total Auto Trips w/out TMP		32,440		32,960		33,820		33,450
TMP Vehicle Trip Reduction (-20%)		-6,490		-6,590		-6,760		-6,690
Total Auto Trips with TMP		25,950		26,370		27,060		26,760

Notes:
1. Assume a 35,000-attendee game with 1,320 employees.
2. Assume a 28,000-attendee event with 1,200 employees.
3. Auto occupancy of 2.12 attendees per vehicle used for both drive and ride-sourcing trips without the TMP. Employee trips assumed to be single occupant for calculation purposes.
4. Ride sourcing involves two vehicle trips for each leg—one to pick up the passenger and one to drive to the passenger's destination.

Source: Fehr & Peers, 2020.

Table 13: Attendees by Travel Mode – Ballpark without TMP

	Weekday Evening[1]		Weekday Day[1]		Weekend[1]		Concert[2]	
	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]
Drive[4]	57%	20,060	57%	19,810	62%	21,790	58%	20,230
BART	21%	7,380	20%	7,130	17%	6,100	18%	6,350
Ride-sourcing[4]	18%	6,280	19%	6,680	18%	6,140	19%	6,810
Walk	2%	760	3%	890	2%	600	3%	1,150
Bus	1%	300	1%	330	1%	280	1%	330
Bicycle	<1%	50	<1%	60	<1%	40	<1%	60
Ferry	<1%	170	<1%	100	<1%	50	<1%	60

Notes:
1. Assume a 35,000-attendee game.
2. Assume a 35,000-attendee event.
3. Represents average of arrival and departure travel mode shares, which may vary slightly, and primary mode.
4. Average vehicle occupancy of 2.12.

Source: Fehr & Peers, 2020.

Table 14: Attendees by Travel Mode – Ballpark with TMP[6]

	Weekday Evening[1]		Weekday Day[1]		Weekend[1]		Concert[2]	
	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]	% Mode Share[3]	Persons[3]
Drive[4]	50%	17,330	49%	17,120	54%	18,840	50%	17,490
BART	23%	8,040	22%	7,810	21%	7,150	21%	7,120
Ride-sourcing[4]	16%	5,430	17%	5,770	15%	5,310	17%	5,890
Walk[5]	4%	1,500	5%	1,600	3%	1,000	5%	1,870
Bus	3%	1,200	3%	1,200	3%	1,200	3%	1,130
Bicycle	1%	500	1%	500	1%	500	1%	500
Ferry	3%	1,000	3%	1,000	3%	1,000	3%	1,000

Notes:
1. Assume a 35,000-attendee game.
2. Assume a 35,000-attendee event.
3. Represents average of arrival and departure travel mode shares, which may vary slightly, and primary mode.
4. Average vehicle occupancy of 2.3.
5. Includes attendees who walk to/from a shuttle from their origin/destination.
6. Refer to Table 15 describing groups of strategies with a range of effectiveness illustrating the TMP can achieve a 20 percent VTR.

Source: Fehr & Peers, 2020.

3.2. Summary of TMP Process and Measures

This analysis only considered TMP measures that have quantifiable vehicle trip reduction effects. This does not imply that other measures, not mentioned in this analysis, do not have an impact on vehicle trips. Rather, those other measures either may be difficult to model accurately under the framework used in this analysis or would be inappropriate to isolate in the absence of a holistic transportation management strategy. The menu of analyzed measures follows five general strategies, as described in **Table 15**. A description of the measures and how they affect the mode share and geographic distribution follows.

Table 15 provides a menu of TMP measures that will be considered in the creation of a final plan for opening day and beyond. Following the narrative description of Table 15 is a list of City Priorities—these are measures that align with City policy. However, it may not be feasible or necessary to implement all these measures at opening day to achieve a 20 percent VTR.

As shown in **Table 15** the TMP strategies have a wide range of effectiveness which illustrates that the implemented TMP strategies will need to be aggressive but that the AB 734 requirements can be successfully achieved. The VTR ranges represent conservative assumptions about potential trip

reduction at the low end of the ranges. Due to the location of the Project in an area that has very good transit, bicycle, and pedestrian access with dispersed parking, it is expected that the TMP would achieve a 20 percent VTR if all strategies were moderately effective. As a result, the ballpark development with a TMP is expected to achieve the 20 percent VTR required by AB 734 legislation.

Table 15: TMP Measures by Strategy for Ballpark

Strategy	Measures	Vehicle Trip Reduction Estimate
Encourage Walking and Bicycling	Develop Howard Terminal high-density housing and office uses	0-3%
	Bike lanes on: Martin Luther King Jr. Way between the site and 8th Street and 7th Street between Mandela Parkway and Martin Luther King Jr. Way including the 8th Street fork.	
	Bike lanes north of 8th Street on Martin Luther King Jr. Way to San Pablo Avenue, Market Street from 3rd Street north into Berkeley, 2nd Street connecting to the Oak / Embarcadero corridor, and Washington Street.	
	Upgrade sidewalks along the primary corridors serving the ballpark including 7th and Market Streets, Martin Luther King Jr. Way, Washington Street, and Broadway.	
	Free bicycle/scooter valet and/or secure parking spaces for at least 500 bicycles and scooters with flexibility to expand to 1,000 spaces.	
Better Transit Options	Gameday ferry service between the Oakland Jack London Square ferry terminal and San Francisco, Alameda, Richmond, and/or Marin	1-10%
	Extend bus lines to provide high-frequency AC Transit service near the ballpark along 2nd Street i.e., Transportation Hub.	
	Bus-only lanes on Broadway between Embarcadero and 11th Streets connecting the 12th Street BART station; 7th Street between the West Oakland BART station and Castro Street; and/or 7th and 8th Streets connecting Broadway to the Lake Merritt BART station at Oak Street.	
	Reroute bus lines closer to ballpark, connecting West Oakland and Lake Merritt BART stations via 2nd Street.	
	Transit reimbursement equivalent to one roundtrip fare on AC Transit; provide free transit after ballpark events at the Transportation Hub.	
Downtown Connections	Gameday shuttles between 12th Street BART station and the ballpark	2-6%
	Gameday shuttles between West Oakland and Lake Merritt BART stations and the ballpark	
	Gondola service (project variant) between 12th Street and the ballpark	
Parking Supply Management	Limit on-site parking spaces available for ballpark attendees to 3,500 spaces at opening day and 2,000 spaces at site buildout	0-11%
	Use pricing to maintain 90-95% occupancy rate at nearby off-site garages	
	Use pricing to maintain 85% occupancy rate at nearby on-street spaces	

Table 15: TMP Measures by Strategy for Ballpark

Strategy	Measures	Vehicle Trip Reduction Estimate
	Through curb management, prohibit on-street parking by ballpark attendees near the ballpark, if necessary, to maintain on-street parking for local businesses and residents	
	Expand residential parking programs in West Oakland and Downtown	
Reduced Vehicle/Trip Demand	Manage TNC operations by prohibiting drop-off/pick-ups except in designated areas significantly farther from the ballpark than the transit hub before and after ballpark events. Enforce via physical barriers and traffic control officers.	3-14%
	Implement a TNC fee rationing access to the pick-up/drop-off zones on-site (if provide) and nearby off-site (if provided) locations.	

Source: Fehr & Peers, 2020.

3.2.1. Encourage Walking and Bicycling

The following measures reduce vehicle trips by increasing the number of attendees who are likely to walk or bike to attend games or events at the ballpark.

Develop Howard Terminal

Developing the western side of Howard Terminal with residential and office buildings (among other uses) would increase the number of potential attendees within easy walking distance of the ballpark. Residents and workers in these buildings would walk or bicycle to attend baseball games or events at the ballpark. The development of Howard Terminal is expected to reduce the number of vehicle trips to the ballpark because it is anticipated that some of these residents and employees will walk to a ballgame instead of driving, as they otherwise would if they were not located in close proximity.[8] This measure would cause the geographic shift of attendees due to the ballpark's relocation to Howard Terminal to be more pronounced towards close-in attendees.

Valet and/or Secure Bicycle/Scooter Parking

Without the TMP, no special accommodations are made for attendees who choose to bicycle or scooter. As such, bicyclists and scooter riders must lock their bicycles and scooters to bike racks on the streets outside of Howard Terminal, which are limited in number and pose theft concerns. This

[8] Vehicle trips of these residents and employees unrelated to ballpark travel are not considered part of the ballpark's trip generation. Vehicle trip reduction strategies for these non-ballpark land uses are analyzed elsewhere in this memorandum.

measure would provide a free bicycle and scooter valet and/or secure parking that could accommodate up to 1,000 bicycles or scooters, providing attendees who wish to bicycle or scooter to the ballpark a conveniently located, free, and secure place to store their bicycle or scooter while at the ballpark. By improving bicycling options, this measure reduces vehicle trips for attendees within five miles who otherwise may have chosen to use a TNC or drive themselves.

Better Bicycle and Pedestrian Connections

Without the TMP, no special accommodations are made for people walking and biking to the Ballpark. Attendees who choose to bicycle or scooter would share the road with faster moving motor vehicle traffic, making travel less convenient and less safe. Providing bike facilities that accommodate all ages and abilities also make the trip safer and more convenient by connecting adjacent neighborhoods and the ballpark for bicycling. The existing attendees from nearby generators such as BART would walk to the site along corridors with a variety of sidewalk conditions that would make walking difficult in some locations. In some cases, the sidewalk widths are not adequate to handle the pedestrian demands, while in other cases the sidewalks are in poor condition or may not exist. Like improving bicycle facilities, improving sidewalks between adjacent neighborhoods and the BART stations and the ballpark makes walking an attractive last mile connection for the ballpark; thereby, attracting more people from adjacent neighborhoods, including the BART stations.

3.2.2. Better Transit Options

Improving transit options, either by introducing new services specially tailored to ballpark events, optimizing existing services, or reducing the cost of transit can have a moderate impact on vehicle trips by inducing some attendees to forgo driving.

Ballpark Gameday/Event Ferries

Without the TMP, ferry service at the Oakland Jack London Square ferry terminal is poorly timed to accommodate game attendees, except for those who want to arrive via ferry for weekday evening games and then use a different mode when departing. Howard Terminal's location on the waterfront lends itself to ferries because of the short distance between the ferry terminal and the ballpark.

This measure would consider special event ferry service from Oakland to San Francisco, Richmond, Marin, or elsewhere. These services would operate similarly to the San Francisco Giants service, arriving about 20 minutes before the start of a weekend game or event, and departing about 20 minutes after the final out or end of a weekend or weeknight event. This measure would induce more attendees from the Alameda, San Francisco, Richmond, and Vallejo areas to use the ferry.

The total increase in ferry ridership was calibrated to model one San Francisco-Oakland ferry, one Richmond-Oakland ferry. An increase in ferry ridership from San Francisco would not affect the number of vehicle trips (riders within walking distance of the Ferry Building would otherwise use BART), but riders from Alameda, Richmond, or Marin areas switching from vehicles to the ferry would result in a reduction in vehicle trips.

Improved AC Transit Service

Without the TMP, AC Transit serves the Howard Terminal site, with only Line 72/72M/72R offering high-frequency service with stops within a quarter mile of the site. Except for the Broadway Shuttle on weekdays, which is about one-third of a mile from the site, other routes with high-frequency service require a 10- to 15-minute walk to the ballpark.

This measure improves AC Transit service to the Project site by extending existing nearby routes to a Transportation Hub on 2nd Street between Martin Luther King Jr Way and Clay Street, adjacent to the Martin Luther King Jr Way corridor pedestrian access to the ballpark and the pedestrian-bike overcrossing at either Jefferson Street or Clay Streets. The measure could also reroute or extend other bus lines to stop in the same area while traveling between the West Oakland and Lake Merritt BART stations. The measure could also provide transit-only lanes on one or more of the routes used by these lines to improve travel time and reliability between the ballpark, downtown, and the three nearest BART stations. This measure would moderately increase bus ridership to the games, with the size of the effect estimated to be an increase of several full busloads of attendees. Overall, the size of the effect was moderate based on the number of attendees who might plausibly switch to bus service as the primary mode to travel to and from the ballpark and attendees who switch to BART because of the last mile service provided by the buses.

Transit Reimbursement

This measure, if provided, improves the attractiveness of transit with a portion (or all) of the transit fare to a ballpark event reimbursed. Unlike parking pricing, which penalizes people for driving, a transit reimbursement incentivizes people to leave their cars at home and use transit to travel to ballpark events. Making transit free between the Transportation Hub on 2nd Street and one or more of the nearby BART stations would similarly incentivize attendees to use BART (or AC Transit), since the bus ride is free to access BART.

3.2.3. Downtown Connections

Without the TMP, attendees who use BART to travel to or from the ballpark must walk about 20 minutes between BART stations and Howard Terminal. This decreases the attractiveness of BART, particularly considering that travel time spent walking is generally viewed as less preferable than

travel time spent on other modes. Likewise, workers and residents in Downtown and Uptown Oakland face potentially longer walks to the ballpark if they originate north of 12th Street, and the use of TNCs for these attendees to access the ballpark in the absence of alternative options is likely. Better connections between Downtown Oakland and the ballpark would reduce vehicle trips by increasing the attractiveness and convenience of BART and providing a reasonable alternative for downtown workers and residents.

BART Shuttles

This measure introduces a shuttle system between the 12th Street BART station and Howard Terminal. Shuttle service would not only increase BART ridership by increasing convenience, but also increase walking mode share, as attendees within walking distance of the shuttle stops could walk to the shuttle. The shuttle service would determine optimal routing and service requirements based on attendee preferences (as captured by surveys) in coordination with the City of Oakland and service provider. Additional service between Howard Terminal and the West Oakland and/or Lake Merritt BART stations could also be considered.

This measure primarily reduces vehicle trips by encouraging more attendees within a moderate distance of Downtown Oakland to use BART or walk instead of switching to TNCs. The West Oakland and Lake Merritt shuttles have a similar effect as the 12th Street shuttle.

The vehicle trip reduction impact of BART shuttles is moderate and relatively unaffected by the implementation of other measures. The impact is moderate because while these shuttles encourage mode shift primarily away from TNCs (which have the largest vehicle trip impact), each BART shuttle route will serve 1,000 to 2,000 riders per hour, depending on the travel time to the BART station and whether two or three shuttle (un)loading locations at the 2nd Street Transportation Hub are provided.[9] This capacity is much less than the peak-hour attendee BART ridership. The shuttles would likely not serve all BART riders and downtown workers and residents who may want to use them. Shuttles would be able to drop off at the Transportation Hub proposed on 2nd Street adjacent to the Project site and would be able to use the transit only lanes, meaning that overall travel times would be reduced by about 5 minutes over walking, and riders would not have to walk the full distance between BART and the ballpark. Agreement with AC Transit would be necessary for the shuttle buses to use the AC Transit bus stops at the BART stations.

BART shuttles have relatively limited synergies with other measures, because shuttles do not cause much of a mode shift for attendees who currently drive from outside of Oakland. Even with shuttles, the location of Howard Terminal is still less convenient to BART than is the Coliseum site. If an

[9] Each (un)loading location can serve 12 shuttles per hour i.e., one shuttle every 5-minutes and each shuttle is assumed to carry 50 to 60 people.

attendee currently drives to the Coliseum, then the attendee is likely to continue to drive to Howard Terminal absent parking pricing and reduced parking availability.

Gondola (Project Variant)

As an alternative to a shuttle between the 12th Street BART station and the ballpark at Howard Terminal, a gondola could be provided that would transfer attendees between the two locations. The gondola's capacity of up to 5,000 to 6,000 riders per hour would serve most or all attendees using BART, even during the peak post-game hour. The gondola would also provide a faster travel time than the shuttle, reducing overall travel time by up to 10 minutes compared to walking.

The impact of the gondola would have a similar effect as the BART shuttles on what kinds of attendee behavior would be affected, but the size of the effect would be larger due to its greater capacity and convenience and reduced overall travel time.

3.2.4. Parking Supply Management

Without the TMP, the new ballpark would provide 6,800 parking spaces; and drivers could find another 4,210 available off-site parking spaces (in garages and on-street within one mile of the ballpark) for weekday games and 7,600 available spaces for weekday evening and weekend games. Without the TMP, there would be enough on- and off-site parking spaces to accommodate all attendees who would prefer to drive.

The TMP is designed to manage the parking supply such that parking availability for ballpark attendees is restricted, while ensuring that parking spaces remain available for the surrounding neighborhoods and land uses. Potential measures to achieve this include management of the parking supply through pricing to maintain on-street parking occupancy at 85 percent and off-street at 90-95 percent. These recommendations would assist in achieving the desired 20 percent VTR by constraining the number of attendee vehicles that can find available parking within a reasonable distance of the ballpark. In addition, the on-site parking supply would be limited to no more than 3,500 spaces for ballpark attendees (2,000 spaces at site buildout), ballpark attendees could be prohibited from using on-street parking near the ballpark to ensure available parking for local businesses and residents, and residential parking permits could be used to minimize the number of ballpark attendees who park in residential areas.

3.2.5. Reduced Vehicle/Trip Demand

Another approach to vehicle trip reduction is to reduce the demand for vehicle trips. This happens either by reducing the number of vehicles (and therefore trips) used to serve a given number of

people by increasing occupancies, or by discouraging vehicle trips through making the use of automobiles a less convenient option for attendees.

TNC Management

Without the TMP, a large percentage of ballpark attendees would use TNCs to access Howard Terminal. This is problematic in terms of vehicle trips, as an attendee who uses TNCs contributes twice as many trips compared to an attendee who drives her personal vehicle. In part, this high mode share is driven by the fact that while Howard Terminal is near downtown (and therefore near many potential attendees), attendees walking from downtown must nonetheless walk 20 minutes to reach the site. This causes fewer people to prefer to walk or find some other non-vehicular mode of transportation when an inexpensive alternative is provided in the form of TNCs.

This measure places TNC controls prohibiting drop-off/pick-ups except in designated areas significantly farther from the ballpark than the transit hub before and after ballpark events. TNC (un)loading could occur under the elevated I-880 freeway structure or in one or more designated locations in Jack London District east of Broadway. These controls would be enforced using geofencing or similar methods. Local access restrictions would also limit circulation of vehicles other than local traffic within the neighborhoods adjacent to the Project site before, during, and after ballpark events. Physical barriers and traffic control officers (or other personnel acceptable to the City) would provide management of the local access restrictions to make it difficult for attendees to use automobiles in the area except in the proscribed manner. Designated off-site TNC pick-up/drop-off zones would be provided, which on its own would likely increase TNC capacity compared to no designated TNC zones.

However, subject to agreements between the A's and TNC providers, TNC use of these designated zones could be priced at a premium using a TNC fee calibrated to reduce demand while maintaining revenue levels. This measure makes TNC use less convenient and more expensive, shifting people towards other modes with fewer or no associated vehicle trips. This measure has the greatest reduction effect on TNC users in the closest-in areas because there are multiple alternative options, including shuttles, walking, bicycling, and shared micro-mobility. Areas approaching five miles out and further, by contrast, would experience relatively less impact because there are fewer convenient alternatives to TNC use.

The overall impact of this measure is large because those attendees whose behavior it changes have a disproportionate impact, as TNC users who switch to zero-trip modes have twice the trip reduction impact of drivers who switch modes. This measure is particularly powerful when paired with parking reduction strategies, as it incentivizes displaced drivers to use BART or other modes rather than counterproductively (from a vehicle trip reduction perspective) switching to TNCs.

3.3. TMP Strategies – City Priorities

The City identified the following priorities for the TMP that are consistent with the City of Oakland's Transit First Policy as well as AB 734. The strategies in **bold** represent strategies that are expected to be implemented by opening day of the Ballpark. Strategies not in bold may still be implemented on day one, pending further development of the TMP.

1. **Extending transit service to the Transportation Hub on 2nd Street in coordination with AC Transit and the City of Oakland. (Required as Mitigation Measure TRANS-1c)**
2. Additional regular AC Transit bus service connecting the Project site to Downtown, as well as the West Oakland, 12th Street, and Lake Merritt BART stations.
3. **Bus priority lanes serving the 12th Street BART station and Downtown Oakland to increase the speed, reliability, and attractiveness of transit services. (Required as Mitigation Measure TRANS-1d)**
4. Bus priority lanes serving the West Oakland and Lake Merritt BART stations to increase speed, reliability, and attractiveness of transit services.
5. **Supplemental shuttle service (provided by AC Transit or a private operator) to the 12th Street BART station to increase frequency and capacity of transit connections to BART stations on game days.**
6. Supplemental shuttle service (provided by AC Transit or a private operator) to the West Oakland and/or Lake Merritt BART stations to increase frequency and capacity of transit connections to BART stations on game days.
7. **Pedestrian improvements along 7th Street, Market Street, Martin Luther King Jr. Way, Washington Street, and Broadway connecting the BART stations and the ballpark as well as improvements on streets serving the Transportation Hub and Pedestrian Bridge over the railroad tracks. (Required as Mitigation Measure TRANS-1e)**
8. **Bicycle network improvements on 7th Street, Market Street, Martin Luther King Jr. Way, Washington Street, and 2nd Street. (Required as Mitigation Measure TRANS-2a, TRANS-2b, and TRANS-2c)**
9. **Wayfinding between the West Oakland BART station and the ballpark via 7th Street, between 12th Street BART station and the ballpark via Broadway and Washington Street, and between Lake Merritt BART station and the ballpark via 8th Street.**
10. **At-grade railroad crossing improvements along the project's frontage and extending to Broadway. (Required as Mitigation Measure TRANS-3a and TRANS-3b)**
11. Transit subsidies to provide free or reduced cost transit for ballpark attendees and/or employees particularly at the Transportation Hub on 2nd Street.
12. **No parking subsidies for ballpark employees.**

13. **A combination of standard, secure, and valet bicycle parking at multiple locations, identified in collaboration with the Oakland Department of Transportation (OakDOT).**
14. **Identification of geofenced micromobility parking (such as scooters and bike share), as well as priority and coordination for on-site and/or site-adjacent shared micromobility services identified in collaboration with OakDOT.**
15. **Coordination with transit providers to provide timed transit service before and/or after the game or event, including but not limited to AC Transit, BART, Amtrak, and the Water Emergency Transportation Authority (WETA).**
16. **Agreements between A's and Transportation Network Company (TNC) operators (such as Lyft and Uber) to use geofencing or similar methods to restrict pick-up and drop-off zones to designated locations significantly farther from the ballpark than bus transit and shared micromobility options.**
17. **Enforcement of local access restrictions to limit circulation of vehicles other than local traffic within the neighborhoods adjacent to the Project site before, during, and after ballgames.**
18. Implementation of TNC fee (through private agreements between A's and TNC operators) for access to designated pick-up and drop-off locations to limit demand to support VTR goals.
19. **Coordination with OakDOT on management of the off-site parking garages within one mile of the Project site.**
20. **Coordination with OakDOT on the management of on-street parking on-site and in adjacent neighborhoods within one mile of the Project site, including the implementation of Residential Parking Permits (RPPs), through the OakPark parking plan.**
21. Further reduction of on-site parking as needed to achieve VTR goals.
22. Additional measures and technology. With approval from the City of Oakland, the TMP may include additional or substitute measures and technology to reduce Project-generated trips that are not currently known or available, provided that the VTR plan demonstrates to the City's satisfaction that such measures are equally or more effective as existing available measures, are consistent with the City's various published plan documents, as amended, and meet the City's policy goals and values.

Ballpark employees and attendees would also benefit from strategies that would be implemented for non-ballpark components of the Project, which would consist of both one-time physical improvements and on-going operational strategies as described in the TMP. While no priority has been given to the listed measures in the TMP, the City has indicated a desire to prioritize transit-supportive measures as well as micromobility and walking to achieve required vehicle trip reduction goals.

3.4. TMP Monitoring and Performance Standards

The A's are required per AB 734 to monitor the effectiveness of the transportation and parking demand management for the ballpark. The A's are to achieve a 20 percent VTR from a baseline with no TMP for the ballpark. Refer to the TMP included with the CEQA documentation, as well as the CEQA document, for a detailed discussion of the monitoring, refinement, and performance standards.

Attachments

Appendix A – Atlanta Ballpark Relocation Trip Distribution Case Study

Ballpark Relocation Trip Distribution Analysis

Fehr & Peers utilized aggregated smartphone location data (known as "location-based services") from StreetLight Data to evaluate how attendee trip distribution changed when the home field of the Atlanta Braves baseball team was moved from Turner Field just south of downtown Atlanta to SunTrust Park 15 vehicle-miles northwest. The results from this case study analysis were then used to inform the extent to which a change in geographic distribution of attendees can be expected with the move of the Oakland A's ballpark six miles from the Coliseum to Howard Terminal. While distances vary the time to travel 15 miles to the SunTrust Park is equivalent to the travel time to Howard Terminal.

In general, a given trip is less likely to be taken the more costly it is in terms of time and expense, while a quicker, shorter, and less expensive trip is more likely to be taken. In the context of a highly-specialized event with a dedicated fanbase it is commonly assumed that the distribution of attendees may not shift to a significant degree, as geographic proximity and ease of access may be less significant causes of attendance compared to interest in the event. This case study assessed whether and to what extent the Atlanta Braves' move resulted in a distributional shift of attendees towards areas that were closer to the new ballpark and away from areas that were further away from the new ballpark.

Although the Atlanta case study concerns a move away from downtown to a more outlying location rather than a move from an outlying location to near downtown, as with the move to Howard Terminal, the results still provide relevant information about the elasticity of attendee origins for those who drive.

Data Selection

When a smartphone with location-based services enabled runs an app that utilizes those services (such as Google Maps), the phone transmits the user's location along with a unique user ID number. This information provides location information to within 60 feet and is used by StreetLight Data

along with GPS devices, connected vehicles and more to determine the routes of individual person trips by linking the travel paths of these users to the roadway network.[1]

For the Atlanta ballpark case study analysis described below, Fehr & Peers used location-based services data collected on weekday evenings from 5:00 PM to 7:00 PM with a baseball game at Turner Field for the 2016 season and SunTrust Park for the 2017 season. The 5:00 PM to 7:00 PM period represents the two hours prior to the start of games, when the majority of attendees will arrive by automobile. A detailed description of the zones used for the analysis is provided in the following section.

Using location-based services data means that all distributions in this analysis are estimates based on samples, rather than on counts of all trips over a designated period. For a sample to provide a reliable estimate of the entire population, it must be unbiased and large enough to mitigate the impact of random chance error.

An unbiased sample is one in which all individuals in the population have an equal chance of being selected. With an unbiased sample, error in the estimate is due to random chance alone and is not a result of the sample selection process. With location-based services data, not all travelers have an equal chance of being included in the sample, since the data can capture only travelers that have a smartphone with location-based services enabled. However, this potential source of bias would not substantially affect the results of this analysis because any bias that is introduced due to a difference between those with smartphones with location-based services enabled and those without would apply to both distributions, and this analysis is concerned only with observing any differences between the distributions at the two ballparks rather than providing explicit distributional estimates.

A large enough sample is one that has enough data points to allow for confidence that the sample estimate is a good representation of the population as a whole, with the error due to random chance likely to be relatively small. The sample size for the Turner Field distribution was about 2,000, and the sample size for the SunTrust Park distribution was about 7,000. These sample sizes correspond with standard errors of less than 1% for the analyzed distributions, assuming an unbiased sample.

[1] More information on the data source can be found at https://www.streetlightdata.com/

Zone Selection

Origin zones

Zones for ballpark attendee trip origins were drawn based on rough changes in travel distances between Turner Field and SunTrust Park. Four zones representing areas southeast of Turner Field were drawn with radii of five miles, 10 miles, 15 miles, and 40 miles to represent attendees for whom the new ballpark represented a substantial increase in travel distance and time. Similarly, four zones representing areas within five, 10, 15, and 40 miles northwest of SunTrust Park were drawn to represent attendees for whom the new ballpark represented a substantially reduced travel distance and time.

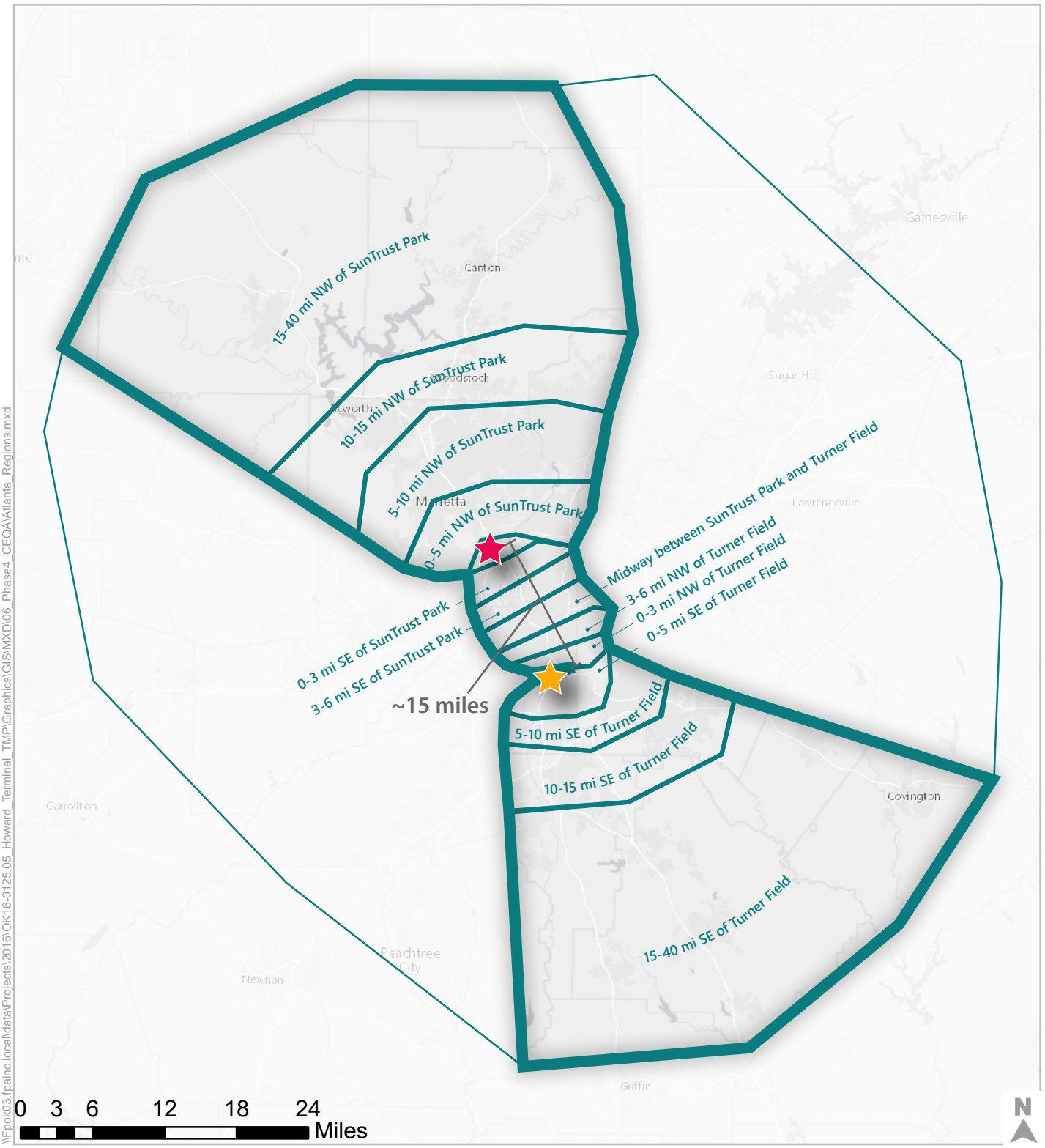
Five zones, each approximately three miles in width, were drawn between the two ballparks. Attendees from these zones experienced a more moderate change in travel distances, although travel speeds from these zones are typically faster traveling northbound to SunTrust Park than they are traveling southbound to Turner Field through downtown Atlanta during the 5:00 PM to 7:00 PM study period.

In addition to the study zones described above, the area that was not included in one of the zones described above but was within approximately a 40-mile radius of the midpoint of the two ballparks was also included to help establish the magnitude of the overall change in attendee distribution. This zone encompasses a large area, and some attendees from this zone may have had their travel times shortened by the move to SunTrust Park, while others may have had their travel times lengthened. However, travel time differences for attendees within this zone are generally less significant than for those in the study zones.

Figure 1 maps all origin zones used for this analysis.

Destination zones

Destination zones for the Turner Field analysis used pass-through zones for entering vehicles at the entrances of the official attendee parking lots directly north of Turner Field. These lots represent most of the easily-assessible parking near the ballpark.



Legend

- SunTrust Park (new stadium)
- Turner Field (old stadium)

Figure 1: Atlanta Ballpark Analysis Zones

At SunTrust Park, some parking for baseball games is provided in dedicated garages, and some is provided in nearby lots shared with commercial uses. The entrances of the shared lots are controlled on gamedays, with only baseball game attendees allowed to enter and park. The entrances of all designated parking lots that are available for all weekday evening games were used as destination pass-through zones for entering vehicles, with the exception of the Red Deck and valet decks, where entrances could not be isolated from other traffic traveling through the area.

Results

For both the 2016 season at Turner Field and the 2017 season at SunTrust Park, the analyzed origin zones southeast of Turner Field, northwest of SunTrust Park, and between the two ballparks represented 81% of all Atlanta-area trips to Braves games. The other 19% of trips originated in the large zones to the east and west. The percentage of the total regional trips to Braves games originating in each analysis zone is presented in **Table 1**.

As shown in Table 1, the distribution of attendee origins shifted dramatically following the move from Turner Field to SunTrust Park, with a much smaller percentage of attendees traveling from areas that required longer travel distances to reach SunTrust Park and a much greater percentage of attendees whose travel distances were shortened by the move. In 2016, almost half of trips originated from within five or six miles of Turner Field, whereas less than 10% did so in 2017. Similarly, while less than 10% of trips to Braves games originated within three to five miles of SunTrust Park in 2016, over 40% of trips in 2017 originated from that area. These results strongly suggest that the distribution of baseball game attendee origins is indeed sensitive to changes in travel distances.

Table 1: Weekday Evening Attendee Origin Trip Distributions From Study Zones Expressed Geographically North To South

Analysis Zone	Turner Field 2016	SunTrust Park 2017
15-40 mi NW of SunTrust Park	<1%	2%
10-15 mi NW of SunTrust Park	1%	5%
5-10 mi NW of SunTrust Park	3%	13%
0-5 mi NW of SunTrust Park	4%	24%
SunTrust Park		
0-3 mi SE of SunTrust Park	2%	17%
3-6 mi SE of SunTrust Park	2%	4%
Midway between SunTrust Park and Turner Field	10%	4%
3-6 mi NW of Turner Field	11%	4%
0-3 mi NW of Turner Field	24%	4%
Turner Field		
0-5 mi SE of Turner Field	12%	1%
5-10 mi SE of Turner Field	3%	1%
10-15 mi SE of Turner Field	4%	1%
15-40 mi SE of Turner Field	5%	1%

Sources: StreetLight Data, Fehr & Peers, 2019.

Application to Howard Terminal

The geographic shift caused by the move from the Coliseum to Howard Terminal was conservatively assumed to be smaller than the observed shift between Turner Field and SunTrust Park due to the shorter move in Oakland and a geographic feature of the Atlanta Braves fanbase that may have exacerbated trip origin changes. **Figure 2** shows the assumed reductions in the vehicle trip origin distribution for attendees south of the Coliseum. At the same time, Oakland/Piedmont, Central Contra Costa, and Alameda were assumed to gain vehicle trips due to being closer to the new ballpark.

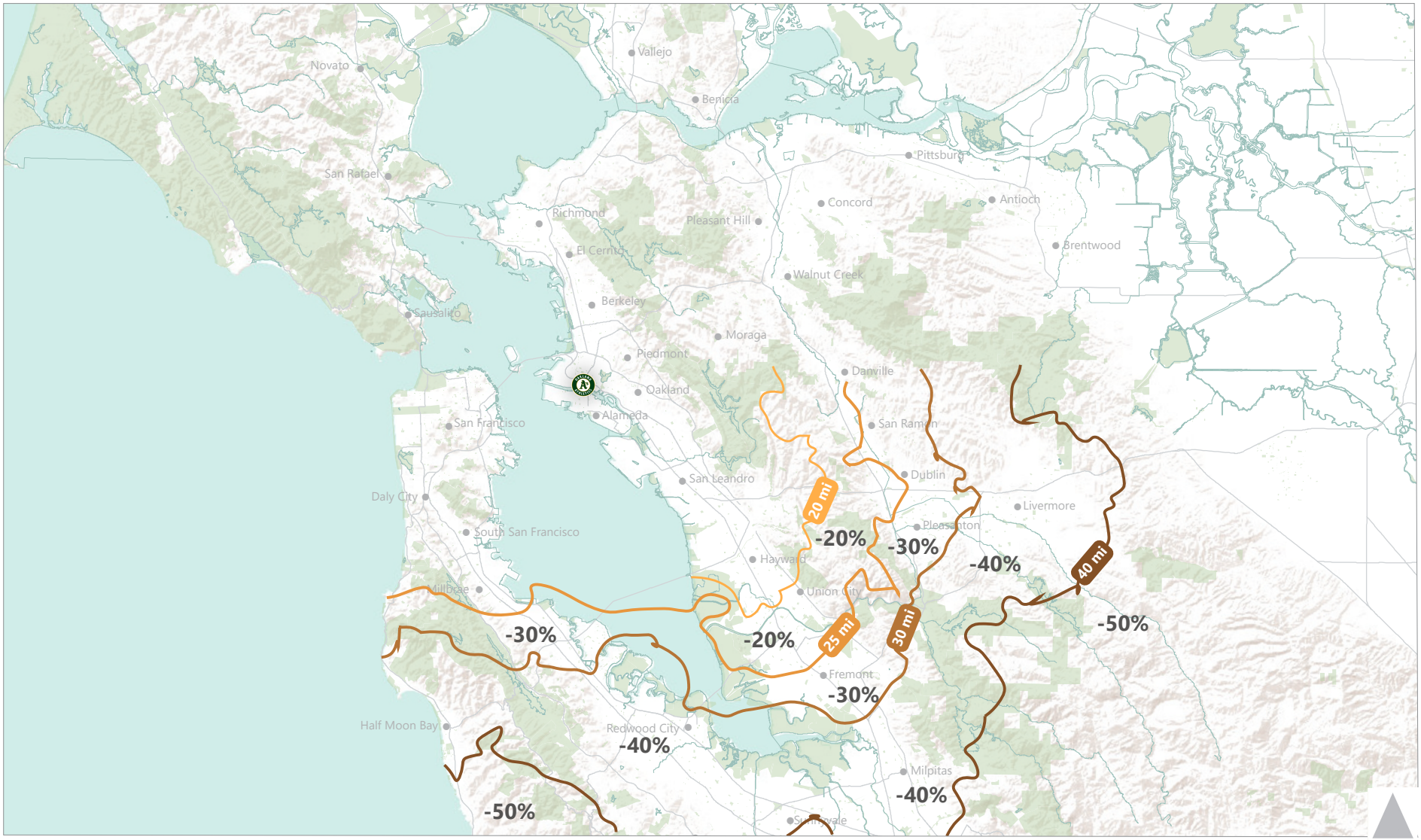


Figure 2: Geographic Redistribution of A's Attendees

Howard Terminal is about six miles by car away from the Coliseum, compared to the 15-mile travel distance between the Atlanta ballparks, though the I-880 corridor in Oakland is generally more congested than the expressways connecting the two Atlanta ballparks. According to Google Maps, attendees traveling northbound on I-880 to Howard Terminal would have about 25-minute longer trip than to the Coliseum, while those traveling northbound from southeast of Turner Field experienced about a 20-minute longer trip to SunTrust Park. In the other direction, those traveling southbound to Howard Terminal would only save about 10 minutes, whereas those from northwest of SunTrust Park traveling southbound saved approximately 30 minutes.

Although the added travel time for those driving from south of the Coliseum would be similar to the added travel time for those driving from south of Turner Field to SunTrust Park, the travel time savings for those driving from north of Howard Terminal are much less than the savings for those driving from north of Sun Trust Park. The change in distribution from a move to Howard Terminal would therefore be expected to be somewhat less than the observed change in distribution from the move from Turner Field to SunTrust Park.

TRA.3 Intersection Operation Technical Draft Memorandum

FEHR PEERS

MEMORANDUM

Date:	December 1, 2020
To:	Pete Vollmann, City of Oakland Nicole Ferrara, City of Oakland
From:	Rob Rees, Ron Ramos, and Lee Reis, Fehr & Peers
Subject:	**Howard Terminal – Operations Analysis**

OK16-0125.06

The Oakland A's are proposing a non-ballpark development and a ballpark on the Howard Terminal site. The City of Oakland no longer evaluates intersection traffic operations for CEQA. However, the City's Transportation Impact Review Guidelines (TIRG) dated April 14, 2017 state that intersection operations analysis may be recommended at the City's discretion (TIRG, Section 3.1.5). The analysis is typically undertaken to ensure that local streets can reasonably accommodate day-to-day traffic loads from the project being studied. In addition, the City of Oakland requested that Fehr & Peers study game day operations at a limited number of intersections using a microsimulation model that includes pedestrians to provide recommendations for pedestrian and automobile infrastructure.

Day-to-day operations are assessed in this memorandum for 76 intersections under the following scenarios for the weekday AM and PM commute peak hours:

- Existing Conditions
- Existing Conditions Plus Full Buildout Non-Ballpark Development

Game-day operations are assessed for 33 intersections on an hourly basis for a weekday between 3:00 PM and 8:00 PM using a microsimulation model. The analyses presented are primarily concerned with assessing the effect of baseball games on local roadways and sidewalks with focus being flushing motorized and non-motorized traffic from the ballpark after a weekday day game as well as arrivals for a weekday evening game. In addition, a freeway merge analysis at the five on-ramp locations surrounding the project site was completed for the same hours. The microsimulation and freeway merge analyses focused on the following scenarios:

- Existing Conditions
- Existing Conditions Plus Full Buildout Non-Ballpark Development Plus Midday Game
- Existing Conditions Plus Full Buildout Non-Ballpark Development Plus Evening Game

This memorandum is divided into the following sections:

- Project Description
- Peak Hour Non-Gameday Intersection Operations
- Peak Period Gameday Intersection Operations
- Freeway Merges

1. Project Description

The proposed project is located at Howard Terminal in the Jack London District. The project would include a 35,000-attendee capacity ballpark, as well as non-ballpark development that includes a 3,500-seat performance theater, 3,000 residential units, 1.5 million square feet of office space, 400 hotel rooms, and 270,000 square feet of commercial space. In addition, the A's will have up to 65,000 square feet allocated to ballpark and team employment.

Existing uses on Howard Terminal include, but are not limited to, truck parking, loaded and empty container storage and staging, transloading (i.e., logistics) facilities, longshore-person training facilities, and berthing vessels for maintenance and storage. Development of the Project would necessitate that they relocate from Howard Terminal, which may be elsewhere within the City or the region.

1.1 List of Improvements

The following permanent changes to the roadway network were assumed to be implemented with the non-ballpark development in the Full Buildout:

- Traffic signal upgrades including equipment, timing optimization, and coordination to accommodate the additional traffic. Event traffic signal timing plans for major corridors in the area including Market Street, Martin Luther King Junior Way, Broadway, 5th Street, 6th Street, and 7th Street.

- Union Street at 5th Street – Through re-striping convert one northbound through-right turn lane to a right-turn only lane from the I-880 Off-Ramp to eastbound 5th Street.

- Adeline Street at 5th Street – Through re-striping convert the eastbound through-right lane to a right-turn lane from eastbound 5th Street to southbound Adeline Street and convert the eastbound left-turn lane to a through lane prohibiting left turning traffic. In addition, through re-striping convert the northbound through-right lane to a through lane and a right-turn lane from northbound Adeline Street to westbound 5th Street.

- Adeline Street at 3rd Street – Through re-striping provide two northbound and two southbound lanes on Adeline Street, add a 150-foot southbound to eastbound left-turn pocket, and prohibit

northbound left turning traffic to 3rd Street; Activate the traffic signal and provide a traffic signal ahead sign with flashing beacons on the Adeline Street Bridge; optimize signal timings protected southbound left-turn phasing; provide curb extensions where feasible shortening crossings.

- Reconfigure Market Street, between 3rd and 8th Streets, to provide Class 4 Protected Bike Lanes maintaining two motor vehicle lanes each way with left-turn lanes at select intersections.
- Market Street at 7th Street – Through re-striping convert one westbound through lane to a 2nd left-turn lane from westbound 7th Street to southbound Market Street and add a protected left turn traffic signal phase. Modify the Market Street median between 5th and 7th Streets to add a northbound right-turn lane from Market Street to eastbound 7th Street and introduce a right turn overlap traffic signal phase.
- Re-purpose Martin Luther King Junior Way from 4- to 2-lanes and provide right- and/or left-turn lanes at key intersections with Class 4 Protected Bike Lanes from the railroad tracks to 7th Street and Class 2 Buffer Bike Lanes north of 7th Street to 17th Street. An Affordable Housing and Sustainable Communities (AHSC) grant will implement the changes north of 7th Street.
- Incorporate traffic signals on 3rd Street at Market Street and Martin Luther King Jr. Way with all-way stop-control at Brush and Castro Streets.
- Re-purpose 7th Street from 6- to 4-lanes for automobile traffic and provide Class 2B Buffered Bike Lanes each way between Adeline Street and Martin Luther King Jr. Way.
- Re-purpose Broadway from 4- to 2-lanes for auto/truck traffic and provide bus only lanes each way between Embarcadero West and 11th Street where the bus only lanes would conform with planned bus only lanes that continue to 20th Street. Provide left turn lanes at 7th and 8th Streets.
- Broadway at 5th Street – Eliminate the eastbound right-turn lane from 5th Street onto southbound Broadway.
- Broadway at 6th Street – Eliminate the northbound left-turn lane and prohibit the movement onto westbound 6th Street. These drivers can make the same movement at 8th Street. Eliminate the westbound slip lane so that right-turning vehicles use the signalized intersection to turn right.
- Curb extensions or maximize pedestrian waiting area at intersections on:
    - Market Street
    - Martin Luther King Jr Way
    - Washington Street
    - Broadway

- Sidewalk widening at:
    - Market Street, between the railroad tracks and 3rd Street, maximize effective width at obstacles.
    - Market Street, both sides between 3rd Street and 7th Street, provide 8-foot effective width at obstacles.
    - Martin Luther King Jr. Way, east side between 5th and 6th Streets, provide 8 feet effective width and maximize corner space at the 5th and 6th Street intersections.
    - Martin Luther King Jr. Way provide 8-foot effective sidewalk widths at obstacles (both sides) between 2nd Street and 12th Street.
    - Washington Street, both sides between 5th and 6th Streets, remove parking and expand sidewalks 8 feet and maximize corner space at the 5th and 6th Street intersections
    - 3rd Street, between Market and Broadway, provide sidewalks on both sides of the street by closing gaps.
- Crosswalk changes at:
    - Stripe 15-foot crosswalks along Market Street from the railroad tracks to 7th Street. Stripe 15-foot crosswalks at all crosswalks on Market Street/3rd Street intersection.
    - Stripe 15-foot crosswalks along Martin Luther King Jr. Way between the railroad tracks and 14th Street as part of the corridor road diet.
    - Stripe 15-foot crosswalks along both sides of Washington Street between the railroad tracks and into the Old Oakland District.
- New traffic signals at the following intersections:
    - Market Street at Martin Luther King Jr. Way (on site)
    - Market Street at Embarcadero West (on site)
    - Market Street at 3rd Street
    - Castro Street at 5th Street
    - Martin Luther King Jr Way at Embarcadero (Railroad signal only at Embarcadero)
    - Martin Luther King Jr Way at 2nd Street
    - Martin Luther King Jr Way at 3rd Street
    - Broadway at 2nd Street

- Broadway at 4th Street

- Convert side street stop control to all way stop control at the following intersections:
  - Brush Street at 3rd Street
  - Castro Street at 3rd Street

1.1.1 Additional Improvements to be Considered based on Analysis Findings

The following additional improvements are recommended to address operations evaluated in this memorandum.

- The Market Street/7th Street intersection degrades from vehicular LOS B to LOS F during the PM peak hour due to lanes removed to accommodate the bus/truck lanes which are being considered by the City of Oakland as a separate project. The bus/truck lanes operate with little to no delay. Some vehicles may reroute away from 7th Street if there is higher delay at this intersection, and removing about 250 cars from the intersection would yield an improvement from LOS F to LOS E.

- The Adeline Street/3rd Street Southwest corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on Adeline Street. If feasible, provide curb extensions and crosswalk widening to improve the LOS F based on the worst pedestrian spacing. Alternatively, direct pedestrians destined to the Ballpark to use the 7th Street corridor rather than 3rd Street through the use of ambassadors at the West Oakland BART station and traffic and/or parking control offices, or other personnel acceptable to the City, at the 5th Street intersections with Mandela Parkway and with Adeline Street.

- The Market/3rd southeast corner operates at LOS D based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on northbound Market Street. Curb extensions and crosswalk widening have already been implemented for this analysis. Minimize obstacles in the sidewalk within 30 feet of the corner to maximize pedestrian waiting space. Use Traffic Control Officers to manage the pedestrian flows through this intersection.

- The Martin Luther King Jr Way/2nd Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to intersection signal timings. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing.

- The Martin Luther King Jr Way /3rd Street Northeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the intersection signal timings and limited area provided at this corner. Curb extensions and crosswalk widening have already been implemented for this analysis. Minimize obstacles in the sidewalk within 30 feet

of the corner to maximize pedestrian waiting space. Use Traffic Control Officers to manage the pedestrian flows through this intersection. Or, provide blank-out turn restriction signs to reduce vehicle-pedestrian conflicts.

- The Martin Luther King Jr Way/5th Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on eastbound 5th Street. If feasible, provide curb extensions and crosswalk widening to improve the LOS F on the worst pedestrian spacing. Traffic Control Officers may also be needed to manage the pedestrian flows through this intersection. Or, provide blank-out turn restriction signs to reduce vehicle-pedestrian conflicts.

- The Martin Luther King Jr Way/6th Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to due to intersection signal timings and small corner area. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing.

- The Martin Luther King Jr Way/7th southeast corner operates at LOS D based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on eastbound 7th Street. If feasible, provide curb extensions to improve the pedestrian spacing. Provide blank-out turn restriction signs to reduce vehicle-pedestrian conflicts.

- The Martin Luther King Jr Way /7th Street Northeast corner operates at LOS C based on average pedestrian spacing and LOS E based on the worst pedestrian spacing due to the long signal timings on eastbound 7th Street. If feasible, provide curb extensions to improve the LOS E based on the worst pedestrian spacing. Provide blank-out turn restriction signs to reduce vehicle-pedestrian conflicts.

- The Clay Street/Embarcadero Northwest corner operates at LOS C based on average pedestrian spacing and LOS F due to the limited area provided at this corner. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing and widen sidewalk by removing parking on Clay Street to 2nd Street.

- The Washington/5th southeast corner operates at LOS D based on average pedestrian spacing and LOS E based on the worst pedestrian spacing due to the long signal timings on eastbound 5th Street. Curb extensions and crosswalk widening have already been implemented for this analysis. Minimize obstacles in the sidewalk within 30 feet of the corner to maximize pedestrian waiting space. Use traffic or parking control officers, or other personnel acceptable to the City, to manage the pedestrian flows through this intersection.

- The Broadway/5th southwest corner operates at a LOS D based on average pedestrian spacing and LOS E based on the worst pedestrian spacing. If feasible, provide curb extensions by removing the right turn lane to improve the pedestrian spacing.

2. Peak Hour Non-Gameday Intersection Operations

This section compares the peak hour intersection analysis between Existing and Existing Plus Full Buildout Non-Ballpark Development Conditions. The intersection analysis is conducted using the Synchro software which is based on methodologies in the 2010 *Highway Capacity Manual*. This section also describes the trip generation, distribution, and assignment in more detail.

2.1 Trip Generation

A detailed discussion of trip generation is provided in the technical memorandum titled *Howard Terminal – Transportation and Parking Demand Management for Non-Ballpark Development and Ballpark* (TDM Memorandum) which established the peak hour trip generation for the non-ballpark development as well as the ballpark. The trip generation process follows the guidance set forth in the City of Oakland Transportation Impact Review Guidelines (TIRG). **Table 1** summarizes the net automobile trip generation for the Project's non-ballpark development without and with a TDM Plan that achieves a 20 percent vehicle trip reduction (VTR). To meet CEQA streamlining under AB 734, the project must implement a Transportation Demand Management (TDM) Plan for non-ballpark development that achieves a minimum 20 percent VTR compared to without a TDM Plan. **Table 2** summarizes the automobile trips as well as the transit, bike, and walk trips for the Project with a TDM Plan and 20 percent VTR.

Table 1: Howard Terminal Existing Plus Full Buildout Non-Ballpark Development

Land Use	ITE Code	Size[1]	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				In	Out	Total	In	Out	Total
Residential[2]	222	3,000 DU	12,040	206	654	860	628	401	1,029
Office[3]	710	1,564 KSF	15,290	1,287	210	1,497	248	1,304	1,552
Retail[4]	820	180 KSF	8,970	150	92	242	403	437	840
Restaurant[5]	932	90 KSF	10,100	492	403	895	546	334	880
Hotel[6]	310	400 rooms	4,090	115	80	195	140	134	274
Trip Generation Subtotal			*50,490*	*2,250*	*1,439*	*3,689*	*1,965*	*2,610*	*4,575*
Non-Auto Reduction[7]			-18,530	-826	-528	-1,354	-721	-958	-1,679
Adjusted Total Project Auto Trips		**No TMP**	**31,960**	**1,424**	**911**	**2,335**	**1,244**	**1,652**	**2,896**
		With TMP	**25,570**	**1,139**	**729**	**1,868**	**995**	**1,322**	**2,317**

Notes:

1. DU = Dwelling Units, KSF = 1,000 square feet.
2. ITE *Trip Generation (10th Edition)* land use category 222 (High-Rise Apartment):
   Daily: T = 3.94 * X + 211.81
   AM Peak Hour: T = 0.28 * X + 12.86 (24% in, 76% out)
   PM Peak Hour: T = 0.34 * X + 8.56 (61% in, 39% out)
3. ITE *Trip Generation (10th Edition)* land use category 710 (General Office Building):
   Daily: Ln(T) = 0.97 * ln(X) + 2.5
   AM Peak Hour: T = 0.94 * X + 26.49 (86% in, 14% out)
   PM Peak Hour: Ln(T) = 0.95 * ln(X) +0.36 (60% in, 40% out)
4. ITE *Trip Generation (10th Edition)* land use category 820 (Shopping Center):
   Daily: Ln(T) = 0.68 * ln(X) + 5.57
   AM Peak Hour: T = 0.5 * X + 151.78 (62% in, 38% out)
   PM Peak Hour: Ln(T) = 0.74 * ln(X) + 2.89 (48% in, 52% out)
5. ITE *Trip Generation (10th Edition)* land use category 932 (High-Turnover (Sit-Down) Restaurant):
   Daily: T = 112.18 * X
   AM Peak Hour: T = 9.94 * X (55% in, 45% out)
   PM Peak Hour: Ln(T) = 9.77 * X (62% in, 38% out)
6. ITE *Trip Generation (10th Edition)* land use category 310 (Hotel):
   Daily: T = 11.29 * X - 426.97
   AM Peak Hour: T = 0.5 * X - 5.34 (59% in, 41% out)
   PM Peak Hour: T = 0.75 * X - 26.02 (51% in, 49% out)
7. Reductions of 36.7% assumed for ITE rates, based on City of Oakland *Transportation Impact Review Guideline*, using Census data for urban environments between 0.5 and 1.0 miles from a BART station, Ferry Terminal and rail station. Performance venue non-auto rates calculated using methodology described in "Howard Terminal – Preliminary Transportation Assessment" (April 2, 2019).

Source: Table 3 in the December 1, 2020 memorandum titled *Howard Terminal Project – Transportation and Parking Demand* (Fehr & Peers, 2020).

Table 2: Trip Generation by Travel Mode – Non-Ballpark Development with TDM Plan

Travel Mode	Mode Share Adjustment Factors [a]	Daily	Weekday AM Peak Hour	Weekday PM Peak Hour
Automobile	50.6%	25,570	1,868	2,317
Transit	33.6%			
BART		11,500	840	1,042
AC Transit		2,880	210	260
Ferry		1,880	138	171
Amtrak		690	51	63
Bike	7.0%	3,520	257	319
Walk	8.8%	4,450	325	403
Total Trips		50,490	3,689	4,575

NOTES:

[a] Based-on City of Oakland TIRG assuming project site is in an urban environment between 0.5 and 1.0 mile of a BART Station, Ferry Terminal or Rail Station, with "other" modes assigned to transit, bicycling, and walking proportionately. TDM Plan vehicle trip reductions were redistributed to transit, bicycling, and walking proportionately. Transit mode share was assigned to BART, AC Transit, Ferry, and Amtrak based on 2013-2017 American Community Survey 5-Year Estimates, Table B08006, Alameda County Tract 9832.

Source: Table 5 in the December 1, 2020 memorandum titled *Howard Terminal Project – Transportation and Parking Demand* (Fehr & Peers, 2020).

2.2 Trip Distribution and Assignment

Project trip distribution percentages were determined based on existing travel patterns in the project vicinity and data from the Alameda County Transportation Commission (CTC) Countywide Travel Demand Model for residential and employment land uses. The resulting weekday AM and PM peak hour distributions are presented in **Table 3**. Using these distributions, the trips generated by the project were assigned to the roadway network. Intersections were selected following the TIRG guidelines and in coordination with the City of Oakland staff.

Table 3: Howard Terminal Existing Plus Full Buildout Non-Ballpark Development Peak Hour Vehicle Distribution

Zone	AM Peak	PM Peak
To/From I-980	35%	32%
To/From I-880 N	16%	17%
To/From I-880 S	21%	19%
To/From Alameda (Webster and Posey Tubes)	7%	6%

Table 3: Howard Terminal Existing Plus Full Buildout Non-Ballpark Development Peak Hour Vehicle Distribution

Zone	AM Peak	PM Peak
To/From Local Streets (West)		
To/from West Oakland/Emeryville/West Berkeley	10%	10%
To/from I-580/I-880/I-80 via Grand Ave	1%	1%
To/From Local Street (Downtown)		
To/From Downtown Oakland	6%	9%
To/From East Oakland	3%	5%
To/From Local Streets (Jack London)	1%	1%

Sources: Alameda County Transportation Commission Countywide Travel Demand Model, Fehr & Peers, 2020.

2.2.1 Existing Conditions and Existing Plus Full Buildout Non-Ballpark Development

Weekday morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) commute peak-period intersection turning movement counts, including counts of pedestrians and bicyclists, were collected at the study intersections. Intersection data were collected in November 2018 and January 2019 on typical weekdays with moderate weather and local schools in normal session. Note that the existing traffic data includes all trips generated by the existing land uses at the time the data was collected including trips generated by existing Howard Terminal activities.

A single global peak hour for the study area was identified for the AM and PM commute peak periods based on the hours with the highest total traffic volumes collected in the traffic counts. Based on these counts, the global AM peak hour in the study area is from 8:00 AM to 9:00 AM, and the global PM peak hour in the study area is from 4:45 PM to 5:45 PM. The analysis of existing conditions uses observed volumes at those hours for all intersections. **Appendix A** provides the lane configuration and traffic control figures. **Appendix B** provides the existing peak hour intersection volumes.

The project trips from the full buildout of the non-ballpark development were then added to the Existing Conditions peak hour traffic volumes to estimate the peak hour traffic volumes with the non-ballpark development. Existing traffic from Howard Terminal activities were also redistributed to the Seaport based on the existing distribution of traffic between the three Seaport accesses. **Appendix B** provides peak hour intersection volumes incorporating the existing traffic plus traffic associated with full buildout of the non-ballpark development including the reassigned Howard Terminal traffic.

Based on the roadway configurations and volumes presented in Appendix A and Appendix B, respectively, Level of Service (LOS)[1] was calculated for the study intersections using the 2010 *Highway Capacity Manual* methodologies incorporated into the Synchro software. **Table 4** summarizes AM and PM peak hour intersection operations under Existing Conditions and Existing Plus Full Buildout Non-Ballpark Development Conditions. Detailed intersection LOS calculation worksheets are presented in **Appendix C**.

Under Existing Conditions all the intersections operate at LOS D or better during the AM and PM peak hours except the Broadway/5th Street intersection, which operates at LOS E during the PM peak hour. Operations under Existing Plus Full Buildout Non-Ballpark Development show most intersections would operate at LOS D or better. The following intersection operate at LOS E or worse:

- The Broadway/5th St intersection remains operating at LOS E and the average delay increases by one second compared to Existing Conditions.
- The Market Street/7th Street intersection degrades from LOS B to LOS F during the PM peak hour due to lanes removed to accommodate the bus/truck lanes which are being considered by the City of Oakland as a separate project. The bus/truck lanes operate with little to no delay. Some vehicles may reroute away from 7th Street if there is higher delay at this intersection, and removing about 250 cars from the intersection would yield an improvement from LOS F to LOS E

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
Union Street/5th Street	Signal	AM	22	C	22	C
		PM	23	C	25	C
Union Street/7th Street	Signal	AM	10	B	10	B
		PM	19	B	19	B
Adeline Street/3rd Street	AWSC/Signal	AM	14	B	18	B
		PM	16	C	17	B
Adeline Street/5th Street	Signal	AM	21	C	31	C
		PM	18	B	20	B
Adeline Street/7th Street	Signal	AM	10	B	13	B

[1] Intersection traffic operations are typically described with the term level of service (LOS), a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, which reflects free-flow conditions where there is very little interaction between vehicles, to LOS F, where the vehicle demand exceeds the capacity and high levels of vehicle delay and stop-and-go conditions result. LOS E represents at-capacity operations. At LOS F, vehicles may wait through multiple signal cycles before passing through the intersection.

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
		PM	7	A	8	A
Market Street/Embarcadero	AWSC/Signal	AM	9	A	1	A
		PM	8	A	1	A
Market Street/3rd Street	SSSC/Signal	AM	5 (18)	A (C)	9	A
		PM	4 (22)	A (C)	9	A
Market Street/5th Street	Signal	AM	16	B	25	C
		PM	12	B	23	C
Market Street/6th Street [3]	Signal	AM	26	C	22	C
		PM	25	C	13	B
Market Street/7th Street	Signal	AM	10	B	32	C
		PM	12	B	**118**	**F**
Market Street/8th Street	Signal	AM	9	A	9	A
		PM	11	B	8	A
Market Street/10th Street	Signal	AM	8	A	7	A
		PM	8	A	6	A
Market Street/12th Street	Signal	AM	5	A	4	A
		PM	7	A	5	A
Market Street/14th Street	Signal	AM	11	B	11	B
		PM	12	B	12	B
Market Street/18th Street	Signal	AM	14	B	14	B
		PM	14	B	15	B
Market Street/West Grand Avenue	Signal	AM	15	B	16	B
		PM	18	B	21	C
Market Street/24th Street	AWSC	AM	9	A	10	A
		PM	9	A	11	B
Market Street/27th Street	Signal	AM	11	B	11	B
		PM	10	B	11	B
Market Street/San Pablo Avenue	Signal	AM	12	B	9	A
		PM	9	A	10	B
Brush Street/3rd Street	SSSC/AWSC	AM	4 (12)	A (B)	9	A
		PM	3 (19)	A (C)	16	C
Brush Street/5th Street	Signal	AM	18	B	39	D

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
		PM	0	A	42	D
Brush Street/6th Street	Signal	AM	15	B	16	B
		PM	15	B	25	C
Brush Street/7th Street	Signal	AM	21	C	33	C
		PM	13	B	38	D
Brush Street/11th Street [3]	Signal	AM	7	A	9	A
		PM	7	A	9	A
Brush Street/12th Street [3]	Signal	AM	26	C	47	D
		PM	18	B	20	B
Brush Street/14th Street	Signal	AM	18	B	18	B
		PM	17	B	17	B
Brush Street/17th Street	Signal	AM	25	C	26	C
		PM	21	C	21	C
Brush Street/18th Street	Signal	AM	17	B	18	B
		PM	14	B	14	B
Castro Street/3rd Street	SSSC/AWSC	AM	2 (12)	A (B)	9	A
		PM	0 (11)	A (B)	12	B
Castro Street/5th Street	SSSC/Signal	AM	1 (14)	A (B)	23	C
		PM	5 (26)	A (D)	27	C
Castro Street/6th Street	Signal	AM	13	B	18	B
		PM	14	B	11	B
Castro Street/7th Street [3]	Signal	AM	17	B	14	B
		PM	20	C	27	C
Castro Street/11th Street [3]	Signal	AM	19	B	22	C
		PM	23	C	27	C
Castro Street/12th Street [3]	Signal	AM	13	B	13	B
		PM	14	B	19	B
Castro Street/14th Street	Signal	AM	5	A	5	A
		PM	12	B	13	B
Castro Street/17th Street [3]	Signal	AM	26	C	26	C
		PM	31	C	31	C
Castro Street/18th Street	Signal	AM	13	B	13	B

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
		PM	20	C	22	C
Martin Luther King Jr Way/ Embarcadero	AWSC	AM	7	A	Project eliminates intersection	
		PM	9	A		
Martin Luther King Jr Way/2nd Street	SSSC/Signal	AM	4 (11)	A (B)	3	A
		PM	5 (11)	A (B)	5	A
Martin Luther King Jr Way/3rd Street	AWSC/Signal	AM	9	A	17	B
		PM	13	B	15	B
Martin Luther King Jr Way/4th Street	SSSC	AM	4 (11)	A (B)	2 (16)	A (C)
		PM	9 (20)	A (C)	18 **(97)**	C **(F)**
Martin Luther King Jr Way/5th Street	Signal	AM	19	B	23	C
		PM	21	C	44	D
Martin Luther King Jr Way/6th Street	Signal	AM	8	A	31	C
		PM	7	A	9	A
Martin Luther King Jr Way/7th Street	Signal	AM	8	A	24	C
		PM	10	A	46	D
Martin Luther King Jr Way/8th Street [3]	Signal	AM	10	A	23	C
		PM	6	A	9	A
Martin Luther King Jr Way/10th Street	Signal	AM	8	A	5	A
		PM	8	A	8	A
Martin Luther King Jr Way/11th Street	Signal	AM	10	A	17	B
		PM	11	B	25	C
Martin Luther King Jr Way/12th Street	Signal	AM	12	B	19	B
		PM	11	B	18	B
Martin Luther King Jr Way /14th Street	Signal	AM	8	A	10	B
		PM	15	B	15	B
Martin Luther King Jr Way /16th Street	Signal	AM	9	A	11	B
		PM	9	A	10	B
Martin Luther King Jr Way /17th Street	Signal	AM	11	B	12	B
		PM	11	B	12	B
Martin Luther King Jr Way /18th Street	Signal	AM	10	B	11	B
		PM	10	B	14	B
Jefferson Street/3rd Street	AWSC	AM	8	A	8	A

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
		PM	10	A	10	B
Jefferson Street/5th Street	Signal	AM	7	A	7	A
		PM	18	B	19	B
Jefferson Street/7th Street	Signal	AM	12	B	12	B
		PM	16	B	11	B
Jefferson Street/8th Street	Signal	AM	13	B	13	B
		PM	13	B	13	B
Clay Street/Embarcadero West	SSSC	AM	4 (10)	A (B)	4 (10)	A (B)
		PM	5 (13)	A (B)	5 (13)	A (B)
Clay Street/3rd Street	AWSC	AM	8	A	8	A
		PM	10	B	11	B
Washington Street/Embarcadero West	SSSC	AM	5 (10)	A (B)	5 (10)	A (B)
		PM	3 (12)	A (B)	3 (12)	A (B)
Washington Street/3rd Street	AWSC	AM	8	A	9	A
		PM	11	B	12	B
Washington Street/5th Street	Signal	AM	13	B	13	B
		PM	14	B	26	C
Washington Street/6th Street	Signal	AM	9	A	9	A
		PM	8	A	10	A
Washington Street/7th Street	Signal	AM	10	B	10	B
		PM	15	B	19	B
Washington Street/8th Street	Signal	AM	11	B	11	B
		PM	9	A	10	A
Broadway/Embarcadero West	AWSC	AM	8	A	8	A
		PM	9	A	9	A
Broadway/3rd Street	Signal	AM	13	B	15	B
		PM	14	B	14	B
Broadway/5th Street [3]	Signal	AM	32	C	35	D
		PM	**56**	**E**	**57**	**E**
Broadway/6th Street	Signal	AM	21	C	11	B
		PM	27	C	14	B
Broadway/7th Street [3]	Signal	AM	14	B	15	B

Table 4: Intersection Level of Service Summary

Intersection	Traffic Control [1]	Peak Hour	Existing Conditions		Existing Plus Project	
			Delay [2] (Seconds)	LOS	Delay [2] (Seconds)	LOS
		PM	25	C	29	C
Broadway/8th Street	Signal	AM	13	B	14	B
		PM	12	B	14	B
Franklin Street/7th Street	Signal	AM	8	A	5	A
		PM	11	B	10	B
Franklin Street/8th Street [3]	Signal	AM	33	C	24	C
		PM	17	B	8	B
Webster Street/7th Street	Signal	AM	13	B	36	D
		PM	15	B	34	D
Webster Street/8th Street [3]	Signal	AM	26	C	29	C
		PM	28	C	12	B
Harrison Street/7th Street	Signal	AM	28	C	23	C
		PM	21	C	32	C
Harrison Street/8th Street	Signal	AM	16	B	27	C
		PM	16	B	22	C

Notes:
1. Signal = intersection controlled by traffic signal; SSSC = Intersection controlled by stop-sign on side-street approach Pedestrians per minute per foot of walkway width. If the project modifies the traffic control exiting control is presented before the slash symbol and the project control is presented after it (exiting/plus project).
2. Signalized intersections, average intersection delay and LOS based on 2010 HCM method. Side-street stop-controlled intersections, delays for worst movement and average intersection delay: intersection average (worst movement)
3. Signalized intersections, average intersection delay and LOS based on 2000 HCM method

Source: Fehr & Peers, 2020

The following intersections show improved operations due to the project improvements listed above:

- The Adeline Street/3rd Street intersection improves from LOS C to LOS B during the PM peak due to the installation of a new traffic signal, added lanes on Adeline Street.
- The Market Street/6th Street intersection improves from LOS C to LOS B during the PM peak due to added northbound lane.
- The Market Street/8th Street intersection improves from LOS B to LOS A during the PM peak due to project trips added to an available green in exiting pretimed signal lowering the average delay.
- The Market Street/San Pablo Avenue intersection improves from LOS B to LOS A during the AM peak due to project trips are added to an available green in exiting pretimed signal lowering the average delay.

- The Broadway/6th Street intersection improves from LOS C to LOS B during the AM and PM peak due to the removal of the northbound left-turn movement.

3. Peak Period Gameday Intersection Operations

This section compares the weekday peak period intersection analysis between Existing and Existing Plus Full Buildout Non-Ballpark Development Plus Game Conditions (midday and evening games). The analysis evaluates the afternoon peak period (3:00 PM to 8:00PM) to provide a comprehensive understanding of how the game events would affect the afternoon commute hours.

Due to the high number of multimodal trips expected for the Project, the proximity of the study intersections, and the potential conflicts between travel modes, Vissim was selected as the analysis tool for game days. Vissim is a microsimulation analysis tool that studies the entire study network including road segments, intersections, sidewalks, and bike lanes. Vissim captures the interactions between the different travel modes for a comprehensive analysis.

The purpose of the Vissim model was to evaluate a scenario with high pedestrian demand and TNC drivers driving in the immediate neighborhood and to the Ballpark to ensure that the sidewalks are sufficiently wide and identify areas of pedestrian and vehicular conflict. In the analysis scenario, all ballpark attendees who drive and park in downtown or take BART would walk to the ballpark. In addition, the model has TNC drivers circulating in the Jack London District along 4th and 5th Streets and TNC drivers accessing the ballpark site. The Vissim model does not incorporate the bus only lanes on 7th, Brush, and Castro Streets nor does it consider the bus only lanes on Broadway, which reduces the attractiveness of bus transit. This scenario maximizes the number of people walking to downtown Oakland to BART and parking spaces and maximizes the number of vehicles accessing the site and the neighborhood. It is therefore a conservative model for the intended purposes.

This section describes the Vissim model development, data collection, trip generation, trip distribution, trip assignment, and measures of effectiveness.

3.1 Vissim Model Development

The development of the Vissim micro-simulation model included three steps: (1) setup, (2) calibration, and (3) validation. Each step is described in the following sections, and the validated Vissim model serves as the basis for comparing scenarios.[2]

[2] The average of ten runs was used for existing conditions and the project scenarios.

3.1.1 Data Collection

Data collection occurred during September 2018 on a typical weekday when schools were in session. Intersection turning movement counts, including pedestrians and bikes, were collected. Intersection observations, including geometry, signal timing, and vehicle queuing observations were conducted during data collection. The passenger and freight train data collection and assumed in the model are included in **Appendix D**. The afternoon peak period volumes are summarized hourly in **Appendix E**. Data was collected at the following intersections from 3:00 to 8:00 PM:

A. Union Street/5th Street
B. Adeline Street/3rd Street
C. Adeline Street/5th Street
D. Market Street/Embarcadero
E. Market Street/3rd Street
F. Market Street/4th Street
G. Market Street/5th Street
H. Market Street/6th Street
I. Market Street/7th Street
J. Brush Street/5th Street
K. Brush Street/6th Street
L. Brush Street/7th Street
M. Brush Street/11th Street
N. Brush Street/I-980 WB Off-ramp/12th Street
O. Castro Street/5th Street
P. Castro Street/7th Street
Q. Castro Street/11th Street
R. Castro Street/12th Street
S. Martin Luther King Jr Way/ Embarcadero
T. Martin Luther King Jr Way /2nd Street
U. Martin Luther King Jr Way /3rd Street
V. Martin Luther King Jr Way /4th Street
W. Martin Luther King Jr Way /5th Street
X. Martin Luther King Jr Way/6th Street
Y. Martin Luther King Jr Way/7th Street
Z. Martin Luther King Jr Way/8th Street
AA. Jefferson Street/4th Street
BB. Clay Street/4th Street
CC. Washington Street/4th Street
DD. Washington Street/5th Street
EE. Broadway/5th Street
FF. Broadway/6th Street
GG. Market Street/Martin Luther King Jr Way (new)

3.1.2 Geometric Data

Roadway geometric data was gathered using aerial photographs and field observations. The lane configurations that were taken initially from aerial photographs were confirmed or revised based on field observations and mapping available from the project team. This information was used to develop the model network for the analysis area.

3.1.3 Model Calibration

Vissim version 11 was used for the analysis. Adjustments to the Vissim model focus on the model components related to driver behavior, driver performance, vehicle fleet mix, and vehicle performance. The following Vissim model parameters were adjusted to calibrate the model:

- Vehicle fleet composition (e.g. passenger cars, pickup trucks, sport-utility vehicles (SUVs), medium and heavy trucks)

- Minimum emergency stop distance
- Arterial driving behavior (e.g. following standstill distance, maximum look-ahead distance)

The Vissim model calibration process began by adjusting the Vissim default values on some parameters to more reasonable initial values based on field observations and experiences on similar projects elsewhere in northern California. The vehicle composition provided as a default setting in Vissim contains only standard sedans. However, a significant portion of vehicles in the study area (and in most U.S. metropolitan areas) are SUVs, a category that also includes light trucks, so the vehicle composition parameter has been adjusted to reflect a more representative condition. The default setting in Vissim assumes there are zero 2-axle trucks in the traffic stream which is inconsistent with field observations and the actual truck traffic counts. Trucks were assigned to the network separately since there are significantly higher truck volumes in the area, and the project would shift existing trucks from Howard Terminal to elsewhere in the transportation network.

The following standard calibration/validation process was employed:

- Make a base model run with initial parameters
- Compare predicted and field-observed performance measures
- Assess differences between predicted and field-observed performance measures
- Select reasonable model input changes to reduce differences
- Make a new model run with selected input changes
- Repeat process until predictions are acceptable

The initial base model run with the initial parameters did not result in the model replicating observed field conditions. Per standard practice, parameters affecting roadway capacity and driver behavior were adjusted at specific locations in the study area so that the observed traffic conditions (speed and queuing) could be replicated in the Vissim models. **Table 5** lists the model calibration adjustments made to the Vissim model. It is important to recognize that there are multiple combinations of adjusted parameters that can closely replicate field observed conditions. Ultimately, what is important is that the combination of the adjusted parameters reasonably replicate field observed behavior for the study period.

3.1.4 Model Validation

The model was validated to field observations of operations and queues, together with the GEH statistic used by Caltrans for highway and street traffic operation analyses. The GEH statistic measures how well the simulated traffic volumes correspond with the actual measured traffic volumes obtained from the field. A

lower GEH statistic indicates better model performance, and guidelines for acceptable GEH statistics are provided by the Washington Department of Transportation and used by Caltrans:

- GEH Statistic < 3.0 is an acceptable fit
- GEH Statistic < 5.0 is an acceptable fit for local roadways
- GEH Statistic > 5.0 is unacceptable

All intersections were validated to observed LOS and queues. This includes an observed eastbound queue extending along 5th Street from the Broadway/5th Street intersection to between Jefferson Street and Washington Street. The GEH statistics for all study intersections was 2.0 or less for each hour, exceeding the acceptable guidelines described above.

Table 5: Model Calibration Adjustments for Howard Terminal Ballpark

Category	Parameter	Vissim Default	Initial Value	Adjusted Typical Range
Vehicle Fleet Composition	SOV/HOV Vehicle Type – Sedans	100%	48%	48%
	SOV/HOV Vehicle Type – SUVs	0%	37%	37%
	SOV/HOV Vehicle Type – Sports Cars	0%	15%	15%
	Truck Vehicle Type – 2 Axles	0%	50%	50%
	Truck Vehicle Type – 3 or More Axles	100%	50%	50%
Arterial Connectors	Lane Change – Minimum Emergency Stop	16.4 ft	16.4 ft	16.4 to 300 ft
Arterial Driving Behavior	Following – Standstill Distance	6.56 ft	6.56 ft	2 ft to 10 ft
	Maximum Collision Time for Cooperative Lane Change	Off	Off	On - 10 seconds
	Maximum Look Ahead Distance	820.21 ft	820.21 ft	820.21 to 2,000 ft
	Lane Change – Max Deceleration for cooperative braking	- 9.84 ft/s2	- 9.84 ft/s2	- 9.84 ft/s2 to -30.00 ft/s2
	Maximum Speed Difference for Cooperative Lane Change	Off	Off	On - 25 mph
	Lane Change – Safety distance reduction factor	0.60	0.60	0.01 to 0.60

Source: Fehr & Peers, 2020.

3.2 Trip Generation and Distribution

A detailed discussion of trip generation is provided in the technical memorandum titled *Howard Terminal Project – Transportation and Parking Demand Management for Non-Ballpark Development and Ballpark*

(TDM Memorandum) which established the peak hour trip generation for the non-ballpark development as well as total trip generation for the ballpark. The trip generation process follows the guidance set forth in the City of Oakland Transportation Impact Review Guidelines (TIRG).

The peak hour trip generation in the TDM Memorandum for the non-ballpark development was extrapolated to include hourly trip generation for 3:00 PM to 8:00 PM based on the 24-hour trip generation tables in the ITE *Trip Generation Manual* (10th Edition). While the total trip generation for the midday and evening games in the TDM Memorandum was extrapolated for each hour from 3:00 PM to 8:00 PM using arrival and departure data associated with baseball games at the Oakland Coliseum. **Table 6** summarizes the trip generation for the non-ballpark and ballpark components of the project.

Table 6: Howard Terminal Trip Generation

Mode	3 to 4 PM	4 to 5 PM	5 to 6 PM	6 to 7 PM	7 to 8 PM
Existing Plus Full Buildout Non-Ballpark Development Conditions					
Personal Vehicles	1610	2024	2187	1706	1296
Pedestrians	1441	1812	1960	1528	1161
Midday Game Trips					
Personal Vehicles	1954	2012	234	0	0
TNCs	405	417	49	0	0
Pedestrians	16287	16763	1955	0	0
Evening Game Trips					
Personal Vehicles	0	1006	1246	2513	935
TNCs	0	381	472	951	354
Pedestrians	0	6179	7649	15432	5740

Source: Fehr & Peers, 2020.

3.3 Trip Distribution and Assignment

Ballpark vehicle trip distribution was estimated based on location-based services cell phone data collected for the 2016 and 2017 seasons at the Coliseum for each game type as described in the TDM Memorandum. Using the distributions, the trips generated by the ballpark were then assigned to the roadway network for a weekday afternoon game and for a weekday evening game. Refer to Table 3 for the trip distribution for the non-ballpark development.

3.4 Measures of Effectiveness

It is often useful to supplement the individual intersection analyses with system-wide performance measures such as volume served, average travel speed, and vehicle hours of delay to obtain a better understanding of overall traffic operations.

Several Measures of Effectiveness (MOEs) computed with the Vissim models were used to quantify traffic operations for the project study area. MOEs are presented hourly for the five-hour study period to provide a better understanding of overall traffic operations during the study period. Note that some MOEs (such as total vehicle hours of delay) are presented for the entire network while one (average vehicle delay) is presented both for the system and at individual intersections. Average travel time is presented for a limited number of corridors. A distinction is made because some MOEs are meaningful at both the system level and individual intersection, others are most meaningful at one or the other.

Additionally, the ballpark is expected to create substantial pedestrian demand for sidewalk space, so MOEs have been included in the analyses of post-development conditions to capture the pedestrian experience. These MOEs are computed with VISWALK, an extension of Vissim, and are presented hourly for the study periods to provide a better understanding of overall operations.

The MOEs evaluated in this analysis are described in the following sections.

3.4.1 System-Level

- ***Volume Served*** – is a measure of the vehicles that can be served by the system during the analysis period. If the system is over-capacity for a given time period, the volume served will be less than the demand volume.
- ***Total Vehicle Hours of Delay (TVHD)*** – is a measure of the total delay incurred by all vehicles during the study period due to congestion.
- ***Average Vehicle Hours of Delay (AVHD)*** – is a measure of the average delay incurred by each vehicle during the study period due to congestion.
- ***Pedestrian Volume Served*** – is a measure of the pedestrians that can be served by the system during the analysis period. If the system is over-capacity for a given time period, the volume served will be less than the demand volume.

3.4.2 Intersection or Corridor Level

- ***Average Travel Time, by Corridor*** – is a measure of the time taken by all vehicles (on average) to travel through the network i.e., between two discreet points during the study period. The travel time calculation considers the average delay, vehicle queues, and friction caused by merging vehicles.

- ***Level of Service (LOS) and Average Delay, by Intersection*** – is a measure of the average delay incurred by each vehicle during the study period due to intersection congestion and traffic controls.
- ***Pedestrian Level of Service (LOS), by Corridor*** – is a measure of the pedestrian density on a corridor, which is also a measure of pedestrian comfort. This calculation considers the average effective sidewalk space per pedestrian, which can also be measured by the flow rate per unit width of sidewalk. **Table 7** shows LOS level according to the Highway Capacity Manual (HCM)
- ***Pedestrian Travel Time, by Corridor*** – is a measure of the time taken by all pedestrians (on average) to travel through a corridor i.e., between their origin and destination. The travel time calculation considers the delay from pedestrian congestion and signals and is compared to the travel time without any signals or conflicts.

Table 7: Platoon-Adjusted LOS Criteria for Walkways

LOS	Average Space (ft^2/p)	Flow Rate[1] ($p/min/ft^2$)	Description
A	>530	≤0.5	Ability to move in desired path, no need to alter movements
B	>90-530	>0.5-3	Occasional need to adjust path to avoid conflicts
C	>40-90	>3-6	Frequent need to adjust path to avoid conflicts
D	>23-40	>6-11	Speed and ability to pass slower pedestrians restricted
E	>11-23	>11-18	Speed restricted, very limited ability to pass slower pedestrians
F	≤11[3]	>18	Speeds severely restricted, frequent contact with other users

Notes:
1. Rates in the table represent average flow rates over a 5-minute period. Flow rate is directly related to space; however, LOS is based on average space per pedestrian.
2. Pedestrians per minute per foot of walkway width.
3. In crossflow situations, the LOS E-F threshold width is 13 ft^2/p.

Source: Highway Capacity Manual 6th Edition, Chapter 24, Exhibit 24-2.

3.5 Existing Conditions Operations

This section summarizes the microsimulation results for Existing Conditions.

3.5.1 Network MOEs

A summary of the network MOEs for Existing Conditions is shown in **Table 8**. The detailed results for Existing Conditions after model validation are included in **Appendix F**. Under Existing Conditions, the model serves almost all the vehicles each hour and the system-wide delay follows a typical weekday afternoon commute pattern with increasing congestion i.e., system-wide delay each hour up to the highest hour ending at 6:00 PM after which system-wide delay decreases.

Table 8: Network MOEs, Existing Conditions

MOE	3 to 4 PM	4 to 5 PM	5 to 6 PM	6 to 7 PM	7 to 8 PM
Average Vehicle Delay (seconds)	52	58	81	81	44
Total Vehicle Hours of Delay (hours)	135	181	286	221	85
Vehicles Served	9,057	10,845	12,270	9,493	6,774
Vehicle Demand	9,207	11,027	12,379	9,409	6,749
Percent Demand Served	98%	98%	99%	101%	100%
Total Vehicle Demand Served	**99%**				

Source: Fehr & Peers, 2020.

3.5.2 Intersection LOS

Based on the roadway configurations and volumes presented in **Appendix A** and **Appendix E**, LOS was calculated for the study intersections using the 2010 *Highway Capacity Manual* methodologies for each hour between 3:00 PM and 8:00 PM. **Table 9** summarizes hourly operations under Existing Conditions. Detailed intersection LOS calculation worksheets are presented in **Appendix F**. Most intersections currently operate at LOS D or better for each hour during the study period. The following intersections experience LOS E or worse during one or more study hours:

- The Adeline Street/3rd Street intersection (B) operates at LOS E from 5 to 6 PM. This intersection operates as an all-way stop-controlled intersection.
- The Castro Street/5th Street intersection (O) operates at LOS A from 4 to 5 PM and from 6 to 7 PM, but the worst movement i.e., stop signs on Castro Street operates at LOS E. The intersection operates at LOS C between 5 and 6 PM, and the Castro Street stop signs operate at LOS F.
- The Washington Street/5th Street intersection (DD) operates at LOS F from 5 to 7 PM because the vehicle queue from Broadway extends back beyond Washington Street degrading intersection operations.
- The Broadway/5th Street intersection (EE) operates at LOS E from 5 to 6 PM primarily because of the vehicle congestion on 5th Street approaching Broadway.

Table 9: Existing Conditions Intersection LOS

Letter	Intersection	Control[1]	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS
A	Union St/5th St	Signal	17	B	21	C	45	D	19	B	15	B
B	Adeline St/3rd St	All-way Stop	6	A	17	C	**36**	**E**	5	A	4	A
C	Adeline St/5th St	Signal	18	B	20	B	23	C	16	B	14	B
D	Market St/Embarcadero	All-way Stop	9	A	13	B	11	B	9	A	8	A
E	Market St/3rd St	Side-street Stop	3.7 (14)	A (B)	4 (16)	A (C)	3(19)	A (C)	2 (10)	A (B)	3 (10)	A(B)
F	Market St/4th St	Side-street Stop	2 (9)	A (A)	1(8)	A (A)	1 (7)	A (A)	1(7)	A (A)	1 (7)	A (A)
G	Market St/5th St	Signal	11	B	11	B	12	B	10	B	9	A
H	Market St/6th St	Signal	15	B	16	B	18	B	17	B	17	B
I	Market St/7th St	Signal	12	B	12	B	39	D	11	B	11	B
J	Brush St/5th St	Signal	16	B	12	B	13	B	13	B	15	B
K	Brush St/6th St	Signal	19	B	9	A	19	B	9	A	14	B
L	Brush St/7th St	Signal	19	B	17	B	47	D	17	B	14	B
M	Brush St/11th St	Signal	7	A	8	A	9	A	7	A	5	A
N	Brush St-I-980 Westbound Off-ramp/12th St	Signal	6	A	6	A	5	A	5	A	1	A
O	Castro St/5th St	Side-street Stop	5 (32)	A (D)	**6 (47)**	**A (E)**	**19 (130)**	**C (F)**	**8 (50)**	**A (E)**	3 (19)	A (C)
P	Castro St/7th St	Signal	16	B	16	B	36	D	17	B	16	B
Q	Castro St/11th St	Signal	30	C	30	C	29	C	29	C	10	A
R	Castro St/12th St	Signal	15	B	16	B	16	B	14	B	7	A
S	Martin Luther King Jr Way/Embarcadero	All-way Stop	10	B	13	B	13	B	10	B	9	A
T	Martin Luther King Jr Way/2nd St	Side-street Stop	3 (9)	A (A)	2 (9)	A (A)	3 (11)	A (B)	4 (9)	A (A)	3 (9)	A (A)
U	Martin Luther King Jr Way/3rd St	All-way Stop	7	A	14	B	30	D	9	A	6	A

Table 9: Existing Conditions Intersection LOS

Letter	Intersection	Control[1]	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS	Delay[2]	LOS
V	Martin Luther King Jr Way/4th St	Side-street Stop	3 (13)	A (B)	3(13)	A (B)	5 (7)	A (C)	3 (13)	A (B)	2 (13)	A (B)
W	Martin Luther King Jr Way/5th St	Signal	7	A	9	A	14	B	14	B	7	A
X	Martin Luther King Jr Way/6th St	Signal	7	A	8	A	10	A	6	A	9	A
Y	Martin Luther King Jr Way/7th St	Signal	8	A	8	A	8	A	8	A	7	A
Z	Martin Luther King Jr Way/8th St	Signal	7	A	8	A	7	A	8	A	8	A
AA	Jefferson St/4th St	Side-street Stop	1 (11)	A (B)	1 (11)	A (B)	1 (12)	A (B)	1 (11)	A (B)	1 (9)	A (A)
BB	Clay St/4th St	Side-street Stop	1 (6)	A (A)	1(6)	A (A)	7 (11)	A (B)	2(7)	A (A)	2 (6)	A (A)
CC	Washington St/4th St	Side-street Stop	4 (11)	A (B)	4 (11)	A (B)	15(31)	B (D)	5 (16)	A(C)	2 (10)	A (B)
DD	Washington St/5th St	Signal	15	B	32	C	**125**	**F**	**100**	**F**	45	D
EE	Broadway/5th St	Signal	37	D	44	D	**67**	**E**	54	D	38	D
FF	Broadway/6th St	Signal	17	B	24	C	34	C	36	D	15	B

Notes:

1. Signal = intersection controlled by traffic signal; SSSC = Intersection controlled by stop-sign on side-street approach Pedestrians per minute per foot of walkway width.
2. Signalized intersections, average intersection delay and LOS based on 2010 HCM method. Side-street stop-controlled intersections, delays for worst movement and average intersection delay: intersection average (worst movement)

Source: Fehr & Peers, 2020

3.5.3 Motor Vehicle Travel Times

Vehicle travel times for five corridors are shown in **Figure 1** through **Figure 5** below and the routes are illustrated on a map in **Appendix G**. Visualizations of vehicle delay in the form of speed plots throughout the study network are also shown in **Appendix F.** Travel time was measured along the following routes:

- Between I-880 Ramp Termini at Union Street to the Market Street Project Access (Figure 1)
- Between Market Street north of 7th Street and the Market Street Project Access (Figure 2)
- Between I-980 Ramp Termini at 12th Street to the Market Street Project Access (Figure 3)
- Between Martin Luther King Jr Way north of 7th Street and the Martin Luther King Jr Way Project Access (Figure 4)
- Between Market Street Project Access and Alameda via 5th Street and the Webster Tube (Figure 5)

Overall, travel times follow a typical commute pattern with increasing travel times generally peaking at 6:00 PM after which travel times begin to improve.

Figure 1: Travel Time Between I-880 Ramp Termini at Union Street and Market Street Project Access

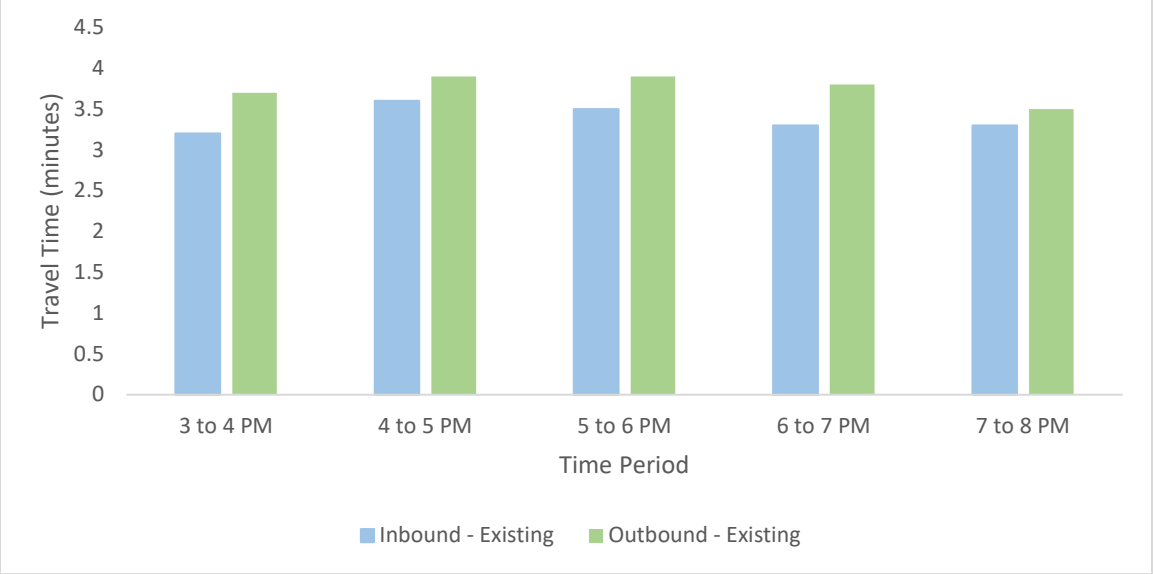


Figure 2: Travel Time Between Market Street North of 7th Street and Market Street Project Access

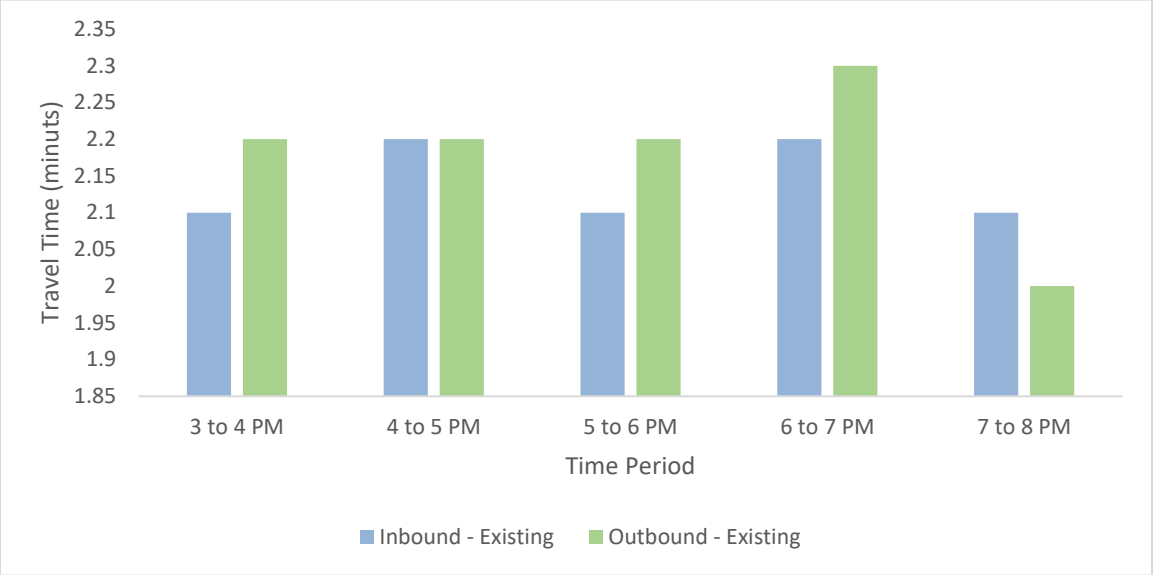


Figure 3: Travel Time Between I-980 Ramp Termini at 12th Street to Market Street Project Access

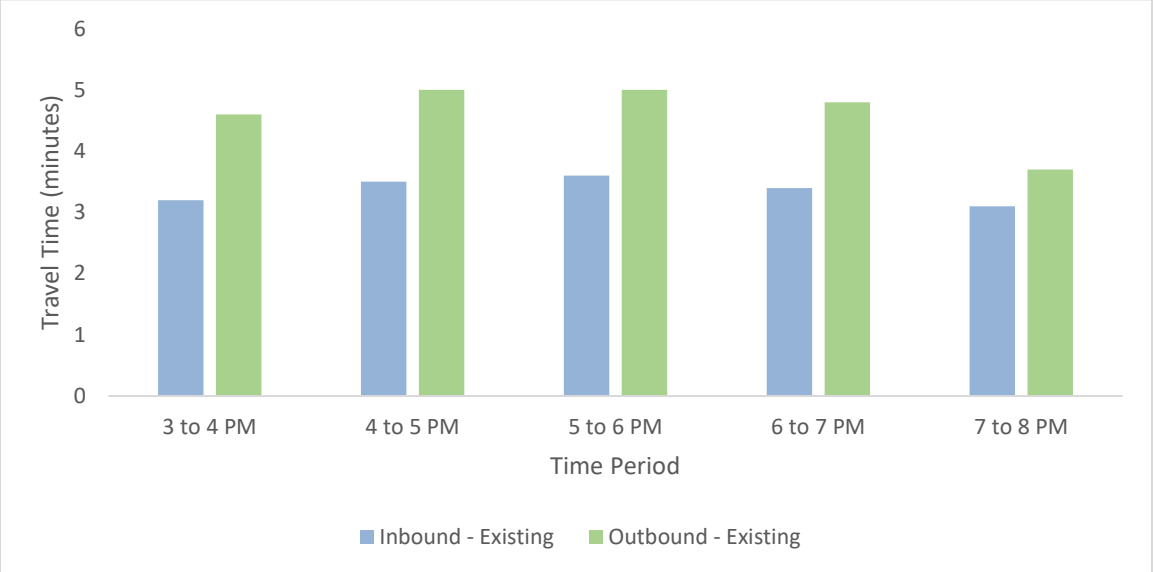


Figure 4: Travel Time Between Martin Luther King Jr Way North of 7th Street and Martin Luther King Jr. Way Project Access

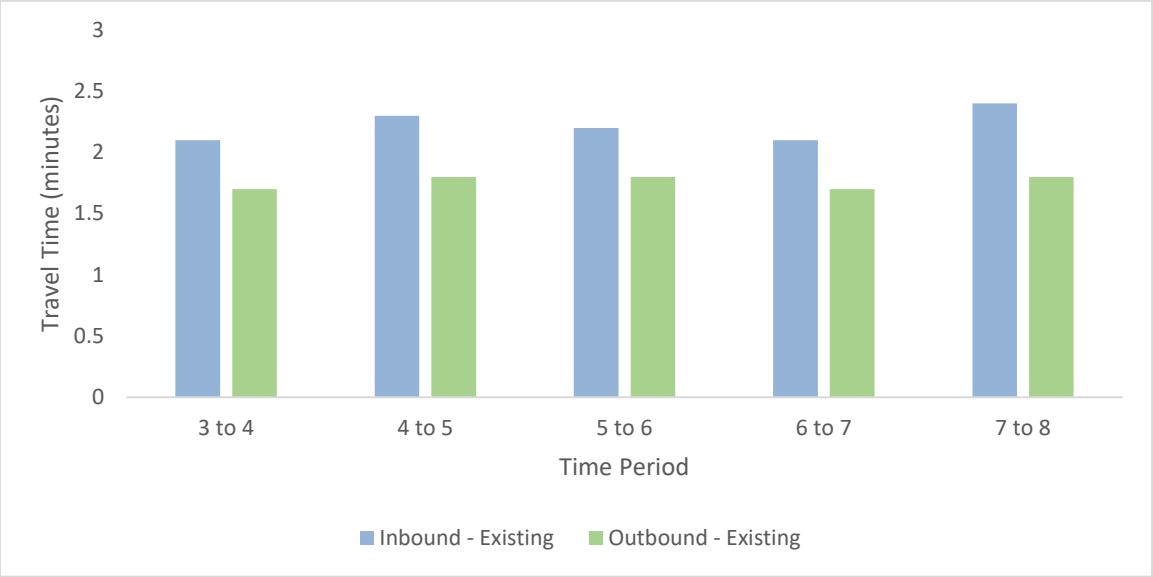
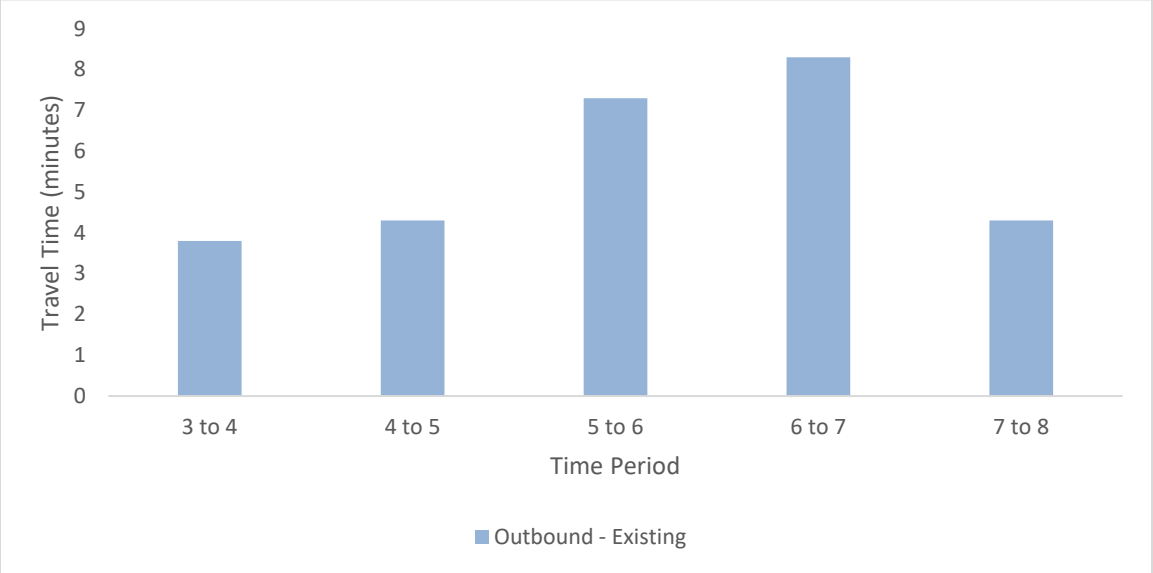


Figure 5: Travel Time Between Market Street Project Access and Alameda via 5th Street and the Webster Tube



3.6 Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Operations

This section summarizes the results for the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game. With the recommended improvements described previously in this memorandum, pedestrian demand is fully served within the study period, and pedestrian average LOS is C or better on most corridors. Intersection vehicle operations for most study intersections is LOS D or better for the entire study period between 3 PM and 8 PM. Both inbound and outbound travel times after ballpark vehicle demand drops off are generally similar or lower than existing travel times. As expected after a large event, outbound vehicle travel times under the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game scenario increase along most corridors.

The remainder of this section presents the microsimulation results for the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game scenario.

3.6.1 Network MOEs

A summary of the network MOEs for the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game scenario is shown in **Table 10**. Detailed results are included in **Appendix H.** These results account for the recommended improvements described above. With buildout of the non-ballpark development and a midday ballgame, the model serves all the pedestrian demand.[3] The model serves 96 percent or more of the vehicle demand in each hour. The system-wide delay increases by nearly 1.5 minutes per vehicle in the study area from 4 to 5 PM,[4] with smaller increases in delay in other time periods.

[3] Pedestrian demand begins at 3 PM when attendees begin to leave the ballgame. The calculation shows that some pedestrians do not reach their destination between 3 and 4 PM. This is because pedestrians that enter the system near 4 PM who arrive to their destination after 4 PM are considered to not be served within the 3 to 4 PM hour. Thus, pedestrians are fully served.

[4] A freight train with about 4 minutes of gate down time passed through the area at about 4:25 contributing to the increase in system-wide delay during the 4 to 5 PM period.

Table 10: Network MOEs: Existing Conditions; Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game

MOE	3 to 4 PM	4 to 5 PM	5 to 6 PM	6 to 7 PM	7 to 8 PM
Existing Conditions					
Average Vehicle Delay (seconds)	52	58	81	81	44
Total Vehicle Hours of Delay (hours)	135	181	286	221	85
Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game					
Pedestrians Served	14,500	16,700	3,800	n/a	n/a
Pedestrian Demand	16,300	16,800	2,000	n/a	n/a
Percent Pedestrian Demand Served	89%	99%	190%	n/a	n/a
Total Pedestrian Demand Served			**100%**		
Average Vehicle Delay (seconds)	88	129	149	81	60
Total Vehicle Hours of Delay (hours)	318	559	662	264	136
Vehicles Served	12,100	14,500	15,100	11,400	7,900
Vehicle Demand	12,600	15,000	14,900	11,100	8,000
Percent Vehicle Demand Served	96%	97%	101%	103%	99%

Source: Fehr & Peers, 2020.

3.6.2 Pedestrian Spacing

Using the HCM procedure, average pedestrian spacing for sidewalks was calculated using Vissim. In addition, for sidewalks operating at LOS C or higher based on average pedestrian spacing, flow rate LOS was also calculated using HCM procedures. The additional calculations confirm that sidewalks will operate within acceptable levels with the additional pedestrian trips. **Table 11** summarizes the sidewalk operations for the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Scenario pedestrian peak hourly Interval. All the sidewalks operate at LOS C or better during the PM peak period.

Based on HCM procedures, **Table 12** summarizes the corner operations for the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Scenario based on average pedestrian spacing and the worst pedestrian spacing. The LOS for worst pedestrian spacing represents a time during the afternoon peak period where pedestrians have the least space available on the corner. For the purpose of this analysis, corners operating at LOS C or better based on average pedestrian spacing combined LOS E or better based on the worst pedestrian spacing are considered operating at comfortable conditions. The following corners do not operate at comfortable conditions:

- The Broadway/5th southwest corner operates at a LOS D based on average pedestrian spacing and LOS E based on the worst pedestrian spacing. If feasible, provide curb extensions by removing the right turn lane to improve the pedestrian spacing.
- The Market/3rd southeast corner operates at LOS D based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on northbound Market Street. Curb extensions and crosswalk widening have already been implemented for this analysis. Minimize obstacles in the sidewalk within 30 feet of the corner to maximize pedestrian waiting space. Use Traffic Control Officers to manage the pedestrian flows through this intersection.
- The Martin Luther King Jr Way/2nd Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to intersection signal timings. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing.
- The Martin Luther King Jr Way/5th Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on eastbound 5th Street. If feasible, provide curb extensions and crosswalk widening to improve the LOS F on the worst pedestrian spacing. Traffic Control Officers may also be needed to manage the pedestrian flows through this intersection.
- The Martin Luther King Jr Way/6th Street southeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to due to intersection signal timings and small corner area. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing
- The Martin Luther King Jr Way/7th southeast corner operates at LOS D based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on eastbound 7th Street. If feasible, provide curb extensions to improve the pedestrian spacing.
- The Washington/5th southeast corner operates at LOS D based on average pedestrian spacing and LOS E based on the worst pedestrian spacing due to the long signal timings on eastbound 5th Street. Curb extensions and crosswalk widening have already been implemented for this analysis. Minimize obstacles in the sidewalk within 30 feet of the corner to maximize pedestrian waiting space. Use Traffic Control Officers to manage the pedestrian flows through this intersection.

Appendix H contains the hourly average spacing LOS C or worse.

Table 11: Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Pedestrian Peak Interval Sidewalk Operations Summary

Location	Flow (Peds/ Hour)	Speed (Ft/Sec)	Effective Width	Flow Rate (peds/min /ft)	LOS	Average Space (Ft^2/ Ped)	LOS
Broadway west side from 2nd Street to 3rd Street	1816	3.6	6.0	5.0	C	71	C
Market Street east side from Embarcadero to 3rd Street	2031	3.7	6.0	5.6	C	64	C
Martin Luther King Jr Way east side from 2nd Street to 3rd Street	1584	3.6	6.0	4.4	C	78	C
Martin Luther King Jr Way east side from 3rd Street to 4th Street	1243	3.2	4.0	5.2	C	60	C
Martin Luther King Jr Way east side from 4th Street to 5th Street	1101	3.3	5.5	3.3	C	59	C
Martin Luther King Jr Way east side from 5th Street to 6th Street	1097	3.1	5.0	3.7	C	67	C
Martin Luther King Jr Way east side from Embarcadero to 2nd Street	2269	3.8	8.0	4.7	C	74	C
Washington Street east side from Embarcadero to 2nd Street	1819	3.5	8.0	3.8	C	78	C

Source: Fehr & Peers, 2020.

Table 12: Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Pedestrian Peak Interval Corner Operations Summary

Location	Flow (Ped/Hr)	Average Space (Ft^2/ Ped)	LOS	Max. Peds	Radius (Ft)	Worse Space (Ft^2/Ped)	LOS
Broadway/5th Street Southwest corner	2275	38	D	61	2.0	13	E
Market Street/3rd Street Southeast corner	2627	31	D	77	1.7	9	F
Market Street/6th Street Southwest corner	642	87	C	17	2.1	14	E
Martin Luther King Jr Way/2nd Street Southeast corner	2289	75	C	65	1.7	10	F
Martin Luther King Jr Way/3rd Street Southeast corner	1984	86	C	32	2.5	19	E
Martin Luther King Jr Way/5th Street Southeast corner	1247	44	C	36	1.8	10	F
Martin Luther King Jr Way/6th Street Southeast corner	929	67	C	23	1.6	8	F
Martin Luther King Jr Way/7th Street Southeast corner	1110	32	D	39	1.6	9	F
Washington Street/3rd Street Southwest corner	1503	66	C	24	2.5	20	E
Washington Street/5th Street Southeast corner	1998	39	D	58	2.0	13	E
Washington Street/5th Street Southwest corner	1766	67	C	48	2.3	16	E

Source: Fehr & Peers, 2020.

3.6.3 Pedestrian Travel Times

Pedestrian travel times for five pedestrian travel routes are shown in **Figure 6** through **Figure 10** below, and the routes are illustrated on a map in **Appendix G**. The modeled pedestrian travel times are compared to ideal travel times with unimpeded walking of 3 mph (4.4 feet per second) i.e., pedestrians are not delayed at any intersecting streets. The figures illustrate pedestrian delay due to intersections, such as signals, and from sidewalk crowding. The changes in travel time reflect the combination of the added pedestrian volumes as well as changes to the transportation network described in the previous section. Visualizations of pedestrian delay in the form of speed plots throughout the study network and pedestrian density plots are included in **Appendix H** Travel time was measured along the following routes:

- From 3rd Street/Adeline Street to Athletics Way (Figure 6)
- From Market Street/7th Street to Athletics Way (Figure 7)
- From Martin Luther King Jr Way/7th Street to Athletics Way (Figure 8)
- From Washington Street/5th Street to Athletics Way (Figure 9)
- From Broadway/6th Street to Athletics Way (Figure 10)

While pedestrian travel times do increase with the added pedestrian volumes from the ballgame and the added traffic at the intersections, most of the increase over the ideal travel time is likely from existing delay at intersections rather than the added ballpark pedestrian arrivals.

Figure 6: Pedestrian Travel Time from 3rd Street/Adeline Street to Athletics Way

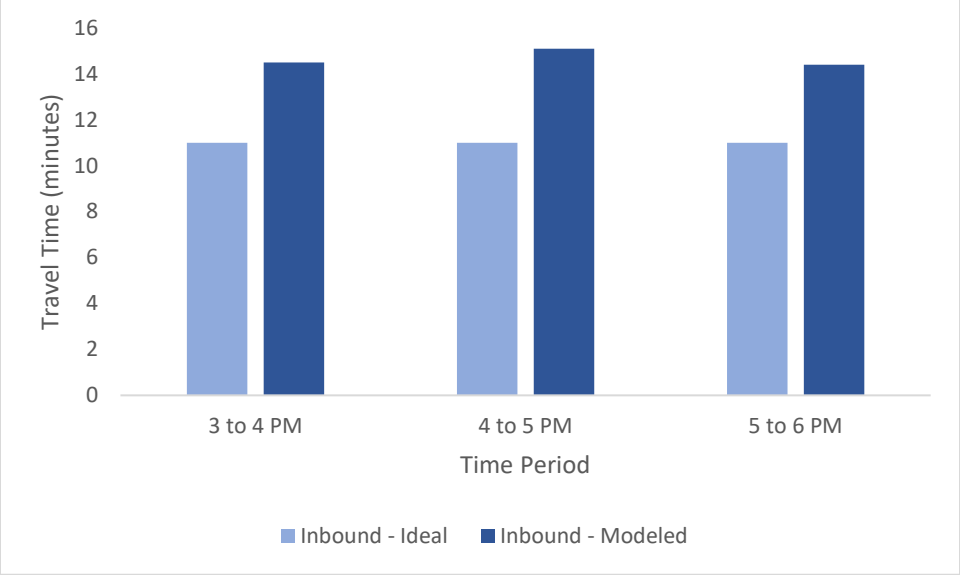


Figure 7: Pedestrian Travel Times from Market Street/7th Street to Athletics Way

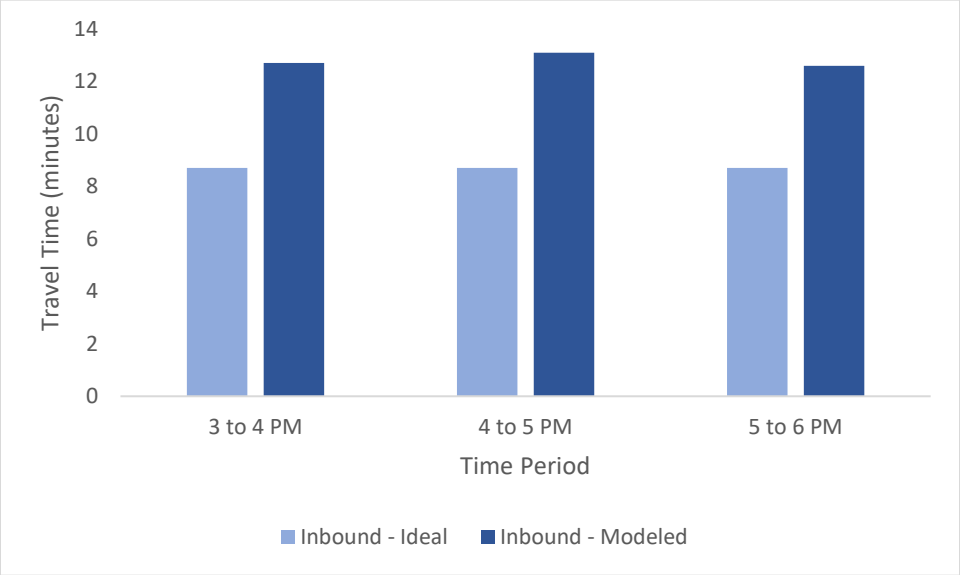


Figure 8: Pedestrian Travel Time from Martin Luther King Jr Way/8th Street to Athletics Way

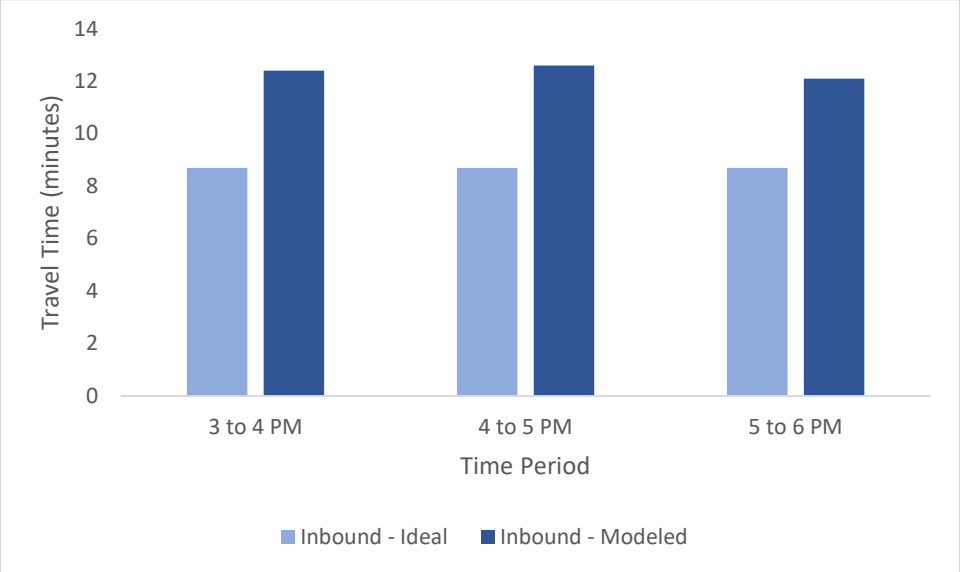


Figure 9: Pedestrian Travel Time from Washington Street/5th Street to Athletics Way

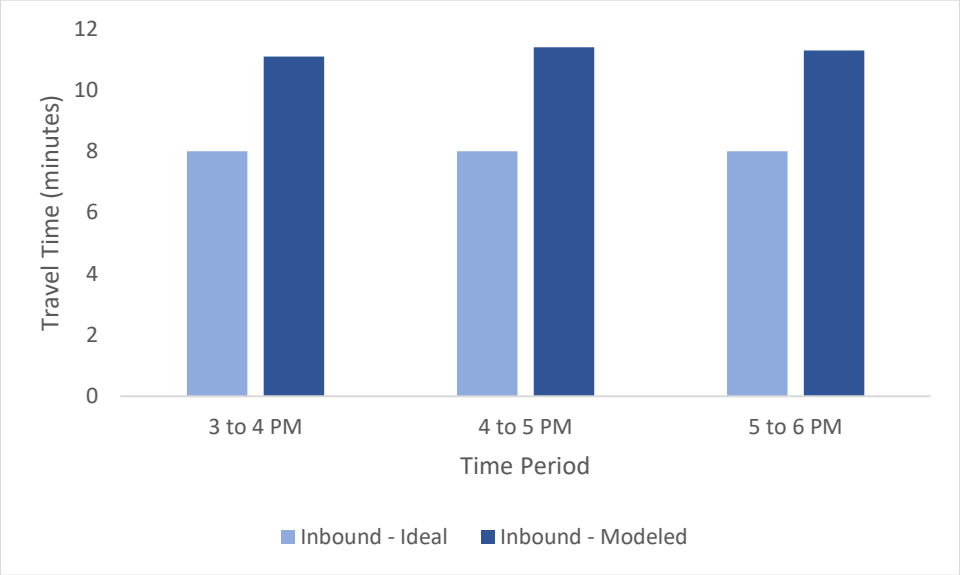
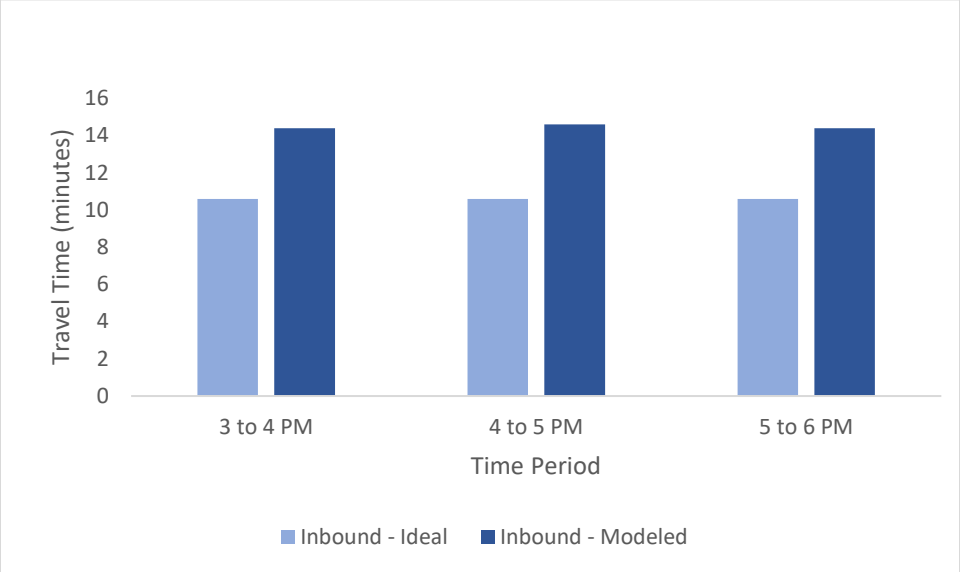


Figure 10: Pedestrian Travel Time from Broadway/6th Street to Athletics Way



3.6.4 Intersection LOS

The project trips from the Full Buildout Non-Ballpark Development and the Midday Game were added to the Existing Conditions traffic volumes to estimate the Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Conditions peak period traffic volumes. Based on the roadway configurations and volumes presented in **Appendix I and E**, LOS was calculated for the study intersections using the 2010 *Highway Capacity Manual* methodologies.

Table 13 summarizes the PM peak period operations hourly under Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Conditions. Detailed intersection LOS calculation worksheets are presented in **Appendix H.** These results account for the recommended improvements described above. Most intersections operate at LOS D or better during the entire study period. The following intersections experience LOS E or worse during one or more study hours:

- The Market Street at Embarcadero intersection (D) operates at LOS E from 4 to 5 PM. The LOS E is due to queues on the northbound approach caused by drivers who park at the game leave the site.
- The Washington Street/5th Street intersection (DD) operates at LOS F from 5 to 6 PM and LOS E from 6 to 7 PM. The project proposes new timings to improve operations at this intersection compared to existing conditions.
- The Market St/Martin Luther King Jr Way intersection (GG) operates at LOS E from 5 to 6 PM.

Table 13: Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Intersection LOS

Letter	Intersection	Control	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
A	Union St/5th St	Signal	20	B	22	C	22	C	19	B	17	B
B	Adeline St/3rd St	Signal	15	B	27	C	18	B	13	B	11	B
C	Adeline St/5th St	Signal	27	C	32	C	29	C	19	B	16	B
D	Market St/Embarcadero	Signal	17	B	**79**	**E**	45	D	6	A	16	B
E	Market St/3rd St	Signal	24	C	44	D	40	D	19	B	22	C
F	Market St/4th St	Side-street Stop	2.8 (24)	A (C)	11 (11)	B (B)	9 (27)	A (D)	4 (19)	A (C)	3 (15)	A (C)
G	Market St/5th St	Signal	17	B	30	C	34	C	24	C	14	B
H	Market St/6th St	Signal	19	B	26	C	23	C	15	B	12	B
I	Market St/7th St	Signal	22	C	29	C	48	D	24	C	16	B
J	Brush St/5th St	Signal	22	C	21	C	24	C	19	B	13	B
K	Brush St/6th St	Signal	11	B	8	A	6	A	4	A	3	A
L	Brush St/7th St	Signal	16	B	20	B	25	C	15	B	14	B
M	Brush St/11th St	Signal	12	B	14	B	12	B	9	A	6	A
N	Brush St-I-980 Westbound Off-ramp/12th St	Signal	7	A	7	A	5	A	4	A	1	A
O	Castro St/5th St	Signal	22	C	17	B	20	B	10	A	5	A
P	Castro St/7th St	Signal	19	B	20	B	27	C	15	B	25	C
Q	Castro St/11th St	Signal	14	B	26	C	50	D	24	C	10	A
R	Castro St/12th St	Signal	21	C	35	C	47	D	23	C	15	B
S	Martin Luther King Jr Way/Embarcadero	Signal	Intersection removed with Project. Signal remains to manage queue crossing tracks									
T	Martin Luther King Jr Way/2nd St	Signal	7	A	16	B	19	B	6	A	9	A

Table 13: Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Intersection LOS

Letter	Intersection	Control	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
U	Martin Luther King Jr Way/3rd St	Signal	7	A	15	B	23	C	14	B	13	B
V	Martin Luther King Jr Way/4th St	Signal	15	B	21	C	23	C	11	B	9	A
W	Martin Luther King Jr Way/5th St	Signal	25	C	23	C	26	C	24	C	24	C
X	Martin Luther King Jr Way/6th St	Signal	12	B	18	B	17	B	7	A	6	A
Y	Martin Luther King Jr Way/7th St	Signal	17	B	19	B	17	B	10	B	9	A
Z	Martin Luther King Jr Way/8th St	Signal	14	B	21	C	18	B	8	A	7	A
AA	Jefferson St/4th St	Signal	11	B	14	B	17	B	17	B	14	B
BB	Clay St/4th St	Signal	14	B	17	B	16	B	13	B	11	B
CC	Washington St/4th St	Signal	11	B	16	B	16	B	8	A	5	A
DD	Washington St/5th St	Signal	23	C	33	C	**81**	**F**	**59**	**E**	12	B
EE	Broadway/5th St	Signal	33	C	27	C	45	D	41	D	29	C
FF	Broadway/6th St	Signal	18	B	18	B	25	C	20	B	12	B
GG	Market St/Martin Luther King Jr Way	Signal	16	B	41	D	**64**	**E**	14	B	15	B

Notes:
1. Traffic signal installed with Non-Ballpark Development
2. Traffic signal timings optimized along Market Street, Martin Luther King Jr. Way, 5th Street, 6th Street, and 7th Street

Source: Fehr & Peers, 2020.

3.6.5 Motor Vehicle Travel Times

Vehicle travel times for five corridors are shown in **Figure 11** through **Figure 15** below and the routes are illustrated on a map in **Appendix G**. Visualizations of vehicle delay in the form of speed plots throughout the study network are also shown in **Appendix H**. The changes in travel time reflect the combination of the added vehicular and pedestrian traffic as well as changes to the transportation network described in Section 2. Travel time was measured along the following routes

- Between I-880 Ramp Termini at Union Street to the Market Street Project Access (Figure 11)
- Between Market Street north of 7th Street and the Market Street Project Access (Figure 12)
- Between I-980 Ramp Termini at 12th Street to the Market Street Project Access (Figure 13)
- Between Martin Luther King Jr Way north of 7th Street and the Martin Luther King Jr Way Project Access (Figure 14)
- Between Market Street Project Access and Alameda via 5th Street and the Webster Tube (Figure 15)

As expected with any large event, outbound travel times after a ballgame increase along most corridors. After ballgame vehicle demand drops off around 6 PM, both inbound and outbound travel times are generally similar or lower than existing travel times. Most travel times are expected to increase in the 20 to 40 percent range between the site and the freeway ramps after a ballgame. The exception is I-980 via Castro Street and Martin Luther King Jr Way. I-980 via Castro Street is expected to see a 50 to 90 percent increase in travel time because of the high demand for drivers destined to I-580 or SR 24. Martin Luther King Jr Way is expected to experience a 50 to 80 percent increase in travel time with the combination of the proposed road diet and the increased vehicle demand on the corridor from the ballpark.

Figure 11: Travel Time Between I-880 Ramp Termini at Union Street and Market Street Project Access

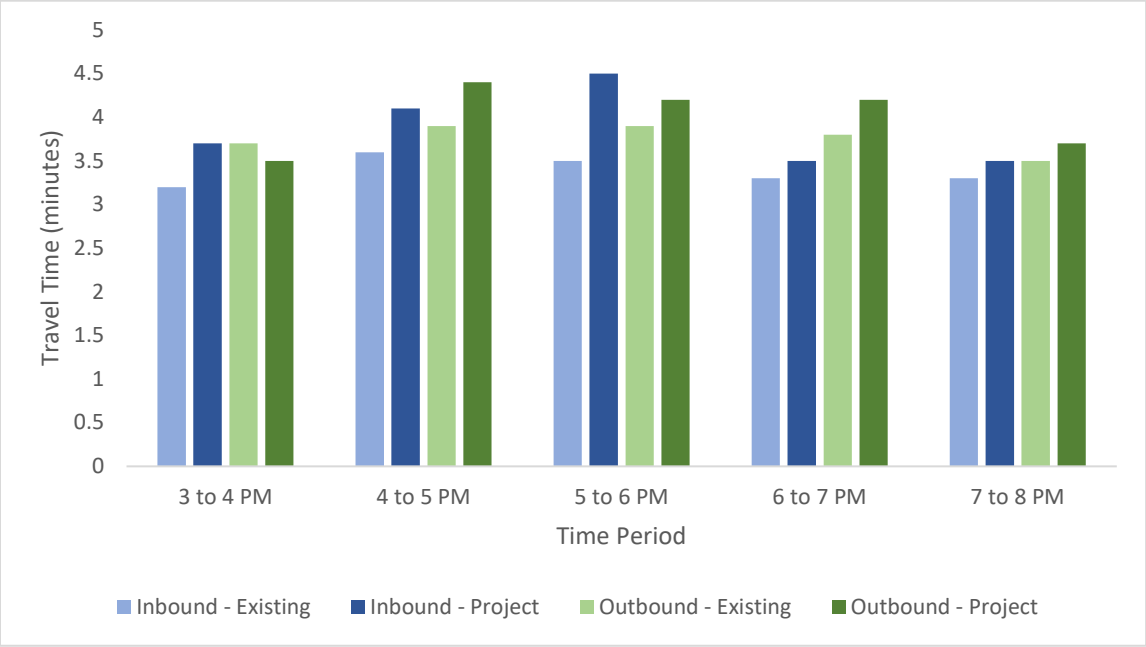


Figure 12: Travel Time Between Market Street North of 7th Street and Market Street Project Access

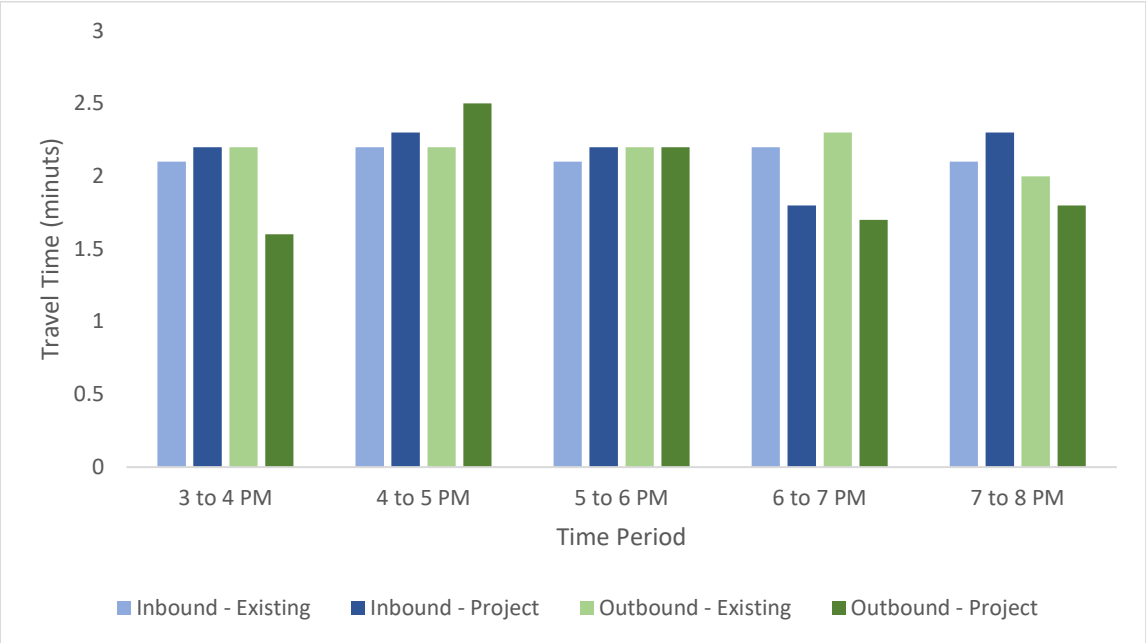


Figure 13: Travel Time Between I-980 Ramp Termini at 12th Street to Market Street Project Access

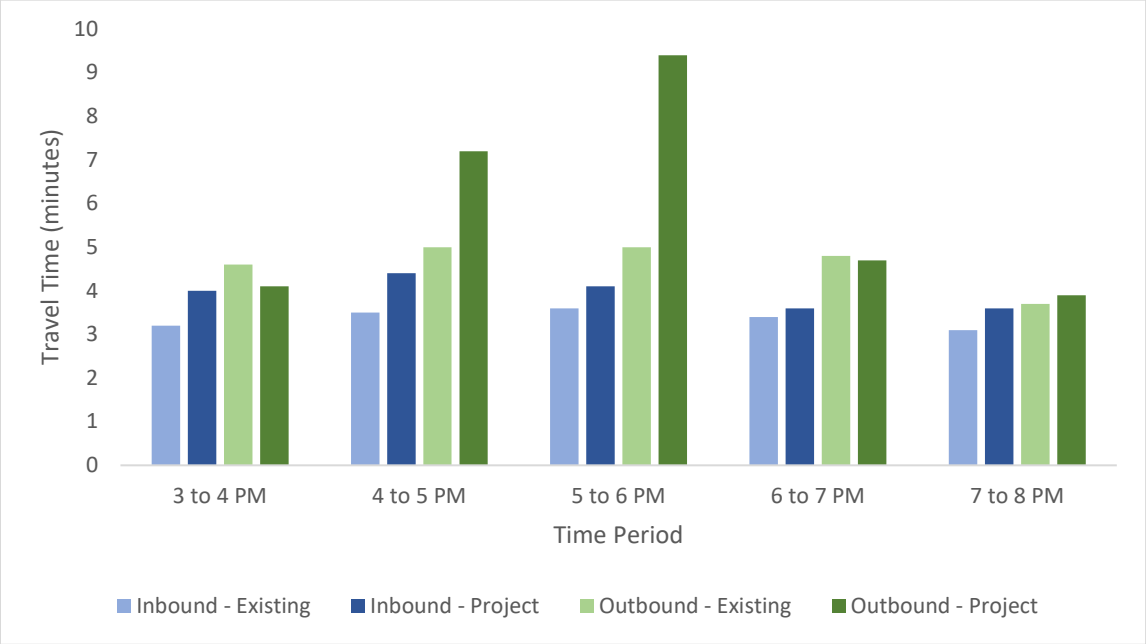


Figure 14: Travel Time Between Martin Luther King Jr Way North of 7th Street and Martin Luther King Jr Way Project Access

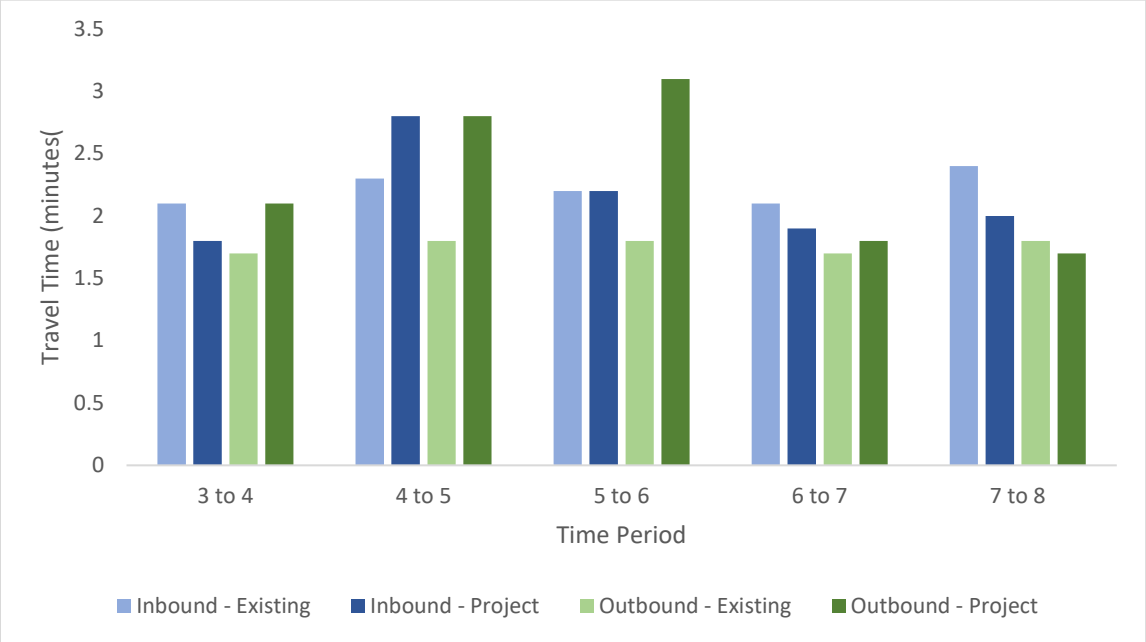
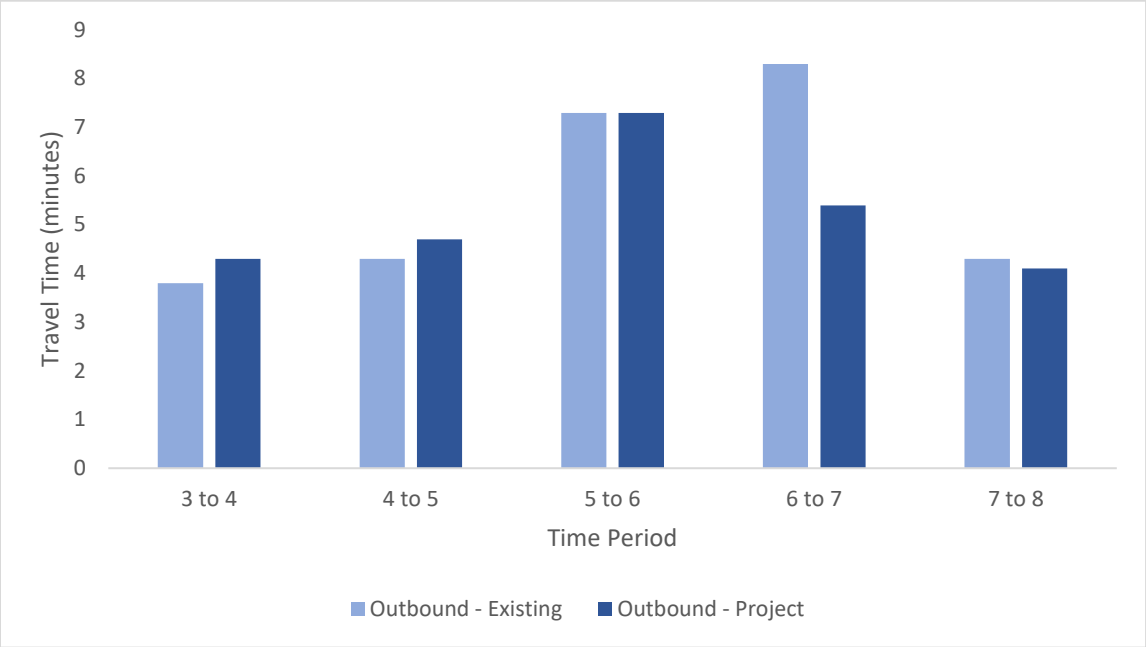


Figure 15: Travel Time Between Market Street Project Access and Alameda via 5th Street and the Webster Tube



3.7 Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Operations

This section summarizes the results for the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game. With the recommended improvements described previously in this memorandum, pedestrian demand is fully served within the study period, and pedestrian average LOS is C or better on corridors. Intersection vehicle operations for most study intersections is LOS D or better for the entire study period between 3 PM and 8 PM. Both inbound and outbound travel times after ballpark vehicle demand drops off are generally similar or lower than existing travel times. As expected before a large event, vehicle travel times increase along most corridors.

The remainder of this section presents the microsimulation results for the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Scenario.

3.7.1 Network MOEs

A summary of the network MOEs for the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game scenario is shown in **Table 14**. Detailed results are included in **Appendix J.** These results account for the recommended improvements described above. With buildout of the Non-Ballpark Development and

a weekday evening ballgame, the model serves all the pedestrian demand.[5] The model serves 97 percent or more of the vehicle demand in each hour. The system-wide delay increases by around 35 seconds per vehicle in the study area from 6 to 7 PM, with smaller increases in delay in other time periods.

Table 14: Network MOEs: Existing Conditions; Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game

MOE	3 to 4 PM	4 to 5 PM	5 to 6 PM	6 to 7 PM	7 to 8 PM
Existing Conditions					
Average Vehicle Delay (seconds)	52	58	81	81	44
Total Vehicle Hours of Delay (hours)	135	181	286	221	85
Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game					
Pedestrians Served	n/a	5,300	7,400	14,300	8,000
Pedestrian Demand	n/a	6,200	7,600	15,400	5,700
Percent Pedestrian Demand Served	n/a	85%	97%	93%	140%
Total Pedestrian Demand Served			**100%**		
Average Vehicle Delay (seconds)	67	79	96	86	71
Total Vehicle Hours of Delay (hours)	207	309	431	325	181
Vehicles Served	10,600	13,400	15,400	13,100	8,800
Vehicle Demand	10,700	13,800	15,600	13,100	8,700
Percent Vehicle Demand Served	99%	97%	99%	100%	101%
Total Vehicle Demand Served			**99%**		

Source: Fehr & Peers, 2020.

3.7.2 Pedestrian Spacing

Using the HCM procedure, average pedestrian spacing for sidewalks was calculated using Vissim. In addition, for sidewalks operating at LOS C or higher based on average pedestrian spacing, flow rate LOS was also calculated using HCM procedures. The additional calculations confirm that sidewalks will operate within acceptable levels with the additional pedestrian trips. **Table 15** summarizes the sidewalk operations for the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Scenario pedestrian peak hourly Interval. All the sidewalks operate at LOS C or better during the PM peak period.

[5] Pedestrian demand begins at 4 PM when attendees start to arrive for the ballgame. The calculation shows that some pedestrians do not reach their destination between 4 and 5 PM. This is because pedestrians that enter the system near 5 PM who arrive to their destination after 5 PM are considered to not be served within the 4 to 5 PM hour. Thus, pedestrians are fully served.

Based on HCM procedures, **Table 16** summarizes the corner operations for the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Scenario based on average pedestrian spacing and the worst pedestrian spacing. The LOS for worst pedestrian spacing represents a time during the afternoon peak period where pedestrians have the least space available on the corner. For the purpose of this analysis, corners operating at LOS C or better based on average pedestrian spacing combined LOS E or better based on the worst pedestrian spacing are considered operating at comfortable conditions. The following corners do not operate at comfortable conditions:

- The Adeline Street/3rd Street Southwest corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the long signal timings on Adeline Street. If feasible, provide curb extensions and crosswalk widening to improve the LOS F based on the worst pedestrian spacing.
- The Clay Street/Embarcadero Northwest corner operates at LOS C based on average pedestrian spacing and LOS F due to the limited area provided at this corner. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing and widen sidewalk by removing parking to 2nd Street.
- The Martin Luther King Jr Way /3rd Street Northeast corner operates at LOS C based on average pedestrian spacing and LOS F based on the worst pedestrian spacing due to the intersection signal timings and limited area provided at this corner. If feasible, provide curb extensions to improve the LOS F based on the worst pedestrian spacing.
- The Martin Luther King Jr Way /7th Street Northeast corner operates at LOS C based on average pedestrian spacing and LOS E based on the worst pedestrian spacing due to the long signal timings on eastbound 7th Street. If feasible, provide curb extensions to improve the LOS E based on the worst pedestrian spacing.

Appendix J contains the hourly average spacing LOS C or worse.

Table 15: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Pedestrian Peak Interval Sidewalk Operations Summary

Location	Flow (Peds/ Hour)	Speed (Ft/Sec)	Effective Width	Flow Rate (peds/min /ft)	LOS	Average Space (Ft^2/ Ped)	LOS
Broadway west side: 2nd to 3rd (middle)	1747	3.7	6.0	4.9	C	75	C
Broadway west side: 2nd to 3rd (north)	1754	3.7	6.0	4.9	C	76	C
Broadway west side: 2nd to 3rd (south)	1742	3.8	6.0	4.8	C	77	C
Broadway west side: 4th to 5th (middle)	2289	3.6	7.0	5.4	C	88	C
Broadway west side: 4th to 5th (north)	2290	3.4	7.0	5.5	C	79	C
Market east side: Embarcadero to 3rd (north)	1509	3.8	6.0	4.2	C	88	C

Table 15: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Pedestrian Peak Interval Sidewalk Operations Summary

Location	Flow (Peds/ Hour)	Speed (Ft/Sec)	Effective Width	Flow Rate (peds/min /ft)	LOS	Average Space (Ft^2/ Ped)	LOS
MLK east side: 2rd to 3th (middle)	1952	3.7	6.0	5.4	C	78	C
MLK east side: 2rd to 3th (north)	1954	3.5	6.0	5.4	C	62	C
MLK east side: to 3th (south)	1949	3.8	7.0	4.6	C	77	C
MLK east side: 3rd to 4th (south)	1183	3.8	4.0	4.9	C	73	C
MLK east side: 4th to 5th (south)	1082	3.6	5.5	3.3	C	65	C
MLK east side: 5th to 6th (middle)	1108	3.9	5.0	3.7	C	81	C
MLK east side: 5th to 6th (north)	1111	3.7	5.0	3.7	C	76	C
MLK east side: 5th to 6th (south)	1103	3.9	5.0	3.7	C	84	C
MLK east side: Embarcadero to 2nd (north)	2367	3.6	8.0	4.9	C	68	C
MLK east side: Embarcadero to 2nd (south)	1653	3.2	8.0	3.4	C	69	C

Source: Fehr & Peers, 2020.

Table 16: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Pedestrian Peak Interval Corner Operations Summary

Location	Flow (Ped/Hr)	Average Space (Ft^2/ Ped)	LOS	Max. Peds	Radius (Ft)	Max. Space (Ft^2/Ped)	LOS
Adeline Street/3rd Street Southwest corner	978	48	C	10	1.9	11	F
Clay Street/Embarcadero Northeast corner	1001	82	C	69	1.7	9	F
Martin Luther King Jr Way/2nd Street Northeast corner	2069	72	C	29	2.4	18	E
Martin Luther King Jr Way /3rd Street Northeast corner	1513	42	C	37	1.7	9	F
Martin Luther King Jr Way /5th Street Northeast corner	1193	65	C	50	2.2	15	E
Martin Luther King Jr Way/5th Street Northwest corner	687	87	C	26	2.3	16	E
Martin Luther King Jr Way /7th Street Northeast corner	1182	48	C	23	2.0	13	E
Martin Luther King Jr Way/7th Street Northwest corner	690	48	C	21	1.6	8	F
Martin Luther King Jr Way /8th Street Northeast corner	1172	42	C	26	2.1	14	E
Martin Luther King Jr Way/8th Street Northwest corner	711	53	C	17	2.1	13	E
Washington Street/2nd Street Northeast corner	2232	44	C	31	2.4	18	E
Washington Street /2nd Street Northwest corner	1562	82	C	24	2.2	16	E
Washington Street /3rd Street Northeast corner	986	75	C	25	2.6	21	E
Washington Street /3rd Street Northwest corner	1260	72	C	28	2.1	13	E

Table 16: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Pedestrian Peak Interval Corner Operations Summary

Location	Flow (Ped/Hr)	Average Space (Ft^2/ Ped)	LOS	Max. Peds	Radius (Ft)	Max. Space (Ft^2/Ped)	LOS
Washington Street /4th Street Northeast corner	880	88	C	33	2.7	23	E
Washington Street /4th Street Northwest corner	1097	55	C	26	2.3	16	E
Washington Street /5th Street Northwest corner	1064	73	C	27	2.7	22	E

Source: Fehr & Peers, 2020.

3.7.3 Pedestrian Travel Times

Pedestrian travel times for five pedestrian travel routes are shown in **Figure 16** through **Figure 20** below, and the routes are illustrated on a map in Appendix G**.** The modeled pedestrian travel times are compared to ideal travel times with unimpeded walking of 3 mph (4.4 feet per second) i.e., pedestrians are not delayed at any intersecting streets. The figures illustrate pedestrian delay due to intersections, such as signals, and from sidewalk crowding. The changes in travel time reflect the combination of the added pedestrian volumes as well as changes to the transportation network described in the previous section. Visualizations of pedestrian delay in the form of speed plots throughout the study network and pedestrian density plots are included in **Appendix J.** Travel time was measured along the following routes:

- From 3rd Street/Adeline Street to Athletics Way (Figure 16)
- From Market Street/7th Street to Athletics Way (Figure 17)
- From Martin Luther King Jr Way/7th Street to Athletics Way (Figure 18)
- From Washington Street/5th Street to Athletics Way (Figure 19)
- From Broadway/6th Street to Athletics Way (Figure 20)

While pedestrian travel times do increase with the added pedestrian volumes from the ballgame and the added traffic at the intersections, most of the increase over the ideal travel time is likely from existing delay at intersections rather than the added ballpark pedestrian arrivals.

Figure 16: Pedestrian Travel Time from 3rd Street/Adeline Street to Athletics Way

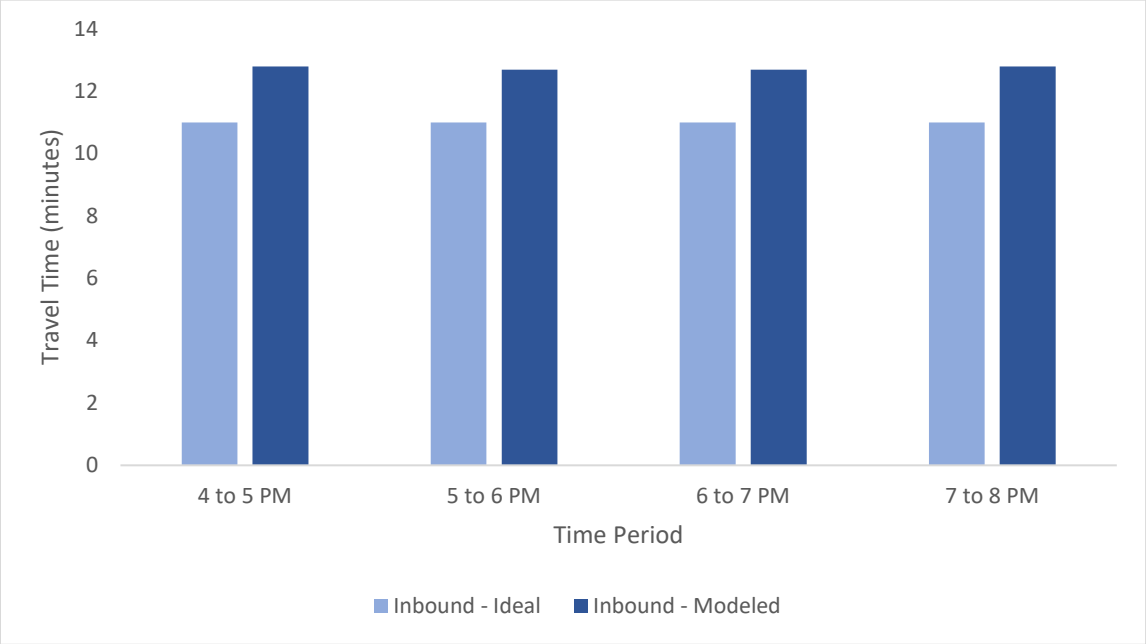


Figure 17: Pedestrian Travel Time from Market Street/7th Street to Athletics Way

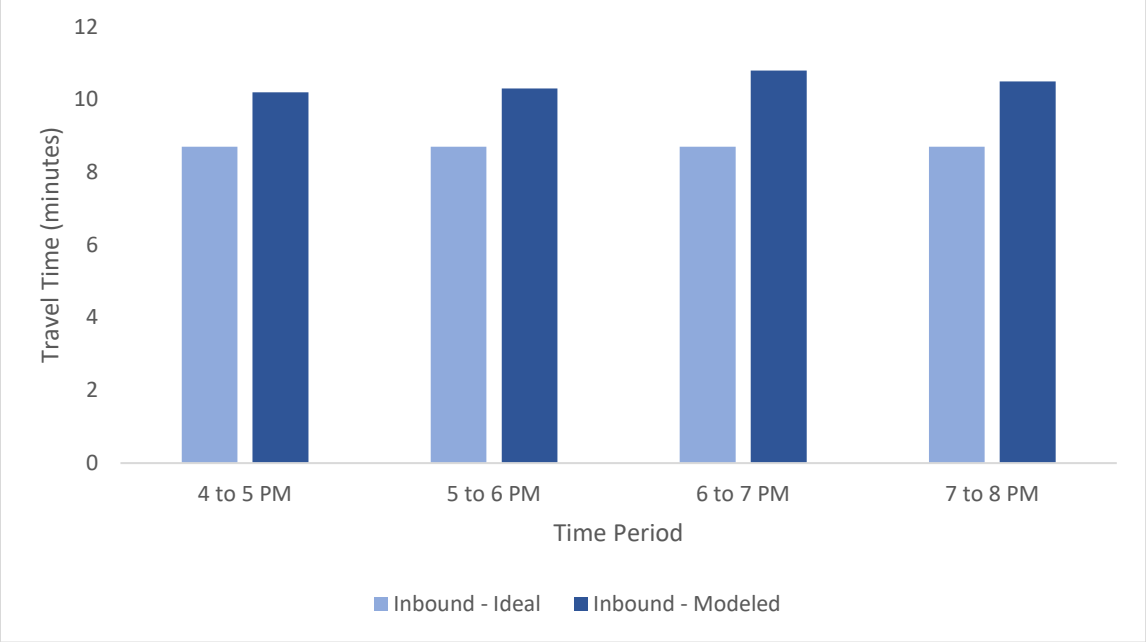


Figure 18: Pedestrian Travel Time from Martin Luther King Jr Way/8th Street to Athletics Way

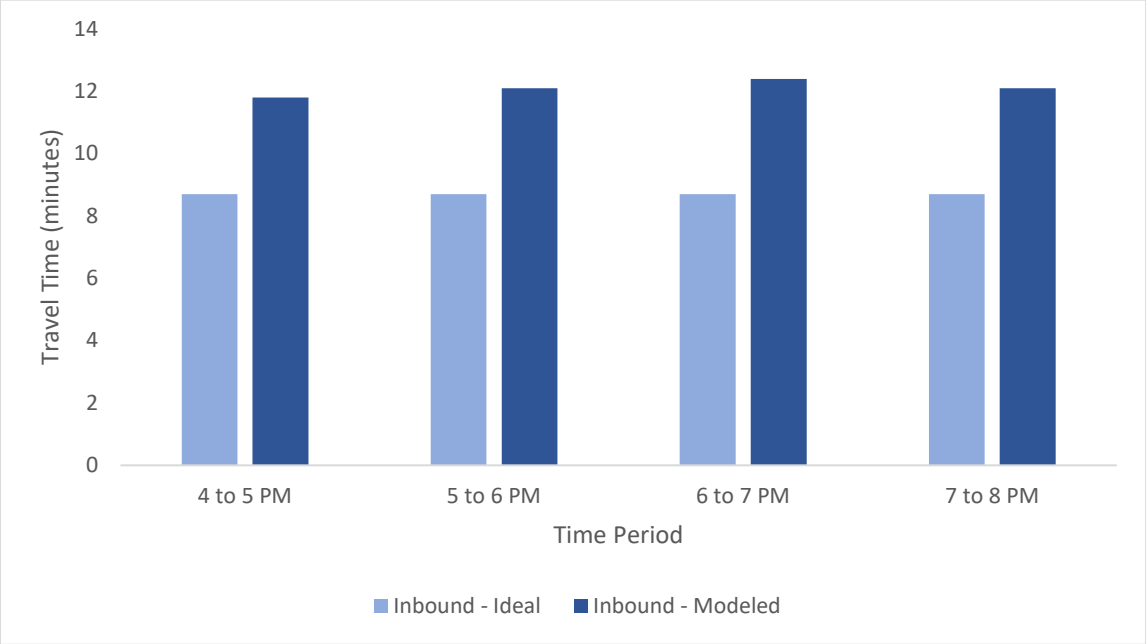


Figure 19: Pedestrian Travel Time from Washington Street/5th Street to Athletics Way

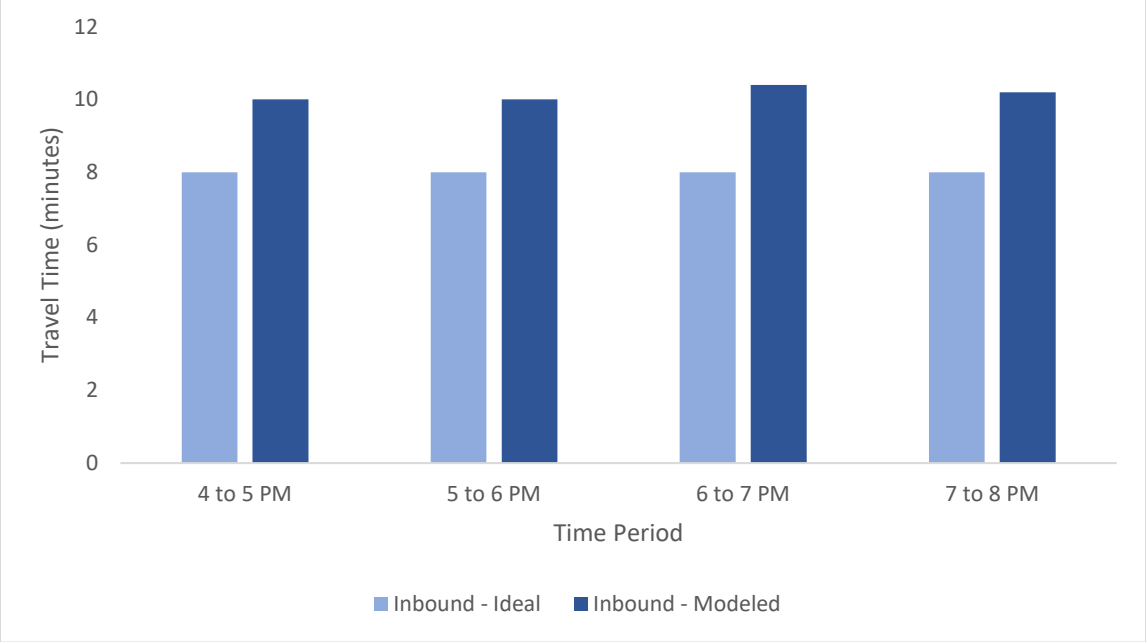
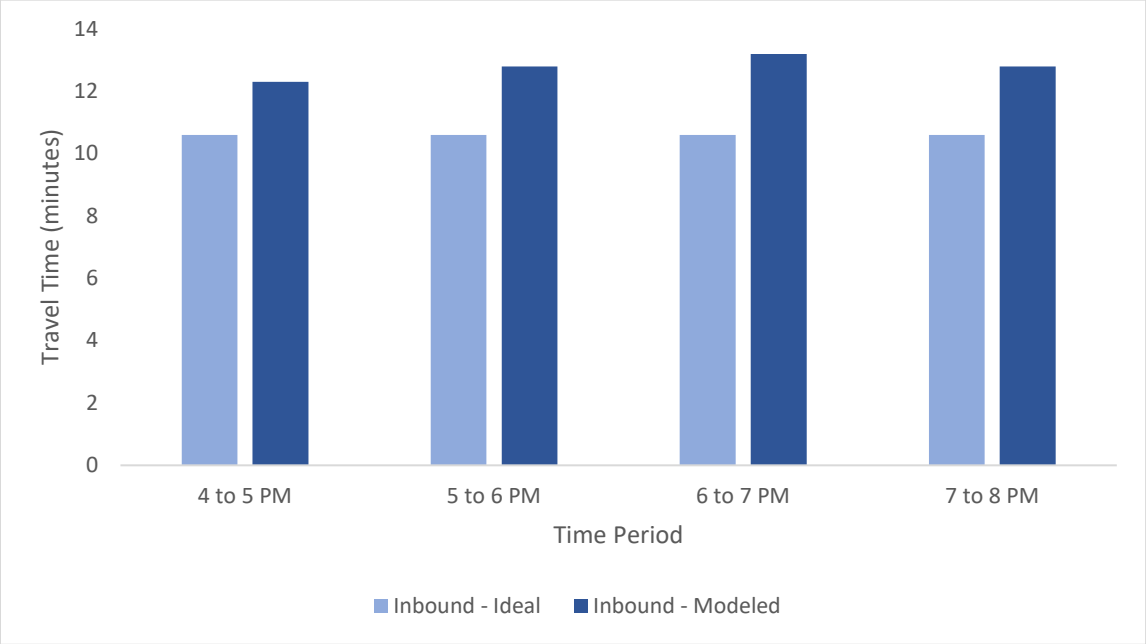


Figure 20: Pedestrian Travel Time from Broadway/6th Street to Athletics Way



3.7.4 Intersection LOS

The project trips from the Full Buildout Non-Ballpark Development and the Evening Game were added to the Existing Conditions peak hour traffic volumes to estimate the Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Conditions peak period traffic volumes. Based on the roadway configurations and volumes presented in **Appendix I** and **Appendix E**, LOS was calculated for the study intersections using the 2010 *Highway Capacity Manual* methodologies.

Table 17 summarizes the PM peak period operations hourly under Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Conditions. Detailed intersection LOS calculation worksheets are presented in **Appendix J.** These results account for the recommended improvements described above. All intersections operate at LOS D or better during the entire study period. The following intersections experience LOS E or worse during one or more study hours:

- The Market Street/4th Street intersection (F) operates at LOS C or better from 4 to 6 PM, and the worst movement for those time periods operates at LOS E.
- The Washington Street/5th Street intersection (DD) operates at LOS E from 5 to 6 PM

Table 17: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Intersection Vehicle LOS

Letter	Intersection	Control	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
A	Union St/5th St	Signal	17	B	19	B	22	C	19	B	17	B
B	Adeline St/3rd St	Signal	18	B	25	C	22	C	19	B	17	B
C	Adeline St/5th St	Signal	20	C	26	C	23	C	17	B	15	B
D	Market St/Embarcadero	Signal	6	A	12	B	10	B	12	B	19	B
E	Market St/3rd St	Signal	13	B	24	C	25	C	25	C	23	C
F	Market St/4th St	Side-street Stop	3 (17)	A (C)	**10 (38)**	**A (E)**	**20 (48)**	**C (E)**	8 (24)	A (C)	6 (12)	A (B)
G	Market St/5th St	Signal	25	C	30	C	27	C	24	C	24	C
H	Market St/6th St	Signal	17	B	18	B	19	B	25	C	19	B
I	Market St/7th St	Signal	23	C	24	C	27	C	32	C	23	C
J	Brush St/5th St	Signal	17	B	16	B	19	B	16	B	17	B
K	Brush St/6th St	Signal	5	A	7	A	5	A	5	A	5	A
L	Brush St/7th St	Signal	14	B	14	B	15	B	13	B	14	B
M	Brush St/11th St	Signal	7	A	10	A	11	B	9	A	7	A
N	Brush St-I-980 Westbound Off-ramp/12th St	Signal	4	A	4	A	5	A	4	A	3	A
O	Castro St/5th St	Signal	11	B	15	B	21	C	14	B	10	A
P	Castro St/7th St	Signal	20	B	19	B	20	C	20	C	21	C
Q	Castro St/11th St	Signal	16	B	20	C	23	C	25	C	20	B
R	Castro St/12th St	Signal	15	B	15	B	18	B	13	B	13	B
S	Martin Luther King Jr Way/Embarcadero	Signal	4	A	9	A	12	B	9	A	14	B
T	Martin Luther King Jr Way/2nd St	Signal	6	A	5	A	9	A	7	A	6	A
U	Martin Luther King Jr Way/3rd St	Signal	9	A	9	A	20	C	12	B	10	B

Table 17: Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Intersection Vehicle LOS

Letter	Intersection	Control	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
V	Martin Luther King Jr Way/4th St	Signal	9	A	15	B	24	C	18	B	12	B
W	Martin Luther King Jr Way/5th St	Signal	22	C	20	B	26	C	21	C	20	B
X	Martin Luther King Jr Way/6th St	Signal	14	B	17	B	18	B	15	B	14	B
Y	Martin Luther King Jr Way/7th St	Signal	16	B	14	B	14	B	13	B	15	B
Z	Martin Luther King Jr Way/8th St	Signal	18	B	17	B	17	B	15	B	15	B
AA	Jefferson St/4th St	Signal	7	A	8	A	6	A	10	B	8	A
BB	Clay St/4th St	Signal	4	A	7	A	10	A	10	B	7	A
CC	Washington St/4th St	Signal	6	A	12	B	19	B	15	B	11	B
DD	Washington St/5th St	Signal	22	C	26	C	**71**	**E**	44	D	18	B
EE	Broadway/5th St	Signal	36	D	33	C	49	D	37	D	30	C
FF	Broadway/6th St	Signal	18	B	18	B	25	C	23	C	13	B
GG	Market St/Martin Luther King Jr Way (new intersection)	Signal	12	B	12	B	12	B	12	B	10	B

Notes:
1. Traffic signal installed with Full Buildout Non-Ballpark Development
2. Traffic signal timings optimized along Market Street, Martin Luther King Jr. Way, 5th Street, 6th Street, and 7th Street

Source: Fehr & Peers, 2020.

3.7.5 Motor Vehicle Travel Times

Vehicle travel times for five corridors are shown in **Figure 21** through **Figure 25** below and the routes are illustrated on a map in **Appendix G**. Visualizations of vehicle delay in the form of speed plots throughout the study network are also shown in **Appendix J**. The changes in travel time reflect the combination of the added vehicular and pedestrian traffic as well as changes to the transportation network described in Section 2. Travel time was measured along the following routes:

- Between I-880 Ramp Termini at Union Street to the Market Street Project Access (Figure 21)
- Between Market Street north of 7th Street and the Market Street Project Access (Figure 22)
- Between I-980 Ramp Termini at 12th Street to the Market Street Project Access (Figure 23)
- Between Martin Luther King Jr Way north of 7th Street and the Martin Luther King Jr Way Project Access (Figure 24)
- Between Market Street Project Access and Alameda via 5th Street and the Webster Tube (Figure 25)

As expected with any large event, inbound travel times before a ballgame increase along most corridors. Before ballgame vehicle demand picks up around 4 PM, both inbound and outbound travel times are generally similar or lower than existing travel times. Most travel times are expected to increase in the 5 to 45 percent range between the site and the freeway ramps before an evening ballgame. Martin Luther King Jr Way is expected to increase by 30 to 60 percent in travel time with the combination of the proposed road diet and the increased vehicle demand on the corridor.

Figure 21: Travel Time Between I-880 Ramp Termini at Union Street and Market Street Project Access

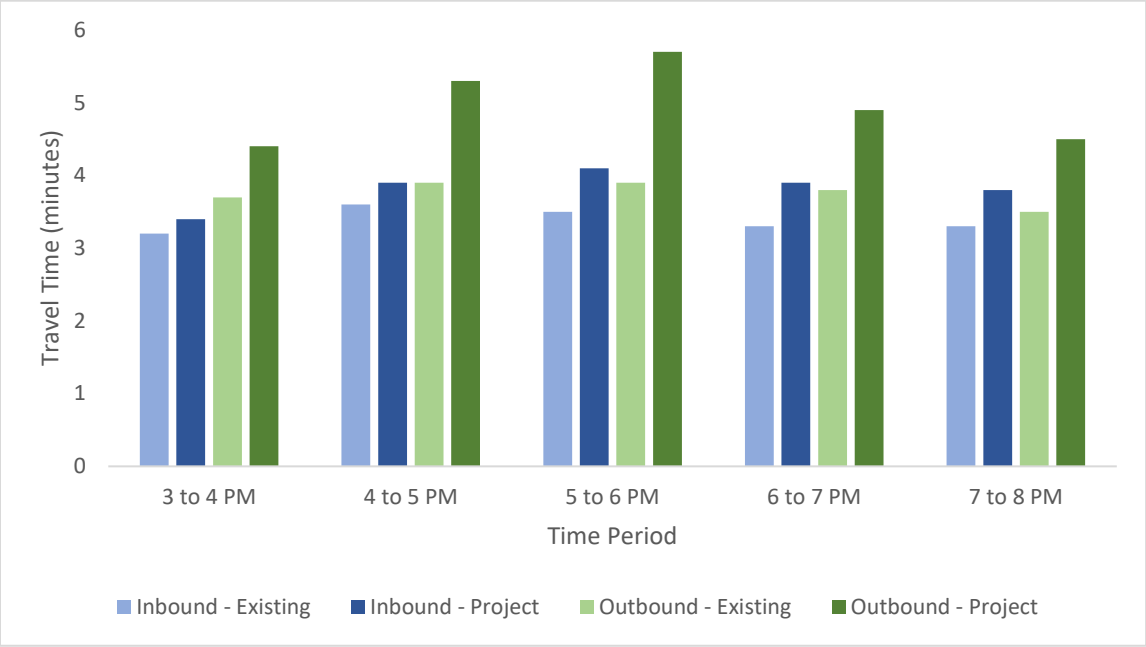


Figure 22: Travel Time Between Market Street North of 7th Street and Market Street Project Access

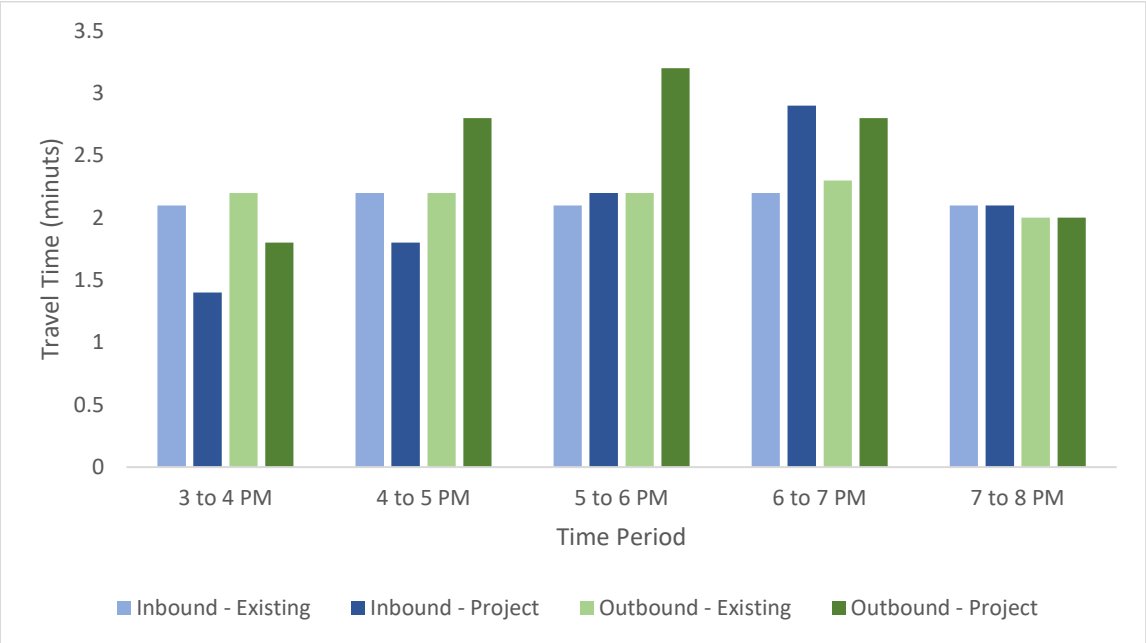


Figure 23: Travel Time Between I-980 Ramp Termini at 12th Street to Market Street Project Access

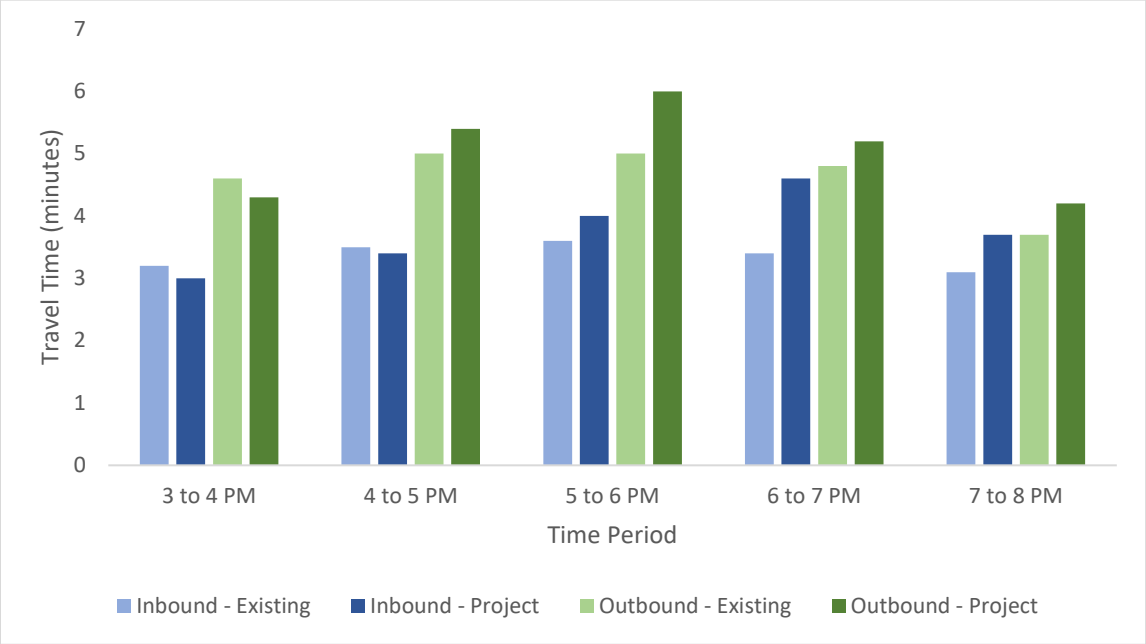


Figure 24: Travel Time Between Martin Luther King Jr Way North of 7th Street and Martin Luther King Jr Way Project Access

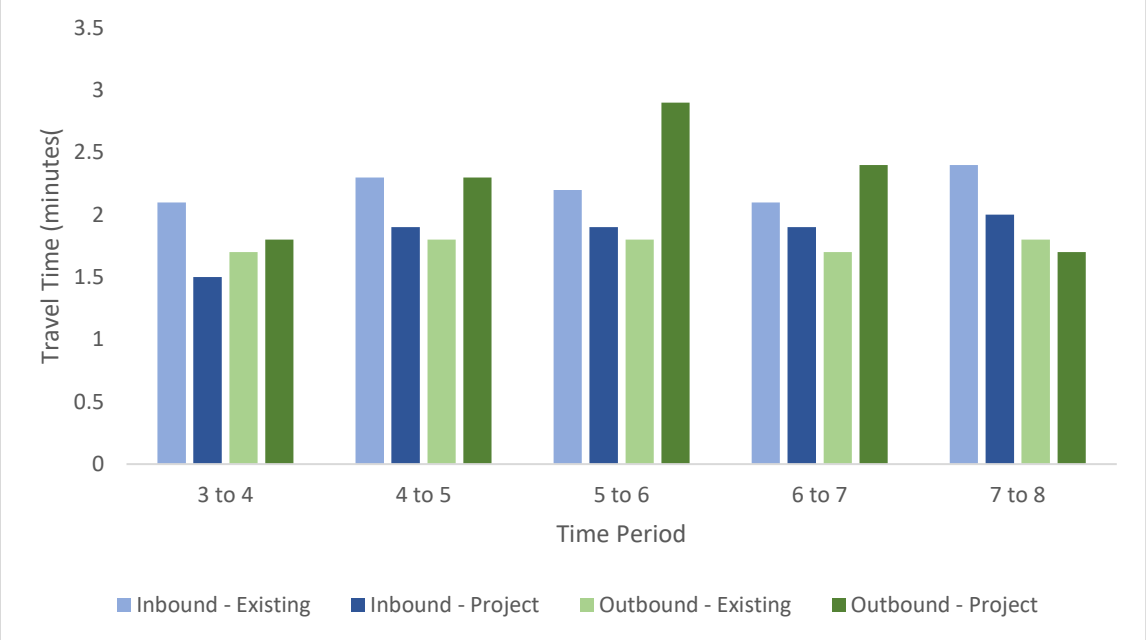
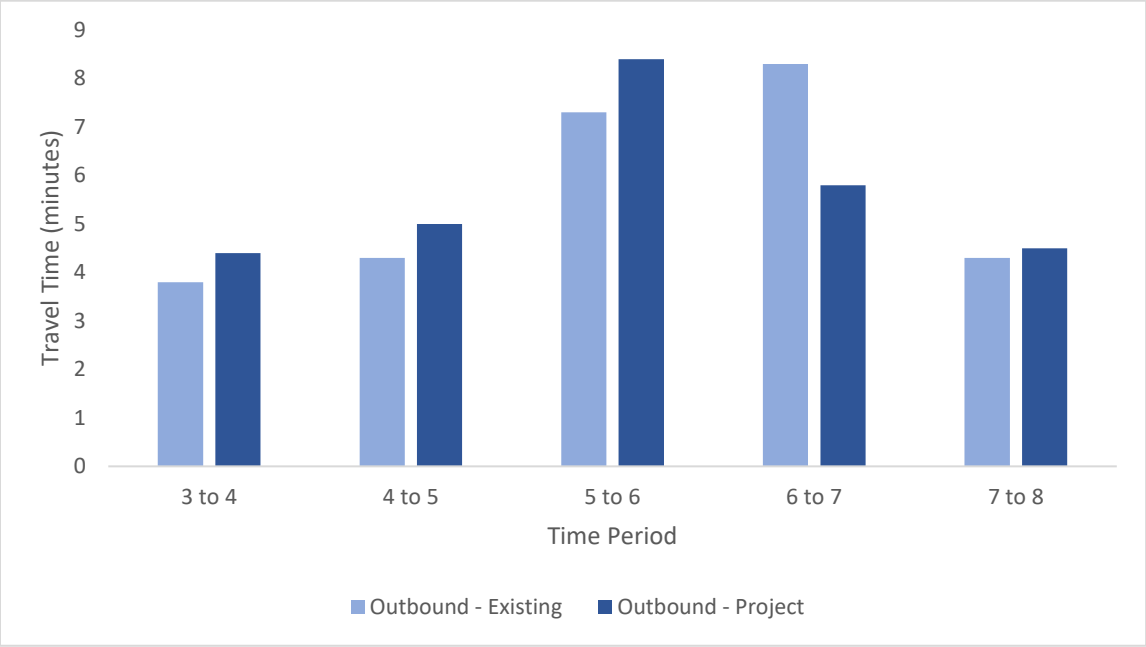


Figure 25: Travel Time Between Market Street Project Access and Alameda via 5th Street and the Webster Tube



4. Freeway Merges

This section summarizes the freeway merges results for the following scenarios:

- Existing Conditions
- Existing Conditions Plus Full Buildout Non-Ballpark Development Plus Midday Game
- Existing Conditions Plus Full Buildout Non-Ballpark Development Plus Evening Games

The following merge segments are analyzed on this chapter:

- I-980 Eastbound on-ramp from 12th Street
- I-980 Westbound on-ramp from 11th Street
- I-880 Northbound from Union Street to 7th Street
- I-880 Southbound on-ramp from Adeline Street
- I-880 Southbound on-ramp from Broadway

4.1 Existing Conditions Operations

Freeway and ramp data counts were obtained from the Revised Draft Exiting Conditions Traffic Report Oakland-Alameda Access Project EA#04-0G360 published in January 2018. **Appendix K** presents the freeway lane configuration and volumes summary.

Based on the roadway configurations and volumes presented on **Appendix K**, the LOS[6] was calculated at the study freeway merge segments using the 2010 *Highway Capacity Manual* (HCM) methodologies. **Appendix L** provides the detailed LOS calculation sheets. Freeway LOS results are shown in **Table 18**. With two exceptions, all freeway merge sections currently operate at LOS D or better during the entire study period. The I-880 Southbound on-ramp from Adeline Street and the I-880 Southbound on-ramp from Broadway merges are in queue for most the study period due to a bottleneck outside the study area on southbound I-880 and so these two merge areas operate at LOS F.

[6] Freeway facility operations are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on speed, travel time, delay, and freedom to maneuver, with six levels, ranging from LOS A to LOS F. LOS E represents "at-capacity" operations. When volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F. The service level for a freeway section is based on vehicle density expressed as passenger cars per mile per lane.

Table 18: Freeway Merge LOS

Nº	Segments	3 to 4 PM		4 to 5 PM		5 to 6 PM		6 to 7 PM		7 to 8 PM	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS	Density	LOS
	Existing										
1	I-980 EB on-ramp at 12th Street	25	C	26	C	26	C	22	C	22	C
2	I-980 WB on-ramp at 11th Street	17	B	19	B	19	B	16	B	16	B
3	I-880 NB Union Street to 7th Street	17	B	16	B	15	B	13	B	13	B
4	I-880 SB on-ramp at Adeline Street	queue	F	queue	F	queue	F	queue	F	17	B
5	I-880 SB on-ramp at Broadway	queue	F	queue	F	queue	F	queue	F	queue	F
	Midday										
1	I-980 EB on-ramp at 12th Street	31	D	30	D	27	D	23	C	23	C
2	I-980 WB on-ramp at 11th Street	18	B	19	B	18	B	16	B	16	B
3	I-880 NB Union Street to 7th Street	18	C	18	B	16	B	13	B	13	B
4	I-880 SB on-ramp at Adeline Street	queue	F	queue	F	queued	F	queue	F	17	B
5	I-880 SB on-ramp at Broadway	queue	F	queue	F	queued	F	queue	F	queue	F
	Evening										
1	I-980 EB on-ramp at 12th Street	27	D	29	D	27	D	23	C	23	C
2	I-980 WB on-ramp at 11th Street	17	B	19	B	19	B	16	B	16	B
3	I-880 NB Union Street to 7th Street	18	B	17	B	16	B	13	B	13	B
4	I-880 SB on-ramp at Adeline Street	queue	F	queue	F	queued	F	queue	F	17	B
5	I-880 SB on-ramp at Broadway	queue	F	queue	F	queued	F	queue	F	queue	F

Source: Fehr & Peers, 2020.

4.2 Existing Plus Full Buildout Plus Midday Game Operations

Based on the roadway configurations and volumes presented on **Appendix K**, the LOS[7] was calculated at the study freeway merge segments using the 2010 *Highway Capacity Manual* (HCM) methodologies. **Appendix L** provides the detailed LOS calculation sheets. Freeway LOS results are shown in **Table 18**. With

[7] Freeway facility operations are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on speed, travel time, delay, and freedom to maneuver, with six levels, ranging from LOS A to LOS F. LOS E represents "at-capacity" operations. When volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F. The service level for a freeway section is based on vehicle density expressed as passenger cars per mile per lane.

two exceptions, all freeway merges would remain operating at LOS D or better during the entire study period under the Existing Plus Full Buildout Plus Midday Game scenario. The I-880 Southbound on-ramp from Adeline Street and the I-880 Southbound on-ramp from Broadway merges are in queue for most the study period due to a bottleneck outside the study area and would remain operating at LOS F under this scenario. However, the long on-ramps at these merge locations have enough queue storage capacity to prevent queueing from spilling to the local roads.

4.3 Existing Plus Full Buildout Plus Evening Game Operations

Based on the roadway configurations and volumes presented on **Appendix K**, the LOS[8] was calculated at the study freeway merge segments using the 2010 *Highway Capacity Manual* (HCM) methodologies. **Appendix L** provides the detailed LOS calculation sheets. Freeway LOS results are shown in **Table 18**. With two exceptions, all freeway merges would remain operating at LOS D or better during the entire study period under the Existing Plus Full Buildout Plus Evening Game scenario. The I-880 Southbound on-ramp from Adeline Street and the I-880 Southbound on-ramp from Broadway merges are in queue for most the study period due to a bottleneck outside the study area and would remain operating at LOS F under this scenario. However, the long on-ramps at these merge locations have enough queue storage capacity to prevent queueing from spilling to the local roads.

[8] Freeway facility operations are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on speed, travel time, delay, and freedom to maneuver, with six levels, ranging from LOS A to LOS F. LOS E represents "at-capacity" operations. When volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F. The service level for a freeway section is based on vehicle density expressed as passenger cars per mile per lane.

Attachments

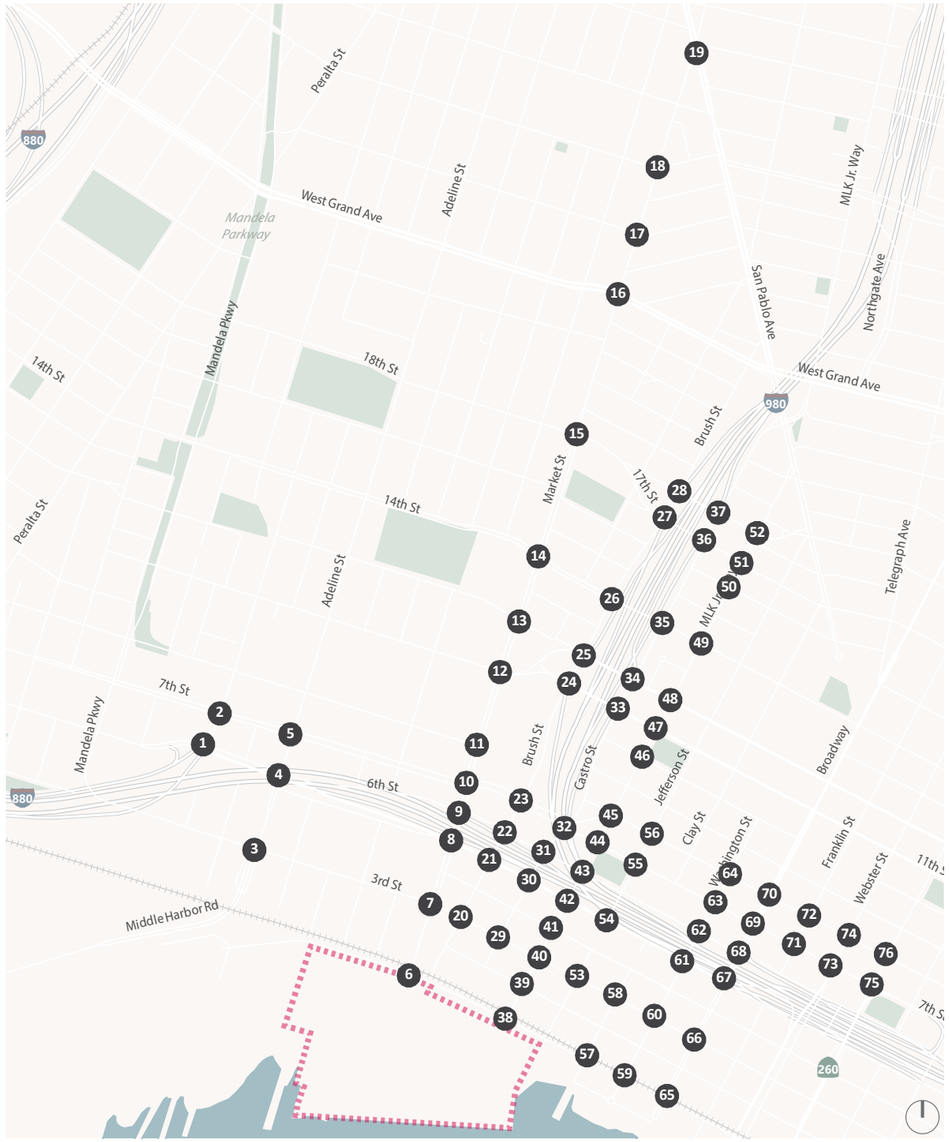
Appendix A Existing and Existing Plus Non-Ballpark Lane Configurations and Traffic Control.
Appendix B Existing and Existing Plus Non-Ballpark Peak Hour Intersection Volumes.
Appendix C Peak Hour Intersection LOS Calculation Worksheets
Appendix D Embarcadero West Train Times and Gate Downtimes.
Appendix E Peak Period Intersection Volumes
Appendix F Existing Conditions Results
Appendix G Motor Vehicle and Pedestrian Travel Time Routes
Appendix H Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Results
Appendix I Existing Plus Full Buildout Non-Ballpark Development Plus Ballgame Lane Configurations and Traffic Controls
Appendix J Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Results
Appendix K Freeway Lane Configuration & Volumes Summary
Appendix L Freeway Detailed LOS Calculation Sheets

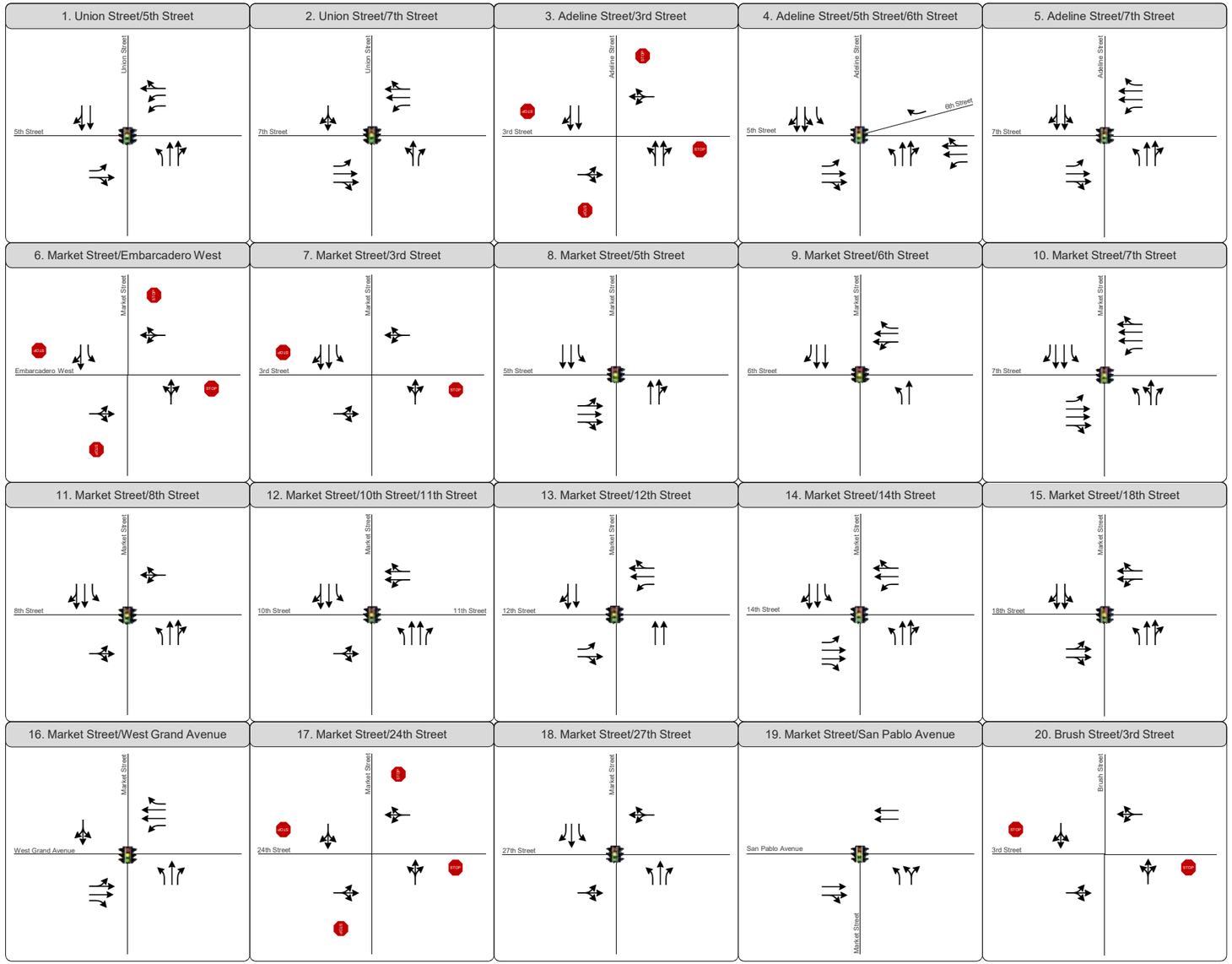
FEHR PEERS

Appendix A:

Existing and Existing Plus Non-Ballpark Lane Configurations and Traffic Control

2201 Broadway | Suite 602 | Oakland, CA 94612 | (510) 834-3200 | Fax (510) 253-0059
www.fehrandpeers.com



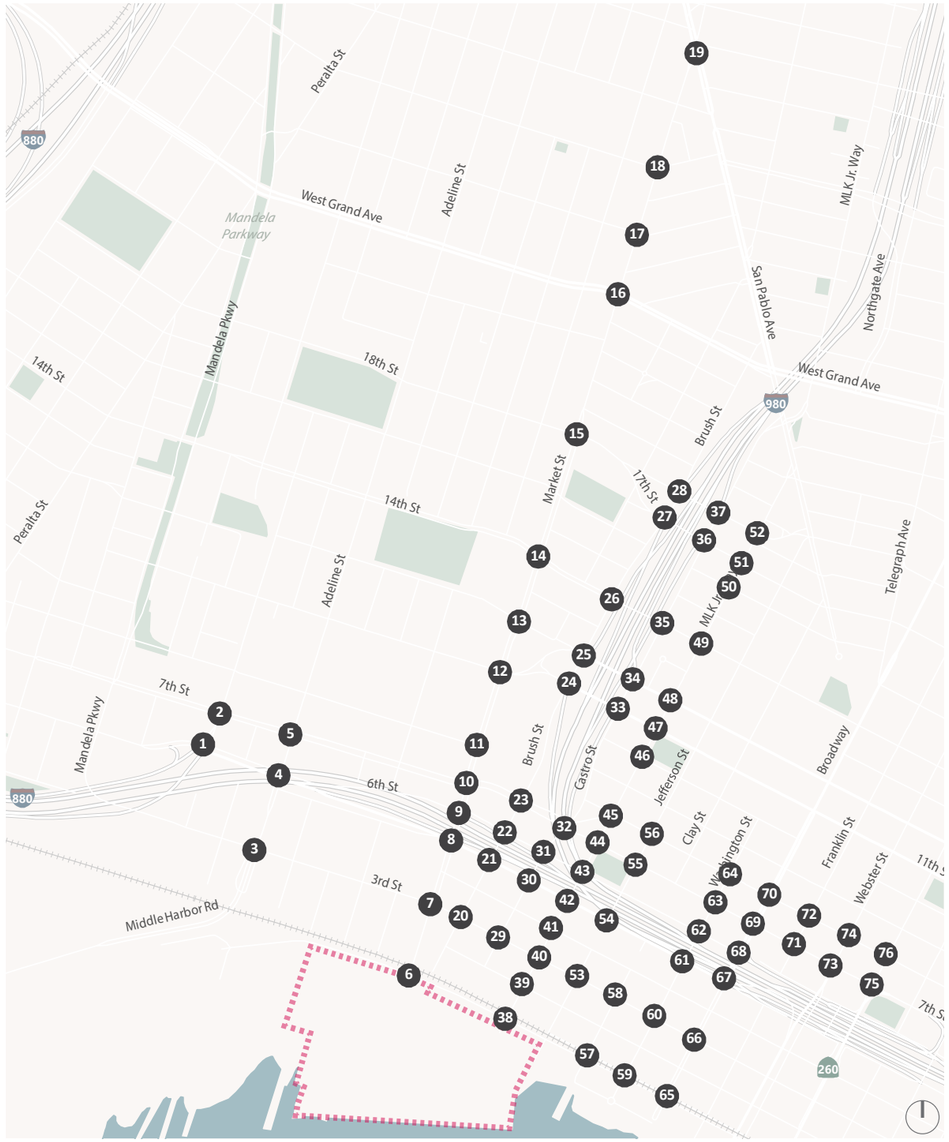


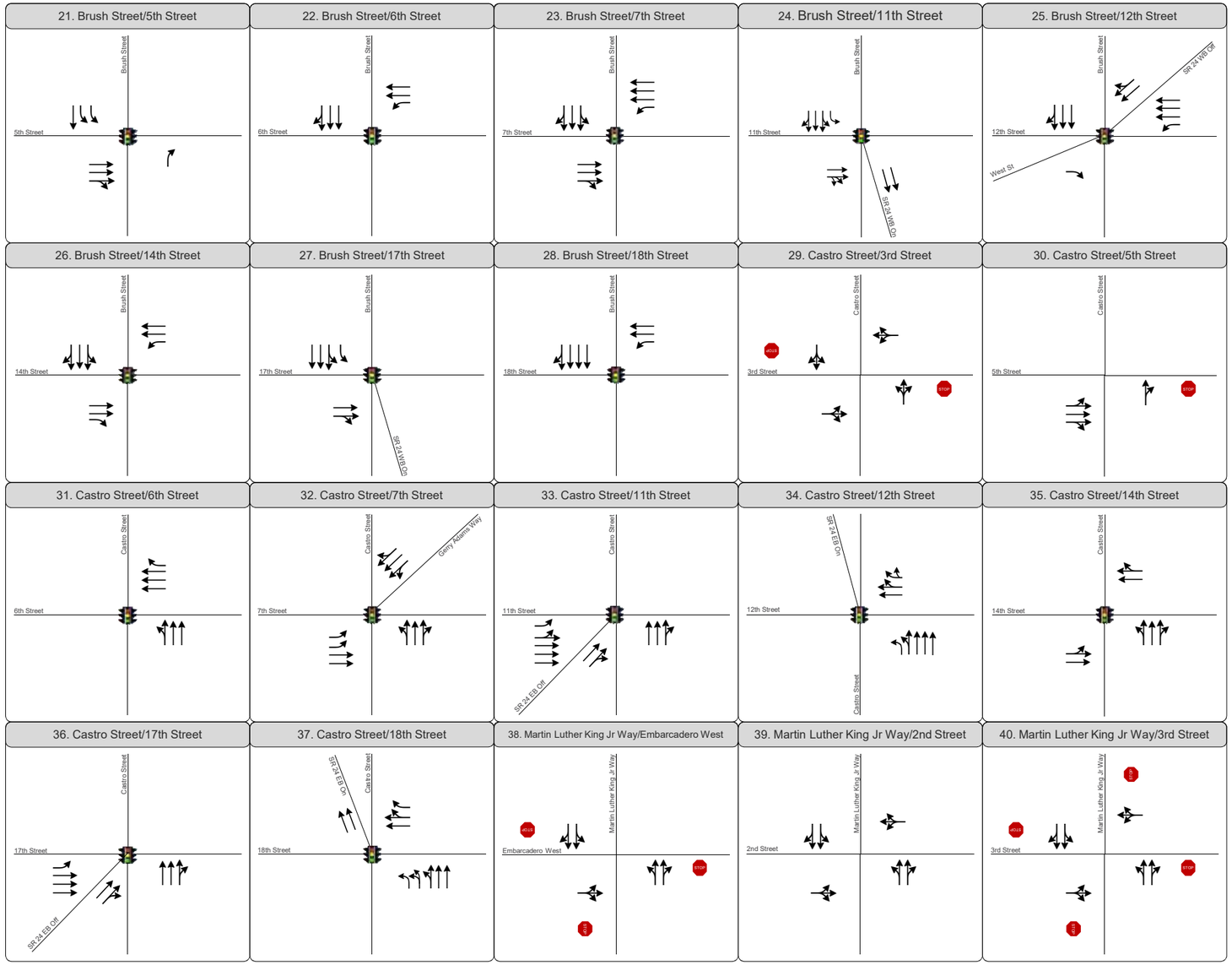
Lane Geometry Signalized Intersection Stop Sign

Project Boundary # Study Intersection

Figure 1A

Existing Conditions
Intersection Lane Configurations and Traffic Controls



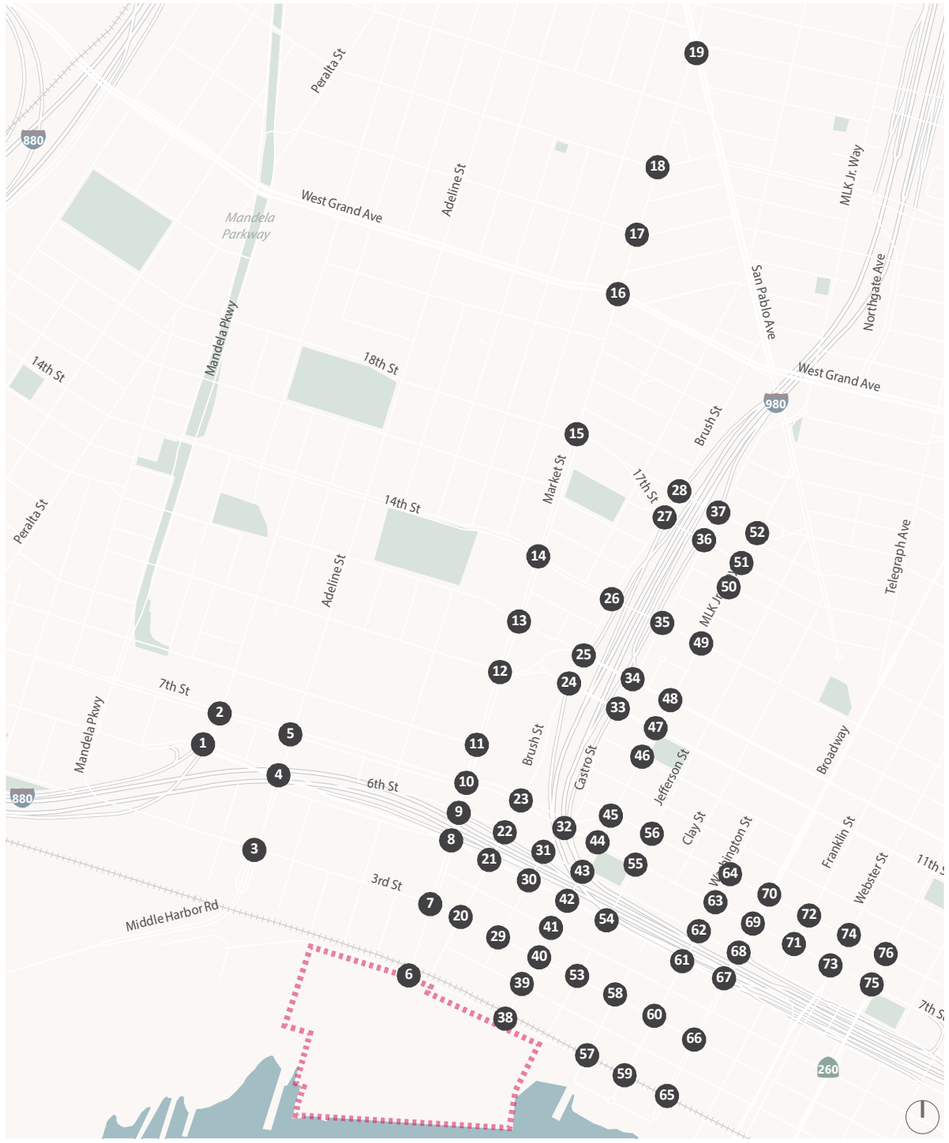


Lane Geometry Signalized Intersection Stop Sign

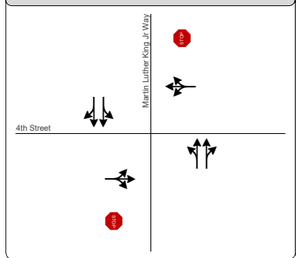
Project Boundary # Study Intersection

Figure 1B

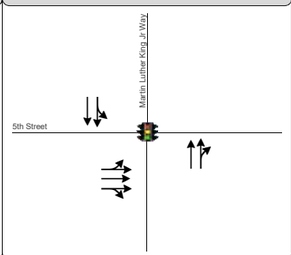
Existing Conditions
Intersection Lane Configurations and Traffic Controls



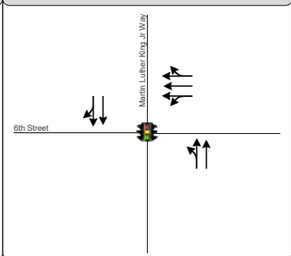
41. Martin Luther King Jr Way/4th Street



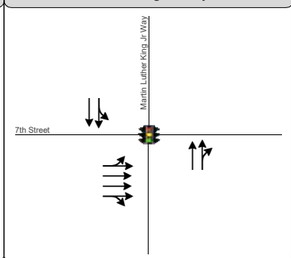
42. Martin Luther King Jr Way/5th Street



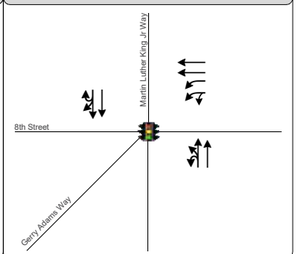
43. Martin Luther King Jr Way/6th Street



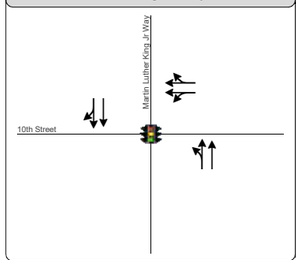
44. Martin Luther King Jr Way/7th Street



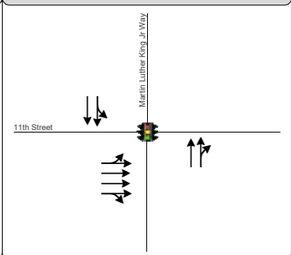
45. Martin Luther King Jr Way/8th Street



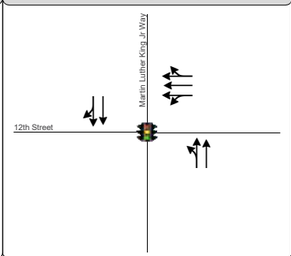
46. Martin Luther King Jr Way/10th Street



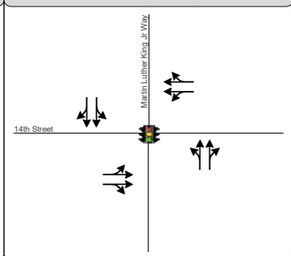
47. Martin Luther King Jr Way/11th Street



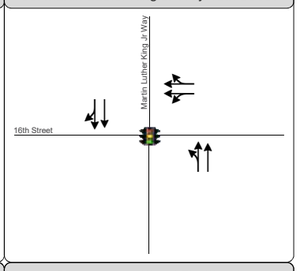
48. Martin Luther King Jr Way/12th Street



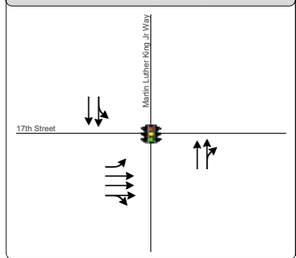
49. Martin Luther King Jr Way/14th Street



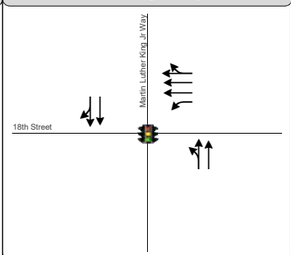
50. Martin Luther King Jr Way/16th Street



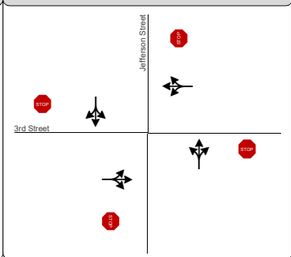
51. Martin Luther King Jr Way/17th Street



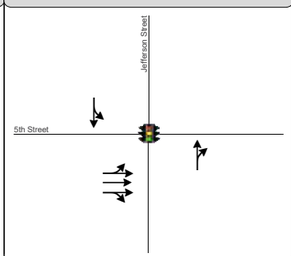
52. Martin Luther King Jr Way/18th Street



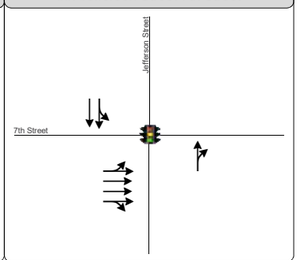
53. Jefferson Street/3rd Street



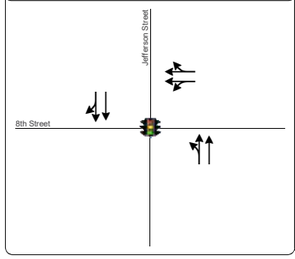
54. Jefferson Street/5th Street



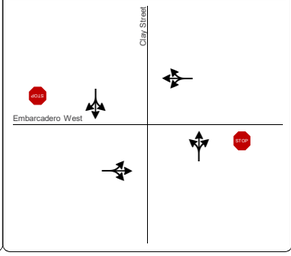
55. Jefferson Street/7th Street



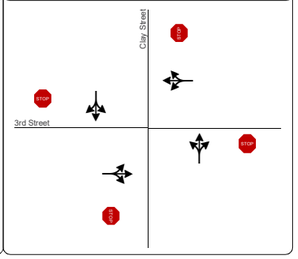
56. Jefferson Street/8th Street



57. Clay Street/Embarcadero West



58. Clay Street/3rd Street

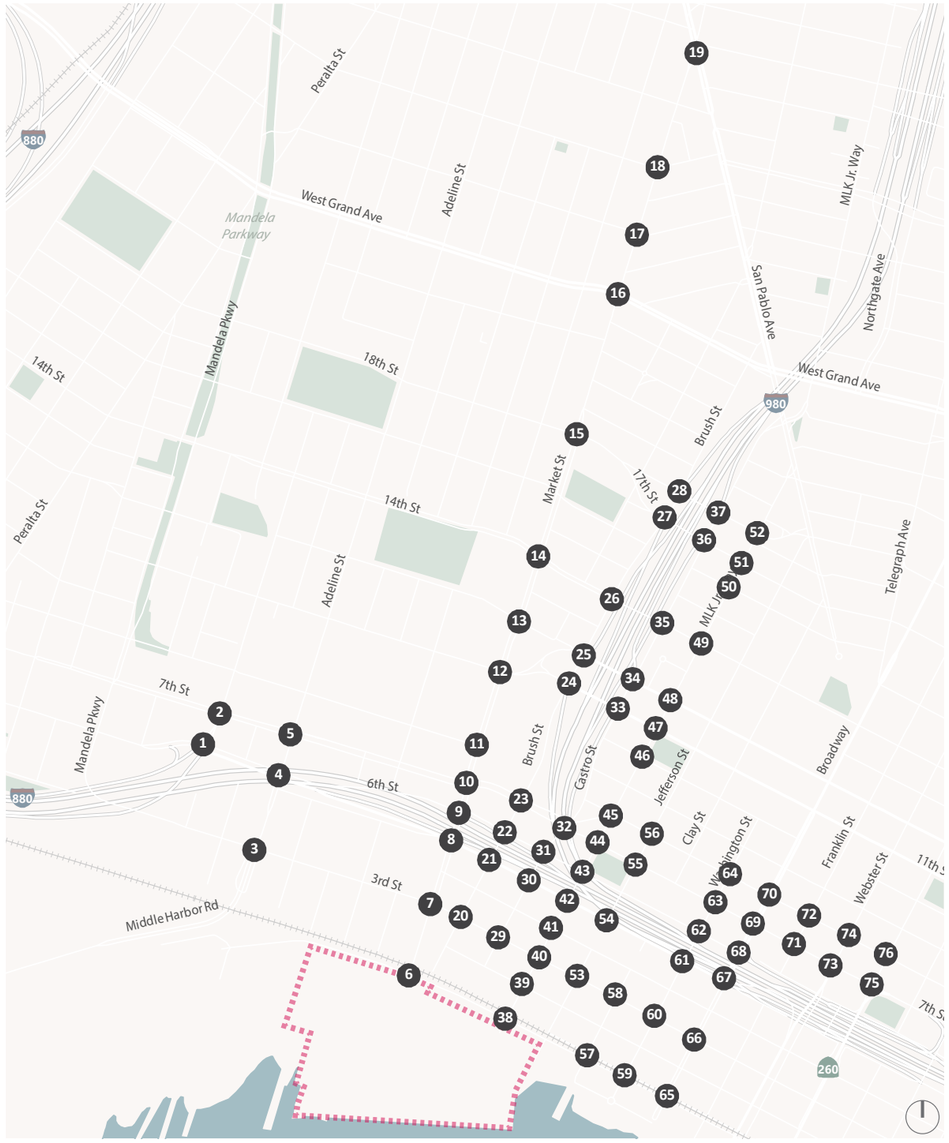


Lane Geometry | Signalized Intersection | Stop Sign

Project Boundary | # Study Intersection

Figure 1C

Existing Conditions
Intersection Lane Configurations and Traffic Controls



Lane Geometry | Signalized Intersection | Stop Sign

Project Boundary | # Study Intersection

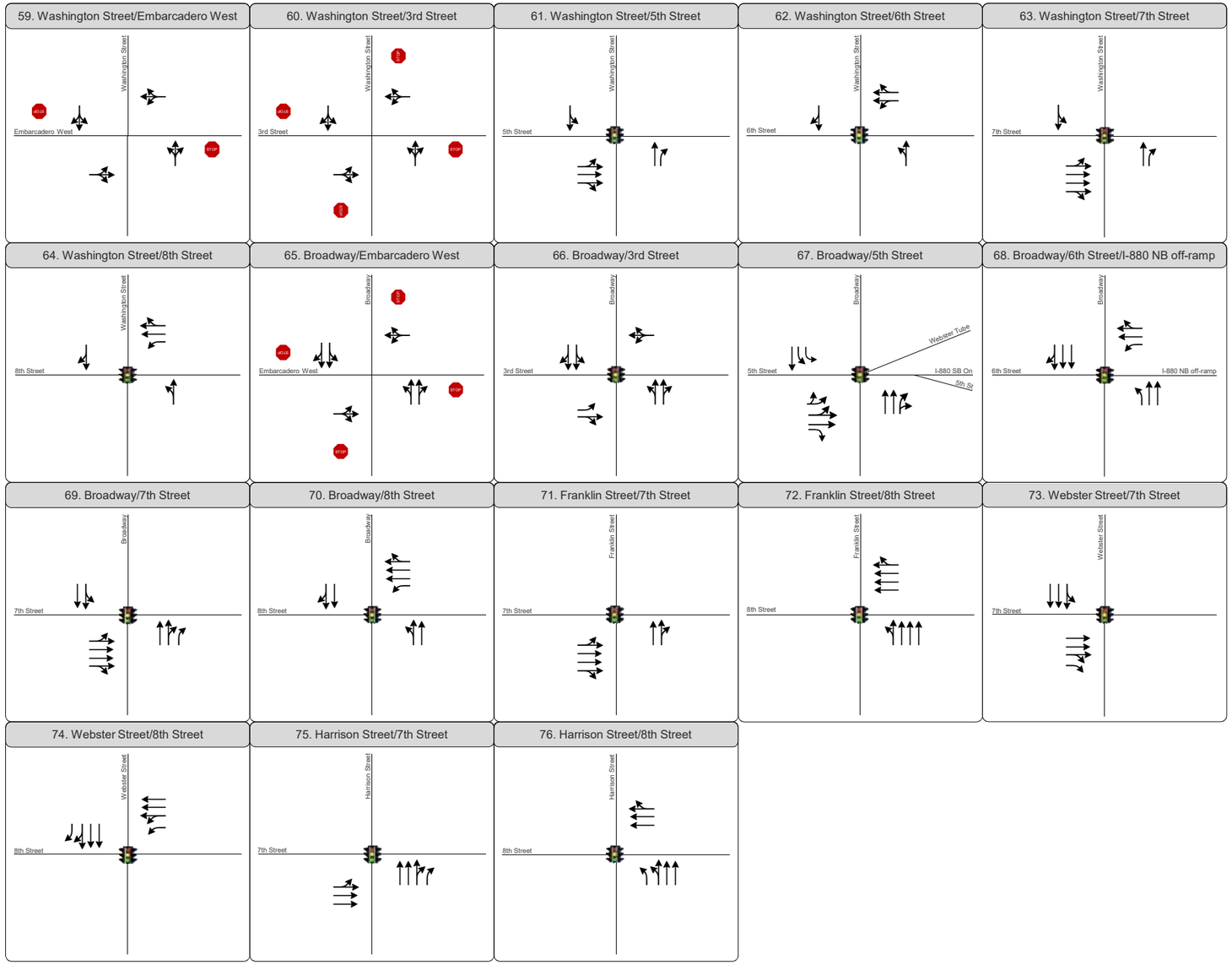
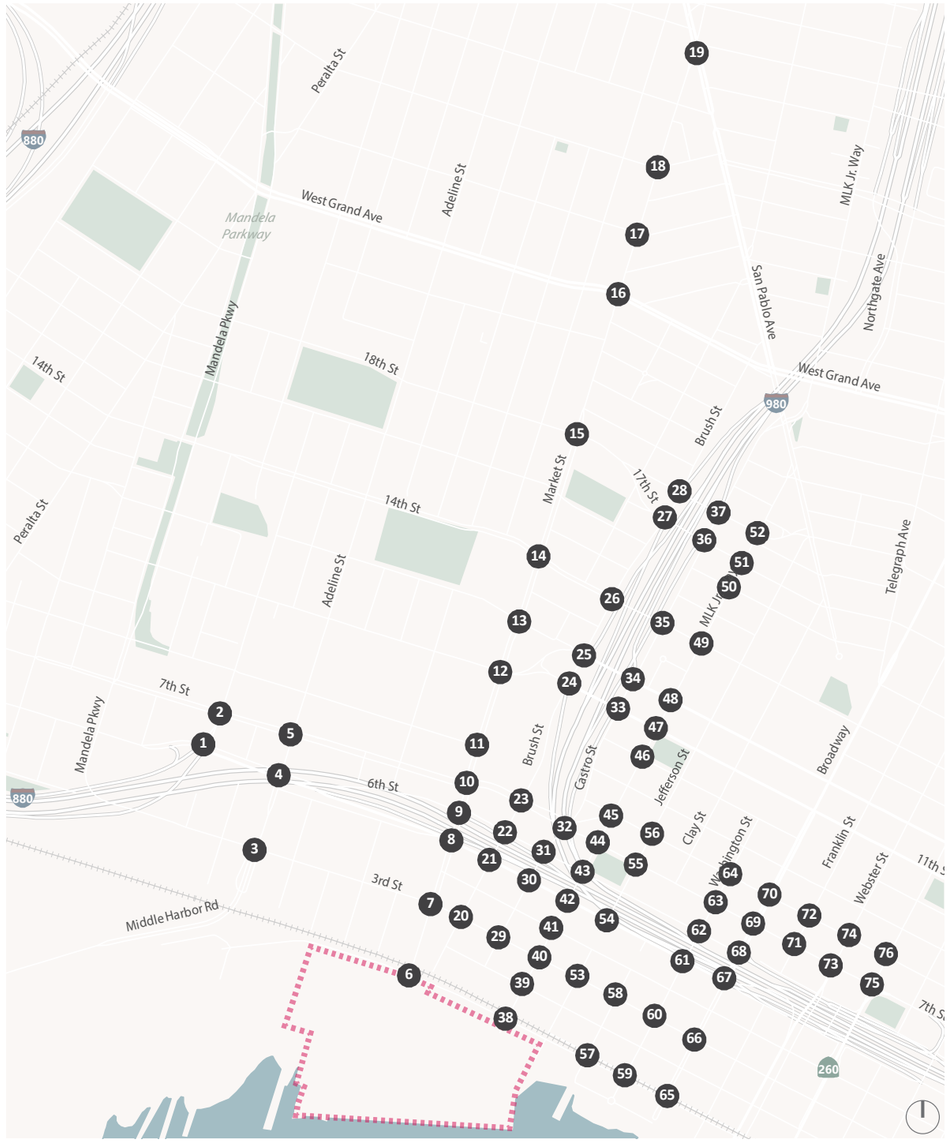
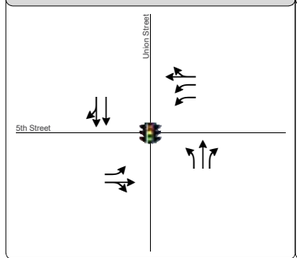


Figure 1D

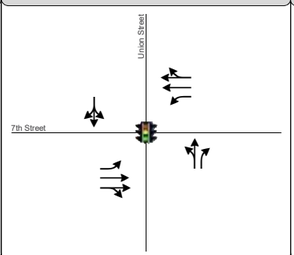
Existing Conditions
Intersection Lane Configurations and Traffic Controls



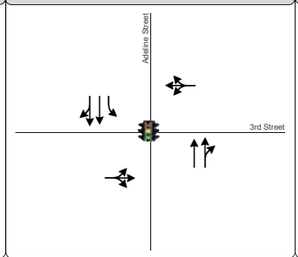
1. Union Street/5th Street



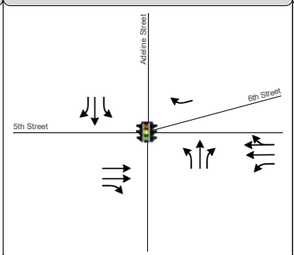
2. Union Street/7th Street



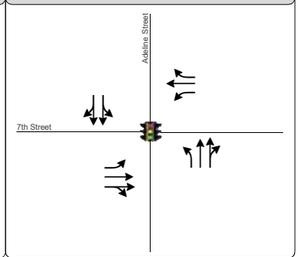
3. Adeline Street/3rd Street



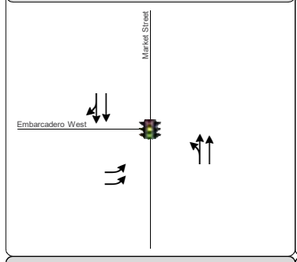
4. Adeline Street/5th Street/6th Street



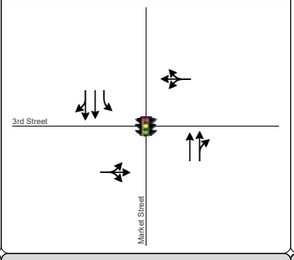
5. Adeline Street/7th Street



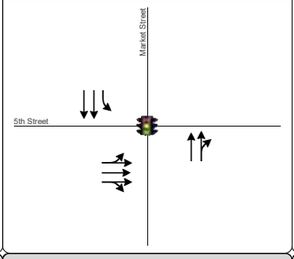
6. Market Street/Embarcadero West



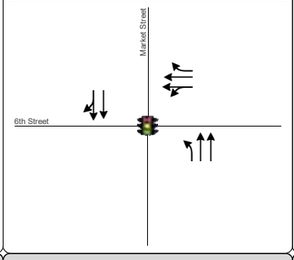
7. Market Street/3rd Street



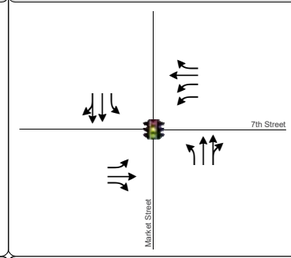
8. Market Street/5th Street



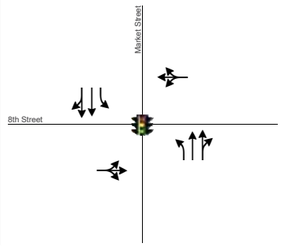
9. Market Street/6th Street



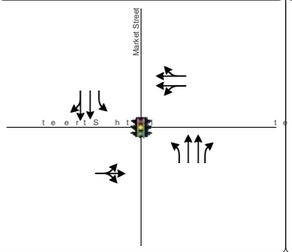
10. Market Street/7th Street



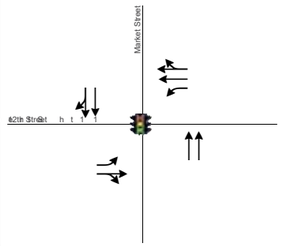
11. Market Street/8th Street



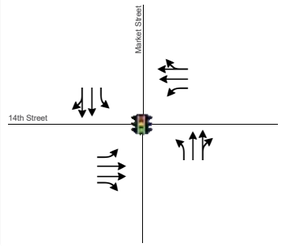
12. Market Street/10th Street/11th Street



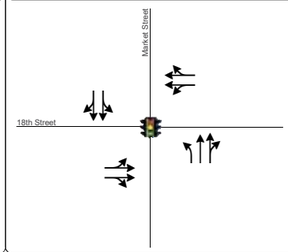
13. Market Street/12th Street



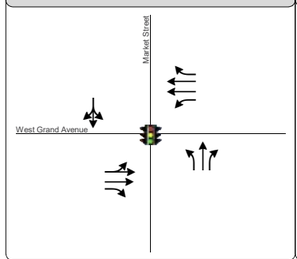
14. Market Street/14th Street



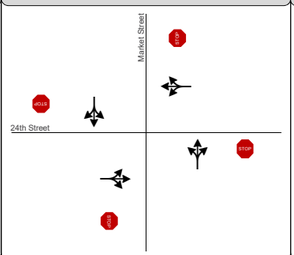
15. Market Street/18th Street



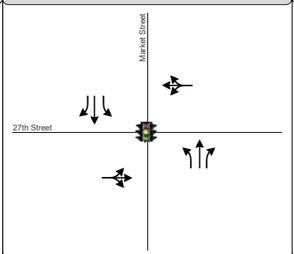
16. Market Street/West Grand Avenue



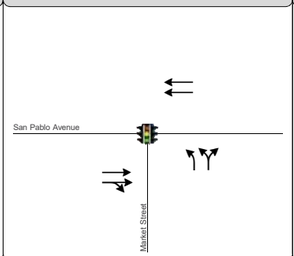
17. Market Street/24th Street



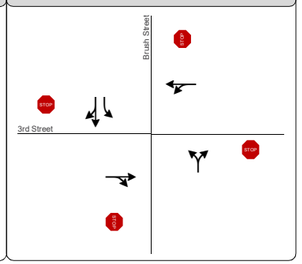
18. Market Street/27th Street



19. Market Street/San Pablo Avenue



20. Brush Street/3rd Street

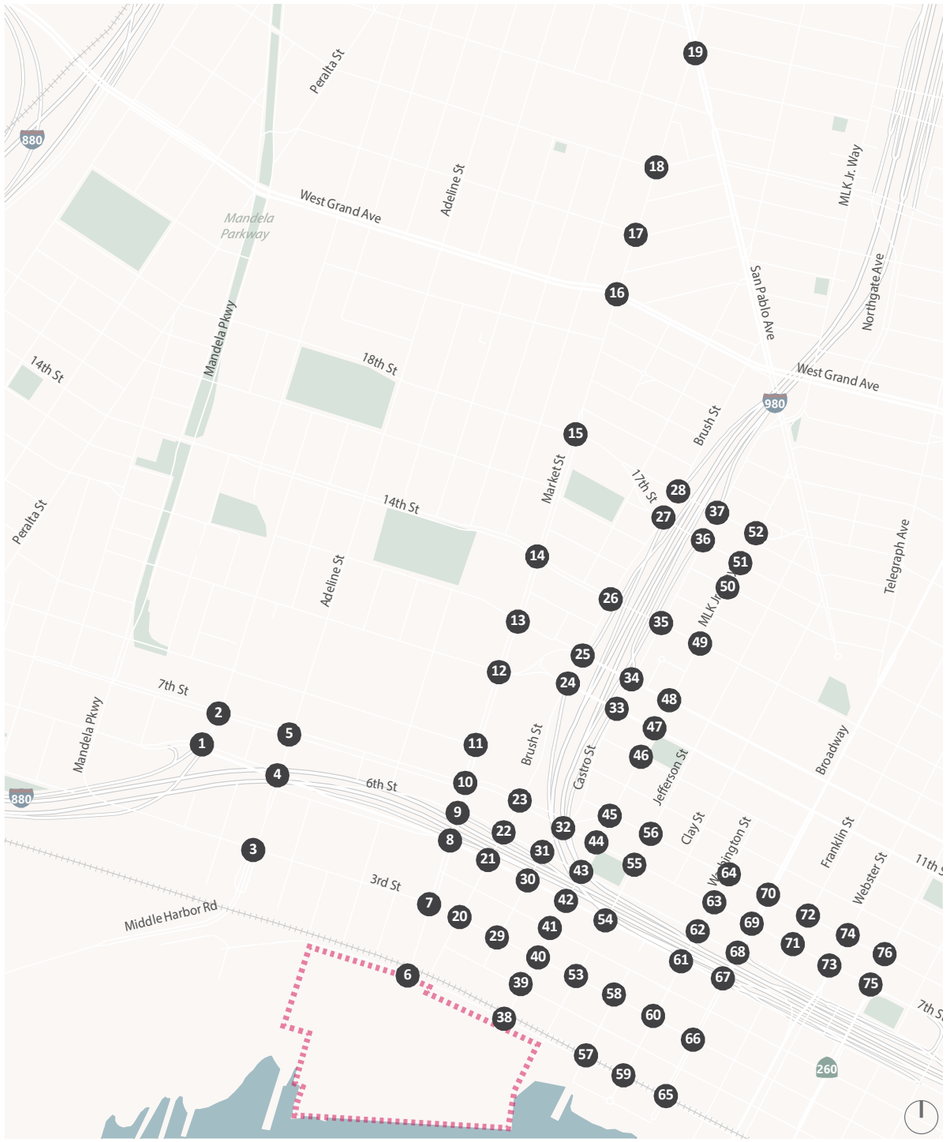


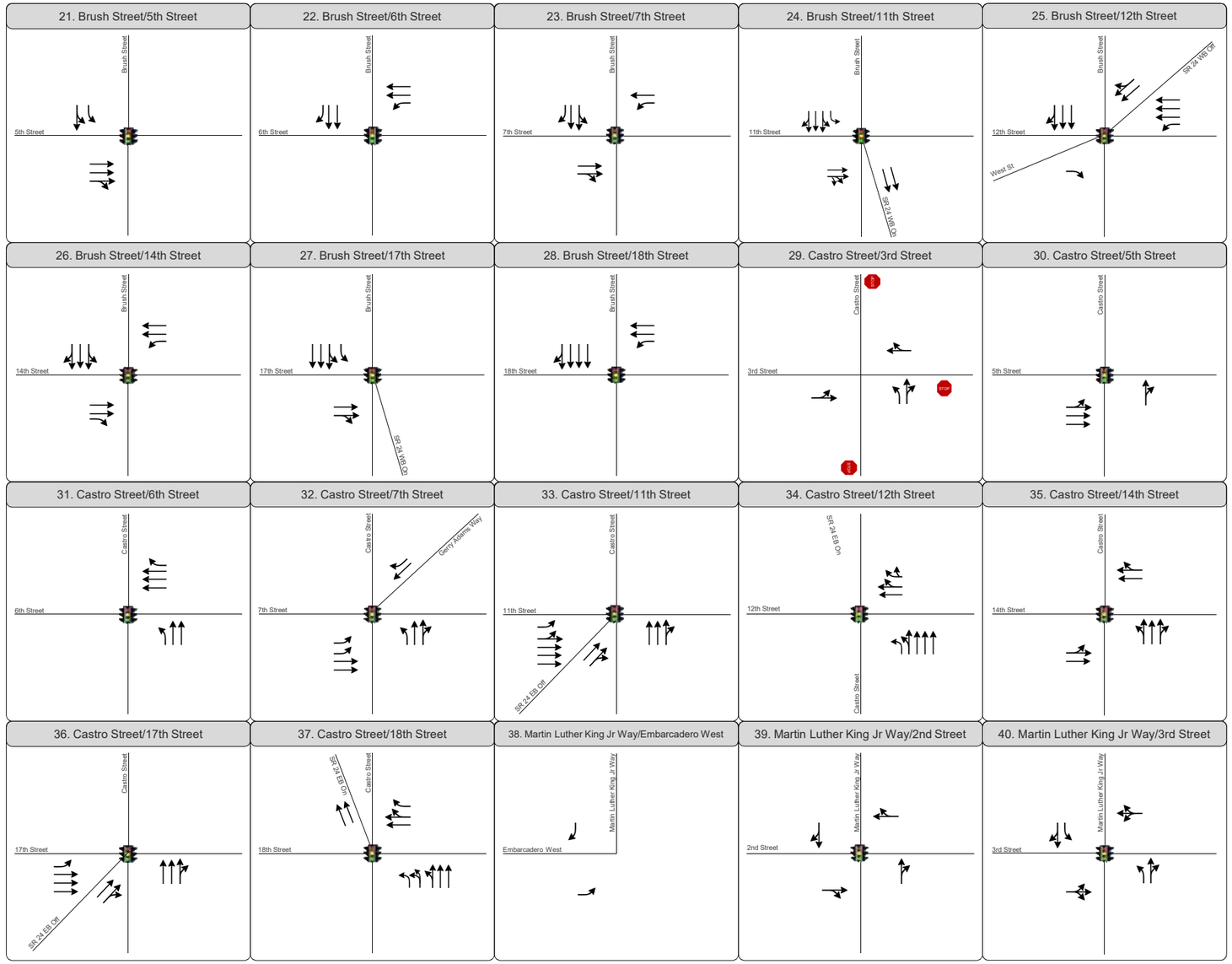
Lane Geometry | Signalized Intersection | Stop Sign

Project Boundary | # Study Intersection

Figure 2A

Existing Plus Non-Ballpark Development Conditions
Intersection Lane Configurations and Traffic Controls



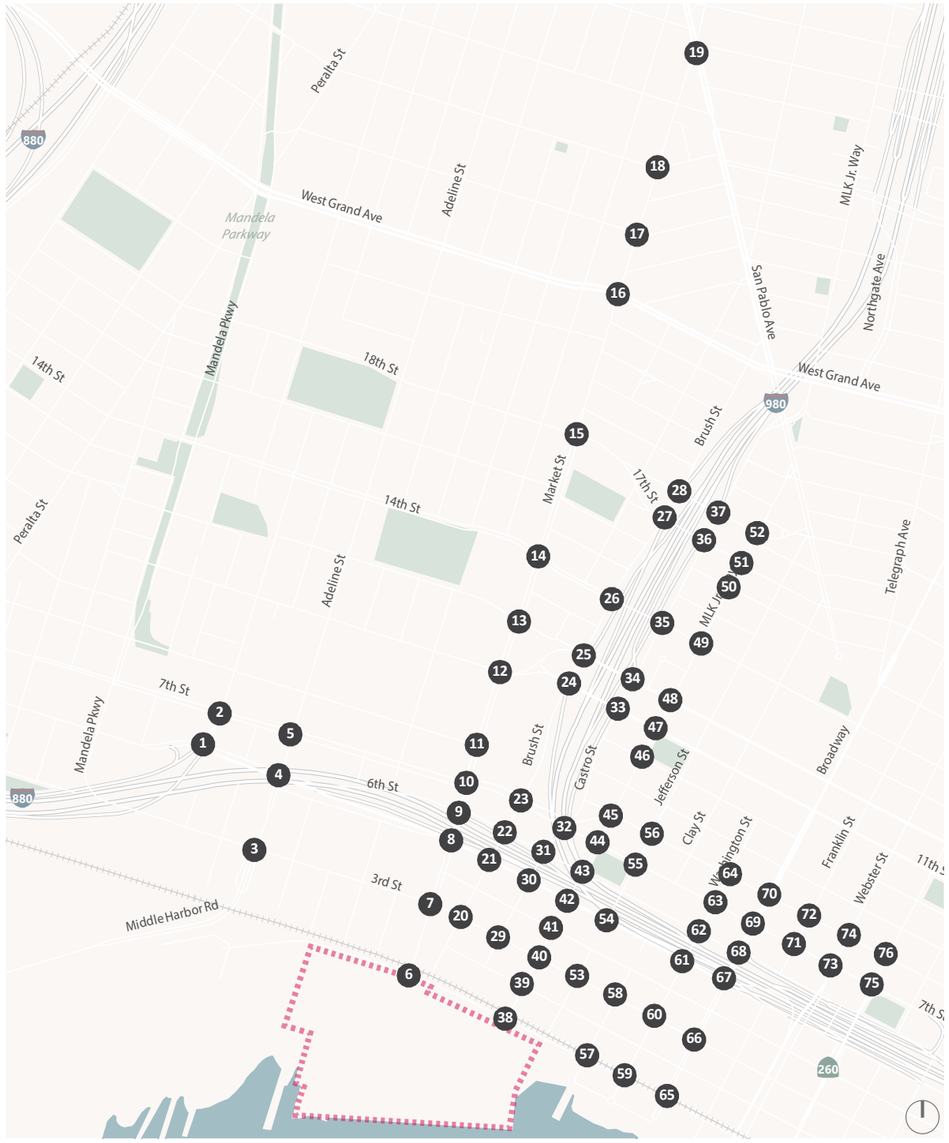


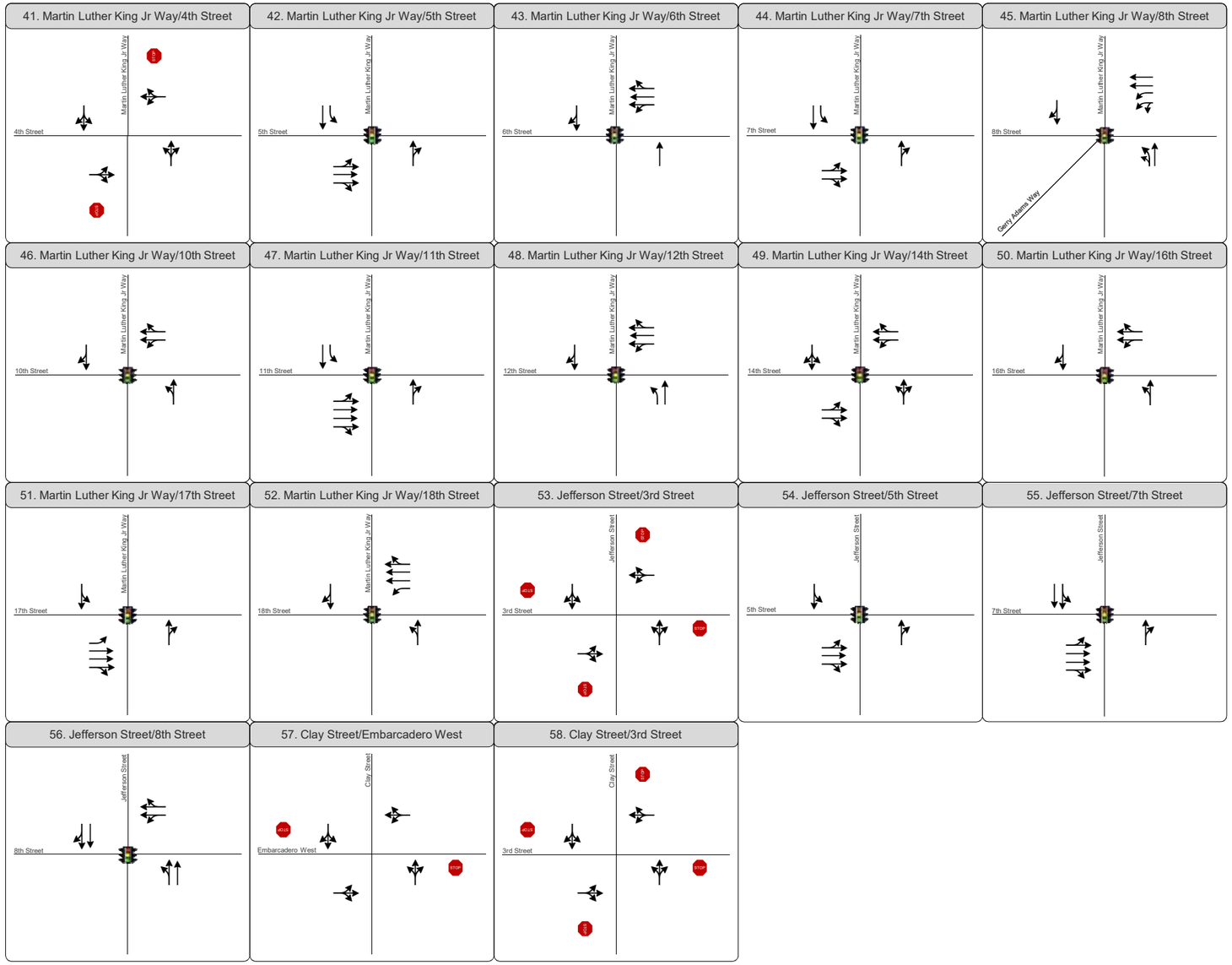
Lane Geometry Signalized Intersection Stop Sign

Project Boundary # Study Intersection

Figure 2B

Existing Plus Non-Ballpark Development Conditions
Intersection Lane Configurations and Traffic Controls



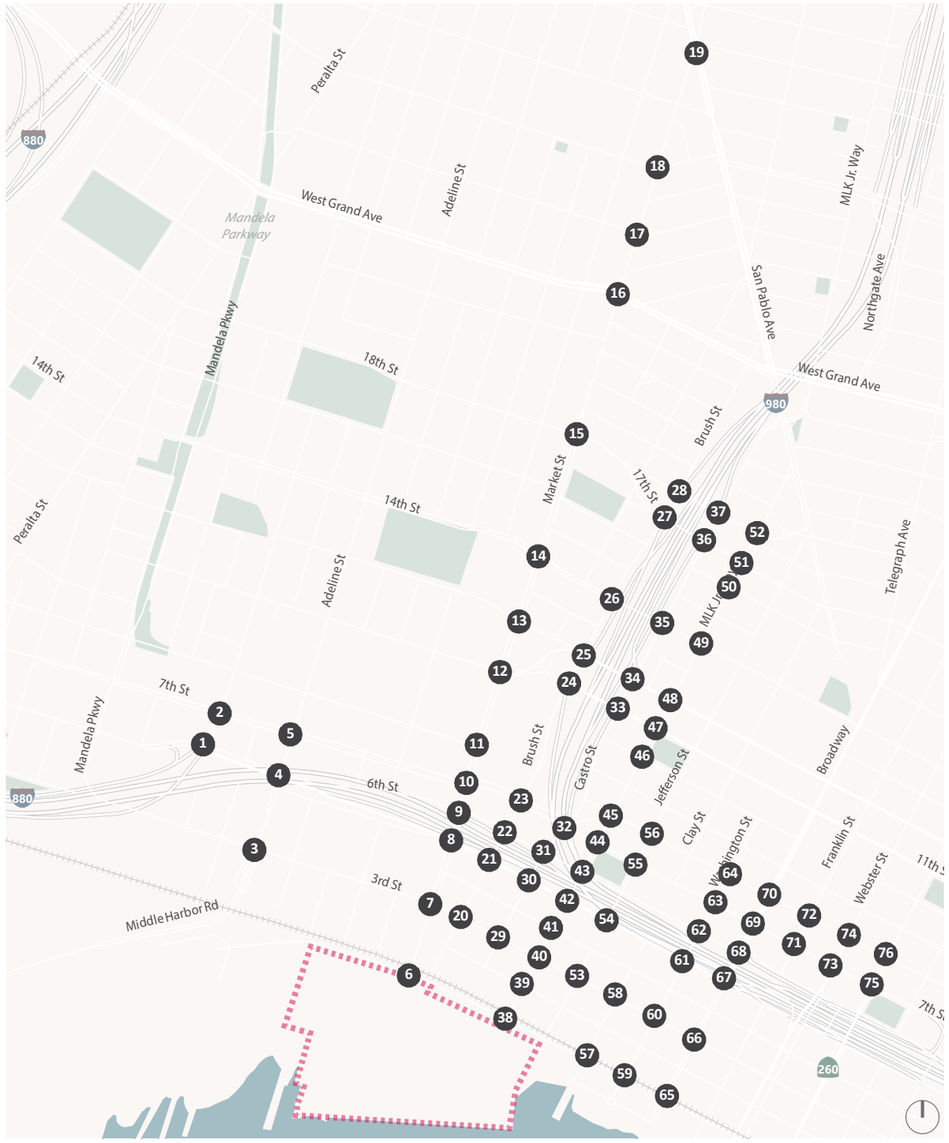


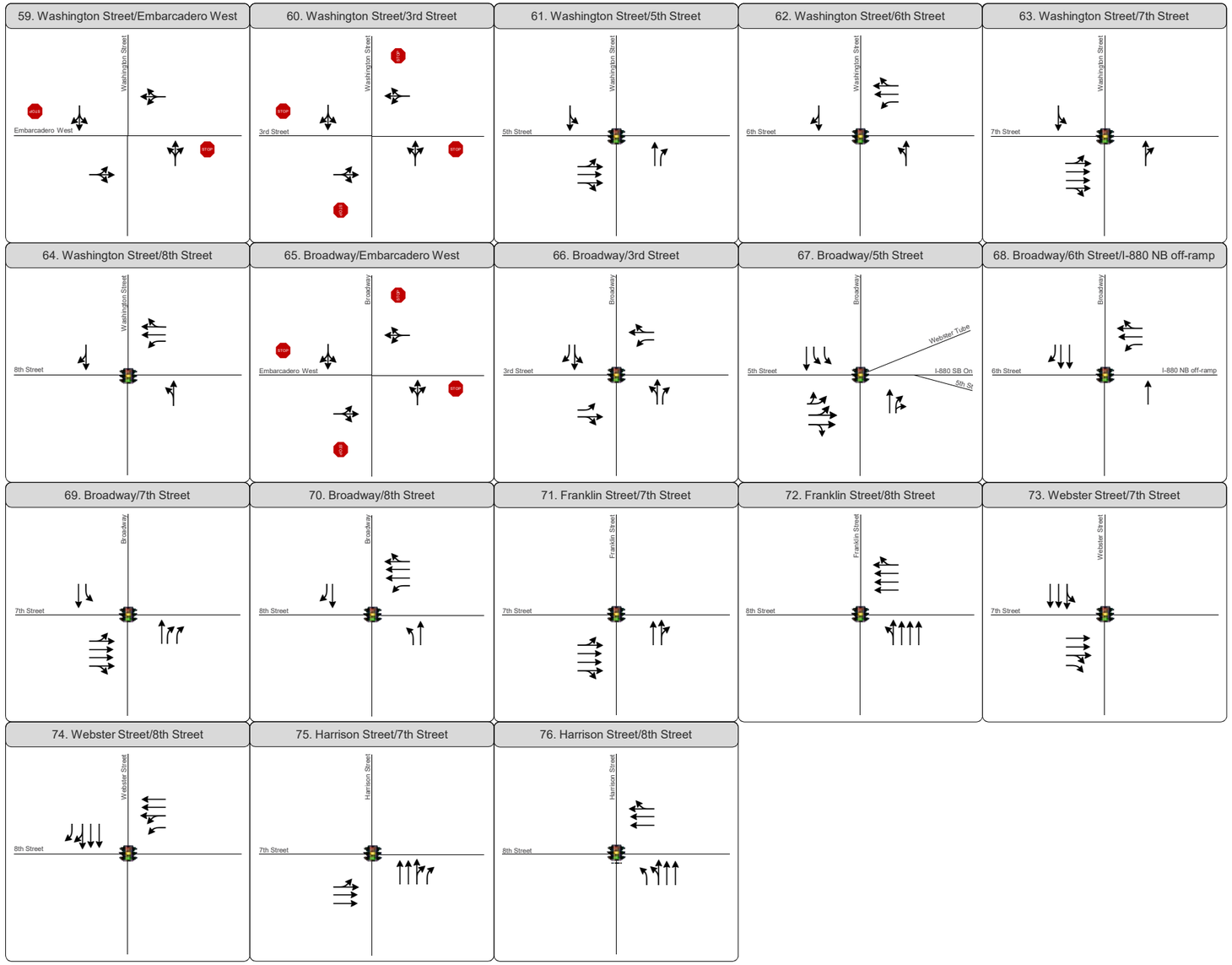
Lane Geometry Signalized Intersection Stop Sign

Project Boundary # Study Intersection

Figure 2C

Existing Plus Non-Ballpark Development Conditions Intersection Lane Configurations and Traffic Controls





Lane Geometry Signalized Intersection Stop Sign

Project Boundary # Study Intersection

Figure 2D

Existing Plus Non-Ballpark Development Conditions Intersection Lane Configurations and Traffic Controls

FEHR PEERS

Appendix B:

Existing and Existing Plus Non-Ballpark Peak Hour Intersection Volumes

2201 Broadway | Suite 602 | Oakland, CA 94612 | (510) 834-3200 | Fax (510) 253-0059
www.fehrandpeers.com

Existing Condition Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Peak Hour														
1	Union St	5th St	69	139	655	0	275	93	17	95	86	178	189	25
2	Adeline St	3rd St	11	160	69	85	94	21	22	81	8	170	60	67
3	Adeline St	5th St	67	8	174	102	31	71	14	613	102	76	262	54
4	Market St	Embarcadero West	0	19	0	11	20	33	26	6	1	0	8	4
5	Market St	3rd St	39	15	4	23	30	120	13	123	39	23	192	23
6	Market St	5th St	0	63	11	49	164	0	11	505	17	0	0	0
7	Market St	6th St	18	59	0	0	101	125	0	0	0	108	311	199
8	Market St	7th St	81	162	15	60	81	112	52	336	26	107	760	23
9	Market St	14th St	37	203	57	36	180	26	60	354	24	57	304	56
10	Brush St	3rd St	2	1	1	34	0	98	5	144	0	2	144	0
11	Brush St	5th St	0	0	10	429	171	0	0	549	11	0	0	0
12	Brush St	6th St	0	0	0	0	588	8	0	0	0	6	20	0
13	Brush St	7th St	0	0	0	271	574	745	0	399	20	14	162	0
14	Brush St	11th St	0	0	0	856	1,585	31	0	183	48	0	0	0
15	Brush St	12th St	0	0	0	0 (1788*)	651	35 (30*)	0	0	3	61	123	0
16	Castro St	3rd St	16	8	1	17	6	4	16	150	10	2	132	13
17	Castro St	5th St	0	34	10	0	0	0	27	940	22	0	0	0
18	Castro St	7th St	7	72	10	0	0	0 (180*)	134	535	0	0	0	0
19	Castro St	11th St	0 (100*)	414	25 (99*)	0	0	0	143	787	0	0	0	0
20	Castro St	12th St	452	185	0	0	0	0	0	0	0	0	147	212
21	MLK Jr Way	Embarcadero West	2	45	2	27	45	7	4	6	3	0	0	0
22	MLK Jr Way	2nd St	1	47	0	42	65	6	3	8	0	15	16	17
23	MLK Jr Way	3rd St	46	17	1	62	62	18	5	111	48	5	90	13
24	MLK Jr Way	4th St	2	50	2	43	129	9	2	22	17	5	30	11
25	MLK Jr Way	5th St	0	40	22	23	60	0	6	812	125	0	0	0
26	MLK Jr Way	6th St	13	34	0	0	61	8	0	0	0	25	46	18
27	MLK Jr Way	7th St	0	40	13	44	54	0	8	515	15	0	0	0
28	MLK Jr Way	8th St	25	33	0	0	73	40	0	0	0	170	140	31
29	MLK Jr Way	11th St	0	38	14	63	105	0	92	747	77	0	0	0
30	MLK Jr Way	12th St	15	116	0	0	139	23	0	0	0	31	324	66
31	Jefferson St	3rd St	8	0	1	6	6	3	6	139	17	14	96	1
32	Clay St	3rd St	27	0	6	3	17	3	6	81	59	27	81	6
33	Washington St	3rd St	13	28	3	12	123	23	9	52	18	20	70	9
34	Broadway St	3rd St	18	101	14	26	102	41	27	31	9	8	38	49
35	Broadway St	5th St	0	114	236	291	196	0	699	127	53	0	0	0
36	Broadway St	6th St	13	139	0	0	276	33	0	0	0	210	234	517
37	Broadway St	7th St	0	404	255	122	262	0	38	393	45	0	0	0
38	Broadway St	8th St	45	407	0	0	322	47	0	0	0	66	380	82
39	Webster St	7th St	0	0	0	144	616	0	0	275	361	0	0	0
40	Webster St	8th St	0	0	0	0	407	156	0	0	0	352	513	0
41	Harrison St	7th St	0	933	1,445	0	0	0	65	315	0	0	0	0

Existing Condition Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Peak Hour														
42	Harrison St	8th St	307	673	0	0	0	0	0	0	0	0	558	133
101	Union St	7th St	17	35	114	21	40	18	9	265	24	326	431	35
102	Adeline St	7th St	11	35	26	51	94	90	35	337	36	73	692	47
103	Market St	8th St	40	149	48	42	139	59	69	24	29	25	40	49
104	Market St	10th St	23	178	84	50	191	47	23	120	15	28	38	23
105	Market St	12th St	17	203	0	0	226	42	60	0	37	16	54	41
106	Market St	18th St	30	242	29	47	196	25	20	121	20	32	152	53
107	Market St	West Grand Ave	86	156	72	40	142	47	19	324	37	63	737	14
108	Market St	24th St	31	157	14	3	159	22	27	15	37	14	4	8
109	Market St	27th St	30	144	23	7	128	7	13	25	29	24	51	7
110	Market St	San Pablo Ave	152	0	7	0	0	0	0	548	113	0	400	0
111	Brush St	14th St	0	0	0	435	614	299	0	373	74	38	267	0
112	Brush St	17th St	0	0	0	1099	1,712	0	0	196	105	0	0	0
113	Brush St	18th St	0	0	0	0	2,701	263	0	0	0	110	112	0
114	Castro St	6th St	2	53	0	0	0	0	0	0	0	0	26	40
115	Castro St	14th St	43	95	74	0	0	0	232	576	0	0	265	139
116	Castro St	17th St	0 (342*)	507	41 (117*)	0	0	0	216	1,088	0	0	0	0
117	Castro St	18th St	77	958	0	0	0	0	0	0	0	0	140	231
118	MLK Jr Way	10th St	7	41	0	0	167	14	0	0	0	11	49	11
119	MLK Jr Way	14th St	28	42	22	43	167	40	12	524	91	17	342	36
120	MLK Jr Way	17th St	0	50	19	14	110	0	48	1,056	140	0	0	0
121	MLK Jr Way	18th St	22	57	0	0	110	74	0	0	0	15	300	2
122	Jefferson St	5th St	0	0	0	35	0	0	13	811	0	0	0	0
123	Jefferson St	7th St	0	59	89	50	28	0	17	525	28	0	0	0
124	Jefferson St	8th St	14	58	0	0	45	25	0	0	0	29	300	41
125	Clay St	Embarcadero West	2	9	3	12	8	1	5	17	10	19	10	48
126	Washington St	Embarcadero West	6	25	11	11	22	14	3	23	4	9	57	25
127	Washington St	5th St	0	50	15	33	101	0	20	797	61	0	0	0
128	Washington St	6th St	26	47	0	0	66	43	0	0	0	59	177	41
129	Washington St	7th St	0	58	29	16	45	0	17	449	64	0	0	0
130	Washington St	8th St	39	39	0	0	23	5	0	0	0	42	409	25
131	Broadway St	Embarcadero West	2	5	2	34	21	15	8	33	3	13	71	61
132	Franklin St	7th St	0	27	25	0	0	0	154	611	11	0	0	0
133	Franklin St	8th St	50	133	0	0	0	0	0	0	0	0	496	154
137	MLK Jr Way	16th St	10	57	0	0	212	6	0	0	0	29	70	17

Existing Condition Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
PM Peak Hour														
1	Union St	5th St	61	543	723	0	80	24	78	119	86	108	98	22
2	Adeline St	3rd St	29	200	198	73	126	15	31	139	24	99	125	87
3	Adeline St	5th St	74	98	140	89	66	11	38	739	81	64	135	40
4	Market St	Embarcadero West	3	25	3	27	19	22	18	19	3	2	0	9
5	Market St	3rd St	16	15	15	53	27	53	53	434	31	5	240	49
6	Market St	5th St	0	104	30	65	91	0	15	697	62	0	0	0
7	Market St	6th St	40	98	0	0	108	19	0	0	0	48	186	202
8	Market St	7th St	91	205	38	79	67	67	143	1,226	42	22	369	30
9	Market St	14th St	71	262	80	65	166	34	46	592	27	40	338	58
10	Brush St	3rd St	22	5	4	30	18	78	38	454	15	0	193	4
11	Brush St	5th St	0	0	48	390	165	0	0	785	7	0	0	0
12	Brush St	6th St	0	0	0	0	553	14	0	0	0	12	26	0
13	Brush St	7th St	0	0	0	409	549	247	0	1,327	16	4	160	0
14	Brush St	11th St	0	0	0	593	1,131	38	0	232	48	0	0	0
15	Brush St	12th St	0	0	0	0 (1253*)	422	30 (33*)	0	0	3	70	131	0
16	Castro St	3rd St	0	0	10	0	0	11	0	380	109	0	186	67
17	Castro St	5th St	0	209	20	0	0	0	83	1,133	17	0	0	0
18	Castro St	7th St	16	418	30	0	0	0 (153*)	415	1,321	0	0	0	0
19	Castro St	11th St	0 (90*)	1,256	65 (44*)	0	0	0	142	543	0	0	0	0
20	Castro St	12th St	1,174	311	0	0	0	0	0	0	0	0	160	636
21	MLK Jr Way	Embarcadero West	10	59	12	85	44	2	5	29	16	0	0	0
22	MLK Jr Way	2nd St	2	61	5	34	120	4	4	32	4	7	42	72
23	MLK Jr Way	3rd St	43	88	6	35	48	13	34	253	105	5	198	68
24	MLK Jr Way	4th St	5	173	13	125	57	5	7	173	13	1	39	38
25	MLK Jr Way	5th St	0	196	41	35	43	0	38	1,015	106	0	0	0
26	MLK Jr Way	6th St	91	147	0	0	55	4	0	0	0	9	115	11
27	MLK Jr Way	7th St	0	121	43	72	48	0	12	1,323	14	0	0	0
28	MLK Jr Way	8th St	67	72	0	0	109	42	0	0	0	127	266	29
29	MLK Jr Way	11th St	0	80	27	62	136	0	12	565	75	0	0	0
30	MLK Jr Way	12th St	26	72	0	0	171	53	0	0	0	24	717	41
31	Jefferson St	3rd St	16	6	11	10	1	6	8	280	14	1	246	4
32	Clay St	3rd St	106	27	62	2	10	2	8	271	26	28	143	9
33	Washington St	3rd St	17	82	17	32	63	48	63	288	15	9	135	21
34	Broadway St	3rd St	21	181	22	37	134	50	131	191	29	10	94	103
35	Broadway St	5th St	0	210	391	529	245	0	853	305	34	0	0	0
36	Broadway St	6th St	22	191	0	0	524	23	0	0	0	237	104	498
37	Broadway St	7th St	0	341	338	183	471	0	70	1,438	79	0	0	0
38	Broadway St	8th St	34	377	0	0	565	60	0	0	0	94	284	111
39	Webster St	7th St	0	0	0	150	912	0	0	815	63	0	0	0
40	Webster St	8th St	0	0	0	0	698	225	0	0	0	347	398	0
41	Harrison St	7th St	0	876	1,294	0	0	0	126	839	0	0	0	0

Existing Condition Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
PM Peak Hour														
42	Harrison St	8th St	213	790	0	0	0	0	0	0	0	0	532	131
101	Union St	7th St	16	71	619	15	7	13	20	560	11	80	373	34
102	Adeline St	7th St	12	104	84	71	71	51	54	1,128	33	60	388	101
103	Market St	8th St	48	254	75	47	122	62	88	39	57	39	47	73
104	Market St	10th St	23	288	126	46	184	22	17	115	12	29	36	18
105	Market St	12th St	18	320	0	0	205	24	20	0	19	21	64	69
106	Market St	18th St	44	295	36	65	215	19	27	148	30	17	170	64
107	Market St	West Grand Ave	82	207	99	37	153	45	52	709	94	73	645	19
108	Market St	24th St	23	244	23	8	171	20	16	17	38	9	15	22
109	Market St	27th St	23	210	47	7	149	8	12	27	27	27	44	13
110	Market St	San Pablo Ave	227	0	5	0	0	0	0	734	123	0	673	0
111	Brush St	14th St	0	0	0	212	329	142	0	553	184	49	362	0
112	Brush St	17th St	0	0	0	437	1,063	0	0	194	126	0	0	0
113	Brush St	18th St	0	0	0	0	1,402	167	0	0	0	106	152	0
114	Castro St	6th St	14	274	0	0	0	0	0	0	0	0	16	192
115	Castro St	14th St	111	241	57	0	0	0	218	547	0	0	298	312
116	Castro St	17th St	0 (438*)	843	42 (54*)	0	0	0	211	420	0	0	0	0
117	Castro St	18th St	103	1,389	0	0	0	0	0	0	0	0	158	366
118	MLK Jr Way	10th St	16	84	0	0	200	12	0	0	0	13	83	19
119	MLK Jr Way	14th St	39	99	23	43	126	41	19	536	49	24	512	24
120	MLK Jr Way	17th St	0	124	14	8	114	0	30	417	69	0	0	0
121	MLK Jr Way	18th St	39	113	0	0	105	122	0	0	0	20	391	0
122	Jefferson St	5th St	0	0	0	72	0	0	82	1,009	0	0	0	0
123	Jefferson St	7th St	0	68	23	76	38	0	10	1,466	7	0	0	0
124	Jefferson St	8th St	41	42	0	0	94	23	0	0	0	16	359	33
125	Clay St	Embarcadero West	1	38	18	30	26	5	3	138	6	22	8	40
126	Washington St	Embarcadero West	2	10	9	33	11	15	7	172	5	6	54	26
127	Washington St	5th St	0	110	134	64	92	0	5	996	80	0	0	0
128	Washington St	6th St	31	96	0	0	118	19	0	0	0	38	73	35
129	Washington St	7th St	0	79	52	31	47	0	48	1,504	87	0	0	0
130	Washington St	8th St	63	68	0	0	41	37	0	0	0	37	308	30
131	Broadway St	Embarcadero West	6	45	8	46	48	41	24	149	29	12	37	69
132	Franklin St	7th St	0	39	36	0	0	0	117	1,810	9	0	0	0
133	Franklin St	8th St	50	121	0	0	0	0	0	0	0	0	431	192
137	MLK Jr Way	16th St	25	109	0	0	162	21	0	0	0	31	185	33

Existing Plus Non-Ballpark Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Peak Hour														
1	Union Street	5th Street	69	139	839	0	275	93	17	95	86	296	200	25
2	Adeline Street	3rd Street	0	207	57	79	149	21	22	69	8	143	49	78
3	Adeline Street	5th Street	104	21	182	102	51	71	14	785	114	93	354	54
4	Market Street	Embarcadero West	0	460	0	0	615	251	48	0	0	0	0	0
5	Market Street	3rd Street	22	445	50	23	781	120	8	101	36	76	182	15
6	Market Street	5th Street	0	405	81	49	740	0	11	541	153	0	0	0
7	Market Street	6th Street	110	309	0	0	515	125 (29*)	0	0	0	270	328	199
8	Market Street	7th Street	85	358	65	60	187	112	52	341	45	396	776	28
9	Market Street	14th Street	41	267	108	36	280	26	60	354	30	57	304	56
10	Brush Street	3rd Street	2	1	1	54	0	144	10	163	0	2	134	8
11	Brush Street	5th Street	0	19	10	329	261	0	0	656	11	0	0	0
12	Brush Street	6th Street	1	18	0	0	574	8	0	0	0	6	19	0
13	Brush Street	7th Street	13	0	5	417	560	1013	0	454	20	14	191	0
14	Brush Street	11th Street	0	0	0	856	1984	31	0	234	79	0	0	0
15	Brush Street	12th Street	0	0	0	0 (2032*)	796	35 (30*)	0	0	3	71	123	0
16	Castro Street	3rd Street	16	8	1	17	6	4	42	163	10	2	130	39
17	Castro Street	5th Street	0	84	10	120	20	0	34	940	22	0	0	0
18	Castro Street	7th Street	7	117	10	0	0	0 (209*)	163	573	140	0	0	0
19	Castro Street	11th Street	0 (100*)	494	25 (99*)	0	0	0	181	800	0	0	0	0
20	Castro Street	12th Street	557	198	0	0	0	0	0	0	0	0	157	268
21	MLK Jr Way	Embarcadero West	0	0	0	0	0	306	247	0	0	0	0	0
22	MLK Jr Way	2nd Street	0	246	0	0	308	6	0	8	0	0	16	17
23	MLK Jr Way	3rd Street	62	190	11	104	264	18	5	131	41	12	97	13
24	MLK Jr Way	4th Street	2	223	2	43	373	9	2	22	17	5	30	11
25	MLK Jr Way	5th Street	0	177	58	23	247	0	6	876	181	0	0	0
26	MLK Jr Way	6th Street	0	184	0	0	196	8	0	0	0	78	46	18
27	MLK Jr Way	7th Street	0	173	30	44	183	0	15	540	21	0	0	0
28	MLK Jr Way	8th Street	38	160	0	0	155	45	0	0	0	240	140	31
29	MLK Jr Way	11th Street	0	132	34	63	193	0	92	760	77	0	0	0
30	MLK Jr Way	12th Street	71	154	0	0	227	33	0	0	0	31	324	66
31	Jefferson Street	3rd Street	8	0	1	6	6	3	6	169	59	14	110	1
32	Clay Street	3rd Street	27	0	6	3	17	3	6	111	59	27	95	6
33	Washington Street	3rd Street	13	28	3	12	123	23	9	82	18	20	84	9
34	Broadway	3rd Street	18	101	14	26	102	41	53	35	9	8	52	49
35	Broadway	5th Street	0	101	262	291	196	0	705	220	53	0	0	0
36	Broadway	6th Street	0	139	0	0	276	33	0	0	0	210	287	517
37	Broadway	7th Street	0	404	255	122	262	0	38	435	45	0	0	0
38	Broadway	8th Street	45	407	0	0	322	47	0	0	0	66	450	82
39	Webster Street	7th Street	0	0	0	144	616	0	0	275	403	0	0	0
40	Webster Street	8th Street	0	0	0	0	407	156	0	0	0	362	583	0
41	Harrison Street	7th Street	0	1013	1445	0	0	0	65	315	0	0	0	0

Existing Plus Non-Ballpark Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
AM Peak Hour														
42	Harrison Street	8th Street	387	673	0	0	0	0	0	0	0	0	558	133
101	Union Street	7th Street	17	35	114	23	40	18	9	284	24	326	443	36
102	Adeline Street	7th Street	12	42	31	51	104	90	35	356	38	81	704	47
103	Market Street	8th Street	40	350	48	42	245	59	69	24	29	25	40	49
104	Market Street	10th Street	23	297	166	50	297	47	23	120	15	28	38	23
105	Market Street	12th Street	17	322	0	0	332	42	60	0	37	16	54	41
106	Market Street	18th Street	30	306	29	47	296	25	20	121	20	32	152	53
107	Market Street	West Grand Avenue	98	208	72	40	223	47	19	324	56	63	737	14
108	Market Street	24th Street	31	209	14	3	240	22	27	15	37	14	4	8
109	Market Street	27th Street	30	196	23	7	209	7	13	25	29	24	51	7
110	Market Street	San Pablo Avenue	204	0	7	0	0	0	0	548	194	0	400	0
111	Brush Street	14th Street	0	0	0	435	754	299	0	424	74	43	267	0
112	Brush Street	17th Street	0	0	0	1099	1852	0	0	196	105	0	0	0
113	Brush Street	18th Street	0	0	0	0	2841	263	0	0	0	110	112	0
114	Castro Street	6th Street	1	111	0	0	140	0	0	0	0	0	325	27
115	Castro Street	14th Street	43	102	81	0	0	0	283	576	0	0	270	139
116	Castro Street	17th Street	0 (342*)	558	48 (117*)	0	0	0	216	1088	0	0	0	0
117	Castro Street	18th Street	77	1009	0	0	0	0	0	0	0	0	140	269
118	MLK Jr Way	10th Street	7	155	0	0	255	14	0	0	0	11	49	11
119	MLK Jr Way	14th Street	28	80	22	43	229	40	12	531	91	53	347	36
120	MLK Jr Way	17th Street	0	88	19	14	151	0	48	1063	140	0	0	0
121	MLK Jr Way	18th Street	60	57	0	0	115	74	0	0	0	51	300	2
122	Jefferson Street	5th Street	0	0	0	35	0	0	13	911	0	0	0	0
123	Jefferson Street	7th Street	0	59	89	50	28	0	17	567	28	0	0	0
124	Jefferson Street	8th Street	14	58	0	0	45	25	0	0	0	29	370	41
125	Clay Street	Embarcadero West	2	9	3	12	8	1	5	17	10	19	10	48
126	Washington Street	Embarcadero West	6	25	11	11	22	14	3	23	4	9	57	25
127	Washington Street	5th Street	0	63	15	33	101	0	20	897	61	0	0	0
128	Washington Street	6th Street	39	47	0	0	66	43	0	0	0	59	217	41
129	Washington Street	7th Street	0	58	29	16	45	0	17	491	64	0	0	0
130	Washington Street	8th Street	39	39	0	0	23	5	0	0	0	42	479	25
131	Broadway	Embarcadero West	2	5	2	34	21	15	8	33	3	13	71	61
132	Franklin Street	7th Street	0	27	25	0	0	0	154	653	11	0	0	0
133	Franklin Street	8th Street	50	133	0	0	0	0	0	0	0	0	566	154
137	MLK Jr Way	16th Street	10	95	0	0	253	6	0	0	0	50	70	17

Existing Plus Non-Ballpark Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
PM Peak Hour														
1	Union Street	5th Street	61	543	894	0	80	24	78	119	86	339	127	22
2	Adeline Street	3rd Street	0	277	149	64	215	15	31	106	24	90	112	123
3	Adeline Street	5th Street	157	115	153	89	99	11	38	890	101	91	312	40
4	Market Street	Embarcadero West	0	831	0	0	520	204	65	0	0	0	0	0
5	Market Street	3rd Street	3	791	96	53	645	53	45	365	17	56	267	39
6	Market Street	5th Street	0	737	151	65	561	0	15	731	179	0	0	0
7	Market Street	6th Street	217	554	0	0	453	19 (39*)	0	0	0	173	213	202
8	Market Street	7th Street	103	561	127	79	160	67	143	1233	58	258	392	33
9	Market Street	14th Street	78	378	165	65	253	34	46	592	32	40	338	58
10	Brush Street	3rd Street	22	5	4	46	18	122	46	458	15	0	217	14
11	Brush Street	5th Street	0	25	48	356	236	0	0	940	7	0	0	0
12	Brush Street	6th Street	4	21	0	0	590	14	0	0	0	12	22	0
13	Brush Street	7th Street	13	0	8	476	586	471	0	1423	16	4	185	0
14	Brush Street	11th Street	0	0	0	593	1459	38	0	333	98	0	0	0
15	Brush Street	12th Street	0	0	0	0 (1449*)	540	30 (33*)	0	0	3	84	131	0
16	Castro Street	3rd Street	0	0	10	0	0	11	58	342	109	0	220	109
17	Castro Street	5th Street	0	306	20	50	20	0	102	1236	17	0	0	0
18	Castro Street	7th Street	16	446	30	0	0	0 (178*)	461	1375	70	0	0	0
19	Castro Street	11th Street	0 (90*)	1403	65 (44*)	0	0	0	206	580	0	0	0	0
20	Castro Street	12th Street	1348	348	0	0	0	0	0	0	0	0	174	712
21	MLK Jr Way	Embarcadero West	0	0	0	0	0	292	444	0	0	0	0	0
22	MLK Jr Way	2nd Street	0	447	0	0	293	4	0	32	1	0	42	72
23	MLK Jr Way	3rd Street	112	387	24	69	244	13	34	276	44	9	205	68
24	MLK Jr Way	4th Street	5	472	13	125	287	5	7	173	13	1	39	38
25	MLK Jr Way	5th Street	0	436	101	35	224	0	38	1118	156	0	0	0
26	MLK Jr Way	6th Street	0	478	0	0	198	4	0	0	0	47	115	11
27	MLK Jr Way	7th Street	0	426	69	72	194	0	31	1362	11	0	0	0
28	MLK Jr Way	8th Street	159	304	0	0	220	49	0	0	0	180	266	29
29	MLK Jr Way	11th Street	0	220	83	62	254	0	12	602	75	0	0	0
30	MLK Jr Way	12th Street	102	136	0	0	289	67	0	0	0	24	717	41
31	Jefferson Street	3rd Street	16	6	11	10	1	6	8	320	49	1	257	4
32	Clay Street	3rd Street	106	27	62	2	10	2	8	311	26	28	154	9
33	Washington Street	3rd Street	17	82	17	32	63	48	63	328	15	9	146	21
34	Broadway	3rd Street	21	181	22	37	134	50	173	189	29	10	105	103
35	Broadway	5th Street	0	188	434	529	245	0	862	458	34	0	0	0
36	Broadway	6th Street	0	191	0	0	524	23	0	0	0	237	142	498
37	Broadway	7th Street	0	341	338	183	471	0	70	1503	79	0	0	0
38	Broadway	8th Street	34	377	0	0	565	60	0	0	0	94	337	111
39	Webster Street	7th Street	0	0	0	150	919	0	0	815	128	0	0	0
40	Webster Street	8th Street	0	0	0	0	698	225	0	0	0	354	451	0
41	Harrison Street	7th Street	0	936	1294	0	0	0	126	839	0	0	0	0

Existing Plus Non-Ballpark Peak Hour Intersection Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
PM Peak Hour														
42	Harrison Street	8th Street	273	790	0	0	0	0	0	0	0	0	532	131
101	Union Street	7th Street	16	71	619	18	7	13	20	576	11	80	395	35
102	Adeline Street	7th Street	13	113	91	71	88	51	54	1144	36	73	410	101
103	Market Street	8th Street	48	613	75	47	215	62	88	39	57	39	47	73
104	Market Street	10th Street	23	496	277	46	277	22	17	115	12	29	36	18
105	Market Street	12th Street	18	528	0	0	298	24	20	0	19	21	64	69
106	Market Street	18th Street	44	411	36	65	302	19	27	148	30	17	170	64
107	Market Street	West Grand Avenue	104	301	99	37	224	45	52	709	110	73	645	19
108	Market Street	24th Street	23	338	23	8	242	20	16	17	38	9	15	22
109	Market Street	27th Street	23	304	47	7	220	8	12	27	27	27	44	13
110	Market Street	San Pablo Avenue	321	0	5	0	0	0	0	734	194	0	673	0
111	Brush Street	14th Street	0	0	0	212	440	142	0	638	184	56	362	0
112	Brush Street	17th Street	0	0	0	437	1174	0	0	194	126	0	0	0
113	Brush Street	18th Street	0	0	0	0	1513	167	0	0	0	106	152	0
114	Castro Street	6th Street	10	393	0	0	70	0	0	0	0	0	16	101
115	Castro Street	14th Street	111	260	76	0	0	0	303	547	0	0	305	312
116	Castro Street	17th Street	0 (438*)	928	61 (54*)	0	0	0	211	420	0	0	0	0
117	Castro Street	18th Street	103	1474	0	0	0	0	0	0	0	0	158	430
118	MLK Jr Way	10th Street	16	279	0	0	318	12	0	0	0	13	83	19
119	MLK Jr Way	14th Street	39	163	23	43	209	41	19	555	49	73	519	24
120	MLK Jr Way	17th Street	0	188	14	8	170	0	30	436	69	0	0	0
121	MLK Jr Way	18th Street	103	113	0	0	112	122	0	0	0	69	391	0
122	Jefferson Street	5th Street	0	0	0	72	0	0	82	1172	0	0	0	0
123	Jefferson Street	7th Street	0	68	23	76	38	0	10	1531	7	0	0	0
124	Jefferson Street	8th Street	41	42	0	0	94	23	0	0	0	16	412	33
125	Clay Street	Embarcadero West	1	38	18	30	26	5	3	138	6	22	8	40
126	Washington Street	Embarcadero West	2	10	9	33	11	15	7	172	5	6	54	26
127	Washington Street	5th Street	0	132	134	64	92	0	5	1159	80	0	0	0
128	Washington Street	6th Street	53	96	0	0	118	19	0	0	0	38	89	35
129	Washington Street	7th Street	0	79	52	31	47	0	48	1569	87	0	0	0
130	Washington Street	8th Street	63	68	0	0	41	37	0	0	0	37	361	30
131	Broadway	Embarcadero West	6	45	8	46	48	41	24	149	29	12	37	69
132	Franklin Street	7th Street	0	39	36	0	0	0	117	1875	9	0	0	0
133	Franklin Street	8th Street	50	121	0	0	0	0	0	0	0	0	484	192
137	MLK Jr Way	16th Street	25	173	0	0	218	21	0	0	0	59	185	33

FEHR PEERS

Appendix C:

Peak Hour Intersection LOS Calculation Worksheets

2201 Broadway | Suite 602 | Oakland, CA 94612 | (510) 834-3200 | Fax (510) 253-0059
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	95	86	178	189	25	69	139	655	0	275	93
Future Volume (veh/h)	17	95	86	178	189	25	69	139	655	0	275	93
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1900	1652	1652	1900	1759	1759	1900	0	1863	1900
Adj Flow Rate, veh/h	17	95	0	178	189	22	69	139	207	0	275	58
Adj No. of Lanes	1	1	0	2	1	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	7	7	7	15	15	15	8	8	8	0	2	2
Cap, veh/h	365	614	0	363	360	42	111	519	464	0	547	114
Arrive On Green	0.22	0.35	0.00	0.12	0.25	0.25	0.07	0.31	0.31	0.00	0.19	0.19
Sat Flow, veh/h	1691	1776	0	3053	1449	169	1675	1671	1494	0	3012	606
Grp Volume(v), veh/h	17	95	0	178	0	211	69	139	207	0	165	168
Grp Sat Flow(s),veh/h/ln	1691	1776	0	1526	0	1618	1675	1671	1494	0	1770	1756
Q Serve(g_s), s	0.5	2.4	0.0	3.5	0.0	7.3	2.6	4.0	7.2	0.0	5.4	5.5
Cycle Q Clear(g_c), s	0.5	2.4	0.0	3.5	0.0	7.3	2.6	4.0	7.2	0.0	5.4	5.5
Prop In Lane	1.00		0.00	1.00		0.10	1.00		1.00	0.00		0.35
Lane Grp Cap(c), veh/h	365	614	0	363	0	402	111	519	464	0	332	329
V/C Ratio(X)	0.05	0.15	0.00	0.49	0.00	0.52	0.62	0.27	0.45	0.00	0.50	0.51
Avail Cap(c_a), veh/h	419	614	0	946	0	627	416	1192	1065	0	604	599
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	14.6	0.0	26.6	0.0	20.9	29.3	16.7	17.8	0.0	23.5	23.5
Incr Delay (d2), s/veh	0.0	0.1	0.0	1.0	0.0	0.8	4.2	0.4	1.0	0.0	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	0.0	1.5	0.0	3.3	1.3	1.9	3.1	0.0	2.7	2.7
LnGrp Delay(d),s/veh	20.1	14.7	0.0	27.6	0.0	21.7	33.6	17.1	18.7	0.0	23.9	24.0
LnGrp LOS	C	B		C		C	C	B	B		C	C
Approach Vol, veh/h		112			389			415			333	
Approach Delay, s/veh		15.5			24.4			20.7			24.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.6	20.2	8.0	17.7	12.4	26.5		25.6
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 16	* 25	16.0	* 22	* 20	* 20		46.0
Max Q Clear Time (g_c+I1), s	2.5	9.3	4.6	7.5	5.5	4.4		9.2
Green Ext Time (p_c), s	0.0	0.8	0.1	1.1	0.5	0.3		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	265	24	326	431	35	17	35	114	21	40	18
Future Volume (veh/h)	9	265	24	326	431	35	17	35	114	21	40	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.99		0.94	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1863	1863	1900	1900	1810	1810	1900	1743	1900
Adj Flow Rate, veh/h	9	265	24	326	431	35	17	35	114	21	40	18
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	2	2	2	5	5	5	9	9	9
Cap, veh/h	454	1423	128	510	1517	123	267	526	703	205	374	157
Arrive On Green	0.46	0.46	0.46	0.92	0.92	0.92	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	857	3093	278	1072	3299	266	477	1143	1528	346	813	342
Grp Volume(v), veh/h	9	142	147	326	230	236	52	0	114	79	0	0
Grp Sat Flow(s),veh/h/ln	857	1671	1699	1072	1770	1796	1620	0	1528	1501	0	0
Q Serve(g_s), s	0.6	5.0	5.1	14.1	1.4	1.4	0.0	0.0	4.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	5.0	5.1	19.2	1.4	1.4	1.6	0.0	4.4	2.7	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.15	0.33		1.00	0.27		0.23
Lane Grp Cap(c), veh/h	454	769	782	510	814	826	793	0	703	736	0	0
V/C Ratio(X)	0.02	0.18	0.19	0.64	0.28	0.29	0.07	0.00	0.16	0.11	0.00	0.00
Avail Cap(c_a), veh/h	454	769	782	510	814	826	793	0	703	736	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.5	15.9	16.0	4.1	2.2	2.2	15.0	0.0	15.8	15.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.5	6.0	0.9	0.9	0.2	0.0	0.5	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(50%),veh/ln	0.2	2.4	2.5	4.7	0.8	0.9	0.8	0.0	1.9	1.3	0.0	0.0
LnGrp Delay(d),s/veh	15.6	16.5	16.5	10.1	3.1	3.1	15.2	0.0	16.3	15.6	0.0	0.0
LnGrp LOS	B	B	B	B	A	A	B		B	B		
Approach Vol, veh/h		298			792			166			79	
Approach Delay, s/veh		16.5			6.0			15.9			15.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		50.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		46.0		46.0		46.0		46.0
Max Q Clear Time (g_c+I1), s		6.4		7.1		4.7		21.2
Green Ext Time (p_c), s		0.7		1.9		0.5		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	81	8	170	60	67	11	160	69	85	94	21
Future Vol, veh/h	22	81	8	170	60	67	11	160	69	85	94	21
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
Heavy Vehicles, %	23	23	23	61	61	61	84	84	84	43	43	43
Mvmt Flow	22	81	8	170	60	67	11	160	69	85	94	21
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.1	17.3	13.1	12.2
HCM LOS	B	C	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	12%	0%	20%	57%	64%	0%
Vol Thru, %	88%	54%	73%	20%	36%	69%
Vol Right, %	0%	46%	7%	23%	0%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	149	111	297	132	68
LT Vol	11	0	22	170	85	0
Through Vol	80	80	81	60	47	47
RT Vol	0	69	8	67	0	21
Lane Flow Rate	91	149	111	297	132	68
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.197	0.306	0.198	0.544	0.273	0.13
Departure Headway (Hd)	7.783	7.391	6.419	6.597	7.434	6.886
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	460	486	557	546	482	520
Service Time	5.539	5.147	4.485	4.648	5.193	4.644
HCM Lane V/C Ratio	0.198	0.307	0.199	0.544	0.274	0.131
HCM Control Delay	12.5	13.4	11.1	17.3	13	10.7
HCM Lane LOS	B	B	B	C	B	B
HCM 95th-tile Q	0.7	1.3	0.7	3.2	1.1	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	613	102	76	262	54	67	8	174	102	31	71
Future Volume (veh/h)	14	613	102	76	262	54	67	8	174	102	31	71
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1610	1610	1900	1080	1080	1900	1743	1743	1900
Adj Flow Rate, veh/h	14	613	102	76	262	54	67	8	174	68	79	71
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	18	18	18	76	76	76	9	9	9
Cap, veh/h	23	821	136	92	865	175	238	237	212	231	248	197
Arrive On Green	0.01	0.29	0.29	0.06	0.34	0.34	0.23	0.23	0.23	0.14	0.14	0.14
Sat Flow, veh/h	1675	2868	476	1533	2534	514	1028	1026	916	1660	1782	1419
Grp Volume(v), veh/h	14	357	358	76	157	159	67	8	174	68	77	73
Grp Sat Flow(s),veh/h/ln	1675	1671	1673	1533	1530	1518	1028	1026	916	1660	1743	1458
Q Serve(g_s), s	0.5	10.9	11.0	2.8	4.2	4.4	3.0	0.3	10.2	2.1	2.2	2.6
Cycle Q Clear(g_c), s	0.5	10.9	11.0	2.8	4.2	4.4	3.0	0.3	10.2	2.1	2.2	2.6
Prop In Lane	1.00		0.28	1.00		0.34	1.00		1.00	1.00		0.97
Lane Grp Cap(c), veh/h	23	479	479	92	522	518	238	237	212	231	242	203
V/C Ratio(X)	0.60	0.75	0.75	0.82	0.30	0.31	0.28	0.03	0.82	0.29	0.32	0.36
Avail Cap(c_a), veh/h	534	887	888	624	677	671	418	417	373	675	709	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	18.3	18.3	26.3	13.7	13.7	17.9	16.8	20.6	21.8	21.9	22.1
Incr Delay (d2), s/veh	8.8	0.9	0.9	12.6	0.3	0.3	0.7	0.1	8.3	0.7	0.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.2	5.2	1.5	1.8	1.9	0.9	0.1	3.0	1.0	1.1	1.1
LnGrp Delay(d),s/veh	36.5	19.2	19.2	38.8	14.0	14.0	18.6	16.9	28.9	22.5	22.7	23.1
LnGrp LOS	D	B	B	D	B	B	B	B	C	C	C	C
Approach Vol, veh/h		729			392			249			218	
Approach Delay, s/veh		19.5			18.8			25.7			22.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.3	23.3		17.1	7.4	20.2		11.9
Change Period (Y+Rc), s	3.5	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	25.0		23.0	23.0	30.0		23.0
Max Q Clear Time (g_c+I1), s	2.5	6.4		12.2	4.8	13.0		4.6
Green Ext Time (p_c), s	0.0	1.8		1.1	0.1	3.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	337	36	73	692	47	11	35	26	51	94	90
Future Volume (veh/h)	35	337	36	73	692	47	11	35	26	51	94	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1845	1845	1900	1900	1743	1900
Adj Flow Rate, veh/h	35	337	36	73	692	47	11	35	26	51	94	90
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	9	9	9
Cap, veh/h	458	2022	214	705	2243	980	328	562	372	203	341	315
Arrive On Green	1.00	1.00	1.00	0.64	0.64	0.64	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	700	3159	335	989	3505	1531	1180	2007	1329	543	1219	1124
Grp Volume(v), veh/h	35	184	189	73	692	47	11	30	31	126	0	109
Grp Sat Flow(s),veh/h/ln	700	1736	1758	989	1752	1531	1180	1752	1583	1526	0	1361
Q Serve(g_s), s	0.8	0.0	0.0	2.9	8.9	1.1	0.7	1.3	1.4	3.1	0.0	6.3
Cycle Q Clear(g_c), s	9.6	0.0	0.0	2.9	8.9	1.1	7.0	1.3	1.4	6.1	0.0	6.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.84	0.40		0.83
Lane Grp Cap(c), veh/h	458	1111	1125	705	2243	980	328	491	443	478	0	381
V/C Ratio(X)	0.08	0.17	0.17	0.10	0.31	0.05	0.03	0.06	0.07	0.26	0.00	0.29
Avail Cap(c_a), veh/h	458	1111	1125	705	2243	980	328	491	443	478	0	381
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.7	0.0	0.0	7.0	8.1	6.7	30.9	26.4	26.4	28.0	0.0	28.2
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.3	0.4	0.1	0.2	0.2	0.3	1.3	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.1	0.8	4.3	0.5	0.3	0.6	0.7	2.9	0.0	2.6
LnGrp Delay(d),s/veh	1.0	0.3	0.3	7.3	8.4	6.8	31.1	26.6	26.7	29.4	0.0	30.1
LnGrp LOS	A	A	A	A	A	A	C	C	C	C		C
Approach Vol, veh/h		408			812			72			235	
Approach Delay, s/veh		0.4			8.2			27.4			29.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		68.0		32.0		68.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		64.0		28.0		64.0
Max Q Clear Time (g_c+I1), s		9.0		11.6		8.3		10.9
Green Ext Time (p_c), s		0.3		2.8		1.3		6.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	6	1	0	8	4	0	19	0	11	20	33
Future Vol, veh/h	26	6	1	0	8	4	0	19	0	11	20	33
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
Heavy Vehicles, %	76	76	76	33	33	33	89	89	89	72	72	72
Mvmt Flow	26	6	1	0	8	4	0	19	0	11	20	33
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	1	1
HCM Control Delay	9.5	7.9	9.1	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	79%	0%	100%	0%	0%
Vol Thru, %	100%	18%	67%	0%	100%	0%
Vol Right, %	0%	3%	33%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	33	12	11	20	33
LT Vol	0	26	0	11	0	0
Through Vol	19	6	8	0	20	0
RT Vol	0	1	4	0	0	33
Lane Flow Rate	19	33	12	11	20	33
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.032	0.059	0.017	0.019	0.032	0.047
Departure Headway (Hd)	6.125	6.417	5.105	6.314	5.813	5.113
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	579	562	705	563	611	694
Service Time	3.924	4.117	2.805	4.095	3.594	2.893
HCM Lane V/C Ratio	0.033	0.059	0.017	0.02	0.033	0.048
HCM Control Delay	9.1	9.5	7.9	9.2	8.8	8.1
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0.1	0.1	0.1

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕		↰	↑↕	
Traffic Vol, veh/h	13	123	39	23	192	23	39	15	4	23	30	120
Future Vol, veh/h	13	123	39	23	192	23	39	15	4	23	30	120
Conflicting Peds, #/hr	3	0	8	8	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	140	-	-
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, %	37	37	37	27	27	27	76	76	76	27	27	27
Mvmt Flow	13	123	39	23	192	23	39	15	4	23	30	120

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	218	0	0	170	0	0	502	441	151	431	449	207
Stage 1	-	-	-	-	-	-	177	177	-	253	253	-
Stage 2	-	-	-	-	-	-	325	264	-	178	196	-
Critical Hdwy	4.47	-	-	4.37	-	-	7.86	7.26	6.96	7.37	6.77	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.86	6.26	-	6.37	5.77	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.86	6.26	-	6.37	5.77	-
Follow-up Hdwy	2.533	-	-	2.443	-	-	4.184	4.684	3.984	3.743	4.243	3.543
Pot Cap-1 Maneuver	1169	-	-	1269	-	-	380	415	733	494	470	774
Stage 1	-	-	-	-	-	-	679	633	-	699	654	-
Stage 2	-	-	-	-	-	-	556	574	-	769	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1166	-	-	1259	-	-	295	397	727	464	450	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	397	-	464	450	-
Stage 1	-	-	-	-	-	-	665	620	-	689	638	-
Stage 2	-	-	-	-	-	-	438	560	-	737	680	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.8	18.2	11.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	331	1166	-	-	1259	-	-	464	450	715
HCM Lane V/C Ratio	0.175	0.011	-	-	0.018	-	-	0.05	0.033	0.189
HCM Control Delay (s)	18.2	8.1	0	-	7.9	0	-	13.2	13.3	11.2
HCM Lane LOS	C	A	A	-	A	A	-	B	B	B
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	0.2	0.1	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	505	17	0	0	0	0	63	11	49	164	0
Future Volume (veh/h)	11	505	17	0	0	0	0	63	11	49	164	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1900				0	1532	1532	1570	1570	0
Adj Flow Rate, veh/h	11	505	17				0	63	11	49	164	0
Adj No. of Lanes	0	3	0				0	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	8	0				0	24	24	21	21	0
Cap, veh/h	78	3807	132				0	288	126	167	295	0
Arrive On Green	0.79	0.79	0.79				0.00	0.10	0.10	0.03	0.03	0.00
Sat Flow, veh/h	99	4819	167				0	2988	1273	1108	3062	0
Grp Volume(v), veh/h	195	162	176				0	63	11	49	164	0
Grp Sat Flow(s),veh/h/ln	1754	1601	1730				0	1456	1273	1108	1492	0
Q Serve(g_s), s	2.4	2.1	2.1				0.0	1.8	0.7	3.9	4.9	0.0
Cycle Q Clear(g_c), s	2.4	2.1	2.1				0.0	1.8	0.7	5.7	4.9	0.0
Prop In Lane	0.06		0.10				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1386	1265	1366				0	288	126	167	295	0
V/C Ratio(X)	0.14	0.13	0.13				0.00	0.22	0.09	0.29	0.56	0.00
Avail Cap(c_a), veh/h	1386	1265	1366				0	631	276	298	646	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	2.2	2.2	2.2				0.0	37.3	36.9	42.9	41.6	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.2				0.0	0.1	0.1	0.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.0	1.1				0.0	0.7	0.3	1.2	2.0	0.0
LnGrp Delay(d),s/veh	2.4	2.4	2.4				0.0	37.5	37.0	43.2	42.2	0.0
LnGrp LOS	A	A	A					D	D	D	D	
Approach Vol, veh/h		533						74			213	
Approach Delay, s/veh		2.4						37.4			42.4	
Approach LOS		A						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		13.4		76.6		13.4		
Change Period (Y+Rc), s		4.5		5.5		4.5		
Max Green Setting (Gmax), s		19.5		60.5		19.5		
Max Q Clear Time (g_c+I1), s		3.8		4.4		7.7		
Green Ext Time (p_c), s		0.2		2.3		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes



Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	SWR2
Lane Configurations								
Traffic Volume (vph)	108	311	199	18	59	101	125	29
Future Volume (vph)	108	311	199	18	59	101	125	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	10	10	12
Total Lost time (s)		5.0	5.0	4.5	4.5	4.5	4.5	5.0
Lane Util. Factor		0.95	1.00	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00	1.00	0.98	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85	0.86
Flt Protected		0.99	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)		2946	1317	1413	1493	3120	1370	1341
Flt Permitted		0.99	1.00	0.69	1.00	1.00	1.00	1.00
Satd. Flow (perm)		2946	1317	1024	1493	3120	1370	1341
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	108	311	199	18	59	101	125	29
RTOR Reduction (vph)	0	0	0	0	0	0	40	23
Lane Group Flow (vph)	0	419	199	18	59	101	85	6
Confl. Peds. (#/hr)			1	4			4	1
Confl. Bikes (#/hr)							7	
Heavy Vehicles (%)	21%	21%	21%	23%	23%	8%	8%	21%
Turn Type	Perm	NA	Perm	Perm	NA	NA	Perm	Perm
Protected Phases		4			2	6		
Permitted Phases	4		4	2			6	4
Actuated Green, G (s)		19.1	19.1	61.4	61.4	61.4	61.4	19.1
Effective Green, g (s)		19.1	19.1	61.4	61.4	61.4	61.4	19.1
Actuated g/C Ratio		0.21	0.21	0.68	0.68	0.68	0.68	0.21
Clearance Time (s)		5.0	5.0	4.5	4.5	4.5	4.5	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		625	279	698	1018	2128	934	284
v/s Ratio Prot					0.04	0.03		
v/s Ratio Perm		0.14	c0.15	0.02			c0.06	0.00
v/c Ratio		0.67	0.71	0.03	0.06	0.05	0.09	0.02
Uniform Delay, d1		32.6	32.9	4.6	4.7	4.7	4.8	28.1
Progression Factor		1.00	1.00	1.50	1.41	1.00	1.00	1.00
Incremental Delay, d2		2.2	7.0	0.1	0.1	0.0	0.2	0.0
Delay (s)		34.8	39.9	7.0	6.8	4.7	5.0	28.1
Level of Service		C	D	A	A	A	A	C
Approach Delay (s)		36.4			6.8	4.9		
Approach LOS		D			A	A		

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	336	26	107	760	23	81	162	15	60	81	112
Future Volume (veh/h)	52	336	26	107	760	23	81	162	15	60	81	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900	1845	1845	1900	1743	1743	1743	1810	1810	1810
Adj Flow Rate, veh/h	52	336	26	107	760	23	81	162	15	60	81	112
Adj No. of Lanes	1	3	0	1	3	0	1	1	1	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	6	6	3	3	3	9	9	9	5	5	5
Cap, veh/h	544	3272	249	770	3548	107	264	317	268	199	625	273
Arrive On Green	0.71	0.71	0.71	0.94	0.94	0.94	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	661	4633	353	1004	5023	152	1104	1743	1472	1164	3438	1500
Grp Volume(v), veh/h	52	235	127	107	507	276	81	162	15	60	81	112
Grp Sat Flow(s),veh/h/ln	661	1631	1723	1004	1679	1817	1104	1743	1472	1164	1719	1500
Q Serve(g_s), s	2.2	1.9	2.0	1.0	1.0	1.0	5.6	7.1	0.7	4.2	1.7	5.6
Cycle Q Clear(g_c), s	3.2	1.9	2.0	3.0	1.0	1.0	7.3	7.1	0.7	11.3	1.7	5.6
Prop In Lane	1.00		0.20	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	544	2304	1217	770	2371	1284	264	317	268	199	625	273
V/C Ratio(X)	0.10	0.10	0.10	0.14	0.21	0.21	0.31	0.51	0.06	0.30	0.13	0.41
Avail Cap(c_a), veh/h	544	2304	1217	770	2371	1284	537	749	632	487	1476	644
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)	0.99	0.99	0.99	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.3	3.9	4.0	1.0	0.8	0.8	32.2	31.4	28.7	36.5	29.1	30.7
Incr Delay (d2), s/veh	0.3	0.1	0.2	0.4	0.2	0.4	0.2	0.4	0.0	0.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.9	1.0	0.3	0.4	0.5	1.7	3.5	0.3	1.4	0.8	2.4
LnGrp Delay(d),s/veh	4.6	4.0	4.1	1.3	1.0	1.2	32.4	31.8	28.8	36.8	29.2	31.1
LnGrp LOS	A	A	A	A	A	A	C	C	C	D	C	C
Approach Vol, veh/h		414			890			258			253	
Approach Delay, s/veh		4.1			1.1			31.8			31.8	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		65.0		20.0		65.0
Change Period (Y+Rc), s		4.5		5.0		4.5		5.0
Max Green Setting (Gmax), s		36.5		39.0		36.5		39.0
Max Q Clear Time (g_c+I1), s		9.3		5.2		13.3		5.0
Green Ext Time (p_c), s		0.8		1.9		0.6		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	24	29	25	40	49	40	149	48	42	139	59
Future Volume (veh/h)	69	24	29	25	40	49	40	149	48	42	139	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.98	0.99		0.99	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1881	1900	1776	1776	1900	1863	1863	1900
Adj Flow Rate, veh/h	69	24	29	25	40	49	40	149	48	42	139	59
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	1	1	1	7	7	7	2	2	2
Cap, veh/h	410	144	138	183	281	283	594	1112	345	616	1071	429
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	744	361	345	237	701	708	1113	2527	785	1169	2433	976
Grp Volume(v), veh/h	122	0	0	114	0	0	40	98	99	42	99	99
Grp Sat Flow(s),veh/h/ln	1450	0	0	1646	0	0	1113	1687	1624	1169	1770	1640
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	1.1	1.7	1.8	1.1	1.7	1.8
Cycle Q Clear(g_c), s	2.3	0.0	0.0	2.1	0.0	0.0	2.9	1.7	1.8	2.9	1.7	1.8
Prop In Lane	0.57		0.24	0.22		0.43	1.00		0.48	1.00		0.60
Lane Grp Cap(c), veh/h	693	0	0	746	0	0	594	742	715	616	779	721
V/C Ratio(X)	0.18	0.00	0.00	0.15	0.00	0.00	0.07	0.13	0.14	0.07	0.13	0.14
Avail Cap(c_a), veh/h	693	0	0	746	0	0	594	742	715	616	779	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	0.0	9.6	0.0	0.0	9.2	8.3	8.4	9.2	8.3	8.3
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.4	0.0	0.0	0.2	0.4	0.4	0.2	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.1	0.0	0.0	0.4	0.9	0.9	0.4	0.9	0.9
LnGrp Delay(d),s/veh	10.2	0.0	0.0	10.1	0.0	0.0	9.4	8.7	8.8	9.4	8.6	8.7
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		122			114			237			240	
Approach Delay, s/veh		10.2			10.1			8.8			8.8	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.0		24.0		26.0		24.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		22.0		20.0		22.0		20.0
Max Q Clear Time (g_c+I1), s		4.9		4.3		4.9		4.1
Green Ext Time (p_c), s		1.2		0.5		1.1		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		9.3
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	120	15	28	38	23	23	178	84	50	191	47
Future Volume (veh/h)	23	120	15	28	38	23	23	178	84	50	191	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	0.99		0.99	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1743	1900	1792	1792	1792	1810	1810	1900
Adj Flow Rate, veh/h	23	120	15	28	38	23	23	178	84	50	191	47
Adj No. of Lanes	0	1	0	0	2	0	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	9	9	9	6	6	6	5	5	5
Cap, veh/h	88	312	36	242	288	176	859	2375	1048	832	1903	455
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.70	0.70	0.70	1.00	1.00	1.00
Sat Flow, veh/h	132	1439	165	742	1326	809	1084	3406	1503	1071	2730	652
Grp Volume(v), veh/h	158	0	0	49	0	40	23	178	84	50	118	120
Grp Sat Flow(s),veh/h/ln	1735	0	0	1469	0	1409	1084	1703	1503	1071	1719	1663
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	1.6	0.5	1.2	1.3	0.1	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	1.6	0.0	1.6	0.5	1.2	1.3	1.3	0.0	0.0
Prop In Lane	0.15		0.09	0.57		0.57	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	435	0	0	400	0	306	859	2375	1048	832	1199	1160
V/C Ratio(X)	0.36	0.00	0.00	0.12	0.00	0.13	0.03	0.07	0.08	0.06	0.10	0.10
Avail Cap(c_a), veh/h	889	0	0	762	0	684	859	2375	1048	832	1199	1160
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.5	0.0	0.0	22.1	0.0	22.1	3.3	3.4	3.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	0.8	0.0	0.6	0.1	0.6	0.6	0.0	0.1	0.1
LnGrp Delay(d),s/veh	24.0	0.0	0.0	22.2	0.0	22.3	3.3	3.4	3.5	0.2	0.2	0.2
LnGrp LOS	C			C		C	A	A	A	A	A	A
Approach Vol, veh/h		158			89			285			288	
Approach Delay, s/veh		24.0			22.2			3.5			0.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		51.8		18.2		51.8		18.2
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		30.0		34.0		30.0		34.0
Max Q Clear Time (g_c+I1), s		3.3		7.3		3.3		3.6
Green Ext Time (p_c), s		1.5		0.9		1.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	0	37	16	54	41	17	203	0	0	226	42
Future Volume (veh/h)	60	0	37	16	54	41	17	203	0	0	226	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.96	0.96		0.96	0.98		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1792	1792	1900	1900	1759	0	0	1810	1900
Adj Flow Rate, veh/h	60	0	37	16	54	41	17	203	0	0	226	42
Adj No. of Lanes	1	1	0	1	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	6	6	6	8	8	0	0	5	5
Cap, veh/h	502	0	496	509	648	434	155	1725	0	0	1662	302
Arrive On Green	0.34	0.00	0.34	0.34	0.34	0.34	1.00	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1262	0	1532	1263	1918	1285	167	3074	0	0	2974	525
Grp Volume(v), veh/h	60	0	37	16	47	48	117	103	0	0	133	135
Grp Sat Flow(s),veh/h/ln	1262	0	1532	1263	1703	1500	1640	1521	0	0	1719	1689
Q Serve(g_s), s	2.4	0.0	1.1	0.6	1.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	1.1	1.8	1.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.86	0.15		0.00	0.00		0.31
Lane Grp Cap(c), veh/h	502	0	496	509	575	507	1004	877	0	0	991	974
V/C Ratio(X)	0.12	0.00	0.07	0.03	0.08	0.09	0.12	0.12	0.00	0.00	0.13	0.14
Avail Cap(c_a), veh/h	706	0	744	714	851	750	1004	877	0	0	991	974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	16.1	16.3	15.8	15.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	0.2	0.6	0.6	0.1	0.1	0.0	0.0	0.1	0.1
LnGrp Delay(d),s/veh	17.3	0.0	16.1	16.3	15.8	15.9	0.2	0.3	0.0	0.0	0.3	0.3
LnGrp LOS	B		B	B	B	B	A	A			A	A
Approach Vol, veh/h		97			111			220			268	
Approach Delay, s/veh		16.8			15.9			0.3			0.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.3		26.7		43.3		26.7
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		29.0		35.0		29.0		35.0
Max Q Clear Time (g_c+I1), s		2.0		5.9		2.0		3.8
Green Ext Time (p_c), s		1.3		0.4		1.6		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		5.1
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	354	24	57	304	56	37	203	57	36	180	26
Future Volume (veh/h)	60	354	24	57	304	56	37	203	57	36	180	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97	0.99		0.98	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1845	1845	1900	1792	1792	1900	1810	1810	1900
Adj Flow Rate, veh/h	60	354	24	57	304	56	37	203	57	36	180	26
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	5	3	3	3	6	6	6	5	5	5
Cap, veh/h	487	1572	675	490	1347	244	554	1205	329	584	1376	195
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.91	0.91	0.91	0.15	0.15	0.15
Sat Flow, veh/h	977	3438	1476	980	2946	535	1114	2635	720	1071	3011	427
Grp Volume(v), veh/h	60	354	24	57	179	181	37	129	131	36	101	105
Grp Sat Flow(s),veh/h/ln	977	1719	1476	980	1752	1729	1114	1703	1652	1071	1719	1719
Q Serve(g_s), s	2.8	4.4	0.6	2.6	4.3	4.4	0.5	0.5	0.6	2.0	3.6	3.7
Cycle Q Clear(g_c), s	7.2	4.4	0.6	7.0	4.3	4.4	4.2	0.5	0.6	2.6	3.6	3.7
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.44	1.00		0.25
Lane Grp Cap(c), veh/h	487	1572	675	490	801	790	554	778	755	584	786	786
V/C Ratio(X)	0.12	0.23	0.04	0.12	0.22	0.23	0.07	0.17	0.17	0.06	0.13	0.13
Avail Cap(c_a), veh/h	487	1572	675	490	801	790	554	778	755	584	786	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.7	11.5	10.5	13.6	11.5	11.5	2.2	1.7	1.7	17.5	17.7	17.7
Incr Delay (d2), s/veh	0.5	0.3	0.1	0.5	0.6	0.7	0.2	0.5	0.5	0.2	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.1	0.3	0.8	2.2	2.3	0.2	0.3	0.3	0.6	1.8	1.8
LnGrp Delay(d),s/veh	14.2	11.8	10.6	14.1	12.1	12.2	2.4	2.1	2.2	17.7	18.0	18.1
LnGrp LOS	B	B	B	B	B	B	A	A	A	B	B	B
Approach Vol, veh/h		438			417			297			242	
Approach Delay, s/veh		12.1			12.4			2.2			18.0	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.0		35.0		35.0		35.0
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		32.0		32.0		32.0		32.0
Max Q Clear Time (g_c+I1), s		6.2		9.2		5.7		9.0
Green Ext Time (p_c), s		1.1		1.8		0.8		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		11.1
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	121	20	32	152	53	30	242	29	47	196	25
Future Volume (veh/h)	20	121	20	32	152	53	30	242	29	47	196	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	0.99		0.98	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1845	1900	1827	1827	1900	1900	1827	1900
Adj Flow Rate, veh/h	20	121	20	32	152	53	30	242	29	47	196	25
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	4	4	4	4	4	4
Cap, veh/h	167	923	150	179	773	261	650	1648	195	304	1229	160
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.17	0.17	0.17	0.53	0.53	0.53
Sat Flow, veh/h	289	2585	421	321	2165	730	1125	3118	369	444	2325	303
Grp Volume(v), veh/h	85	0	76	125	0	112	30	133	138	136	0	132
Grp Sat Flow(s),veh/h/ln	1688	0	1607	1679	0	1537	1125	1736	1752	1474	0	1599
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	3.5	1.6	4.6	4.7	0.1	0.0	3.0
Cycle Q Clear(g_c), s	2.1	0.0	2.2	3.3	0.0	3.5	4.5	4.6	4.7	4.7	0.0	3.0
Prop In Lane	0.24		0.26	0.26		0.47	1.00		0.21	0.35		0.19
Lane Grp Cap(c), veh/h	666	0	574	664	0	549	650	917	926	848	0	845
V/C Ratio(X)	0.13	0.00	0.13	0.19	0.00	0.20	0.05	0.15	0.15	0.16	0.00	0.16
Avail Cap(c_a), veh/h	666	0	574	664	0	549	650	917	926	848	0	845
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	15.2	15.5	0.0	15.6	16.8	15.5	15.5	8.4	0.0	8.5
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.6	0.0	0.8	0.1	0.3	0.3	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.1	1.8	0.0	1.6	0.5	2.3	2.3	1.4	0.0	1.4
LnGrp Delay(d),s/veh	15.5	0.0	15.7	16.1	0.0	16.4	16.9	15.8	15.9	8.8	0.0	8.9
LnGrp LOS	B		B	B		B	B	B	B	A		A
Approach Vol, veh/h		161			237			301			268	
Approach Delay, s/veh		15.6			16.3			16.0			8.8	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.0		29.0		41.0		29.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		37.0		25.0		37.0		25.0
Max Q Clear Time (g_c+I1), s		6.7		4.2		6.7		5.5
Green Ext Time (p_c), s		1.1		0.5		1.1		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		14.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	324	37	63	737	14	86	156	72	40	142	47
Future Volume (veh/h)	19	324	37	63	737	14	86	156	72	40	142	47
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.98		0.96	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1712	1712	1845	1845	1845	1792	1792	1792	1900	1792	1900
Adj Flow Rate, veh/h	19	324	37	63	737	14	86	156	72	40	142	47
Adj No. of Lanes	0	2	1	1	2	1	1	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	11	11	11	3	3	3	6	6	6	6	6	6
Cap, veh/h	101	1535	734	132	2274	984	313	428	348	95	261	78
Arrive On Green	0.52	0.52	0.52	0.08	0.65	0.65	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	98	2931	1402	1757	3505	1516	1124	1792	1457	176	1094	328
Grp Volume(v), veh/h	179	164	37	63	737	14	86	156	72	229	0	0
Grp Sat Flow(s),veh/h/ln	1550	1480	1402	1757	1752	1516	1124	1792	1457	1598	0	0
Q Serve(g_s), s	0.0	4.8	1.0	2.8	7.5	0.3	0.0	5.8	3.2	3.2	0.0	0.0
Cycle Q Clear(g_c), s	4.5	4.8	1.0	2.8	7.5	0.3	7.8	5.8	3.2	9.8	0.0	0.0
Prop In Lane	0.11		1.00	1.00		1.00	1.00		1.00	0.17		0.21
Lane Grp Cap(c), veh/h	861	775	734	132	2274	984	313	428	348	434	0	0
V/C Ratio(X)	0.21	0.21	0.05	0.48	0.32	0.01	0.27	0.36	0.21	0.53	0.00	0.00
Avail Cap(c_a), veh/h	861	775	734	242	2274	984	466	672	546	644	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	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.1	10.2	9.3	35.5	6.2	5.0	26.2	25.4	24.4	26.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.6	0.1	2.6	0.4	0.0	0.5	0.5	0.3	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(50%),veh/ln	2.2	2.0	0.4	1.4	3.7	0.1	1.7	2.9	1.3	4.6	0.0	0.0
LnGrp Delay(d),s/veh	10.7	10.8	9.5	38.1	6.6	5.0	26.6	25.9	24.7	27.8	0.0	0.0
LnGrp LOS	B	B	A	D	A	A	C	C	C	C		
Approach Vol, veh/h		380			814			314			229	
Approach Delay, s/veh		10.6			9.0			25.8			27.8	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	10.0	46.9		23.1		56.9		23.1
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s	10.0	26.0		30.0		41.0		30.0
Max Q Clear Time (g_c+I1), s	11.8	6.8		11.8		9.5		9.8
Green Ext Time (p_c), s	0.0	2.1		1.3		5.9		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	15	37	14	4	8	31	157	14	3	159	22
Future Vol, veh/h	27	15	37	14	4	8	31	157	14	3	159	22
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
Heavy Vehicles, %	1	1	1	4	4	4	5	5	5	7	7	7
Mvmt Flow	27	15	37	14	4	8	31	157	14	3	159	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.1	8.9	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	34%	54%	2%
Vol Thru, %	78%	19%	15%	86%
Vol Right, %	7%	47%	31%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	79	26	184
LT Vol	31	27	14	3
Through Vol	157	15	4	159
RT Vol	14	37	8	22
Lane Flow Rate	202	79	26	184
Geometry Grp	1	1	1	1
Degree of Util (X)	0.248	0.101	0.035	0.226
Departure Headway (Hd)	4.42	4.604	4.86	4.416
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	814	779	736	813
Service Time	2.441	2.631	2.892	2.437
HCM Lane V/C Ratio	0.248	0.101	0.035	0.226
HCM Control Delay	8.9	8.2	8.1	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.3	0.1	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	25	29	24	51	7	30	144	23	7	128	7
Future Volume (veh/h)	13	25	29	24	51	7	30	144	23	7	128	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.95	0.96		0.93	0.97		0.93	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1863	1900	1827	1827	1827	1759	1759	1759
Adj Flow Rate, veh/h	13	25	29	24	51	7	30	144	23	7	128	7
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	8	8	8
Cap, veh/h	132	239	236	196	389	48	703	992	788	661	955	756
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	205	697	688	379	1136	141	1183	1827	1451	1108	1759	1393
Grp Volume(v), veh/h	67	0	0	82	0	0	30	144	23	7	128	7
Grp Sat Flow(s),veh/h/ln	1590	0	0	1656	0	0	1183	1827	1451	1108	1759	1393
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.7	0.5	0.2	2.5	0.2
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.2	0.0	0.0	3.4	2.7	0.5	3.0	2.5	0.2
Prop In Lane	0.19		0.43	0.29		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	606	0	0	634	0	0	703	992	788	661	955	756
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.04	0.15	0.03	0.01	0.13	0.01
Avail Cap(c_a), veh/h	606	0	0	634	0	0	703	992	788	661	955	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	0.0	15.8	0.0	0.0	8.7	7.9	7.4	8.7	7.9	7.4
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.1	0.3	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.2	0.0	0.0	0.3	1.4	0.2	0.1	1.3	0.1
LnGrp Delay(d),s/veh	16.1	0.0	0.0	16.2	0.0	0.0	8.8	8.2	7.5	8.7	8.2	7.4
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		67			82			197			142	
Approach Delay, s/veh		16.1			16.2			8.3			8.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		28.0		42.0		28.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		38.0		24.0		38.0		24.0
Max Q Clear Time (g_c+I1), s		5.4		3.9		5.0		4.2
Green Ext Time (p_c), s		1.0		0.3		0.8		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		10.6
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	548	113	0	400	0	152	0	7	0	0	0
Future Volume (veh/h)	0	548	113	0	400	0	152	0	7	0	0	0
Number	1	6	16	5	2	12	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1810	1900	1810	1810	1900			
Adj Flow Rate, veh/h	0	548	113	0	400	0	159	0	0			
Adj No. of Lanes	0	2	0	0	2	0	2	1	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	3	3	0	5	5	5	5	5			
Cap, veh/h	0	1681	345	0	1999	0	962	505	0			
Arrive On Green	0.00	0.58	0.58	0.00	0.58	0.00	0.28	0.00	0.00			
Sat Flow, veh/h	0	2983	594	0	3619	0	3447	1810	0			
Grp Volume(v), veh/h	0	331	330	0	400	0	159	0	0			
Grp Sat Flow(s),veh/h/ln	0	1752	1732	0	1719	0	1723	1810	0			
Q Serve(g_s), s	0.0	8.4	8.5	0.0	4.7	0.0	3.0	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	8.4	8.5	0.0	4.7	0.0	3.0	0.0	0.0			
Prop In Lane	0.00		0.34	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1019	1007	0	1999	0	962	505	0			
V/C Ratio(X)	0.00	0.33	0.33	0.00	0.20	0.00	0.17	0.00	0.00			
Avail Cap(c_a), veh/h	0	1019	1007	0	1999	0	962	505	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	0.99	0.00	0.00			
Uniform Delay (d), s/veh	0.0	9.3	9.3	0.0	8.5	0.0	23.4	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.8	0.9	0.0	0.2	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			
%ile BackOfQ(50%),veh/ln	0.0	4.3	4.3	0.0	2.3	0.0	1.5	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	10.1	10.2	0.0	8.8	0.0	23.8	0.0	0.0			
LnGrp LOS		B	B		A		C					
Approach Vol, veh/h		661			400			159				
Approach Delay, s/veh		10.2			8.8			23.8				
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		30.0
Change Period (Y+Rc), s		6.0				6.0		6.0
Max Green Setting (Gmax), s		22.0				22.0		24.0
Max Q Clear Time (g_c+I1), s		6.7				10.5		5.0
Green Ext Time (p_c), s		2.3				3.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Notes

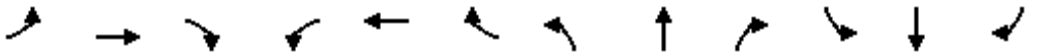
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	144	0	2	144	0	2	1	1	34	0	98
Future Vol, veh/h	5	144	0	2	144	0	2	1	1	34	0	98
Conflicting Peds, #/hr	3	0	20	20	0	3	2	0	3	3	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	26	26	26	32	32	32	50	50	50	17	17	17
Mvmt Flow	5	144	0	2	144	0	2	1	1	34	0	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	164	0	0	373	325	167	309	325	149
Stage 1	-	-	-	-	-	-	174	174	-	151	151	-
Stage 2	-	-	-	-	-	-	199	151	-	158	174	-
Critical Hdwy	4.36	-	-	4.42	-	-	7.6	7	6.7	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	6	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	6	-	6.27	5.67	-
Follow-up Hdwy	2.434	-	-	2.488	-	-	3.95	4.45	3.75	3.653	4.153	3.453
Pot Cap-1 Maneuver	1300	-	-	1251	-	-	505	522	767	615	569	860
Stage 1	-	-	-	-	-	-	728	673	-	817	745	-
Stage 2	-	-	-	-	-	-	704	690	-	810	727	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1296	-	-	1227	-	-	436	507	750	607	553	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	436	507	-	607	553	-
Stage 1	-	-	-	-	-	-	711	658	-	811	741	-
Stage 2	-	-	-	-	-	-	621	687	-	802	710	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	12.2	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	507	1296	-	-	1227	-	-	774
HCM Lane V/C Ratio	0.008	0.004	-	-	0.002	-	-	0.171
HCM Control Delay (s)	12.2	7.8	0	-	7.9	0	-	10.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	549	11	0	0	0	0	0	10	429	171	0
Future Volume (vph)	0	549	11	0	0	0	0	0	10	429	171	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5							4.0	4.0	4.0	
Lane Util. Factor		0.91							1.00	0.97	1.00	
Frpb, ped/bikes		1.00							1.00	1.00	1.00	
Flpb, ped/bikes		1.00							1.00	1.00	1.00	
Frt		1.00							0.86	1.00	1.00	
Flt Protected		1.00							1.00	0.95	1.00	
Satd. Flow (prot)		4787							1644	3365	1827	
Flt Permitted		1.00							1.00	0.95	1.00	
Satd. Flow (perm)		4787							1644	3365	1827	
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	549	11	0	0	0	0	0	10	429	171	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	6	253	0	0
Lane Group Flow (vph)	0	558	0	0	0	0	0	0	4	176	171	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	0%	0%	0%	4%	4%	4%
Turn Type		NA							Prot	Perm	NA	
Protected Phases		4							2		6	
Permitted Phases										6		
Actuated Green, G (s)		44.5							37.0	37.0	37.0	
Effective Green, g (s)		44.5							37.0	37.0	37.0	
Actuated g/C Ratio		0.49							0.41	0.41	0.41	
Clearance Time (s)		4.5							4.0	4.0	4.0	
Lane Grp Cap (vph)		2366							675	1383	751	
v/s Ratio Prot		c0.12							0.00		c0.09	
v/s Ratio Perm										0.05		
v/c Ratio		0.24							0.01	0.13	0.23	
Uniform Delay, d1		13.0							15.6	16.5	17.2	
Progression Factor		1.44							1.00	1.00	1.00	
Incremental Delay, d2		0.2							0.0	0.2	0.7	
Delay (s)		19.0							15.7	16.7	17.9	
Level of Service		B							B	B	B	
Approach Delay (s)		19.0			0.0			15.7			17.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	20	0	0	0	0	0	588	8
Future Volume (veh/h)	0	0	0	6	20	0	0	0	0	0	588	8
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1759	1759	0				0	1827	1900
Adj Flow Rate, veh/h				6	20	0				0	588	8
Adj No. of Lanes				1	2	0				0	3	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				8	8	0				0	4	4
Cap, veh/h				886	1588	0				0	2218	30
Arrive On Green				0.47	0.47	0.00				0.00	0.44	0.44
Sat Flow, veh/h				1675	3431	0				0	5234	69
Grp Volume(v), veh/h				6	20	0				0	385	211
Grp Sat Flow(s),veh/h/ln				1675	1671	0				0	1663	1814
Q Serve(g_s), s				0.2	0.3	0.0				0.0	5.9	5.9
Cycle Q Clear(g_c), s				0.2	0.3	0.0				0.0	5.9	5.9
Prop In Lane				1.00		0.00				0.00		0.04
Lane Grp Cap(c), veh/h				886	1588	0				0	1455	794
V/C Ratio(X)				0.01	0.01	0.00				0.00	0.26	0.27
Avail Cap(c_a), veh/h				886	1588	0				0	1455	794
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				11.1	11.1	0.0				0.0	14.3	14.3
Incr Delay (d2), s/veh				0.0	0.0	0.0				0.0	0.4	0.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.1	0.0				0.0	2.8	3.1
LnGrp Delay(d),s/veh				11.1	11.1	0.0				0.0	14.8	15.1
LnGrp LOS				B	B						B	B
Approach Vol, veh/h					26						596	
Approach Delay, s/veh					11.1						14.9	
Approach LOS					B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						38.5		41.5
Change Period (Y+Rc), s						3.5		3.5
Max Green Setting (Gmax), s						35.0		38.0
Max Q Clear Time (g_c+I1), s						7.9		2.3
Green Ext Time (p_c), s						4.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	399	20	14	162	0	0	0	0	271	574	745
Future Volume (veh/h)	0	399	20	14	162	0	0	0	0	271	574	745
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1792	1900	1759	1759	0				1900	1863	1900
Adj Flow Rate, veh/h	0	399	20	14	162	0				271	574	745
Adj No. of Lanes	0	3	0	1	3	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	6	6	8	8	0				0	2	0
Cap, veh/h	0	1943	96	437	1956	0				542	1226	788
Arrive On Green	0.00	0.81	0.81	0.41	0.41	0.00				0.50	0.50	0.50
Sat Flow, veh/h	0	4932	237	908	4961	0				1075	2429	1561
Grp Volume(v), veh/h	0	272	147	14	162	0				456	389	745
Grp Sat Flow(s),veh/h/ln	0	1631	1745	908	1601	0				1809	1695	1561
Q Serve(g_s), s	0.0	1.6	1.6	0.8	1.8	0.0				14.2	12.5	38.5
Cycle Q Clear(g_c), s	0.0	1.6	1.6	2.4	1.8	0.0				14.2	12.5	38.5
Prop In Lane	0.00		0.14	1.00		0.00				0.59		1.00
Lane Grp Cap(c), veh/h	0	1328	711	437	1956	0				913	855	788
V/C Ratio(X)	0.00	0.20	0.21	0.03	0.08	0.00				0.50	0.45	0.95
Avail Cap(c_a), veh/h	0	1328	711	437	1956	0				936	877	808
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.8	4.8	16.1	15.5	0.0				13.9	13.5	20.0
Incr Delay (d2), s/veh	0.0	0.3	0.7	0.1	0.1	0.0				0.2	0.1	19.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.8	0.2	0.8	0.0				7.1	5.9	20.5
LnGrp Delay(d),s/veh	0.0	5.2	5.5	16.3	15.5	0.0				14.1	13.7	39.1
LnGrp LOS		A	A	B	B					B	B	D
Approach Vol, veh/h		419			176						1590	
Approach Delay, s/veh		5.3			15.6						25.7	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		38.6		46.4		38.6		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		33.5		44.0		33.5		
Max Q Clear Time (g_c+I1), s		3.6		40.5		4.4		
Green Ext Time (p_c), s		1.8		2.4		0.8		

Intersection Summary		
HCM 2010 Ctrl Delay		21.0
HCM 2010 LOS		C



Movement	EBT	EBR	EBR2	SBL2	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	183	46	2	752	104	1585	31
Future Volume (vph)	183	46	2	752	104	1585	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12
Total Lost time (s)	4.5			5.0		5.0	
Lane Util. Factor	0.95			1.00		0.91	
Frpb, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.97			1.00		1.00	
Flt Protected	1.00			0.95		1.00	
Satd. Flow (prot)	3181			1770		5055	
Flt Permitted	1.00			0.95		1.00	
Satd. Flow (perm)	3181			1770		5055	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	183	46	2	752	104	1585	31
RTOR Reduction (vph)	1	0	0	96	0	1	0
Lane Group Flow (vph)	230	0	0	656	0	1719	0
Confl. Peds. (#/hr)			3				
Confl. Bikes (#/hr)							2
Heavy Vehicles (%)	6%	6%	0%	2%	2%	2%	2%
Turn Type	NA			Perm	Perm	NA	
Protected Phases	4					6	
Permitted Phases				6	6		
Actuated Green, G (s)	12.5			63.0		63.0	
Effective Green, g (s)	12.5			63.0		63.0	
Actuated g/C Ratio	0.15			0.74		0.74	
Clearance Time (s)	4.5			5.0		5.0	
Vehicle Extension (s)	3.0			3.0		3.0	
Lane Grp Cap (vph)	467			1311		3746	
v/s Ratio Prot	c0.07						
v/s Ratio Perm				c0.37		0.34	
v/c Ratio	0.49			0.50		0.46	
Uniform Delay, d1	33.3			4.5		4.3	
Progression Factor	1.00			0.96		0.93	
Incremental Delay, d2	0.8			0.8		0.2	
Delay (s)	34.2			5.1		4.3	
Level of Service	C			A		A	
Approach Delay (s)	34.2					4.5	
Approach LOS	C					A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Traffic Volume (vph)	3	61	123	651	35	1788	30
Future Volume (vph)	3	61	123	651	35	1788	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	0.95	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.96	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.99		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1456	1538	4600	5041		3469	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1456	1538	4600	5041		3469	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	61	123	651	35	1788	30
RTOR Reduction (vph)	3	57	0	7	0	0	0
Lane Group Flow (vph)	0	4	123	679	0	1818	0
Confl. Peds. (#/hr)	34	34			4		4
Confl. Bikes (#/hr)					2		
Heavy Vehicles (%)	0%	9%	9%	2%	2%	1%	1%
Turn Type	Perm	Perm	NA	NA		Prot	
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	5.1	5.1	5.1	14.2		50.7	
Effective Green, g (s)	5.1	5.1	5.1	14.2		50.7	
Actuated g/C Ratio	0.06	0.06	0.06	0.17		0.60	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2	
Lane Grp Cap (vph)	87	92	276	842		2069	
v/s Ratio Prot			c0.03	c0.13		c0.52	
v/s Ratio Perm	0.00	0.00					
v/c Ratio	0.00	0.04	0.45	0.81		0.88	
Uniform Delay, d1	37.6	37.6	38.6	34.1		14.5	
Progression Factor	1.00	1.21	0.49	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.4	5.4		5.7	
Delay (s)	37.6	45.7	19.2	39.4		20.2	
Level of Service	D	D	B	D		C	
Approach Delay (s)			28.0	39.4		20.2	
Approach LOS			C	D		C	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑						↑↑↑	
Traffic Volume (veh/h)	0	373	74	38	267	0	0	0	0	435	614	299
Future Volume (veh/h)	0	373	74	38	267	0	0	0	0	435	614	299
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	0.97		1.00				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1827	1827	1827	0				1900	1863	1900
Adj Flow Rate, veh/h	0	373	74	38	267	0				435	614	299
Adj No. of Lanes	0	2	1	1	2	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4	4	4	0				0	2	0
Cap, veh/h	0	741	294	202	741	0				843	1295	636
Arrive On Green	0.00	0.07	0.07	0.07	0.07	0.00				0.54	0.54	0.54
Sat Flow, veh/h	0	3563	1379	897	3563	0				1553	2386	1172
Grp Volume(v), veh/h	0	373	74	38	267	0				500	432	416
Grp Sat Flow(s),veh/h/ln	0	1736	1379	897	1736	0				1785	1695	1630
Q Serve(g_s), s	0.0	7.2	3.6	2.9	5.1	0.0				12.5	10.9	11.0
Cycle Q Clear(g_c), s	0.0	7.2	3.6	10.1	5.1	0.0				12.5	10.9	11.0
Prop In Lane	0.00		1.00	1.00		0.00				0.87		0.72
Lane Grp Cap(c), veh/h	0	741	294	202	741	0				969	920	885
V/C Ratio(X)	0.00	0.50	0.25	0.19	0.36	0.00				0.52	0.47	0.47
Avail Cap(c_a), veh/h	0	1091	433	292	1091	0				969	920	885
HCM Platoon Ratio	1.00	0.33	0.33	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.98	0.98	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	29.0	27.2	33.8	28.0	0.0				10.2	9.8	9.8
Incr Delay (d2), s/veh	0.0	0.5	0.4	0.4	0.3	0.0				2.0	1.7	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.5	1.4	0.7	2.5	0.0				6.6	5.5	5.3
LnGrp Delay(d),s/veh	0.0	29.5	27.7	34.3	28.3	0.0				12.1	11.5	11.6
LnGrp LOS		C	C	C	C					B	B	B
Approach Vol, veh/h		447			305						1348	
Approach Delay, s/veh		29.2			29.0						11.8	
Approach LOS		C			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				19.9		43.0		19.9
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				22.0		38.0		22.0
Max Q Clear Time (g_c+I1), s				9.2		14.5		12.1
Green Ext Time (p_c), s				2.2		10.0		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	196	105	0	0	0	0	0	0	1099	1712	0
Future Volume (veh/h)	0	196	105	0	0	0	0	0	0	1099	1712	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1900							1881	1881	0
Adj Flow Rate, veh/h	0	196	105							1224	1538	0
Adj No. of Lanes	0	2	0							2	2	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4							1	1	0
Cap, veh/h	0	329	165							2569	2529	0
Arrive On Green	0.00	0.15	0.15							0.22	0.22	0.00
Sat Flow, veh/h	0	2265	1092							3583	3762	0
Grp Volume(v), veh/h	0	154	147							1224	1538	0
Grp Sat Flow(s),veh/h/ln	0	1736	1530							1792	1881	0
Q Serve(g_s), s	0.0	7.4	8.1							27.0	33.1	0.0
Cycle Q Clear(g_c), s	0.0	7.4	8.1							27.0	33.1	0.0
Prop In Lane	0.00		0.71							1.00		0.00
Lane Grp Cap(c), veh/h	0	263	232							2569	2529	0
V/C Ratio(X)	0.00	0.59	0.64							0.48	0.61	0.00
Avail Cap(c_a), veh/h	0	386	340							2569	2529	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.76	0.76	0.00
Uniform Delay (d), s/veh	0.0	35.6	35.9							22.0	24.4	0.0
Incr Delay (d2), s/veh	0.0	0.8	1.1							0.5	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.5							13.6	17.5	0.0
LnGrp Delay(d),s/veh	0.0	36.3	36.9							22.4	25.2	0.0
LnGrp LOS		D	D							C	C	
Approach Vol, veh/h		301									2762	
Approach Delay, s/veh		36.6									24.0	
Approach LOS		D									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				18.1		65.5		
Change Period (Y+Rc), s				4.5		5.0		
Max Green Setting (Gmax), s				20.0		60.5		
Max Q Clear Time (g_c+I1), s				10.1		35.1		
Green Ext Time (p_c), s				0.9		13.7		

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	110	112	0	0	0	0	0	2701	263
Future Volume (veh/h)	0	0	0	110	112	0	0	0	0	0	2701	263
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1810	1810	0				0	1863	1900
Adj Flow Rate, veh/h				110	112	0				0	2701	263
Adj No. of Lanes				1	2	0				0	4	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				5	5	0				0	2	2
Cap, veh/h				363	564	0				0	3619	347
Arrive On Green				0.16	0.16	0.00				0.00	0.61	0.61
Sat Flow, veh/h				1723	3529	0				0	6237	574
Grp Volume(v), veh/h				110	112	0				0	2164	800
Grp Sat Flow(s),veh/h/ln				1723	1719	0				0	1602	1745
Q Serve(g_s), s				5.1	2.5	0.0				0.0	29.1	30.0
Cycle Q Clear(g_c), s				5.1	2.5	0.0				0.0	29.1	30.0
Prop In Lane				1.00		0.00				0.00		0.33
Lane Grp Cap(c), veh/h				363	564	0				0	2910	1056
V/C Ratio(X)				0.30	0.20	0.00				0.00	0.74	0.76
Avail Cap(c_a), veh/h				559	955	0				0	2910	1056
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.90	0.90	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				33.6	32.5	0.0				0.0	12.7	12.9
Incr Delay (d2), s/veh				0.2	0.1	0.0				0.0	1.8	5.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	1.2	0.0				0.0	13.1	15.7
LnGrp Delay(d),s/veh				33.7	32.6	0.0				0.0	14.5	18.0
LnGrp LOS				C	C						B	B
Approach Vol, veh/h					222						2964	
Approach Delay, s/veh					33.1						15.4	
Approach LOS					C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						60.5		19.3
Change Period (Y+Rc), s						6.0		4.5
Max Green Setting (Gmax), s						54.5		25.0
Max Q Clear Time (g_c+I1), s						32.0		7.1
Green Ext Time (p_c), s						17.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	150	10	2	132	13	16	8	1	17	6	4
Future Vol, veh/h	16	150	10	2	132	13	16	8	1	17	6	4
Conflicting Peds, #/hr	3	0	9	9	0	3	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	25	25	25	31	31	31	24	24	24	7	7	7
Mvmt Flow	16	150	10	2	132	13	16	8	1	17	6	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	169	0	0	344	348	168	342	347	142
Stage 1	-	-	-	-	-	-	196	196	-	146	146	-
Stage 2	-	-	-	-	-	-	148	152	-	196	201	-
Critical Hdwy	4.35	-	-	4.41	-	-	7.34	6.74	6.44	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.34	5.74	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.34	5.74	-	6.17	5.57	-
Follow-up Hdwy	2.425	-	-	2.479	-	-	3.716	4.216	3.516	3.563	4.063	3.363
Pot Cap-1 Maneuver	1304	-	-	1251	-	-	571	542	822	603	568	893
Stage 1	-	-	-	-	-	-	758	699	-	845	767	-
Stage 2	-	-	-	-	-	-	805	732	-	794	726	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1300	-	-	1240	-	-	552	527	812	584	552	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	552	527	-	584	552	-
Stage 1	-	-	-	-	-	-	741	683	-	831	763	-
Stage 2	-	-	-	-	-	-	793	728	-	770	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	11.8	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	551	1300	-	-	1240	-	-	607
HCM Lane V/C Ratio	0.045	0.012	-	-	0.002	-	-	0.044
HCM Control Delay (s)	11.8	7.8	0	-	7.9	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

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	27	940	22	0	0	0	0	34	10	0	0	0
Future Vol, veh/h	27	940	22	0	0	0	0	34	10	0	0	0
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	2	2	2	11	11	11	2	2	2
Mvmt Flow	27	940	22	0	0	0	0	34	10	0	0	0

Major/Minor	Major1			Minor1		
Conflicting Flow All	0	0	0	-	1008	485
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	5.38	-	-	-	6.72	7.32
Critical Hdwy Stg 1	-	-	-	-	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.14	-	-	-	4.11	4.01
Pot Cap-1 Maneuver	-	-	-	0	225	433
Stage 1	-	-	-	0	297	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	0	432
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB
HCM Control Delay, s		14.3
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR
Capacity (veh/h)	432	-	-	-
HCM Lane V/C Ratio	0.102	-	-	-
HCM Control Delay (s)	14.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	26	40	2	53	0	0	0	0
Future Volume (veh/h)	0	0	0	0	26	40	2	53	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1759	1759	1900	1638	0			
Adj Flow Rate, veh/h				0	26	40	2	53	0			
Adj No. of Lanes				0	3	1	0	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	8	8	16	16	0			
Cap, veh/h				0	3062	952	68	1199	0			
Arrive On Green				0.00	0.64	0.64	0.28	0.28	0.00			
Sat Flow, veh/h				0	4961	1494	66	4398	0			
Grp Volume(v), veh/h				0	26	40	21	34	0			
Grp Sat Flow(s),veh/h/ln				0	1601	1494	1617	1356	0			
Q Serve(g_s), s				0.0	0.2	0.8	0.0	0.7	0.0			
Cycle Q Clear(g_c), s				0.0	0.2	0.8	0.7	0.7	0.0			
Prop In Lane				0.00		1.00	0.10		0.00			
Lane Grp Cap(c), veh/h				0	3062	952	504	763	0			
V/C Ratio(X)				0.00	0.01	0.04	0.04	0.04	0.00			
Avail Cap(c_a), veh/h				0	3062	952	504	763	0			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh				0.0	5.3	5.4	20.9	20.9	0.0			
Incr Delay (d2), s/veh				0.0	0.0	0.1	0.2	0.1	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	0.1	0.3	0.4	0.3	0.0			
LnGrp Delay(d),s/veh				0.0	5.3	5.5	21.1	21.0	0.0			
LnGrp LOS					A	A	C	C				
Approach Vol, veh/h					66			55				
Approach Delay, s/veh					5.4			21.1				
Approach LOS					A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		26.0						54.0
Change Period (Y+Rc), s		3.5						3.0
Max Green Setting (Gmax), s		22.5						51.0
Max Q Clear Time (g_c+I1), s		2.7						2.8
Green Ext Time (p_c), s		0.1						0.2

Intersection Summary		
HCM 2010 Ctrl Delay		12.5
HCM 2010 LOS		B



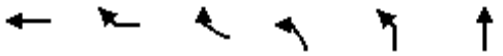
Movement	EBL2	EBT	NBL	NBT	NBR2	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	134	535	7	72	10	178	2
Future Volume (vph)	134	535	7	72	10	178	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	11
Total Lost time (s)	4.5	5.0		8.5		5.0	
Lane Util. Factor	0.97	0.95		0.91		0.76	
Frpb, ped/bikes	1.00	1.00		1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00	
Frt	1.00	1.00		0.98		0.85	
Flt Protected	0.95	1.00		1.00		1.00	
Satd. Flow (prot)	3400	3505		4341		3390	
Flt Permitted	0.95	1.00		1.00		1.00	
Satd. Flow (perm)	3400	3505		4341		3390	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	134	535	7	72	10	178	2
RTOR Reduction (vph)	0	0	0	58	0	96	0
Lane Group Flow (vph)	134	535	0	31	0	84	0
Confl. Peds. (#/hr)	17		1			1	17
Confl. Bikes (#/hr)							
Heavy Vehicles (%)	3%	3%	17%	17%	17%	5%	5%
Turn Type	Prot	NA	Perm	NA		Prot	
Protected Phases	5	2		4		6	
Permitted Phases			4				
Actuated Green, G (s)	19.5	45.5		26.0		21.5	
Effective Green, g (s)	19.5	45.5		26.0		21.5	
Actuated g/C Ratio	0.23	0.54		0.31		0.25	
Clearance Time (s)	4.5	5.0		8.5		5.0	
Lane Grp Cap (vph)	780	1876		1327		857	
v/s Ratio Prot	0.04	c0.15				0.02	
v/s Ratio Perm				0.01			
v/c Ratio	0.17	0.29		0.02		0.10	
Uniform Delay, d1	26.3	10.8		20.6		24.3	
Progression Factor	0.96	1.00		1.00		1.00	
Incremental Delay, d2	0.5	0.4		0.0		0.2	
Delay (s)	25.6	11.2		20.7		24.6	
Level of Service	C	B		C		C	
Approach Delay (s)		14.1		20.7			
Approach LOS		B		C			

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	143	787	414	25	100	99
Future Volume (vph)	143	787	414	25	100	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	0.96	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1372	6026	4937		3230	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1372	6026	4937		3230	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	143	787	414	25	100	99
RTOR Reduction (vph)	56	39	10	0	0	0
Lane Group Flow (vph)	73	762	429	0	199	0
Confl. Peds. (#/hr)	35			8		
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	48.3	48.3	13.1		9.1	
Effective Green, g (s)	48.3	48.3	13.1		9.1	
Actuated g/C Ratio	0.57	0.57	0.15		0.11	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	1.5	1.5	3.0		1.5	
Lane Grp Cap (vph)	779	3424	760		345	
v/s Ratio Prot			c0.09		c0.06	
v/s Ratio Perm	0.05	0.13				
v/c Ratio	0.09	0.22	0.56		0.58	
Uniform Delay, d1	8.4	9.1	33.3		36.1	
Progression Factor	1.69	1.15	0.78		1.00	
Incremental Delay, d2	0.2	0.1	1.0		1.5	
Delay (s)	14.4	10.6	26.9		37.6	
Level of Service	B	B	C		D	
Approach Delay (s)		11.1	26.9		37.6	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	147	187	25	37	415	185
Future Volume (vph)	147	187	25	37	415	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91		0.86	0.81	0.81
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	0.95	0.85		1.00	1.00	1.00
Flt Protected	1.00	1.00		0.95	0.95	0.97
Satd. Flow (prot)	3051	1376		1478	1392	4285
Flt Permitted	1.00	1.00		0.95	0.95	0.97
Satd. Flow (perm)	3051	1376		1478	1392	4285
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	187	25	37	415	185
RTOR Reduction (vph)	0	21	0	10	6	0
Lane Group Flow (vph)	222	116	0	23	210	388
Confl. Peds. (#/hr)						
Heavy Vehicles (%)	4%	4%	0%	5%	5%	5%
Turn Type	NA	Perm		Perm	Perm	NA
Protected Phases	4					2
Permitted Phases		4		2	2	
Actuated Green, G (s)	15.6	15.6		59.9	59.9	59.9
Effective Green, g (s)	15.6	15.6		59.9	59.9	59.9
Actuated g/C Ratio	0.18	0.18		0.70	0.70	0.70
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	5.0	5.0		1.0	1.0	1.0
Lane Grp Cap (vph)	559	252		1041	980	3019
v/s Ratio Prot	0.07					
v/s Ratio Perm		c0.08		0.02	c0.15	0.09
v/c Ratio	0.40	0.46		0.02	0.21	0.13
Uniform Delay, d1	30.6	30.9		3.8	4.4	4.1
Progression Factor	1.00	1.00		0.02	0.43	0.18
Incremental Delay, d2	1.0	2.8		0.0	0.5	0.1
Delay (s)	31.5	33.7		0.1	2.4	0.8
Level of Service	C	C		A	A	A
Approach Delay (s)	32.4					1.3
Approach LOS	C					A

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↑↑				
Traffic Volume (veh/h)	232	576	0	0	265	139	43	95	74	0	0	0
Future Volume (veh/h)	232	576	0	0	265	139	43	95	74	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1863	0	0	1845	1900	1900	1845	1900			
Adj Flow Rate, veh/h	232	576	0	0	265	139	43	95	74			
Adj No. of Lanes	0	2	0	0	2	0	0	3	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	3	3	0	3	0			
Cap, veh/h	635	1513	0	0	1649	834	119	284	177			
Arrive On Green	0.99	0.99	0.00	0.00	1.00	1.00	0.12	0.12	0.12			
Sat Flow, veh/h	742	2126	0	0	2318	1125	1025	2447	1527			
Grp Volume(v), veh/h	355	453	0	0	207	197	75	63	74			
Grp Sat Flow(s),veh/h/ln	1173	1610	0	0	1752	1599	1793	1679	1527			
Q Serve(g_s), s	0.0	0.5	0.0	0.0	0.0	0.0	2.7	2.4	3.2			
Cycle Q Clear(g_c), s	0.3	0.5	0.0	0.0	0.0	0.0	2.7	2.4	3.2			
Prop In Lane	0.65		0.00	0.00		0.70	0.57		1.00			
Lane Grp Cap(c), veh/h	954	1193	0	0	1299	1185	208	195	177			
V/C Ratio(X)	0.37	0.38	0.00	0.00	0.16	0.17	0.36	0.32	0.42			
Avail Cap(c_a), veh/h	954	1193	0	0	1299	1185	512	480	436			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.78	0.78	0.00	0.00	0.97	0.97	1.00	1.00	1.00			
Uniform Delay (d), s/veh	0.1	0.1	0.0	0.0	0.0	0.0	28.5	28.4	28.7			
Incr Delay (d2), s/veh	0.9	0.7	0.0	0.0	0.3	0.3	0.4	0.4	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.0	0.0	0.1	0.1	1.4	1.1	1.4			
LnGrp Delay(d),s/veh	1.0	0.9	0.0	0.0	0.3	0.3	28.9	28.8	29.3			
LnGrp LOS	A	A			A	A	C	C	C			
Approach Vol, veh/h		808			404			212				
Approach Delay, s/veh		0.9			0.3			29.0				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		13.1		56.9				56.9
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		20.0		40.0				40.0
Max Q Clear Time (g_c+I1), s		5.2		2.5				2.0
Green Ext Time (p_c), s		0.7		4.3				1.7

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	216	1088	507	41	342	117
Future Volume (vph)	216	1088	507	41	342	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1728	4964	4972		3255	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1728	4964	4972		3255	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	216	1088	507	41	342	117
RTOR Reduction (vph)	62	0	12	0	0	0
Lane Group Flow (vph)	154	1088	536	0	459	0
Confl. Peds. (#/hr)				4		
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	3%	3%	5%	5%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	44.9	44.9	14.8		16.8	
Effective Green, g (s)	44.9	44.9	14.8		16.8	
Actuated g/C Ratio	0.49	0.49	0.16		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	852	2449	808		600	
v/s Ratio Prot		c0.22	c0.11		c0.14	
v/s Ratio Perm	0.09					
v/c Ratio	0.18	0.44	0.66		0.77	
Uniform Delay, d1	12.8	15.0	35.8		35.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.6	1.6		5.2	
Delay (s)	13.3	15.5	37.4		40.4	
Level of Service	B	B	D		D	
Approach Delay (s)		15.2	37.4		40.4	
Approach LOS		B	D		D	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	140	231	77	958	0	0	0	0
Future Volume (veh/h)	0	0	0	0	140	231	77	958	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1863	1863	1827	1827	1827			
Adj Flow Rate, veh/h				0	140	231	77	958	0			
Adj No. of Lanes				0	1	2	1	3	1			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	2	2	4	4	4			
Cap, veh/h				0	204	342	1445	4301	1219			
Arrive On Green				0.00	0.11	0.11	0.78	0.78	0.00			
Sat Flow, veh/h				0	1863	3122	1740	5481	1553			
Grp Volume(v), veh/h				0	140	231	77	958	0			
Grp Sat Flow(s),veh/h/ln				0	1863	1561	1740	1827	1553			
Q Serve(g_s), s				0.0	6.5	6.4	0.9	4.1	0.0			
Cycle Q Clear(g_c), s				0.0	6.5	6.4	0.9	4.1	0.0			
Prop In Lane				0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h				0	204	342	1445	4301	1219			
V/C Ratio(X)				0.00	0.69	0.67	0.05	0.22	0.00			
Avail Cap(c_a), veh/h				0	414	694	1445	4301	1219			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.99	0.99	0.74	0.74	0.00			
Uniform Delay (d), s/veh				0.0	38.6	38.5	2.2	2.5	0.0			
Incr Delay (d2), s/veh				0.0	4.0	2.3	0.1	0.1	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	3.6	2.9	0.4	2.1	0.0			
LnGrp Delay(d),s/veh				0.0	42.6	40.8	2.2	2.6	0.0			
LnGrp LOS					D	D	A	A				
Approach Vol, veh/h					371			1035				
Approach Delay, s/veh					41.5			2.6				
Approach LOS					D			A				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		75.6						14.4
Change Period (Y+Rc), s		5.0						4.5
Max Green Setting (Gmax), s		60.5						20.0
Max Q Clear Time (g_c+I1), s		6.1						8.5
Green Ext Time (p_c), s		9.0						1.4

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	6	3	0	0	0	2	45	2	27	45	7
Future Vol, veh/h	4	6	3	0	0	0	2	45	2	27	45	7
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
Heavy Vehicles, %	62	62	62	2	2	2	92	92	92	41	41	41
Mvmt Flow	4	6	3	0	0	0	2	45	2	27	45	7
Number of Lanes	0	1	0	0	0	0	0	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.3	9.1	8.4
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2
Vol Left, %	8%	0%	31%	55%	0%
Vol Thru, %	92%	92%	46%	45%	76%
Vol Right, %	0%	8%	23%	0%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	25	13	50	30
LT Vol	2	0	4	27	0
Through Vol	23	23	6	23	23
RT Vol	0	2	3	0	7
Lane Flow Rate	24	24	13	50	30
Geometry Grp	7	7	2	7	7
Degree of Util (X)	0.042	0.041	0.019	0.076	0.042
Departure Headway (Hd)	6.168	6.07	5.246	5.518	5.079
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	580	589	686	649	704
Service Time	3.91	3.812	3.246	3.254	2.815
HCM Lane V/C Ratio	0.041	0.041	0.019	0.077	0.043
HCM Control Delay	9.2	9.1	8.3	8.7	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0.2	0.1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	8	0	15	16	17	1	47	0	42	65	6
Future Vol, veh/h	3	8	0	15	16	17	1	47	0	42	65	6
Conflicting Peds, #/hr	3	0	1	1	0	3	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	9	9	9	8	8	8	98	98	98	31	31	31
Mvmt Flow	3	8	0	15	16	17	1	47	0	42	65	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	202	38	171	205	27	72	0	0	47	0	0
Stage 1	153	153	-	49	49	-	-	-	-	-	-	-
Stage 2	37	49	-	122	156	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.66	6.66	7.06	6.06	-	-	4.72	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.66	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.66	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.58	4.08	3.38	3.18	-	-	2.51	-	-
Pot Cap-1 Maneuver	734	677	1003	760	677	1023	1035	-	-	1371	-	-
Stage 1	814	753	-	941	840	-	-	-	-	-	-	-
Stage 2	954	838	-	852	753	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	688	654	1001	733	654	1021	1034	-	-	1371	-	-
Mov Cap-2 Maneuver	688	654	-	733	654	-	-	-	-	-	-	-
Stage 1	812	728	-	940	839	-	-	-	-	-	-	-
Stage 2	917	837	-	815	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	9.9	0.2	2.9
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1034	-	-	663	779	1371	-	-
HCM Lane V/C Ratio	0.001	-	-	0.017	0.062	0.031	-	-
HCM Control Delay (s)	8.5	0	-	10.5	9.9	7.7	0.1	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	111	48	5	90	13	46	17	1	62	62	18
Future Vol, veh/h	5	111	48	5	90	13	46	17	1	62	62	18
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
Heavy Vehicles, %	21	21	21	10	10	10	72	72	72	6	6	6
Mvmt Flow	5	111	48	5	90	13	46	17	1	62	62	18
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.2	8.7	10.4	9
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	84%	0%	3%	5%	67%	0%
Vol Thru, %	16%	89%	68%	83%	33%	63%
Vol Right, %	0%	11%	29%	12%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	10	164	108	93	49
LT Vol	46	0	5	5	62	0
Through Vol	9	9	111	90	31	31
RT Vol	0	1	48	13	0	18
Lane Flow Rate	54	10	164	108	93	49
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.106	0.017	0.219	0.144	0.147	0.069
Departure Headway (Hd)	6.979	6.479	4.808	4.8	5.687	5.092
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	513	551	746	745	629	701
Service Time	4.734	4.233	2.843	2.838	3.436	2.841
HCM Lane V/C Ratio	0.105	0.018	0.22	0.145	0.148	0.07
HCM Control Delay	10.6	9.3	9.2	8.7	9.4	8.2
HCM Lane LOS	B	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0.8	0.5	0.5	0.2

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	22	17	5	30	11	2	50	2	43	129	9
Future Vol, veh/h	2	22	17	5	30	11	2	50	2	43	129	9
Conflicting Peds, #/hr	1	0	9	9	0	1	4	0	3	3	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	5	5	5	9	9	9	35	35	35	6	6	6
Mvmt Flow	2	22	17	5	30	11	2	50	2	43	129	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	269	283	82	229	286	30	142	0	0	55	0	0
Stage 1	224	224	-	58	58	-	-	-	-	-	-	-
Stage 2	45	59	-	171	228	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.68	6.68	7.08	4.8	-	-	4.22	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.59	4.09	3.39	2.55	-	-	2.26	-	-
Pot Cap-1 Maneuver	654	618	952	688	606	1015	1228	-	-	1519	-	-
Stage 1	750	710	-	927	830	-	-	-	-	-	-	-
Stage 2	955	838	-	794	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	603	593	942	634	582	1011	1223	-	-	1515	-	-
Mov Cap-2 Maneuver	603	593	-	634	582	-	-	-	-	-	-	-
Stage 1	746	685	-	922	826	-	-	-	-	-	-	-
Stage 2	908	834	-	726	673	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	10.9	0.3	1.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1223	-	-	701	654	1515	-	-
HCM Lane V/C Ratio	0.002	-	-	0.058	0.07	0.028	-	-
HCM Control Delay (s)	7.9	0	-	10.5	10.9	7.4	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	812	125	0	0	0	0	40	22	23	60	0
Future Volume (veh/h)	6	812	125	0	0	0	0	40	22	23	60	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900				0	1473	1900	1900	1759	0
Adj Flow Rate, veh/h	6	812	125				0	40	22	23	60	0
Adj No. of Lanes	0	3	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	29	29	8	8	0
Cap, veh/h	21	2990	475				0	439	223	226	571	0
Arrive On Green	0.22	0.22	0.22				0.00	0.24	0.24	0.24	0.24	0.00
Sat Flow, veh/h	31	4448	707				0	1869	913	676	2414	0
Grp Volume(v), veh/h	352	291	300				0	30	32	45	38	0
Grp Sat Flow(s),veh/h/ln	1825	1663	1698				0	1399	1309	1490	1521	0
Q Serve(g_s), s	14.4	13.0	13.1				0.0	1.5	1.7	0.0	1.7	0.0
Cycle Q Clear(g_c), s	14.4	13.0	13.1				0.0	1.5	1.7	1.8	1.7	0.0
Prop In Lane	0.02		0.42				0.00		0.70	0.51		0.00
Lane Grp Cap(c), veh/h	1227	1118	1141				0	342	320	424	372	0
V/C Ratio(X)	0.29	0.26	0.26				0.00	0.09	0.10	0.11	0.10	0.00
Avail Cap(c_a), veh/h	1227	1118	1141				0	342	320	424	372	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	16.5	16.6				0.0	26.3	26.3	26.4	26.3	0.0
Incr Delay (d2), s/veh	0.6	0.6	0.6				0.0	0.5	0.6	0.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	6.2	6.4				0.0	0.6	0.7	0.9	0.8	0.0
LnGrp Delay(d),s/veh	17.7	17.1	17.2				0.0	26.8	26.9	26.9	26.9	0.0
LnGrp LOS	B	B	B					C	C	C	C	
Approach Vol, veh/h		943						62			83	
Approach Delay, s/veh		17.3						26.9			26.9	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		26.0		64.0		26.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		22.0		60.5		22.0		
Max Q Clear Time (g_c+I1), s		3.7		16.4		3.8		
Green Ext Time (p_c), s		0.2		4.6		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	25	46	18	13	34	0	0	61	8
Future Volume (veh/h)	0	0	0	25	46	18	13	34	0	0	61	8
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1513	0	0	1598	1710
Adj Flow Rate, veh/h				25	46	18	13	34	0	0	61	8
Adj No. of Lanes				0	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	13	13	0	0	7	7
Cap, veh/h				518	1037	384	364	879	0	0	1171	150
Arrive On Green				0.42	0.42	0.42	0.43	0.43	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1228	2456	910	563	2098	0	0	2782	347
Grp Volume(v), veh/h				33	27	29	26	21	0	0	34	35
Grp Sat Flow(s),veh/h/ln				1599	1511	1484	1284	1308	0	0	1518	1530
Q Serve(g_s), s				0.5	0.5	0.5	0.0	0.4	0.0	0.0	0.6	0.6
Cycle Q Clear(g_c), s				0.5	0.5	0.5	0.4	0.4	0.0	0.0	0.6	0.6
Prop In Lane				0.77		0.61	0.50		0.00	0.00		0.23
Lane Grp Cap(c), veh/h				675	638	627	676	567	0	0	658	663
V/C Ratio(X)				0.05	0.04	0.05	0.04	0.04	0.00	0.00	0.05	0.05
Avail Cap(c_a), veh/h				675	638	627	676	567	0	0	658	663
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.7	7.6	7.7	7.4	7.3	0.0	0.0	7.4	7.4
Incr Delay (d2), s/veh				0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.3	0.3
LnGrp Delay(d),s/veh				7.8	7.8	7.8	7.5	7.5	0.0	0.0	7.5	7.5
LnGrp LOS				A	A	A	A	A			A	A
Approach Vol, veh/h					89			47			69	
Approach Delay, s/veh					7.8			7.5			7.5	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		22.0		23.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		19.5		19.0		19.5		
Max Q Clear Time (g_c+I1), s		2.6		2.5		2.4		
Green Ext Time (p_c), s		0.2		0.3		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	515	15	0	0	0	0	40	13	44	54	0
Future Volume (veh/h)	8	515	15	0	0	0	0	40	13	44	54	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1644	1710				0	1583	1710	1710	1644	0
Adj Flow Rate, veh/h	8	515	15				0	40	13	44	54	0
Adj No. of Lanes	0	4	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	8	8	4	4	0
Cap, veh/h	39	2716	81				0	803	248	482	615	0
Arrive On Green	0.47	0.47	0.47				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	85	5821	173				0	2336	697	953	1804	0
Grp Volume(v), veh/h	155	243	140				0	26	27	56	42	0
Grp Sat Flow(s),veh/h/ln	1640	1414	1610				0	1504	1450	1261	1421	0
Q Serve(g_s), s	2.5	2.3	2.3				0.0	0.5	0.6	0.6	0.9	0.0
Cycle Q Clear(g_c), s	2.5	2.3	2.3				0.0	0.5	0.6	1.2	0.9	0.0
Prop In Lane	0.05		0.11				0.00		0.48	0.79		0.00
Lane Grp Cap(c), veh/h	765	1320	751				0	535	516	591	505	0
V/C Ratio(X)	0.20	0.18	0.19				0.00	0.05	0.05	0.09	0.08	0.00
Avail Cap(c_a), veh/h	765	1320	751				0	535	516	591	505	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.1	7.0	7.0				0.0	9.5	9.5	9.7	9.6	0.0
Incr Delay (d2), s/veh	0.6	0.3	0.5				0.0	0.2	0.2	0.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.9	1.1				0.0	0.2	0.2	0.5	0.4	0.0
LnGrp Delay(d),s/veh	7.7	7.3	7.6				0.0	9.7	9.7	10.0	10.0	0.0
LnGrp LOS	A	A	A					A	A	B	A	
Approach Vol, veh/h		538						53			98	
Approach Delay, s/veh		7.5						9.7			10.0	
Approach LOS		A						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		3.2		4.5		2.6		
Green Ext Time (p_c), s		0.3		3.0		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A



Movement	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	SBT	SBR	SBR2
Lane Configurations										
Traffic Volume (vph)	15	155	140	31	3	22	33	73	26	14
Future Volume (vph)	15	155	140	31	3	22	33	73	26	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		3.0	3.0				4.5	4.5		
Lane Util. Factor		0.97	0.95				0.95	0.95		
Frpb, ped/bikes		1.00	0.99				1.00	0.99		
Flpb, ped/bikes		0.99	1.00				1.00	1.00		
Frt		1.00	0.97				1.00	0.95		
Flt Protected		0.95	1.00				0.98	1.00		
Satd. Flow (prot)		2962	2979				2766	2715		
Flt Permitted		0.95	1.00				0.86	1.00		
Satd. Flow (perm)		2962	2979				2442	2715		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	155	140	31	3	22	33	73	26	14
RTOR Reduction (vph)	0	0	18	0	0	0	0	8	0	0
Lane Group Flow (vph)	0	170	153	0	0	0	58	105	0	0
Confl. Peds. (#/hr)	7			25		11				11
Heavy Vehicles (%)	2%	2%	2%	2%	7%	7%	7%	5%	5%	5%
Turn Type	Perm	Perm	NA		Perm	Perm	NA	NA		
Protected Phases			4				2	2		
Permitted Phases	4	4			2	2				
Actuated Green, G (s)		19.0	19.0				18.5	18.5		
Effective Green, g (s)		19.0	19.0				18.5	18.5		
Actuated g/C Ratio		0.42	0.42				0.41	0.41		
Clearance Time (s)		3.0	3.0				4.5	4.5		
Lane Grp Cap (vph)		1250	1257				1003	1116		
v/s Ratio Prot			0.05					c0.04		
v/s Ratio Perm		c0.06					0.02			
v/c Ratio		0.14	0.12				0.06	0.09		
Uniform Delay, d1		8.0	7.9				8.0	8.1		
Progression Factor		1.41	1.50				1.38	0.46		
Incremental Delay, d2		0.2	0.2				0.1	0.2		
Delay (s)		11.4	12.1				11.1	3.9		
Level of Service		B	B				B	A		
Approach Delay (s)			11.8				11.1	3.9		
Approach LOS			B				B	A		

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	49	11	7	41	0	0	167	14
Future Volume (veh/h)	0	0	0	11	49	11	7	41	0	0	167	14
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.99		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1583	1710	1710	1644	0	0	1629	1710
Adj Flow Rate, veh/h				11	49	11	7	41	0	0	167	14
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	8	0	4	4	0	0	5	5
Cap, veh/h				194	889	205	219	1110	0	0	1219	101
Arrive On Green				0.42	0.42	0.42	0.42	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h				460	2105	487	279	2704	0	0	2969	239
Grp Volume(v), veh/h				37	0	34	26	22	0	0	89	92
Grp Sat Flow(s),veh/h/ln				1560	0	1491	1487	1421	0	0	1547	1579
Q Serve(g_s), s				0.6	0.0	0.6	0.0	0.4	0.0	0.0	1.6	1.6
Cycle Q Clear(g_c), s				0.6	0.0	0.6	0.4	0.4	0.0	0.0	1.6	1.6
Prop In Lane				0.29		0.33	0.27		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				659	0	630	729	600	0	0	653	667
V/C Ratio(X)				0.06	0.00	0.05	0.04	0.04	0.00	0.00	0.14	0.14
Avail Cap(c_a), veh/h				659	0	630	729	600	0	0	653	667
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.7	0.0	7.7	7.6	7.6	0.0	0.0	8.0	8.0
Incr Delay (d2), s/veh				0.2	0.0	0.2	0.1	0.1	0.0	0.0	0.4	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.3	0.0	0.3	0.2	0.2	0.0	0.0	0.7	0.8
LnGrp Delay(d),s/veh				7.9	0.0	7.8	7.7	7.7	0.0	0.0	8.4	8.4
LnGrp LOS				A		A	A	A			A	A
Approach Vol, veh/h					71			48			181	
Approach Delay, s/veh					7.9			7.7			8.4	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.5				22.5		22.5
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		19.0				19.0		19.0
Max Q Clear Time (g_c+I1), s		2.4				3.6		2.6
Green Ext Time (p_c), s		0.1				0.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	747	77	0	0	0	0	38	14	63	105	0
Future Volume (veh/h)	92	747	77	0	0	0	0	38	14	63	105	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1613	1710	1710	1555	0
Adj Flow Rate, veh/h	92	747	77				0	38	14	63	105	0
Adj No. of Lanes	0	4	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	6	6	10	10	0
Cap, veh/h	315	2754	286				0	594	207	307	485	0
Arrive On Green	0.55	0.55	0.55				0.00	0.27	0.27	0.27	0.27	0.00
Sat Flow, veh/h	573	5006	520				0	2307	775	776	1888	0
Grp Volume(v), veh/h	265	419	232				0	25	27	94	74	0
Grp Sat Flow(s),veh/h/ln	1648	1442	1568				0	1533	1469	1250	1344	0
Q Serve(g_s), s	5.2	4.6	4.7				0.0	0.7	0.8	2.4	2.6	0.0
Cycle Q Clear(g_c), s	5.2	4.6	4.7				0.0	0.7	0.8	3.4	2.6	0.0
Prop In Lane	0.35		0.33				0.00		0.53	0.67		0.00
Lane Grp Cap(c), veh/h	906	1586	863				0	409	392	434	358	0
V/C Ratio(X)	0.29	0.26	0.27				0.00	0.06	0.07	0.22	0.21	0.00
Avail Cap(c_a), veh/h	906	1586	863				0	409	392	434	358	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.2	7.1	7.1				0.0	16.4	16.4	17.3	17.1	0.0
Incr Delay (d2), s/veh	0.8	0.4	0.8				0.0	0.3	0.3	1.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.9	2.2				0.0	0.3	0.4	1.4	1.1	0.0
LnGrp Delay(d),s/veh	8.1	7.5	7.9				0.0	16.7	16.8	18.4	18.4	0.0
LnGrp LOS	A	A	A					B	B	B	B	
Approach Vol, veh/h		916						52			168	
Approach Delay, s/veh		7.8						16.7			18.4	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.5		38.5		21.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		16.0		33.0		16.0		
Max Q Clear Time (g_c+I1), s		2.8		7.2		5.4		
Green Ext Time (p_c), s		0.1		6.8		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	31	324	66	15	116	0	0	139	23
Future Volume (veh/h)	0	0	0	31	324	66	15	116	0	0	139	23
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.96	0.98		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1613	1710	1710	1676	0	0	1629	1710
Adj Flow Rate, veh/h				31	324	66	15	116	0	0	139	23
Adj No. of Lanes				0	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	6	0	2	2	0	0	5	5
Cap, veh/h				169	1864	379	129	798	0	0	750	121
Arrive On Green				0.53	0.53	0.53	0.28	0.28	0.00	0.00	0.28	0.28
Sat Flow, veh/h				318	3495	710	197	2894	0	0	2729	427
Grp Volume(v), veh/h				156	130	135	71	60	0	0	80	82
Grp Sat Flow(s),veh/h/ln				1597	1468	1457	1565	1449	0	0	1547	1528
Q Serve(g_s), s				3.0	2.7	2.9	0.0	1.9	0.0	0.0	2.3	2.4
Cycle Q Clear(g_c), s				3.0	2.7	2.9	1.9	1.9	0.0	0.0	2.3	2.4
Prop In Lane				0.20		0.49	0.21		0.00	0.00		0.28
Lane Grp Cap(c), veh/h				852	783	777	516	411	0	0	438	433
V/C Ratio(X)				0.18	0.17	0.17	0.14	0.15	0.00	0.00	0.18	0.19
Avail Cap(c_a), veh/h				852	783	777	516	411	0	0	438	433
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.2	7.2	7.2	16.1	16.1	0.0	0.0	16.2	16.3
Incr Delay (d2), s/veh				0.5	0.5	0.5	0.6	0.8	0.0	0.0	0.9	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.4	1.2	1.2	0.9	0.8	0.0	0.0	1.1	1.1
LnGrp Delay(d),s/veh				7.7	7.6	7.7	16.6	16.8	0.0	0.0	17.2	17.3
LnGrp LOS				A	A	A	B	B			B	B
Approach Vol, veh/h					421			131			162	
Approach Delay, s/veh					7.7			16.7			17.2	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.5				22.5		37.5
Change Period (Y+Rc), s		5.5				5.5		5.5
Max Green Setting (Gmax), s		17.0				17.0		32.0
Max Q Clear Time (g_c+I1), s		3.9				4.4		5.0
Green Ext Time (p_c), s		0.5				0.7		2.7

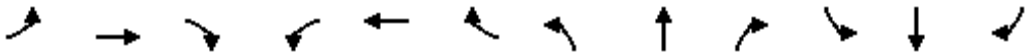
Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	524	91	17	342	36	28	42	22	43	167	40
Future Volume (veh/h)	12	524	91	17	342	36	28	42	22	43	167	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.95	0.98		0.95	0.98		0.96	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1629	1710	1710	1676	1710	1710	1644	1710
Adj Flow Rate, veh/h	12	524	91	17	342	36	28	42	22	43	167	40
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	5	5	5	2	2	2	4	4	4
Cap, veh/h	63	1345	229	87	1353	139	288	414	231	201	688	162
Arrive On Green	1.00	1.00	1.00	0.51	0.51	0.51	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	19	2615	446	62	2630	271	601	1207	674	388	2007	473
Grp Volume(v), veh/h	337	0	290	207	0	188	47	0	45	132	0	118
Grp Sat Flow(s),veh/h/ln	1660	0	1420	1545	0	1418	1104	0	1377	1478	0	1391
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.2	0.1	0.0	1.6	0.0	0.0	4.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	4.9	0.0	5.2	4.4	0.0	1.6	4.0	0.0	4.2
Prop In Lane	0.04		0.31	0.08		0.19	0.60		0.49	0.32		0.34
Lane Grp Cap(c), veh/h	907	0	730	850	0	729	461	0	472	575	0	477
V/C Ratio(X)	0.37	0.00	0.40	0.24	0.00	0.26	0.10	0.00	0.10	0.23	0.00	0.25
Avail Cap(c_a), veh/h	907	0	730	850	0	729	461	0	472	575	0	477
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	1.00	0.00	1.00	0.99	0.00	0.99	0.99	0.00	0.99
Uniform Delay (d), s/veh	0.0	0.0	0.0	9.5	0.0	9.5	15.6	0.0	15.6	16.4	0.0	16.5
Incr Delay (d2), s/veh	1.0	0.0	1.4	0.7	0.0	0.9	0.4	0.0	0.4	0.9	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	2.3	0.0	2.2	0.7	0.0	0.6	2.0	0.0	1.8
LnGrp Delay(d),s/veh	1.0	0.0	1.4	10.1	0.0	10.4	16.1	0.0	16.0	17.4	0.0	17.7
LnGrp LOS	A		A	B		B	B		B	B		B
Approach Vol, veh/h		627			395			92			250	
Approach Delay, s/veh		1.2			10.3			16.0			17.5	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		41.0		29.0		41.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		24.0		36.0		24.0		36.0
Max Q Clear Time (g_c+I1), s		6.4		2.0		6.2		7.2
Green Ext Time (p_c), s		0.3		2.7		0.9		1.7

Intersection Summary		
HCM 2010 Ctrl Delay		7.8
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	29	70	17	10	57	0	0	212	6
Future Volume (vph)	0	0	0	29	70	17	10	57	0	0	212	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frpb, ped/bikes					1.00			1.00			1.00	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					0.98			1.00			1.00	
Flt Protected					0.99			0.99			1.00	
Satd. Flow (prot)					3437			3544			3557	
Flt Permitted					0.99			0.92			1.00	
Satd. Flow (perm)					3437			3273			3557	
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	0	0	29	70	17	10	57	0	0	212	6
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	107	0	0	67	0	0	214	0
Confl. Peds. (#/hr)	15		4	4		15	10		13	13		10
Confl. Bikes (#/hr)									2			9
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					21.0			16.0			16.0	
Effective Green, g (s)					21.0			16.0			16.0	
Actuated g/C Ratio					0.47			0.36			0.36	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					1603			1163			1264	
v/s Ratio Prot											c0.06	
v/s Ratio Perm					0.03			0.02				
v/c Ratio					0.07			0.06			0.17	
Uniform Delay, d1					6.6			9.5			9.9	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.1			0.1			0.3	
Delay (s)					6.7			9.6			10.2	
Level of Service					A			A			B	
Approach Delay (s)		0.0			6.7			9.6			10.2	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.11		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	1056	140	0	0	0	0	50	19	14	110	0
Future Volume (veh/h)	48	1056	140	0	0	0	0	50	19	14	110	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1693	1710				0	1660	1710	1710	1598	0
Adj Flow Rate, veh/h	48	1056	140				0	50	19	14	110	0
Adj No. of Lanes	1	3	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1				0	3	3	7	7	0
Cap, veh/h	833	2125	281				0	678	242	130	811	0
Arrive On Green	0.52	0.52	0.52				0.00	0.30	0.30	0.30	0.30	0.00
Sat Flow, veh/h	1612	4112	544				0	2343	805	193	2777	0
Grp Volume(v), veh/h	48	791	405				0	34	35	67	57	0
Grp Sat Flow(s),veh/h/ln	1612	1541	1575				0	1577	1488	1516	1382	0
Q Serve(g_s), s	0.9	10.0	10.0				0.0	0.9	1.0	0.0	1.8	0.0
Cycle Q Clear(g_c), s	0.9	10.0	10.0				0.0	0.9	1.0	1.8	1.8	0.0
Prop In Lane	1.00		0.35				0.00		0.54	0.21		0.00
Lane Grp Cap(c), veh/h	833	1592	814				0	473	446	527	414	0
V/C Ratio(X)	0.06	0.50	0.50				0.00	0.07	0.08	0.13	0.14	0.00
Avail Cap(c_a), veh/h	833	1592	814				0	473	446	527	414	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.2	9.4	9.4				0.0	15.0	15.1	15.3	15.3	0.0
Incr Delay (d2), s/veh	0.1	1.1	2.2				0.0	0.3	0.3	0.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.4	4.8				0.0	0.4	0.5	0.9	0.8	0.0
LnGrp Delay(d),s/veh	7.4	10.5	11.6				0.0	15.3	15.4	15.8	16.0	0.0
LnGrp LOS	A	B	B					B	B	B	B	
Approach Vol, veh/h		1244						69			124	
Approach Delay, s/veh		10.8						15.4			15.9	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.5		36.5		23.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		18.0		31.0		18.0		
Max Q Clear Time (g_c+I1), s		3.0		12.0		3.8		
Green Ext Time (p_c), s		0.2		8.7		0.5		

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	15	300	2	22	57	0	0	110	74
Future Volume (veh/h)	0	0	0	15	300	2	22	57	0	0	110	74
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	0.99		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1676	1676	1710	1710	1676	0	0	1644	1710
Adj Flow Rate, veh/h				15	300	2	22	57	0	0	110	74
Adj No. of Lanes				1	3	0	0	2	0	0	2	0
Peak Hour Factor				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	0	0	4	4
Cap, veh/h				705	2071	14	366	961	0	0	825	510
Arrive On Green				0.44	0.44	0.44	0.45	0.45	0.00	0.00	0.45	0.45
Sat Flow, veh/h				1597	4690	31	611	2212	0	0	1916	1133
Grp Volume(v), veh/h				15	195	107	43	36	0	0	92	92
Grp Sat Flow(s),veh/h/ln				1597	1526	1670	1297	1449	0	0	1562	1404
Q Serve(g_s), s				0.3	2.3	2.3	0.0	0.9	0.0	0.0	2.1	2.3
Cycle Q Clear(g_c), s				0.3	2.3	2.3	2.3	0.9	0.0	0.0	2.1	2.3
Prop In Lane				1.00		0.02	0.52		0.00	0.00		0.81
Lane Grp Cap(c), veh/h				705	1348	738	675	652	0	0	703	632
V/C Ratio(X)				0.02	0.14	0.15	0.06	0.06	0.00	0.00	0.13	0.15
Avail Cap(c_a), veh/h				705	1348	738	675	652	0	0	703	632
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.4	10.0	10.0	9.3	9.3	0.0	0.0	9.6	9.7
Incr Delay (d2), s/veh				0.1	0.2	0.4	0.2	0.2	0.0	0.0	0.4	0.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	1.0	1.1	0.4	0.4	0.0	0.0	1.0	1.0
LnGrp Delay(d),s/veh				9.5	10.2	10.4	9.5	9.5	0.0	0.0	10.0	10.2
LnGrp LOS				A	B	B	A	A			B	B
Approach Vol, veh/h					317			79			184	
Approach Delay, s/veh					10.2			9.5			10.1	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.0				30.0		30.0
Change Period (Y+Rc), s		3.0				3.0		3.5
Max Green Setting (Gmax), s		27.0				27.0		26.5
Max Q Clear Time (g_c+I1), s		4.3				4.3		4.3
Green Ext Time (p_c), s		0.4				1.1		1.9

Intersection Summary		
HCM 2010 Ctrl Delay		10.1
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	139	17	14	96	1	8	0	1	6	6	3
Future Vol, veh/h	6	139	17	14	96	1	8	0	1	6	6	3
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
Heavy Vehicles, %	5	5	5	10	10	10	11	11	11	0	0	0
Mvmt Flow	6	139	17	14	96	1	8	0	1	6	6	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	8	7.9	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	89%	4%	13%	40%
Vol Thru, %	0%	86%	86%	40%
Vol Right, %	11%	10%	1%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	162	111	15
LT Vol	8	6	14	6
Through Vol	0	139	96	6
RT Vol	1	17	1	3
Lane Flow Rate	9	162	111	15
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.182	0.131	0.019
Departure Headway (Hd)	4.815	4.054	4.252	4.469
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	748	880	838	806
Service Time	2.816	2.101	2.305	2.469
HCM Lane V/C Ratio	0.012	0.184	0.132	0.019
HCM Control Delay	7.9	8	8	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.7	0.5	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	811	0	0	0	0	0	0	0	35	0	0
Future Volume (veh/h)	13	811	0	0	0	0	0	0	0	35	0	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	0				0	1900	1900	1900	1863	0
Adj Flow Rate, veh/h	13	811	0				0	0	0	35	0	0
Adj No. of Lanes	0	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	0	0	2	2	0
Cap, veh/h	49	3248	0				0	481	0	452	0	0
Arrive On Green	0.65	0.65	0.00				0.00	0.00	0.00	0.25	0.00	0.00
Sat Flow, veh/h	76	5186	0				0	1900	0	1406	0	0
Grp Volume(v), veh/h	310	514	0				0	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1806	1647	0				0	1900	0	1406	0	0
Q Serve(g_s), s	5.5	4.9	0.0				0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	5.5	4.9	0.0				0.0	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.04		0.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1168	2130	0				0	481	0	452	0	0
V/C Ratio(X)	0.27	0.24	0.00				0.00	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1168	2130	0				0	481	0	452	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	5.5	0.0				0.0	0.0	0.0	21.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.3	0.0				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
%ile BackOfQ(50%),veh/ln	2.8	2.3	0.0				0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	6.2	5.8	0.0				0.0	0.0	0.0	21.8	0.0	0.0
LnGrp LOS	A	A								C		
Approach Vol, veh/h		824						0			35	
Approach Delay, s/veh		6.0						0.0			21.8	
Approach LOS		A									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		52.0		23.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		19.0		48.5		19.0		
Max Q Clear Time (g_c+I1), s		0.0		0.0		3.4		
Green Ext Time (p_c), s		0.0		0.0		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	525	28	0	0	0	0	59	89	50	28	0
Future Volume (veh/h)	17	525	28	0	0	0	0	59	89	50	28	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1644	1710				0	1676	1710	1710	1644	0
Adj Flow Rate, veh/h	17	525	28				0	59	89	50	28	0
Adj No. of Lanes	0	4	0				0	1	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	2	2	4	4	0
Cap, veh/h	79	2603	140				0	212	320	468	505	0
Arrive On Green	0.15	0.15	0.15				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	169	5577	301				0	596	899	867	1496	0
Grp Volume(v), veh/h	165	258	147				0	0	148	50	28	0
Grp Sat Flow(s),veh/h/ln	1636	1414	1584				0	0	1494	867	1421	0
Q Serve(g_s), s	4.0	3.6	3.7				0.0	0.0	3.2	1.6	0.6	0.0
Cycle Q Clear(g_c), s	4.0	3.6	3.7				0.0	0.0	3.2	4.7	0.6	0.0
Prop In Lane	0.10		0.19				0.00		0.60	1.00		0.00
Lane Grp Cap(c), veh/h	763	1320	739				0	0	531	468	505	0
V/C Ratio(X)	0.22	0.20	0.20				0.00	0.00	0.28	0.11	0.06	0.00
Avail Cap(c_a), veh/h	763	1320	739				0	0	531	468	505	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.8	11.7	11.7				0.0	0.0	10.4	12.1	9.5	0.0
Incr Delay (d2), s/veh	0.6	0.3	0.6				0.0	0.0	1.3	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.5	1.7				0.0	0.0	1.5	0.5	0.3	0.0
LnGrp Delay(d),s/veh	12.5	12.0	12.3				0.0	0.0	11.7	12.5	9.7	0.0
LnGrp LOS	B	B	B						B	B	A	
Approach Vol, veh/h		570						148			78	
Approach Delay, s/veh		12.2						11.7			11.5	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		5.2		6.0		6.7		
Green Ext Time (p_c), s		0.6		3.3		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	29	300	41	14	58	0	0	45	25
Future Volume (veh/h)	0	0	0	29	300	41	14	58	0	0	45	25
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1644	0	0	1644	1710
Adj Flow Rate, veh/h				29	300	41	14	58	0	0	45	25
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	4	4	0	0	4	4
Cap, veh/h				103	1105	158	272	995	0	0	798	409
Arrive On Green				0.14	0.14	0.14	0.40	0.40	0.00	0.00	0.40	0.40
Sat Flow, veh/h				244	2618	374	409	2562	0	0	2078	1024
Grp Volume(v), veh/h				196	0	174	39	33	0	0	34	36
Grp Sat Flow(s),veh/h/ln				1648	0	1588	1475	1421	0	0	1562	1457
Q Serve(g_s), s				4.8	0.0	4.4	0.0	0.6	0.0	0.0	0.6	0.7
Cycle Q Clear(g_c), s				4.8	0.0	4.4	0.7	0.6	0.0	0.0	0.6	0.7
Prop In Lane				0.15		0.24	0.36		0.00	0.00		0.70
Lane Grp Cap(c), veh/h				696	0	670	699	569	0	0	625	583
V/C Ratio(X)				0.28	0.00	0.26	0.06	0.06	0.00	0.00	0.06	0.06
Avail Cap(c_a), veh/h				696	0	670	699	569	0	0	625	583
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.3	0.0	13.1	8.3	8.3	0.0	0.0	8.3	8.3
Incr Delay (d2), s/veh				1.0	0.0	0.9	0.2	0.2	0.0	0.0	0.2	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	2.1	0.3	0.3	0.0	0.0	0.3	0.3
LnGrp Delay(d),s/veh				14.3	0.0	14.0	8.5	8.5	0.0	0.0	8.5	8.5
LnGrp LOS				B		B	A	A			A	A
Approach Vol, veh/h					370			72			70	
Approach Delay, s/veh					14.1			8.5			8.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.0		22.0				22.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		19.0		18.0				18.0
Max Q Clear Time (g_c+I1), s		6.8		2.7				2.7
Green Ext Time (p_c), s		1.2		0.2				0.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	17	10	19	10	48	2	9	3	12	8	1
Future Vol, veh/h	5	17	10	19	10	48	2	9	3	12	8	1
Conflicting Peds, #/hr	3	0	20	20	0	3	10	0	71	71	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	12	12	12	5	5	5	7	7	7	10	10	10
Mvmt Flow	5	17	10	19	10	48	2	9	3	12	8	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	47	0	0	139	151	113	184	132	47
Stage 1	-	-	-	-	-	-	52	52	-	75	75	-
Stage 2	-	-	-	-	-	-	87	99	-	109	57	-
Critical Hdwy	4.22	-	-	4.15	-	-	7.17	6.57	6.27	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.2	5.6	-
Follow-up Hdwy	2.308	-	-	2.245	-	-	3.563	4.063	3.363	3.59	4.09	3.39
Pot Cap-1 Maneuver	1481	-	-	1541	-	-	820	732	926	760	744	1000
Stage 1	-	-	-	-	-	-	948	842	-	915	817	-
Stage 2	-	-	-	-	-	-	908	803	-	877	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1477	-	-	1512	-	-	780	704	847	689	716	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	780	704	-	689	716	-
Stage 1	-	-	-	-	-	-	927	823	-	910	804	-
Stage 2	-	-	-	-	-	-	878	790	-	803	814	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.8	10	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	741	1477	-	-	1512	-	-	709
HCM Lane V/C Ratio	0.019	0.003	-	-	0.013	-	-	0.03
HCM Control Delay (s)	10	7.4	0	-	7.4	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	81	59	27	81	6	27	0	6	3	17	3
Future Vol, veh/h	6	81	59	27	81	6	27	0	6	3	17	3
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
Heavy Vehicles, %	3	3	3	15	15	15	12	12	12	3	3	3
Mvmt Flow	6	81	59	27	81	6	27	0	6	3	17	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	8.2	8	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	82%	4%	24%	13%
Vol Thru, %	0%	55%	71%	74%
Vol Right, %	18%	40%	5%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	146	114	23
LT Vol	27	6	27	3
Through Vol	0	81	81	17
RT Vol	6	59	6	3
Lane Flow Rate	33	146	114	23
Geometry Grp	1	1	1	1
Degree of Util (X)	0.044	0.158	0.139	0.029
Departure Headway (Hd)	4.754	3.898	4.378	4.507
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	758	907	811	799
Service Time	2.755	1.979	2.45	2.509
HCM Lane V/C Ratio	0.044	0.161	0.141	0.029
HCM Control Delay	8	7.7	8.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.6	0.5	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	3	23	4	9	57	25	6	25	11	11	22	14
Future Vol, veh/h	3	23	4	9	57	25	6	25	11	11	22	14
Conflicting Peds, #/hr	21	0	19	19	0	21	72	0	19	19	0	72
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	17	17	17	8	8	8	5	5	5	9	9	9
Mvmt Flow	3	23	4	9	57	25	6	25	11	11	22	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	46	0	0	228	171	63	177	161	163
Stage 1	-	-	-	-	-	-	50	50	-	109	109	-
Stage 2	-	-	-	-	-	-	178	121	-	68	52	-
Critical Hdwy	4.27	-	-	4.18	-	-	7.15	6.55	6.25	7.19	6.59	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.19	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.19	5.59	-
Follow-up Hdwy	2.353	-	-	2.272	-	-	3.545	4.045	3.345	3.581	4.081	3.381
Pot Cap-1 Maneuver	1400	-	-	1524	-	-	721	717	993	770	719	864
Stage 1	-	-	-	-	-	-	956	847	-	879	792	-
Stage 2	-	-	-	-	-	-	817	790	-	925	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1372	-	-	1496	-	-	628	685	957	708	687	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	628	685	-	708	687	-
Stage 1	-	-	-	-	-	-	937	830	-	860	771	-
Stage 2	-	-	-	-	-	-	722	769	-	869	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.7	10	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	750	1372	-	-	1496	-	-	723
HCM Lane V/C Ratio	0.048	0.002	-	-	0.006	-	-	0.05
HCM Control Delay (s)	10	7.6	0	-	7.4	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	52	18	20	70	9	13	28	3	12	123	23
Future Vol, veh/h	9	52	18	20	70	9	13	28	3	12	123	23
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
Heavy Vehicles, %	10	10	10	16	16	16	7	7	7	4	4	4
Mvmt Flow	9	52	18	20	70	9	13	28	3	12	123	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	8.4	7.9	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	11%	20%	8%
Vol Thru, %	64%	66%	71%	78%
Vol Right, %	7%	23%	9%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	44	79	99	158
LT Vol	13	9	20	12
Through Vol	28	52	70	123
RT Vol	3	18	9	23
Lane Flow Rate	44	79	99	158
Geometry Grp	1	1	1	1
Degree of Util (X)	0.057	0.1	0.13	0.192
Departure Headway (Hd)	4.64	4.541	4.715	4.374
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	773	791	761	822
Service Time	2.661	2.561	2.735	2.392
HCM Lane V/C Ratio	0.057	0.1	0.13	0.192
HCM Control Delay	7.9	8.1	8.4	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.4	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	797	61	0	0	0	0	50	15	33	101	0
Future Volume (veh/h)	20	797	61	0	0	0	0	50	15	33	101	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900				0	1652	1652	1900	1827	0
Adj Flow Rate, veh/h	20	797	61				0	50	15	33	101	0
Adj No. of Lanes	0	3	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0				0	15	15	4	4	0
Cap, veh/h	71	2980	235				0	447	367	130	371	0
Arrive On Green	0.64	0.64	0.64				0.00	0.27	0.27	0.27	0.27	0.00
Sat Flow, veh/h	110	4664	368				0	1652	1355	321	1369	0
Grp Volume(v), veh/h	324	269	286				0	50	15	134	0	0
Grp Sat Flow(s),veh/h/ln	1787	1631	1724				0	1652	1355	1690	0	0
Q Serve(g_s), s	8.4	7.5	7.5				0.0	2.4	0.9	0.1	0.0	0.0
Cycle Q Clear(g_c), s	8.4	7.5	7.5				0.0	2.4	0.9	6.1	0.0	0.0
Prop In Lane	0.06		0.21				0.00		1.00	0.25		0.00
Lane Grp Cap(c), veh/h	1142	1042	1102				0	447	367	500	0	0
V/C Ratio(X)	0.28	0.26	0.26				0.00	0.11	0.04	0.27	0.00	0.00
Avail Cap(c_a), veh/h	1142	1042	1102				0	858	703	911	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98				0.00	1.00	1.00	0.99	0.00	0.00
Uniform Delay (d), s/veh	8.4	8.2	8.2				0.0	28.8	28.2	30.1	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.6	0.6				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
%ile BackOfQ(50%),veh/ln	4.3	3.5	3.7				0.0	1.1	0.3	3.1	0.0	0.0
LnGrp Delay(d),s/veh	9.0	8.8	8.8				0.0	28.8	28.3	30.2	0.0	0.0
LnGrp LOS	A	A	A					C	C	C		
Approach Vol, veh/h		878						65			134	
Approach Delay, s/veh		8.8						28.7			30.2	
Approach LOS		A						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.4		71.6		33.4		
Change Period (Y+Rc), s		5.0		4.5		5.0		
Max Green Setting (Gmax), s		54.5		41.0		54.5		
Max Q Clear Time (g_c+I1), s		4.4		10.4		8.1		
Green Ext Time (p_c), s		0.2		4.1		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	59	177	41	26	47	0	0	66	43
Future Volume (veh/h)	0	0	0	59	177	41	26	47	0	0	66	43
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	0.94		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1598	0	0	1629	1710
Adj Flow Rate, veh/h				59	177	41	26	47	0	0	66	43
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	7	7	0	0	5	5
Cap, veh/h				261	811	194	287	450	0	0	401	261
Arrive On Green				0.40	0.40	0.40	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				653	2027	485	393	989	0	0	881	574
Grp Volume(v), veh/h				147	0	130	73	0	0	0	0	109
Grp Sat Flow(s),veh/h/ln				1628	0	1537	1381	0	0	0	0	1455
Q Serve(g_s), s				2.7	0.0	2.5	0.0	0.0	0.0	0.0	0.0	2.0
Cycle Q Clear(g_c), s				2.7	0.0	2.5	1.2	0.0	0.0	0.0	0.0	2.0
Prop In Lane				0.40		0.32	0.36		0.00	0.00		0.39
Lane Grp Cap(c), veh/h				651	0	615	738	0	0	0	0	663
V/C Ratio(X)				0.23	0.00	0.21	0.10	0.00	0.00	0.00	0.00	0.16
Avail Cap(c_a), veh/h				651	0	615	738	0	0	0	0	663
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.9	0.0	8.8	7.0	0.0	0.0	0.0	0.0	7.2
Incr Delay (d2), s/veh				0.8	0.0	0.8	0.3	0.0	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				1.3	0.0	1.2	0.6	0.0	0.0	0.0	0.0	0.9
LnGrp Delay(d),s/veh				9.7	0.0	9.6	7.3	0.0	0.0	0.0	0.0	7.7
LnGrp LOS				A		A	A					A
Approach Vol, veh/h					277			73			109	
Approach Delay, s/veh					9.7			7.3			7.7	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		21.0		24.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		20.5		18.0		20.5		
Max Q Clear Time (g_c+I1), s		3.2		4.7		4.0		
Green Ext Time (p_c), s		0.3		1.3		0.5		

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑						↑	↗		↰	
Traffic Volume (veh/h)	17	449	64	0	0	0	0	58	29	16	45	0
Future Volume (veh/h)	17	449	64	0	0	0	0	58	29	16	45	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.88				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1629	1710				0	1629	1629	1710	1629	0
Adj Flow Rate, veh/h	17	449	64				0	58	29	16	45	0
Adj No. of Lanes	0	4	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	5	5	5	5	0
Cap, veh/h	65	1820	250				0	706	574	221	530	0
Arrive On Green	0.37	0.37	0.37				0.00	0.43	0.43	0.43	0.43	0.00
Sat Flow, veh/h	178	4963	682				0	1629	1326	277	1224	0
Grp Volume(v), veh/h	155	243	131				0	58	29	61	0	0
Grp Sat Flow(s),veh/h/ln	1620	1401	1402				0	1629	1326	1501	0	0
Q Serve(g_s), s	3.0	2.7	3.0				0.0	0.9	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	2.7	3.0				0.0	0.9	0.6	1.0	0.0	0.0
Prop In Lane	0.11		0.49				0.00		1.00	0.26		0.00
Lane Grp Cap(c), veh/h	594	1027	514				0	706	574	751	0	0
V/C Ratio(X)	0.26	0.24	0.26				0.00	0.08	0.05	0.08	0.00	0.00
Avail Cap(c_a), veh/h	594	1027	514				0	706	574	751	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.0	9.9	10.0				0.0	7.5	7.4	7.5	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.5	1.2				0.0	0.2	0.2	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
%ile BackOfQ(50%),veh/ln	1.5	1.1	1.3				0.0	0.5	0.2	0.5	0.0	0.0
LnGrp Delay(d),s/veh	11.0	10.4	11.2				0.0	7.7	7.6	7.7	0.0	0.0
LnGrp LOS	B	B	B					A	A	A		
Approach Vol, veh/h		530						87			61	
Approach Delay, s/veh		10.8						7.7			7.7	
Approach LOS		B						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		21.0		24.0		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		19.5		16.5		19.5		
Max Q Clear Time (g_c+I1), s		2.9		5.0		3.0		
Green Ext Time (p_c), s		0.3		2.7		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	409	25	39	39	0	0	23	5
Future Volume (veh/h)	0	0	0	42	409	25	39	39	0	0	23	5
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.91	0.92		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1660	1660	1710	1710	1629	0	0	1541	1710
Adj Flow Rate, veh/h				42	409	25	39	39	0	0	23	5
Adj No. of Lanes				1	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				3	3	3	5	5	0	0	11	11
Cap, veh/h				597	1134	69	413	366	0	0	586	127
Arrive On Green				0.38	0.38	0.38	0.49	0.49	0.00	0.00	0.49	0.49
Sat Flow, veh/h				1581	3001	182	600	748	0	0	1199	261
Grp Volume(v), veh/h				42	214	220	78	0	0	0	0	28
Grp Sat Flow(s),veh/h/ln				1581	1577	1606	1348	0	0	0	0	1459
Q Serve(g_s), s				0.8	4.4	4.4	0.0	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s				0.8	4.4	4.4	1.2	0.0	0.0	0.0	0.0	0.4
Prop In Lane				1.00		0.11	0.50		0.00	0.00		0.18
Lane Grp Cap(c), veh/h				597	596	607	779	0	0	0	0	713
V/C Ratio(X)				0.07	0.36	0.36	0.10	0.00	0.00	0.00	0.00	0.04
Avail Cap(c_a), veh/h				597	596	607	779	0	0	0	0	713
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.9	10.1	10.1	6.2	0.0	0.0	0.0	0.0	6.0
Incr Delay (d2), s/veh				0.2	1.7	1.7	0.3	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	2.2	2.2	0.6	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh				9.2	11.8	11.8	6.4	0.0	0.0	0.0	0.0	6.1
LnGrp LOS				A	B	B	A					A
Approach Vol, veh/h					476			78			28	
Approach Delay, s/veh					11.5			6.4			6.1	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		20.0		25.0		
Change Period (Y+Rc), s		3.0		3.0		3.0		
Max Green Setting (Gmax), s		22.0		17.0		22.0		
Max Q Clear Time (g_c+I1), s		3.2		6.4		2.4		
Green Ext Time (p_c), s		0.3		2.1		0.1		

Intersection Summary		
HCM 2010 Ctrl Delay		10.6
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	33	3	13	71	61	2	5	2	34	21	15
Future Vol, veh/h	8	33	3	13	71	61	2	5	2	34	21	15
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
Heavy Vehicles, %	16	16	16	15	15	15	11	11	11	14	14	14
Mvmt Flow	8	33	3	13	71	61	2	5	2	34	21	15
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	7.8	8	7.9	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	0%	18%	9%	76%	0%
Vol Thru, %	56%	56%	75%	49%	24%	41%
Vol Right, %	0%	44%	7%	42%	0%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	5	44	145	45	26
LT Vol	2	0	8	13	34	0
Through Vol	3	3	33	71	11	11
RT Vol	0	2	3	61	0	15
Lane Flow Rate	4	4	44	145	44	26
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.007	0.006	0.055	0.165	0.069	0.034
Departure Headway (Hd)	5.41	4.874	4.525	4.088	5.56	4.763
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	665	738	795	863	648	756
Service Time	3.114	2.578	2.531	2.186	3.262	2.465
HCM Lane V/C Ratio	0.006	0.005	0.055	0.168	0.068	0.034
HCM Control Delay	8.2	7.6	7.8	8	8.7	7.6
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0	0.2	0.6	0.2	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	31	9	8	38	49	18	101	14	26	102	41
Future Volume (veh/h)	27	31	9	8	38	49	18	101	14	26	102	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.97		0.96	0.95		0.92	0.95		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
Adj Sat Flow, veh/h/ln	1743	1743	1900	1900	1638	1900	1900	1508	1900	1900	1696	1900
Adj Flow Rate, veh/h	27	31	9	8	38	49	18	101	14	26	102	41
Adj No. of Lanes	1	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	16	16	16	26	26	26	12	12	12
Cap, veh/h	620	548	159	77	273	318	188	938	130	227	810	316
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1188	1284	373	58	640	744	281	2070	287	364	1787	696
Grp Volume(v), veh/h	27	0	40	95	0	0	70	0	63	90	0	79
Grp Sat Flow(s),veh/h/ln	1188	0	1656	1443	0	0	1346	0	1292	1499	0	1348
Q Serve(g_s), s	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.6
Cycle Q Clear(g_c), s	0.7	0.0	1.1	3.0	0.0	0.0	2.0	0.0	2.1	2.3	0.0	2.6
Prop In Lane	1.00		0.22	0.08		0.52	0.26		0.22	0.29		0.52
Lane Grp Cap(c), veh/h	620	0	707	668	0	0	670	0	586	742	0	611
V/C Ratio(X)	0.04	0.00	0.06	0.14	0.00	0.00	0.10	0.00	0.11	0.12	0.00	0.13
Avail Cap(c_a), veh/h	620	0	707	668	0	0	670	0	586	742	0	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	12.6	13.2	0.0	0.0	11.8	0.0	11.8	11.8	0.0	11.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.4	0.0	0.0	0.3	0.0	0.4	0.3	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.5	1.3	0.0	0.0	0.9	0.0	0.8	1.1	0.0	1.0
LnGrp Delay(d),s/veh	12.7	0.0	12.8	13.6	0.0	0.0	12.1	0.0	12.2	12.2	0.0	12.3
LnGrp LOS	B		B	B			B		B	B		B
Approach Vol, veh/h		67			95			133			169	
Approach Delay, s/veh		12.7			13.6			12.1			12.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.0		37.0		38.0		37.0
Change Period (Y+Rc), s		4.0		5.0		4.0		5.0
Max Green Setting (Gmax), s		34.0		32.0		34.0		32.0
Max Q Clear Time (g_c+I1), s		4.1		3.1		4.6		5.0
Green Ext Time (p_c), s		0.8		0.3		1.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B



Movement	EBL2	EBL	EBT	EBR	NBT	NBR	NBR2	SBL2	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	21	678	127	53	114	187	49	181	110	196
Future Volume (vph)	21	678	127	53	114	187	49	181	110	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		6.0	6.0	6.0	3.5	3.5		4.5	4.5	4.5
Lane Util. Factor		0.91	0.91	1.00	0.95	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	0.97	1.00	0.93		1.00	1.00	1.00
Flpb, ped/bikes		0.97	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85		1.00	1.00	1.00
Flt Protected		0.95	0.97	1.00	1.00	1.00		0.95	0.95	1.00
Satd. Flow (prot)		1506	3148	1483	3008	1278		1685	1546	1627
Flt Permitted		0.95	0.97	1.00	1.00	1.00		0.95	0.95	1.00
Satd. Flow (perm)		1506	3148	1483	3008	1278		1685	1546	1627
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	678	127	53	114	187	49	181	110	196
RTOR Reduction (vph)	0	0	0	31	0	61	0	0	0	0
Lane Group Flow (vph)	0	367	459	22	114	175	0	181	110	196
Confl. Peds. (#/hr)		17		9		17	33	33	17	
Confl. Bikes (#/hr)										
Heavy Vehicles (%)	6%	6%	6%	6%	12%	12%	0%	0%	9%	9%
Turn Type	Perm	Split	NA	Perm	NA	Perm		Prot	Prot	NA
Protected Phases		4	4		2			1	1	6
Permitted Phases	4			4		2				
Actuated Green, G (s)		42.0	42.0	42.0	23.5	23.5		25.5	25.5	52.5
Effective Green, g (s)		42.0	42.0	42.0	23.5	23.5		25.5	25.5	52.5
Actuated g/C Ratio		0.40	0.40	0.40	0.22	0.22		0.24	0.24	0.50
Clearance Time (s)		6.0	6.0	6.0	3.5	3.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		602	1259	593	673	286		409	375	813
v/s Ratio Prot			0.15		0.04			c0.11	0.07	0.12
v/s Ratio Perm		0.24		0.01		c0.14				
v/c Ratio		0.61	0.36	0.04	0.17	0.61		0.44	0.29	0.24
Uniform Delay, d1		25.0	22.1	19.2	32.9	36.7		33.7	32.4	14.9
Progression Factor		1.24	1.24	2.03	1.00	1.00		0.95	0.94	0.78
Incremental Delay, d2		4.5	0.8	0.1	0.5	9.5		3.4	1.9	0.7
Delay (s)		35.5	28.2	39.1	33.4	46.1		35.6	32.4	12.3
Level of Service		D	C	D	C	D		D	C	B
Approach Delay (s)			31.9		42.0					25.5
Approach LOS			C		D					C

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

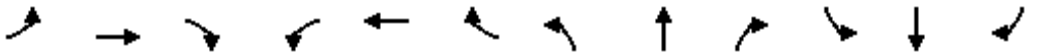


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	210	234	517	13	139	0	0	276	33
Future Volume (veh/h)	0	0	0	210	234	517	13	139	0	0	276	33
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.91
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1644	1644	1710	1437	1437	0	0	1541	1710
Adj Flow Rate, veh/h				210	234	0	13	139	0	0	276	33
Adj No. of Lanes				1	2	0	1	2	0	0	3	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				4	4	4	19	19	0	0	11	11
Cap, veh/h				671	1339	0	417	1794	0	0	1189	137
Arrive On Green				0.43	0.43	0.00	0.10	0.22	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1566	3206	0	1369	2802	0	0	3921	435
Grp Volume(v), veh/h				210	234	0	13	139	0	0	202	107
Grp Sat Flow(s),veh/h/ln				1566	1562	0	1369	1365	0	0	1402	1414
Q Serve(g_s), s				9.3	4.9	0.0	0.9	4.3	0.0	0.0	4.9	5.2
Cycle Q Clear(g_c), s				9.3	4.9	0.0	0.9	4.3	0.0	0.0	4.9	5.2
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.31
Lane Grp Cap(c), veh/h				671	1339	0	417	1794	0	0	881	444
V/C Ratio(X)				0.31	0.17	0.00	0.03	0.08	0.00	0.00	0.23	0.24
Avail Cap(c_a), veh/h				671	1339	0	417	1794	0	0	881	444
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.33	1.33
Upstream Filter(I)				1.00	1.00	0.00	0.99	0.99	0.00	0.00	0.96	0.96
Uniform Delay (d), s/veh				19.8	18.5	0.0	33.2	15.8	0.0	0.0	22.4	22.5
Incr Delay (d2), s/veh				1.2	0.3	0.0	0.1	0.1	0.0	0.0	0.6	1.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.3	2.1	0.0	0.4	1.6	0.0	0.0	1.9	2.2
LnGrp Delay(d),s/veh				21.0	18.8	0.0	33.4	15.8	0.0	0.0	22.9	23.7
LnGrp LOS				C	B		C	B			C	C
Approach Vol, veh/h					444			152			309	
Approach Delay, s/veh					19.9			17.3			23.2	
Approach LOS					B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		73.5			36.5	37.0		49.0
Change Period (Y+Rc), s		4.0			4.0	* 4		4.0
Max Green Setting (Gmax), s		52.0			15.5	* 33		45.0
Max Q Clear Time (g_c+I1), s		6.3			2.9	7.2		11.3
Green Ext Time (p_c), s		0.7			0.0	1.4		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	393	45	0	0	0	0	404	255	122	262	0
Future Volume (vph)	38	393	45	0	0	0	0	404	255	122	262	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		4.5						5.0	5.0		5.0	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		1.00						0.98	0.86		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		0.98	
Frt		0.99						0.98	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.98	
Satd. Flow (prot)		5274						2596	984		2585	
Flt Permitted		1.00						1.00	1.00		0.69	
Satd. Flow (perm)		5274						2596	984		1814	
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)	38	393	45	0	0	0	0	404	255	122	262	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	5	67	0	0	0
Lane Group Flow (vph)	0	453	0	0	0	0	0	455	132	0	384	0
Confl. Peds. (#/hr)	38		28	28		38	139		78	78		139
Confl. Bikes (#/hr)			2						2			8
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	8%	8%	8%	13%	13%	13%
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		26.0						69.5	69.5		69.5	
Effective Green, g (s)		26.0						69.5	69.5		69.5	
Actuated g/C Ratio		0.25						0.66	0.66		0.66	
Clearance Time (s)		4.5						5.0	5.0		5.0	
Vehicle Extension (s)		2.0						2.0	2.0		2.0	
Lane Grp Cap (vph)		1305						1718	651		1200	
v/s Ratio Prot								0.18				
v/s Ratio Perm		0.09							0.13		c0.21	
v/c Ratio		0.35						0.26	0.20		0.32	
Uniform Delay, d1		32.5						7.3	6.9		7.6	
Progression Factor		1.00						0.57	0.00		1.00	
Incremental Delay, d2		0.1						0.3	0.6		0.1	
Delay (s)		32.6						4.5	0.7		7.7	
Level of Service		C						A	A		A	
Approach Delay (s)		32.6			0.0			3.3			7.7	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	66	380	82	45	407	0	0	322	47
Future Volume (veh/h)	0	0	0	66	380	82	45	407	0	0	322	47
Number				3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.91	0.93		1.00	1.00		0.83
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1613	1613	1710	1710	1527	0	0	1500	1710
Adj Flow Rate, veh/h				66	380	82	45	407	0	0	322	47
Adj No. of Lanes				1	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				6	6	6	12	12	0	0	14	14
Cap, veh/h				378	884	181	186	1514	0	0	1504	215
Arrive On Green				0.25	0.25	0.25	0.62	0.62	0.00	0.00	0.62	0.62
Sat Flow, veh/h				1536	3594	735	201	2517	0	0	2508	347
Grp Volume(v), veh/h				66	307	155	233	219	0	0	186	183
Grp Sat Flow(s),veh/h/ln				1536	1468	1393	1329	1320	0	0	1425	1355
Q Serve(g_s), s				2.4	6.2	6.6	0.0	5.3	0.0	0.0	4.0	4.2
Cycle Q Clear(g_c), s				2.4	6.2	6.6	4.8	5.3	0.0	0.0	4.0	4.2
Prop In Lane				1.00		0.53	0.19		0.00	0.00		0.26
Lane Grp Cap(c), veh/h				378	722	343	883	816	0	0	881	838
V/C Ratio(X)				0.17	0.42	0.45	0.26	0.27	0.00	0.00	0.21	0.22
Avail Cap(c_a), veh/h				560	1070	507	883	816	0	0	881	838
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.98	0.98	0.98	0.97	0.97	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.8	22.2	22.4	6.0	6.1	0.0	0.0	5.9	5.9
Incr Delay (d2), s/veh				0.1	0.1	0.3	0.7	0.8	0.0	0.0	0.5	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.0	2.5	2.6	2.2	2.1	0.0	0.0	1.7	1.7
LnGrp Delay(d),s/veh				20.9	22.4	22.7	6.7	6.9	0.0	0.0	6.4	6.5
LnGrp LOS				C	C	C	A	A			A	A
Approach Vol, veh/h					528			452			369	
Approach Delay, s/veh					22.3			6.8			6.5	
Approach LOS					C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		48.3				48.3		21.7
Change Period (Y+Rc), s		5.0				5.0		4.5
Max Green Setting (Gmax), s		35.0				35.0		25.5
Max Q Clear Time (g_c+I1), s		6.2				7.3		8.6
Green Ext Time (p_c), s		1.6				2.0		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	611	11	0	0	0	0	27	25	0	0	0
Future Volume (veh/h)	154	611	11	0	0	0	0	27	25	0	0	0
Number	7	4	14				5	2	12			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95				1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1613	1710				0	1583	1710			
Adj Flow Rate, veh/h	154	611	11				0	27	25			
Adj No. of Lanes	0	4	0				0	2	0			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	6	6	6				0	8	8			
Cap, veh/h	618	2439	44				0	471	364			
Arrive On Green	0.57	0.57	0.57				0.00	0.30	0.30			
Sat Flow, veh/h	910	4304	78				0	1649	1214			
Grp Volume(v), veh/h	216	355	205				0	26	26			
Grp Sat Flow(s),veh/h/ln	1317	1262	1449				0	1504	1280			
Q Serve(g_s), s	4.1	4.3	4.3				0.0	0.7	0.9			
Cycle Q Clear(g_c), s	4.9	4.3	4.3				0.0	0.7	0.9			
Prop In Lane	0.71		0.05				0.00		0.95			
Lane Grp Cap(c), veh/h	849	1431	821				0	451	384			
V/C Ratio(X)	0.25	0.25	0.25				0.00	0.06	0.07			
Avail Cap(c_a), veh/h	849	1431	821				0	451	384			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	6.7	6.6	6.6				0.0	15.0	15.0			
Incr Delay (d2), s/veh	0.7	0.4	0.7				0.0	0.2	0.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.0	1.6	1.9				0.0	0.3	0.3			
LnGrp Delay(d),s/veh	7.4	7.0	7.3				0.0	15.2	15.4			
LnGrp LOS	A	A	A					B	B			
Approach Vol, veh/h		776						52				
Approach Delay, s/veh		7.2						15.3				
Approach LOS		A						B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		22.0		38.0				
Change Period (Y+Rc), s		4.0		4.0				
Max Green Setting (Gmax), s		18.0		34.0				
Max Q Clear Time (g_c+I1), s		2.9		6.9				
Green Ext Time (p_c), s		0.1		3.7				

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	496	154	50	133	0	0	0	0
Future Volume (vph)	0	0	0	0	496	154	50	133	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.86			0.86				
Frpb, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.98				
Frt					0.96			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5344			5087				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5344			5087				
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	0	0	0	496	154	50	133	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	62	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	588	0	0	131	0	0	0	0
Confl. Peds. (#/hr)	51		50	50		51	41		132	132		41
Confl. Bikes (#/hr)						4			2			
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	4%	4%	4%	2%	2%	2%
Turn Type					NA		Perm	NA				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					42.0			13.0				
Effective Green, g (s)					42.0			13.0				
Actuated g/C Ratio					0.47			0.14				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					2493			734				
v/s Ratio Prot					c0.11							
v/s Ratio Perm								0.03				
v/c Ratio					0.24			0.18				
Uniform Delay, d1					14.4			33.8				
Progression Factor					2.21			1.00				
Incremental Delay, d2					0.2			0.5				
Delay (s)					32.0			34.3				
Level of Service					C			C				
Approach Delay (s)		0.0			32.0			34.3			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

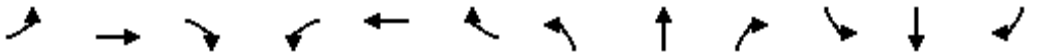


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	275	361	0	0	0	0	0	0	144	616	0
Future Volume (veh/h)	0	275	361	0	0	0	0	0	0	144	616	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1650	1710							1710	1669	0
Adj Flow Rate, veh/h	0	275	361							144	616	0
Adj No. of Lanes	0	2	2							0	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0							3	3	0
Cap, veh/h	0	1320	1163							379	1431	0
Arrive On Green	0.00	0.40	0.40							0.13	0.13	0.00
Sat Flow, veh/h	0	3301	2907							647	3714	0
Grp Volume(v), veh/h	0	275	361							285	475	0
Grp Sat Flow(s),veh/h/ln	0	1650	1454							1459	1382	0
Q Serve(g_s), s	0.0	2.5	3.8							6.0	7.1	0.0
Cycle Q Clear(g_c), s	0.0	2.5	3.8							8.0	7.1	0.0
Prop In Lane	0.00		1.00							0.51		0.00
Lane Grp Cap(c), veh/h	0	1320	1163							704	1106	0
V/C Ratio(X)	0.00	0.21	0.31							0.40	0.43	0.00
Avail Cap(c_a), veh/h	0	1320	1163							704	1106	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	8.8	9.2							15.1	14.8	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.7							1.7	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.2	1.6							3.6	2.9	0.0
LnGrp Delay(d),s/veh	0.0	9.2	9.9							16.8	16.0	0.0
LnGrp LOS		A	A							B	B	
Approach Vol, veh/h		636									760	
Approach Delay, s/veh		9.6									16.3	
Approach LOS		A									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				22.5		22.5		
Change Period (Y+Rc), s				4.5		4.5		
Max Green Setting (Gmax), s				18.0		18.0		
Max Q Clear Time (g_c+I1), s				5.8		10.0		
Green Ext Time (p_c), s				2.7		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	352	513	0	0	0	0	0	407	156
Future Volume (vph)	0	0	0	352	513	0	0	0	0	0	407	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frpb, ped/bikes				1.00	1.00						0.99	0.92
Flpb, ped/bikes				0.88	0.97						1.00	1.00
Frt				1.00	1.00						0.99	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1183	4089						3932	1039
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1183	4089						3932	1039
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	0	0	352	513	0	0	0	0	0	407	156
RTOR Reduction (vph)	0	0	0	150	50	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	61	604	0	0	0	0	0	438	125
Confl. Peds. (#/hr)	96		115	115		96	72		160	160		72
Confl. Bikes (#/hr)						2						8
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Actuated Green, G (s)				26.0	26.0						29.0	29.0
Effective Green, g (s)				26.0	26.0						29.0	29.0
Actuated g/C Ratio				0.29	0.29						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				341	1181						1266	334
v/s Ratio Prot											0.11	
v/s Ratio Perm				0.05	0.15							c0.12
v/c Ratio				0.18	0.51						0.35	0.37
Uniform Delay, d1				24.0	26.7						23.3	23.5
Progression Factor				1.00	1.00						1.00	1.00
Incremental Delay, d2				1.1	1.6						0.8	3.2
Delay (s)				25.1	28.3						24.0	26.7
Level of Service				C	C						C	C
Approach Delay (s)		0.0			27.5			0.0			24.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	315	0	0	0	0	0	933	1445	0	0	0
Future Volume (veh/h)	65	315	0	0	0	0	0	933	1445	0	0	0
Number	5	2	12				7	4	14			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.95			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1598	0				0	1676	1676			
Adj Flow Rate, veh/h	65	315	0				0	933	1445			
Adj No. of Lanes	0	3	0				0	2	2			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	7	7	0				0	2	2			
Cap, veh/h	242	1026	0				0	1755	1423			
Arrive On Green	0.29	0.29	0.00				0.00	0.52	0.52			
Sat Flow, veh/h	534	3668	0				0	3353	2719			
Grp Volume(v), veh/h	146	234	0				0	933	1445			
Grp Sat Flow(s),veh/h/ln	1425	1323	0				0	1676	1359			
Q Serve(g_s), s	2.1	4.1	0.0				0.0	11.0	31.4			
Cycle Q Clear(g_c), s	4.6	4.1	0.0				0.0	11.0	31.4			
Prop In Lane	0.45		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	500	768	0				0	1755	1423			
V/C Ratio(X)	0.29	0.31	0.00				0.00	0.53	1.02			
Avail Cap(c_a), veh/h	500	768	0				0	1755	1423			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	16.7	16.6	0.0				0.0	9.4	14.3			
Incr Delay (d2), s/veh	1.5	1.0	0.0				0.0	1.2	27.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.1	1.6	0.0				0.0	5.3	17.0			
LnGrp Delay(d),s/veh	18.2	17.6	0.0				0.0	10.6	42.1			
LnGrp LOS	B	B						B	F			
Approach Vol, veh/h		380						2378				
Approach Delay, s/veh		17.8						29.7				
Approach LOS		B						C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		23.0		37.0				
Change Period (Y+Rc), s		5.6		5.6				
Max Green Setting (Gmax), s		17.4		31.4				
Max Q Clear Time (g_c+I1), s		6.6		33.4				
Green Ext Time (p_c), s		0.4		0.0				

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	558	133	307	673	0	0	0	0
Future Volume (veh/h)	0	0	0	0	558	133	307	673	0	0	0	0
Number				5	2	12	7	4	14			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.91	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1644	1710	1660	1660	0			
Adj Flow Rate, veh/h				0	558	133	245	760	0			
Adj No. of Lanes				0	3	0	1	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	4	4	3	3	0			
Cap, veh/h				0	1696	390	752	1992	0			
Arrive On Green				0.00	0.47	0.47	0.13	0.13	0.00			
Sat Flow, veh/h				0	3719	822	1581	4981	0			
Grp Volume(v), veh/h				0	464	227	245	760	0			
Grp Sat Flow(s),veh/h/ln				0	1496	1400	1581	1660	0			
Q Serve(g_s), s				0.0	5.8	6.1	8.5	8.4	0.0			
Cycle Q Clear(g_c), s				0.0	5.8	6.1	8.5	8.4	0.0			
Prop In Lane				0.00		0.59	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1421	665	752	1992	0			
V/C Ratio(X)				0.00	0.33	0.34	0.33	0.38	0.00			
Avail Cap(c_a), veh/h				0	1421	665	752	1992	0			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.51	0.51	0.00			
Uniform Delay (d), s/veh				0.0	9.8	9.9	19.3	19.3	0.0			
Incr Delay (d2), s/veh				0.0	0.6	1.4	0.6	0.3	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	2.5	2.6	3.8	3.9	0.0			
LnGrp Delay(d),s/veh				0.0	10.4	11.3	19.9	19.5	0.0			
LnGrp LOS					B	B	B	B				
Approach Vol, veh/h					691			1005				
Approach Delay, s/veh					10.7			19.6				
Approach LOS					B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		32.5		27.5				
Change Period (Y+Rc), s		4.0		3.5				
Max Green Setting (Gmax), s		28.5		24.0				
Max Q Clear Time (g_c+I1), s		8.1		10.5				
Green Ext Time (p_c), s		1.1		1.1				

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	119	86	108	98	22	61	543	723	0	80	24
Future Volume (veh/h)	78	119	86	108	98	22	61	543	723	0	80	24
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1759	1759	1900	1810	1810	1900	0	1810	1900
Adj Flow Rate, veh/h	78	119	0	108	98	14	61	543	483	0	80	8
Adj No. of Lanes	1	1	0	2	1	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	8	8	8	5	5	5	0	5	5
Cap, veh/h	327	559	0	305	314	45	98	723	643	0	994	98
Arrive On Green	0.18	0.30	0.00	0.09	0.21	0.21	0.06	0.42	0.42	0.00	0.31	0.31
Sat Flow, veh/h	1792	1881	0	3250	1502	215	1723	1724	1533	0	3252	312
Grp Volume(v), veh/h	78	119	0	108	0	112	61	541	485	0	43	45
Grp Sat Flow(s),veh/h/ln	1792	1881	0	1625	0	1716	1723	1719	1538	0	1719	1754
Q Serve(g_s), s	2.9	3.6	0.0	2.4	0.0	4.2	2.7	20.5	20.5	0.0	1.3	1.4
Cycle Q Clear(g_c), s	2.9	3.6	0.0	2.4	0.0	4.2	2.7	20.5	20.5	0.0	1.3	1.4
Prop In Lane	1.00		0.00	1.00		0.13	1.00		1.00	0.00		0.18
Lane Grp Cap(c), veh/h	327	559	0	305	0	359	98	721	645	0	541	552
V/C Ratio(X)	0.24	0.21	0.00	0.35	0.00	0.31	0.62	0.75	0.75	0.00	0.08	0.08
Avail Cap(c_a), veh/h	374	559	0	848	0	560	360	1031	923	0	541	552
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	20.2	0.0	32.6	0.0	25.7	35.3	18.9	18.9	0.0	18.5	18.5
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.7	0.0	0.4	4.7	2.5	2.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.9	0.0	1.1	0.0	2.0	1.4	10.1	9.1	0.0	0.6	0.7
LnGrp Delay(d),s/veh	26.9	20.3	0.0	33.3	0.0	26.0	40.1	21.4	21.7	0.0	18.5	18.5
LnGrp LOS	C	C		C		C	D	C	C		B	B
Approach Vol, veh/h		197			220			1087			88	
Approach Delay, s/veh		23.0			29.6			22.5			18.5	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	20.2	8.1	29.7	11.9	27.0		37.8
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 16	* 25	16.0	* 22	* 20	* 20		46.0
Max Q Clear Time (g_c+I1), s	4.9	6.2	4.7	3.4	4.4	5.6		22.5
Green Ext Time (p_c), s	0.1	0.4	0.1	0.2	0.3	0.4		9.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	560	11	80	373	34	16	71	619	15	7	13
Future Volume (veh/h)	20	560	11	80	373	34	16	71	619	15	7	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.94	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1845	1845	1900	1743	1900
Adj Flow Rate, veh/h	20	560	11	80	373	34	16	71	619	15	7	13
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	9	9	9
Cap, veh/h	496	1566	31	373	1454	132	162	683	694	247	119	179
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	934	3479	68	821	3231	292	242	1518	1543	406	265	397
Grp Volume(v), veh/h	20	279	292	80	201	206	87	0	619	35	0	0
Grp Sat Flow(s),veh/h/ln	934	1736	1812	821	1752	1771	1760	0	1543	1068	0	0
Q Serve(g_s), s	1.0	8.4	8.4	3.0	1.2	1.2	0.0	0.0	29.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.2	8.4	8.4	11.5	1.2	1.2	2.2	0.0	29.5	1.0	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.17	0.18		1.00	0.43		0.37
Lane Grp Cap(c), veh/h	496	781	815	373	789	797	845	0	694	545	0	0
V/C Ratio(X)	0.04	0.36	0.36	0.21	0.25	0.26	0.10	0.00	0.89	0.06	0.00	0.00
Avail Cap(c_a), veh/h	496	781	815	373	789	797	845	0	694	545	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	14.4	14.4	4.4	2.3	2.3	12.7	0.0	20.2	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.3	1.2	1.3	0.8	0.8	0.2	0.0	16.0	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(50%),veh/ln	0.3	4.3	4.5	0.8	0.6	0.6	1.2	0.0	15.5	0.5	0.0	0.0
LnGrp Delay(d),s/veh	13.2	15.7	15.6	5.7	3.0	3.0	12.9	0.0	36.2	12.6	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		D	B		
Approach Vol, veh/h		591			487			706			35	
Approach Delay, s/veh		15.6			3.5			33.4			12.6	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		31.5		10.4		3.0		13.5
Green Ext Time (p_c), s		1.4		3.8		0.2		3.0

Intersection Summary		
HCM 2010 Ctrl Delay		19.2
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	139	24	99	125	87	29	200	198	73	126	15
Future Vol, veh/h	31	139	24	99	125	87	29	200	198	73	126	15
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
Heavy Vehicles, %	8	8	8	16	16	16	39	39	39	31	31	31
Mvmt Flow	31	139	24	99	125	87	29	200	198	73	126	15
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	13.7	17.8	16.8	13.2
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	22%	0%	16%	32%	54%	0%
Vol Thru, %	78%	34%	72%	40%	46%	81%
Vol Right, %	0%	66%	12%	28%	0%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	298	194	311	136	78
LT Vol	29	0	31	99	73	0
Through Vol	100	100	139	125	63	63
RT Vol	0	198	24	87	0	15
Lane Flow Rate	129	298	194	311	136	78
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.269	0.572	0.366	0.566	0.299	0.162
Departure Headway (Hd)	7.499	6.908	6.79	6.551	7.907	7.493
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	480	522	530	550	454	478
Service Time	5.241	4.649	4.836	4.589	5.657	5.242
HCM Lane V/C Ratio	0.269	0.571	0.366	0.565	0.3	0.163
HCM Control Delay	13	18.5	13.7	17.8	14	11.7
HCM Lane LOS	B	C	B	C	B	B
HCM 95th-tile Q	1.1	3.6	1.7	3.5	1.2	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	739	81	64	135	40	74	98	140	89	66	11
Future Volume (veh/h)	38	739	81	64	135	40	74	98	140	89	66	11
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1900	1863	1863	1900	1520	1520	1900	1667	1667	1900
Adj Flow Rate, veh/h	38	739	81	64	135	40	74	98	140	55	113	11
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	6	6	2	2	2	25	25	25	14	14	14
Cap, veh/h	55	993	109	82	935	268	255	254	222	236	445	43
Arrive On Green	0.03	0.32	0.32	0.05	0.34	0.34	0.18	0.18	0.18	0.15	0.15	0.15
Sat Flow, veh/h	1707	3096	339	1774	2715	778	1448	1444	1260	1587	2988	287
Grp Volume(v), veh/h	38	406	414	64	86	89	74	98	140	55	62	62
Grp Sat Flow(s),veh/h/ln	1707	1703	1732	1774	1770	1724	1448	1444	1260	1587	1667	1608
Q Serve(g_s), s	1.1	11.1	11.1	1.9	1.7	1.8	2.3	3.1	5.4	1.6	1.7	1.8
Cycle Q Clear(g_c), s	1.1	11.1	11.1	1.9	1.7	1.8	2.3	3.1	5.4	1.6	1.7	1.8
Prop In Lane	1.00		0.20	1.00		0.45	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	55	546	556	82	609	594	255	254	222	236	248	239
V/C Ratio(X)	0.68	0.74	0.74	0.78	0.14	0.15	0.29	0.39	0.63	0.23	0.25	0.26
Avail Cap(c_a), veh/h	591	983	1000	785	851	829	641	639	558	703	738	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	15.7	15.7	24.5	11.7	11.8	18.6	18.9	19.8	19.5	19.6	19.6
Incr Delay (d2), s/veh	5.5	0.8	0.8	11.0	0.1	0.1	0.7	1.0	3.2	0.5	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.3	5.4	1.2	0.9	0.9	1.0	1.3	2.1	0.7	0.8	0.8
LnGrp Delay(d),s/veh	30.3	16.5	16.5	35.5	11.8	11.9	19.3	20.0	23.0	20.0	20.1	20.1
LnGrp LOS	C	B	B	D	B	B	B	B	C	B	C	C
Approach Vol, veh/h		858			239			312			179	
Approach Delay, s/veh		17.1			18.2			21.2			20.1	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	21.9		13.1	6.4	20.7		11.7
Change Period (Y+Rc), s	3.5	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	25.0		23.0	23.0	30.0		23.0
Max Q Clear Time (g_c+I1), s	3.1	3.8		7.4	3.9	13.1		3.8
Green Ext Time (p_c), s	0.0	0.9		1.6	0.1	3.5		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	1128	33	60	388	101	12	104	84	71	71	51
Future Volume (veh/h)	54	1128	33	60	388	101	12	104	84	71	71	51
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.98	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1845	1845	1845	1792	1792	1900	1900	1863	1900
Adj Flow Rate, veh/h	54	1128	33	60	388	101	12	104	84	71	71	51
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	6	6	6	2	2	2
Cap, veh/h	532	1929	56	351	1928	834	461	650	476	370	379	289
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	895	3508	103	475	3505	1517	1207	1857	1361	836	1082	827
Grp Volume(v), veh/h	54	569	592	60	388	101	12	95	93	98	0	95
Grp Sat Flow(s),veh/h/ln	895	1770	1841	475	1752	1517	1207	1703	1514	1205	0	1540
Q Serve(g_s), s	0.6	0.0	0.0	5.2	4.5	2.6	0.6	3.1	3.4	3.3	0.0	3.4
Cycle Q Clear(g_c), s	5.0	0.0	0.0	5.2	4.5	2.6	4.0	3.1	3.4	6.7	0.0	3.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.90	0.72		0.54
Lane Grp Cap(c), veh/h	532	973	1012	351	1928	834	461	596	530	499	0	539
V/C Ratio(X)	0.10	0.58	0.58	0.17	0.20	0.12	0.03	0.16	0.18	0.20	0.00	0.18
Avail Cap(c_a), veh/h	532	973	1012	351	1928	834	461	596	530	499	0	539
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	9.3	9.1	8.7	19.4	17.9	18.0	19.5	0.0	18.0
Incr Delay (d2), s/veh	0.4	2.6	2.5	1.1	0.2	0.3	0.1	0.6	0.7	0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.7	0.7	0.8	2.2	1.1	0.2	1.5	1.5	1.7	0.0	1.6
LnGrp Delay(d),s/veh	0.6	2.6	2.5	10.3	9.3	9.0	19.5	18.5	18.7	20.4	0.0	18.7
LnGrp LOS	A	A	A	B	A	A	B	B	B	C		B
Approach Vol, veh/h		1215			549			200			193	
Approach Delay, s/veh		2.4			9.4			18.7			19.6	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		6.0		7.0		8.7		7.2
Green Ext Time (p_c), s		1.1		10.5		1.0		4.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	19	3	2	0	9	3	25	3	27	19	22
Future Vol, veh/h	18	19	3	2	0	9	3	25	3	27	19	22
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
Heavy Vehicles, %	10	10	10	55	55	55	35	35	35	49	49	49
Mvmt Flow	18	19	3	2	0	9	3	25	3	27	19	22
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.8	8	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	10%	45%	18%	100%	0%
Vol Thru, %	81%	47%	0%	0%	46%
Vol Right, %	10%	7%	82%	0%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	40	11	27	41
LT Vol	3	18	2	27	0
Through Vol	25	19	0	0	19
RT Vol	3	3	9	0	22
Lane Flow Rate	31	40	11	27	41
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.04	0.049	0.014	0.045	0.058
Departure Headway (Hd)	4.697	4.397	4.694	5.941	5.064
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	756	819	767	602	706
Service Time	2.767	2.397	2.695	3.682	2.805
HCM Lane V/C Ratio	0.041	0.049	0.014	0.045	0.058
HCM Control Delay	8	7.6	7.8	9	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0	0.1	0.2

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	434	31	5	240	49	16	15	15	53	27	53
Future Vol, veh/h	53	434	31	5	240	49	16	15	15	53	27	53
Conflicting Peds, #/hr	7	0	4	4	0	7	6	0	3	3	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	140	-	-
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, %	21	21	21	16	16	16	35	35	35	26	26	26
Mvmt Flow	53	434	31	5	240	49	16	15	15	53	27	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	469	0	0	881	866	457	856	857	278
Stage 1	-	-	-	-	-	-	560	560	-	282	282	-
Stage 2	-	-	-	-	-	-	321	306	-	574	575	-
Critical Hdwy	4.31	-	-	4.26	-	-	7.45	6.85	6.55	7.36	6.76	6.46
Critical Hdwy Stg 1	-	-	-	-	-	-	6.45	5.85	-	6.36	5.76	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.45	5.85	-	6.36	5.76	-
Follow-up Hdwy	2.389	-	-	2.344	-	-	3.815	4.315	3.615	3.734	4.234	3.534
Pot Cap-1 Maneuver	1164	-	-	1023	-	-	234	258	541	253	270	707
Stage 1	-	-	-	-	-	-	459	461	-	676	636	-
Stage 2	-	-	-	-	-	-	626	606	-	464	466	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1157	-	-	1019	-	-	187	238	538	220	249	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	187	238	-	220	249	-
Stage 1	-	-	-	-	-	-	429	431	-	630	628	-
Stage 2	-	-	-	-	-	-	548	599	-	407	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	21.7	19.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	261	1157	-	-	1019	-	-	220	249	511
HCM Lane V/C Ratio	0.176	0.046	-	-	0.005	-	-	0.241	0.054	0.13
HCM Control Delay (s)	21.7	8.3	0	-	8.6	0	-	26.5	20.3	13.1
HCM Lane LOS	C	A	A	-	A	A	-	D	C	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.9	0.2	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	697	62	0	0	0	0	104	30	65	91	0
Future Volume (veh/h)	15	697	62	0	0	0	0	104	30	65	91	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900				0	1667	1667	1545	1545	0
Adj Flow Rate, veh/h	15	697	62				0	104	30	65	91	0
Adj No. of Lanes	0	3	0				0	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0				0	14	14	23	23	0
Cap, veh/h	70	3462	317				0	439	187	191	407	0
Arrive On Green	0.77	0.75	0.75				0.00	0.14	0.14	0.14	0.14	0.00
Sat Flow, veh/h	94	4614	422				0	3250	1352	1020	3012	0
Grp Volume(v), veh/h	286	237	251				0	104	30	65	91	0
Grp Sat Flow(s),veh/h/ln	1788	1631	1711				0	1583	1352	1020	1467	0
Q Serve(g_s), s	4.3	3.8	3.9				0.0	2.6	1.8	5.5	2.5	0.0
Cycle Q Clear(g_c), s	4.3	3.8	3.9				0.0	2.6	1.8	8.1	2.5	0.0
Prop In Lane	0.05		0.25				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1341	1224	1284				0	439	187	191	407	0
V/C Ratio(X)	0.21	0.19	0.20				0.00	0.24	0.16	0.34	0.22	0.00
Avail Cap(c_a), veh/h	1341	1224	1284				0	686	293	271	636	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.3	3.3	3.3				0.0	34.5	34.2	38.1	34.5	0.0
Incr Delay (d2), s/veh	0.4	0.4	0.3				0.0	0.1	0.1	0.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.8	1.9				0.0	1.2	0.7	1.6	1.0	0.0
LnGrp Delay(d),s/veh	3.7	3.6	3.6				0.0	34.6	34.3	38.5	34.6	0.0
LnGrp LOS	A	A	A					C	C	D	C	
Approach Vol, veh/h		774						134			156	
Approach Delay, s/veh		3.7						34.6			36.2	
Approach LOS		A						C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		17.0		73.0		17.0		
Change Period (Y+Rc), s		4.5		5.5		4.5		
Max Green Setting (Gmax), s		19.5		60.5		19.5		
Max Q Clear Time (g_c+I1), s		4.6		6.3		10.1		
Green Ext Time (p_c), s		0.4		3.6		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes



Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	SWR2
Lane Configurations								
Traffic Volume (vph)	48	186	202	40	98	108	19	39
Future Volume (vph)	48	186	202	40	98	108	19	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	10	10	12
Total Lost time (s)		5.0	5.0	4.5	4.5	4.5	4.5	5.0
Lane Util. Factor		0.95	1.00	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00	1.00	0.98	0.98
Flpb, ped/bikes		1.00	1.00	0.99	1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00	1.00	0.85	0.86
Flt Protected		0.99	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)		3028	1347	1599	1701	3120	1361	1618
Flt Permitted		0.99	1.00	0.68	1.00	1.00	1.00	1.00
Satd. Flow (perm)		3028	1347	1151	1701	3120	1361	1618
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	186	202	40	98	108	19	39
RTOR Reduction (vph)	0	0	0	0	0	0	6	31
Lane Group Flow (vph)	0	234	202	40	98	108	13	8
Confl. Peds. (#/hr)			4	11			11	4
Confl. Bikes (#/hr)							4	
Heavy Vehicles (%)	18%	18%	18%	8%	8%	8%	8%	0%
Turn Type	Perm	NA	Perm	Perm	NA	NA	Perm	Perm
Protected Phases		4			2	6		
Permitted Phases	4		4	2			6	4
Actuated Green, G (s)		18.3	18.3	62.2	62.2	62.2	62.2	18.3
Effective Green, g (s)		18.3	18.3	62.2	62.2	62.2	62.2	18.3
Actuated g/C Ratio		0.20	0.20	0.69	0.69	0.69	0.69	0.20
Clearance Time (s)		5.0	5.0	4.5	4.5	4.5	4.5	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		615	273	795	1175	2156	940	328
v/s Ratio Prot					c0.06	0.03		
v/s Ratio Perm		0.08	c0.15	0.03			0.01	0.00
v/c Ratio		0.38	0.74	0.05	0.08	0.05	0.01	0.02
Uniform Delay, d1		31.0	33.6	4.4	4.6	4.4	4.3	28.7
Progression Factor		1.00	1.00	1.39	1.33	1.00	1.00	1.00
Incremental Delay, d2		0.1	8.7	0.1	0.1	0.0	0.0	0.0
Delay (s)		31.1	42.3	6.3	6.2	4.5	4.4	28.7
Level of Service		C	D	A	A	A	A	C
Approach Delay (s)		36.3			6.2	4.5		
Approach LOS		D			A	A		

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	1226	42	22	369	30	91	205	38	79	67	67
Future Volume (veh/h)	143	1226	42	22	369	30	91	205	38	79	67	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	1.00		0.98	0.98		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1827	1827	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	143	1226	42	22	369	30	91	205	38	79	67	67
Adj No. of Lanes	1	3	0	1	3	0	1	1	1	1	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	4	4	4	3	3	3	3	3	3
Cap, veh/h	686	3264	112	312	3040	243	361	445	363	247	846	366
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	976	5045	173	426	4699	376	1220	1845	1504	1109	3505	1516
Grp Volume(v), veh/h	143	824	444	22	259	140	91	205	38	79	67	67
Grp Sat Flow(s),veh/h/ln	976	1695	1827	426	1663	1750	1220	1845	1504	1109	1752	1516
Q Serve(g_s), s	5.6	9.6	9.6	2.2	2.5	2.6	5.3	8.1	1.7	5.6	1.3	3.0
Cycle Q Clear(g_c), s	8.2	9.6	9.6	11.8	2.5	2.6	6.6	8.1	1.7	13.6	1.3	3.0
Prop In Lane	1.00		0.09	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	686	2193	1182	312	2151	1132	361	445	363	247	846	366
V/C Ratio(X)	0.21	0.38	0.38	0.07	0.12	0.12	0.25	0.46	0.10	0.32	0.08	0.18
Avail Cap(c_a), veh/h	686	2193	1182	312	2151	1132	590	792	646	456	1505	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	7.0	7.0	9.8	5.7	5.8	27.5	27.5	25.1	33.3	24.9	25.6
Incr Delay (d2), s/veh	0.5	0.4	0.7	0.4	0.1	0.2	0.1	0.2	0.0	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.6	5.0	0.3	1.2	1.3	1.8	4.1	0.7	1.7	0.6	1.3
LnGrp Delay(d),s/veh	7.8	7.4	7.7	10.2	5.9	6.0	27.6	27.8	25.1	33.6	25.0	25.7
LnGrp LOS	A	A	A	B	A	A	C	C	C	C	C	C
Approach Vol, veh/h		1411			421			334			213	
Approach Delay, s/veh		7.5			6.1			27.4			28.4	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.0		60.0		25.0		60.0
Change Period (Y+Rc), s		4.5		5.0		4.5		5.0
Max Green Setting (Gmax), s		36.5		39.0		36.5		39.0
Max Q Clear Time (g_c+I1), s		10.1		11.6		15.6		13.8
Green Ext Time (p_c), s		1.0		7.2		0.5		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	39	57	39	47	73	48	254	75	47	122	62
Future Volume (veh/h)	88	39	57	39	47	73	48	254	75	47	122	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1845	1845	1900	1881	1881	1900
Adj Flow Rate, veh/h	88	39	57	39	47	73	48	254	75	47	122	62
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	301	138	157	165	198	245	716	1422	409	629	1241	591
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	636	415	471	271	595	735	1179	2666	767	1054	2327	1109
Grp Volume(v), veh/h	184	0	0	159	0	0	48	165	164	47	92	92
Grp Sat Flow(s),veh/h/ln	1522	0	0	1600	0	0	1179	1752	1681	1054	1787	1649
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	0.0	1.3	2.9	3.0	1.4	1.5	1.7
Cycle Q Clear(g_c), s	4.7	0.0	0.0	4.1	0.0	0.0	2.9	2.9	3.0	4.5	1.5	1.7
Prop In Lane	0.48		0.31	0.25		0.46	1.00		0.46	1.00		0.67
Lane Grp Cap(c), veh/h	596	0	0	608	0	0	716	935	897	629	953	879
V/C Ratio(X)	0.31	0.00	0.00	0.26	0.00	0.00	0.07	0.18	0.18	0.07	0.10	0.10
Avail Cap(c_a), veh/h	596	0	0	608	0	0	716	935	897	629	953	879
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.7	0.0	0.0	7.6	7.2	7.2	8.4	6.9	6.9
Incr Delay (d2), s/veh	1.3	0.0	0.0	1.0	0.0	0.0	0.2	0.4	0.4	0.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	2.1	0.0	0.0	0.4	1.5	1.5	0.5	0.8	0.8
LnGrp Delay(d),s/veh	16.2	0.0	0.0	15.7	0.0	0.0	7.8	7.6	7.7	8.6	7.1	7.2
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		184			159			377			231	
Approach Delay, s/veh		16.2			15.7			7.7			7.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0		24.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		32.0		20.0		32.0		20.0
Max Q Clear Time (g_c+I1), s		5.0		6.7		6.5		6.1
Green Ext Time (p_c), s		2.3		0.8		1.3		0.7

Intersection Summary		
HCM 2010 Ctrl Delay		10.6
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	115	12	29	36	18	23	288	126	46	184	22
Future Volume (veh/h)	17	115	12	29	36	18	23	288	126	46	184	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.99		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1759	1900	1863	1863	1863	1845	1845	1900
Adj Flow Rate, veh/h	17	115	12	29	36	18	23	288	126	46	184	22
Adj No. of Lanes	0	1	0	0	2	0	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	8	8	8	2	2	2	3	3	3
Cap, veh/h	75	302	29	246	272	140	903	2439	1052	733	2168	255
Arrive On Green	0.20	0.20	0.21	0.20	0.20	0.21	0.69	0.69	0.69	1.00	1.00	1.00
Sat Flow, veh/h	91	1537	148	827	1384	710	1162	3539	1526	953	3146	370
Grp Volume(v), veh/h	144	0	0	46	0	37	23	288	126	46	101	105
Grp Sat Flow(s),veh/h/ln	1777	0	0	1465	0	1456	1162	1770	1526	953	1752	1764
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	1.5	0.4	1.9	2.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	1.5	0.0	1.5	0.4	1.9	2.0	2.1	0.0	0.0
Prop In Lane	0.12		0.08	0.63		0.49	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	407	0	0	372	0	286	903	2439	1052	733	1208	1215
V/C Ratio(X)	0.35	0.00	0.00	0.12	0.00	0.13	0.03	0.12	0.12	0.06	0.08	0.09
Avail Cap(c_a), veh/h	882	0	0	739	0	686	903	2439	1052	733	1208	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	0.0	0.0	23.2	0.0	23.0	3.5	3.7	3.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.2	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	0.7	0.0	0.6	0.2	1.0	0.9	0.1	0.0	0.0
LnGrp Delay(d),s/veh	25.0	0.0	0.0	23.3	0.0	23.2	3.5	3.8	3.9	0.2	0.1	0.1
LnGrp LOS	C			C		C	A	A	A	A	A	A
Approach Vol, veh/h		144			83			437			252	
Approach Delay, s/veh		25.0			23.3			3.8			0.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.2		17.8		52.2		17.8
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		30.0		34.0		30.0		34.0
Max Q Clear Time (g_c+I1), s		4.0		6.8		4.1		3.5
Green Ext Time (p_c), s		2.4		0.8		1.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	19	21	64	69	18	320	0	0	205	24
Future Volume (veh/h)	20	0	19	21	64	69	18	320	0	0	205	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.97	0.99		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1827	0	0	1845	1900
Adj Flow Rate, veh/h	20	0	19	21	64	69	18	320	0	0	205	24
Adj No. of Lanes	1	1	0	1	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	0	0	3	3
Cap, veh/h	242	0	259	296	270	233	142	2369	0	0	2326	269
Arrive On Green	0.15	0.00	0.16	0.15	0.15	0.16	1.00	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1256	0	1582	1386	1805	1559	116	3300	0	0	3251	365
Grp Volume(v), veh/h	20	0	19	21	64	69	180	158	0	0	113	116
Grp Sat Flow(s),veh/h/ln	1256	0	1582	1386	1805	1559	1753	1579	0	0	1752	1772
Q Serve(g_s), s	1.0	0.0	0.7	0.9	2.2	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.7	1.6	2.2	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.10		0.00	0.00		0.21
Lane Grp Cap(c), veh/h	242	0	259	296	270	233	1348	1163	0	0	1290	1305
V/C Ratio(X)	0.08	0.00	0.07	0.07	0.24	0.30	0.13	0.14	0.00	0.00	0.09	0.09
Avail Cap(c_a), veh/h	664	0	791	762	877	757	1348	1163	0	0	1290	1305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	0.0	24.8	26.3	26.3	26.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.4	0.7	0.2	0.2	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3	0.4	1.1	1.2	0.1	0.1	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	28.3	0.0	24.9	26.4	26.7	26.7	0.2	0.2	0.0	0.0	0.1	0.1
LnGrp LOS	C		C	C	C	C	A	A			A	A
Approach Vol, veh/h		39			154			338			229	
Approach Delay, s/veh		26.6			26.7			0.2			0.1	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		55.5		14.5		55.5		14.5
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		29.0		35.0		29.0		35.0
Max Q Clear Time (g_c+I1), s		2.0		5.7		2.0		4.7
Green Ext Time (p_c), s		2.0		0.1		1.3		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	592	27	40	338	58	71	262	80	65	166	34
Future Volume (veh/h)	46	592	27	40	338	58	71	262	80	65	166	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	46	592	27	40	338	58	71	262	80	65	166	34
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	3	3	3	3	3	3
Cap, veh/h	464	1567	672	368	1344	228	555	1170	348	538	1283	256
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.46	0.89	0.89	0.91	0.15	0.15	0.15
Sat Flow, veh/h	971	3539	1517	801	3035	514	1153	2643	787	1015	2896	578
Grp Volume(v), veh/h	46	592	27	40	197	199	71	171	171	65	99	101
Grp Sat Flow(s),veh/h/ln	971	1770	1517	801	1787	1762	1153	1752	1677	1015	1752	1722
Q Serve(g_s), s	2.2	7.8	0.7	2.5	4.8	4.9	1.1	1.0	0.9	3.9	3.4	3.6
Cycle Q Clear(g_c), s	7.1	7.8	0.7	10.3	4.8	4.9	4.6	1.0	0.9	4.9	3.4	3.6
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.47	1.00		0.34
Lane Grp Cap(c), veh/h	464	1567	672	368	791	780	555	776	743	538	776	763
V/C Ratio(X)	0.10	0.38	0.04	0.11	0.25	0.25	0.13	0.22	0.23	0.12	0.13	0.13
Avail Cap(c_a), veh/h	464	1567	672	368	791	780	555	776	743	538	776	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.5	13.0	11.1	16.5	12.2	12.1	2.9	2.3	2.0	19.2	18.1	18.1
Incr Delay (d2), s/veh	0.4	0.7	0.1	0.6	0.8	0.8	0.5	0.7	0.7	0.5	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.9	0.3	0.6	2.5	2.5	0.4	0.5	0.5	1.2	1.7	1.8
LnGrp Delay(d),s/veh	14.9	13.7	11.2	17.1	13.0	12.9	3.4	2.9	2.7	19.6	18.5	18.5
LnGrp LOS	B	B	B	B	B	B	A	A	A	B	B	B
Approach Vol, veh/h		665			436			413			265	
Approach Delay, s/veh		13.7			13.3			2.9			18.8	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.0		35.0		35.0		35.0
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		32.0		32.0		32.0		32.0
Max Q Clear Time (g_c+I1), s		6.6		9.8		6.9		12.3
Green Ext Time (p_c), s		1.5		2.9		0.9		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	148	30	17	170	64	44	295	36	65	215	19
Future Volume (veh/h)	27	148	30	17	170	64	44	295	36	65	215	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1845	1845	1900	1900	1845	1900
Adj Flow Rate, veh/h	27	148	30	17	170	64	44	295	36	65	215	19
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	3	3	3	3	3	3
Cap, veh/h	174	876	175	102	850	300	641	1659	200	346	1161	107
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.17	0.17	0.17	0.53	0.53	0.53
Sat Flow, veh/h	308	2452	489	122	2380	839	1122	3139	379	514	2197	203
Grp Volume(v), veh/h	108	0	97	134	0	117	44	163	168	146	0	153
Grp Sat Flow(s),veh/h/ln	1661	0	1588	1811	0	1530	1122	1752	1765	1277	0	1637
Q Serve(g_s), s	0.0	0.0	2.9	0.0	0.0	3.7	2.3	5.6	5.7	0.9	0.0	3.4
Cycle Q Clear(g_c), s	2.8	0.0	2.9	3.5	0.0	3.7	5.7	5.6	5.7	6.5	0.0	3.4
Prop In Lane	0.25		0.31	0.13		0.55	1.00		0.21	0.45		0.12
Lane Grp Cap(c), veh/h	658	0	567	705	0	546	641	926	933	750	0	865
V/C Ratio(X)	0.16	0.00	0.17	0.19	0.00	0.21	0.07	0.18	0.18	0.19	0.00	0.18
Avail Cap(c_a), veh/h	658	0	567	705	0	546	641	926	933	750	0	865
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.4	15.6	0.0	15.7	17.4	15.9	16.0	8.7	0.0	8.6
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.6	0.0	0.9	0.2	0.4	0.4	0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.4	1.9	0.0	1.7	0.8	2.8	2.9	1.7	0.0	1.6
LnGrp Delay(d),s/veh	15.9	0.0	16.1	16.2	0.0	16.6	17.7	16.3	16.4	9.3	0.0	9.0
LnGrp LOS	B		B	B		B	B	B	B	A		A
Approach Vol, veh/h		205			251			375			299	
Approach Delay, s/veh		16.0			16.4			16.5			9.2	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.0		29.0		41.0		29.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		37.0		25.0		37.0		25.0
Max Q Clear Time (g_c+I1), s		7.7		4.9		8.5		5.7
Green Ext Time (p_c), s		1.4		0.7		1.2		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		14.4
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	709	94	73	645	19	82	207	99	37	153	45
Future Volume (veh/h)	52	709	94	73	645	19	82	207	99	37	153	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1.00		0.96	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900	1827	1900
Adj Flow Rate, veh/h	52	709	94	73	645	19	82	207	99	37	153	45
Adj No. of Lanes	0	2	1	1	2	1	1	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	135	1741	855	123	2395	1026	256	434	346	76	249	67
Arrive On Green	0.58	0.57	0.57	0.07	0.68	0.68	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	165	3069	1506	1774	3539	1516	1158	1863	1483	145	1068	287
Grp Volume(v), veh/h	384	377	94	73	645	19	82	207	99	235	0	0
Grp Sat Flow(s),veh/h/ln	1624	1610	1506	1774	1770	1516	1158	1863	1483	1500	0	0
Q Serve(g_s), s	0.0	13.2	2.9	4.0	7.2	0.4	0.0	9.6	5.5	5.1	0.0	0.0
Cycle Q Clear(g_c), s	11.1	13.2	2.9	4.0	7.2	0.4	12.8	9.6	5.5	14.7	0.0	0.0
Prop In Lane	0.14		1.00	1.00		1.00	1.00		1.00	0.16		0.19
Lane Grp Cap(c), veh/h	978	914	855	123	2395	1026	256	434	346	392	0	0
V/C Ratio(X)	0.39	0.41	0.11	0.59	0.27	0.02	0.32	0.48	0.29	0.60	0.00	0.00
Avail Cap(c_a), veh/h	978	914	855	213	2395	1026	333	559	445	496	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	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.7	12.2	10.0	45.2	6.4	5.3	34.3	33.1	31.5	34.7	0.0	0.0
Incr Delay (d2), s/veh	1.2	1.4	0.3	4.5	0.3	0.0	0.7	0.8	0.5	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(50%),veh/ln	5.8	6.2	1.3	2.1	3.6	0.2	2.1	5.0	2.3	6.1	0.0	0.0
LnGrp Delay(d),s/veh	12.9	13.6	10.2	49.6	6.7	5.3	35.0	33.9	32.0	36.1	0.0	0.0
LnGrp LOS	B	B	B	D	A	A	D	C	C	D		
Approach Vol, veh/h		855			737			388			235	
Approach Delay, s/veh		12.9			10.9			33.6			36.1	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	10.9	61.7		27.3		72.7		27.3
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s	12.0	45.0		30.0		61.0		30.0
Max Q Clear Time (g_c+I1), s	6.0	15.2		16.7		9.2		14.8
Green Ext Time (p_c), s	0.1	6.0		1.1		5.3		1.6

Intersection Summary		
HCM 2010 Ctrl Delay		18.3
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	17	38	9	15	22	23	244	23	8	171	20
Future Vol, veh/h	16	17	38	9	15	22	23	244	23	8	171	20
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
Heavy Vehicles, %	3	3	3	0	0	0	2	2	2	4	4	4
Mvmt Flow	16	17	38	9	15	22	23	244	23	8	171	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.2	9.9	9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	23%	20%	4%
Vol Thru, %	84%	24%	33%	86%
Vol Right, %	8%	54%	48%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	71	46	199
LT Vol	23	16	9	8
Through Vol	244	17	15	171
RT Vol	23	38	22	20
Lane Flow Rate	290	71	46	199
Geometry Grp	1	1	1	1
Degree of Util (X)	0.355	0.095	0.062	0.249
Departure Headway (Hd)	4.403	4.826	4.839	4.51
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	818	741	738	796
Service Time	2.432	2.868	2.884	2.541
HCM Lane V/C Ratio	0.355	0.096	0.062	0.25
HCM Control Delay	9.9	8.4	8.2	9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.6	0.3	0.2	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	27	27	27	44	13	23	210	47	7	149	8
Future Volume (veh/h)	12	27	27	27	44	13	23	210	47	7	149	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1863	1827	1827	1827
Adj Flow Rate, veh/h	12	27	27	27	44	13	23	210	47	7	149	8
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	4	4	4
Cap, veh/h	127	268	231	214	329	87	707	1011	811	626	992	804
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	193	781	674	425	959	254	1203	1863	1494	1080	1827	1482
Grp Volume(v), veh/h	66	0	0	84	0	0	23	210	47	7	149	8
Grp Sat Flow(s),veh/h/ln	1649	0	0	1638	0	0	1203	1863	1494	1080	1827	1482
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.1	1.0	0.2	2.8	0.2
Cycle Q Clear(g_c), s	1.8	0.0	0.0	2.2	0.0	0.0	3.5	4.1	1.0	4.3	2.8	0.2
Prop In Lane	0.18		0.41	0.32		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	626	0	0	630	0	0	707	1011	811	626	992	804
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.03	0.21	0.06	0.01	0.15	0.01
Avail Cap(c_a), veh/h	626	0	0	630	0	0	707	1011	811	626	992	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	0.0	15.9	0.0	0.0	8.8	8.2	7.6	9.4	8.0	7.4
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.4	0.0	0.0	0.1	0.5	0.1	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.2	0.0	0.0	0.2	2.2	0.5	0.1	1.5	0.1
LnGrp Delay(d),s/veh	16.1	0.0	0.0	16.3	0.0	0.0	8.9	8.7	7.7	9.4	8.3	7.4
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		66			84			280			164	
Approach Delay, s/veh		16.1			16.3			8.6			8.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		28.0		42.0		28.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		38.0		24.0		38.0		24.0
Max Q Clear Time (g_c+I1), s		6.1		3.8		6.3		4.2
Green Ext Time (p_c), s		1.5		0.3		0.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	734	123	0	673	0	227	0	5	0	0	0
Future Volume (veh/h)	0	734	123	0	673	0	227	0	5	0	0	0
Number	1	6	16	5	2	12	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1863	0	1863	1863	1900			
Adj Flow Rate, veh/h	0	734	123	0	673	0	232	0	0			
Adj No. of Lanes	0	2	0	0	2	0	2	1	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	0	2	2	2			
Cap, veh/h	0	2140	359	0	2502	0	646	339	0			
Arrive On Green	0.00	0.71	0.71	0.00	0.71	0.00	0.18	0.00	0.00			
Sat Flow, veh/h	0	3121	507	0	3725	0	3548	1863	0			
Grp Volume(v), veh/h	0	429	428	0	673	0	232	0	0			
Grp Sat Flow(s),veh/h/ln	0	1770	1766	0	1770	0	1774	1863	0			
Q Serve(g_s), s	0.0	8.4	8.4	0.0	6.2	0.0	5.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	8.4	8.4	0.0	6.2	0.0	5.2	0.0	0.0			
Prop In Lane	0.00		0.29	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1251	1248	0	2502	0	646	339	0			
V/C Ratio(X)	0.00	0.34	0.34	0.00	0.27	0.00	0.36	0.00	0.00			
Avail Cap(c_a), veh/h	0	1251	1248	0	2502	0	1025	538	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	0.98	0.00	0.00			
Uniform Delay (d), s/veh	0.0	5.1	5.1	0.0	4.8	0.0	32.2	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.7	0.8	0.0	0.3	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			
%ile BackOfQ(50%),veh/ln	0.0	4.3	4.3	0.0	3.1	0.0	2.5	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	5.9	5.9	0.0	5.0	0.0	32.6	0.0	0.0			
LnGrp LOS		A	A		A		C					
Approach Vol, veh/h		857			673			232				
Approach Delay, s/veh		5.9			5.0			32.6				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		69.6				69.6		20.4
Change Period (Y+Rc), s		6.0				6.0		4.0
Max Green Setting (Gmax), s		22.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		8.2				10.4		7.2
Green Ext Time (p_c), s		3.9				5.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	38	454	15	0	193	4	22	5	4	30	18	78
Future Vol, veh/h	38	454	15	0	193	4	22	5	4	30	18	78
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	18	18	18	15	15	15	10	10	10	14	14	14
Mvmt Flow	38	454	15	0	193	4	22	5	4	30	18	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	204	0	0	473	0	0	785	746	468	746	751	202
Stage 1	-	-	-	-	-	-	542	542	-	202	202	-
Stage 2	-	-	-	-	-	-	243	204	-	544	549	-
Critical Hdwy	4.28	-	-	4.25	-	-	7.2	6.6	6.3	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.24	5.64	-
Follow-up Hdwy	2.362	-	-	2.335	-	-	3.59	4.09	3.39	3.626	4.126	3.426
Pot Cap-1 Maneuver	1278	-	-	1024	-	-	301	332	579	315	326	809
Stage 1	-	-	-	-	-	-	510	507	-	773	712	-
Stage 2	-	-	-	-	-	-	743	718	-	502	497	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1269	-	-	1020	-	-	251	315	576	297	309	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	251	315	-	297	309	-
Stage 1	-	-	-	-	-	-	487	484	-	737	707	-
Stage 2	-	-	-	-	-	-	654	713	-	472	475	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	19.4	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	281	1269	-	-	1020	-	-	492
HCM Lane V/C Ratio	0.11	0.03	-	-	-	-	-	0.256
HCM Control Delay (s)	19.4	7.9	0	-	0	-	-	14.8
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	785	7	0	0	0	0	0	48	390	165	0
Future Volume (veh/h)	0	785	7	0	0	0	0	0	48	390	165	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1776	1900				0	0	1827	1827	1827	0
Adj Flow Rate, veh/h	0	785	7				0	0	48	390	165	0
Adj No. of Lanes	0	3	0				0	0	1	2	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	7	0				0	0	4	4	4	0
Cap, veh/h	0	0	0				0	0	0	2672	1649	0
Arrive On Green	0.00	0.00	0.00				0.00	0.00	0.00	0.90	0.90	0.00
Sat Flow, veh/h		0						0		2572	1827	0
Grp Volume(v), veh/h		0.0						0.0		390	165	0
Grp Sat Flow(s),veh/h/ln										1286	1827	0
Q Serve(g_s), s										0.7	0.4	0.0
Cycle Q Clear(g_c), s										0.7	0.4	0.0
Prop In Lane										1.00		0.00
Lane Grp Cap(c), veh/h										2672	1649	0
V/C Ratio(X)										0.15	0.10	0.00
Avail Cap(c_a), veh/h										2672	1649	0
HCM Platoon Ratio										1.00	1.00	1.00
Upstream Filter(I)										1.00	1.00	0.00
Uniform Delay (d), s/veh										0.2	0.2	0.0
Incr Delay (d2), s/veh										0.1	0.1	0.0
Initial Q Delay(d3),s/veh										0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln										0.3	0.2	0.0
LnGrp Delay(d),s/veh										0.3	0.3	0.0
LnGrp LOS										A	A	
Approach Vol, veh/h											555	
Approach Delay, s/veh											0.3	
Approach LOS											A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		
Phs Duration (G+Y+Rc), s						41.0		
Change Period (Y+Rc), s						4.0		
Max Green Setting (Gmax), s						37.0		
Max Q Clear Time (g_c+I1), s						2.7		
Green Ext Time (p_c), s						2.7		

Intersection Summary	
HCM 2010 Ctrl Delay	0.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	12	26	0	0	0	0	0	553	14
Future Volume (veh/h)	0	0	0	12	26	0	0	0	0	0	553	14
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1681	1681	0				0	1845	1900
Adj Flow Rate, veh/h				12	26	0				0	553	14
Adj No. of Lanes				1	2	0				0	3	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				13	13	0				0	3	3
Cap, veh/h				851	1517	0				0	2210	56
Arrive On Green				0.47	0.47	0.00				0.00	0.44	0.44
Sat Flow, veh/h				1601	3279	0				0	5218	127
Grp Volume(v), veh/h				12	26	0				0	367	200
Grp Sat Flow(s),veh/h/ln				1601	1597	0				0	1679	1822
Q Serve(g_s), s				0.3	0.3	0.0				0.0	5.5	5.6
Cycle Q Clear(g_c), s				0.3	0.3	0.0				0.0	5.5	5.6
Prop In Lane				1.00		0.00				0.00		0.07
Lane Grp Cap(c), veh/h				851	1517	0				0	1469	797
V/C Ratio(X)				0.01	0.02	0.00				0.00	0.25	0.25
Avail Cap(c_a), veh/h				851	1517	0				0	1469	797
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				11.1	11.1	0.0				0.0	14.2	14.2
Incr Delay (d2), s/veh				0.0	0.0	0.0				0.0	0.4	0.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.1	0.2	0.0				0.0	2.6	2.9
LnGrp Delay(d),s/veh				11.1	11.1	0.0				0.0	14.6	15.0
LnGrp LOS				B	B						B	B
Approach Vol, veh/h					38						567	
Approach Delay, s/veh					11.1						14.7	
Approach LOS					B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						38.5		41.5
Change Period (Y+Rc), s						3.5		3.5
Max Green Setting (Gmax), s						35.0		38.0
Max Q Clear Time (g_c+I1), s						7.6		2.3
Green Ext Time (p_c), s						3.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1327	16	4	160	0	0	0	0	409	549	247
Future Volume (veh/h)	0	1327	16	4	160	0	0	0	0	409	549	247
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1810	1810	0				1900	1863	1900
Adj Flow Rate, veh/h	0	1327	16	4	160	0				409	549	247
Adj No. of Lanes	0	3	0	1	3	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	5	5	0				0	2	0
Cap, veh/h	0	3043	37	316	2903	0				532	780	352
Arrive On Green	0.00	1.00	1.00	0.59	0.59	0.00				0.32	0.32	0.32
Sat Flow, veh/h	0	5345	62	393	5103	0				1641	2408	1087
Grp Volume(v), veh/h	0	869	474	4	160	0				444	384	377
Grp Sat Flow(s),veh/h/ln	0	1695	1850	393	1647	0				1781	1695	1660
Q Serve(g_s), s	0.0	0.0	0.0	0.4	1.2	0.0				19.1	16.8	16.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.4	1.2	0.0				19.1	16.8	16.9
Prop In Lane	0.00		0.03	1.00		0.00				0.92		0.65
Lane Grp Cap(c), veh/h	0	1992	1087	316	2903	0				577	549	538
V/C Ratio(X)	0.00	0.44	0.44	0.01	0.06	0.00				0.77	0.70	0.70
Avail Cap(c_a), veh/h	0	1992	1087	316	2903	0				922	877	859
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.94	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	7.3	7.5	0.0				26.1	25.1	25.1
Incr Delay (d2), s/veh	0.0	0.7	1.2	0.1	0.0	0.0				0.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.4	0.0	0.5	0.0				9.5	8.0	7.8
LnGrp Delay(d),s/veh	0.0	0.7	1.2	7.4	7.5	0.0				26.9	25.7	25.8
LnGrp LOS		A	A	A	A					C	C	C
Approach Vol, veh/h		1343			164						1205	
Approach Delay, s/veh		0.8			7.5						26.2	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		53.9		31.1		53.9		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		33.5		44.0		33.5		
Max Q Clear Time (g_c+I1), s		2.0		21.1		3.2		
Green Ext Time (p_c), s		7.3		5.6		0.8		

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B



Movement	EBT	EBR	EBR2	SBL2	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	232	40	8	453	140	1131	38
Future Volume (vph)	232	40	8	453	140	1131	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12
Total Lost time (s)	4.5			5.0		5.0	
Lane Util. Factor	0.95			1.00		0.91	
Frpb, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.97			1.00		1.00	
Flt Protected	1.00			0.95		0.99	
Satd. Flow (prot)	3388			1805		5132	
Flt Permitted	1.00			0.95		0.99	
Satd. Flow (perm)	3388			1805		5132	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	40	8	453	140	1131	38
RTOR Reduction (vph)	3	0	0	93	0	2	0
Lane Group Flow (vph)	277	0	0	360	0	1307	0
Confl. Peds. (#/hr)			2				13
Confl. Bikes (#/hr)		2	2				1
Turn Type	NA			Perm	Perm	NA	
Protected Phases	4					6	
Permitted Phases				6	6		
Actuated Green, G (s)	13.1			62.4		62.4	
Effective Green, g (s)	13.1			62.4		62.4	
Actuated g/C Ratio	0.15			0.73		0.73	
Clearance Time (s)	4.5			5.0		5.0	
Vehicle Extension (s)	3.0			3.0		3.0	
Lane Grp Cap (vph)	522			1325		3767	
v/s Ratio Prot	c0.08						
v/s Ratio Perm				0.20		0.25	
v/c Ratio	0.53			0.27		0.35	
Uniform Delay, d1	33.1			3.8		4.0	
Progression Factor	1.00			0.25		0.64	
Incremental Delay, d2	1.0			0.4		0.2	
Delay (s)	34.1			1.4		2.8	
Level of Service	C			A		A	
Approach Delay (s)	34.1					2.4	
Approach LOS	C					A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Traffic Volume (vph)	3	70	131	422	30	1253	33
Future Volume (vph)	3	70	131	422	30	1253	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	0.95	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.96	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.99		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1453	1672	5014	5126		3500	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1453	1672	5014	5126		3500	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	70	131	422	30	1253	33
RTOR Reduction (vph)	3	66	0	11	0	0	0
Lane Group Flow (vph)	0	4	131	441	0	1286	0
Confl. Peds. (#/hr)	36	36			10		10
Confl. Bikes (#/hr)							
Turn Type	Perm	Perm	NA	NA		Prot	
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	5.0	5.0	5.0	10.1		54.9	
Effective Green, g (s)	5.0	5.0	5.0	10.1		54.9	
Actuated g/C Ratio	0.06	0.06	0.06	0.12		0.65	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2	
Lane Grp Cap (vph)	85	98	294	609		2260	
v/s Ratio Prot			c0.03	c0.09		c0.37	
v/s Ratio Perm	0.00	0.00					
v/c Ratio	0.00	0.04	0.45	0.72		0.57	
Uniform Delay, d1	37.7	37.7	38.7	36.1		8.4	
Progression Factor	1.00	0.53	0.58	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.4	3.6		1.0	
Delay (s)	37.7	20.1	22.7	39.7		9.5	
Level of Service	D	C	C	D		A	
Approach Delay (s)			21.8	39.7		9.5	
Approach LOS			C	D		A	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	553	184	49	362	0	0	0	0	212	329	142
Future Volume (veh/h)	0	553	184	49	362	0	0	0	0	212	329	142
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.99		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1881	1881	0				1900	1881	1900
Adj Flow Rate, veh/h	0	553	184	49	362	0				212	329	142
Adj No. of Lanes	0	2	1	1	2	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	1	1	0				0	1	0
Cap, veh/h	0	930	389	210	939	0				760	1287	549
Arrive On Green	0.00	0.26	0.26	0.09	0.09	0.00				0.52	0.50	0.50
Sat Flow, veh/h	0	3632	1478	716	3668	0				1521	2573	1097
Grp Volume(v), veh/h	0	553	184	49	362	0				252	215	217
Grp Sat Flow(s),veh/h/ln	0	1770	1478	716	1787	0				1805	1712	1674
Q Serve(g_s), s	0.0	8.2	6.3	4.0	5.7	0.0				4.7	4.3	4.5
Cycle Q Clear(g_c), s	0.0	8.2	6.3	12.2	5.7	0.0				4.7	4.3	4.5
Prop In Lane	0.00		1.00	1.00		0.00				0.84		0.66
Lane Grp Cap(c), veh/h	0	930	389	210	939	0				903	856	837
V/C Ratio(X)	0.00	0.59	0.47	0.23	0.39	0.00				0.28	0.25	0.26
Avail Cap(c_a), veh/h	0	1180	493	261	1191	0				903	856	837
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	0.96	0.96	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.3	18.6	29.8	22.8	0.0				8.4	8.6	8.6
Incr Delay (d2), s/veh	0.0	0.6	0.8	0.5	0.3	0.0				0.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	2.6	0.8	2.9	0.0				2.5	2.2	2.2
LnGrp Delay(d),s/veh	0.0	19.9	19.5	30.3	23.1	0.0				9.2	9.3	9.4
LnGrp LOS		B	B	C	C					A	A	A
Approach Vol, veh/h		737			411						683	
Approach Delay, s/veh		19.8			23.9						9.3	
Approach LOS		B			C						A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				20.8		35.0		20.8
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				20.0		30.0		20.0
Max Q Clear Time (g_c+I1), s				10.2		6.7		14.2
Green Ext Time (p_c), s				3.1		4.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	194	126	0	0	0	0	0	0	437	1063	0
Future Volume (veh/h)	0	194	126	0	0	0	0	0	0	437	1063	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1881	1881	0
Adj Flow Rate, veh/h	0	194	126							375	1150	0
Adj No. of Lanes	0	2	0							1	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2							1	1	0
Cap, veh/h	0	325	197							1255	3685	0
Arrive On Green	0.00	0.16	0.16							0.22	0.22	0.00
Sat Flow, veh/h	0	2150	1243							1792	5644	0
Grp Volume(v), veh/h	0	165	155							375	1150	0
Grp Sat Flow(s),veh/h/ln	0	1770	1531							1792	1881	0
Q Serve(g_s), s	0.0	7.4	8.1							15.0	14.6	0.0
Cycle Q Clear(g_c), s	0.0	7.4	8.1							15.0	14.6	0.0
Prop In Lane	0.00		0.81							1.00		0.00
Lane Grp Cap(c), veh/h	0	280	242							1255	3685	0
V/C Ratio(X)	0.00	0.59	0.64							0.30	0.31	0.00
Avail Cap(c_a), veh/h	0	416	360							1255	3685	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.95	0.95	0.00
Uniform Delay (d), s/veh	0.0	33.2	33.5							17.5	17.3	0.0
Incr Delay (d2), s/veh	0.0	0.7	1.1							0.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.5							7.6	7.6	0.0
LnGrp Delay(d),s/veh	0.0	33.9	34.6							18.0	17.5	0.0
LnGrp LOS		C	C							B	B	
Approach Vol, veh/h		320									1525	
Approach Delay, s/veh		34.2									17.6	
Approach LOS		C									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				17.9		60.5		
Change Period (Y+Rc), s				4.5		5.0		
Max Green Setting (Gmax), s				20.0		55.5		
Max Q Clear Time (g_c+I1), s				10.1		17.0		
Green Ext Time (p_c), s				1.0		7.3		

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	106	152	0	0	0	0	0	1402	167
Future Volume (veh/h)	0	0	0	106	152	0	0	0	0	0	1402	167
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	0				0	1881	1900
Adj Flow Rate, veh/h				106	152	0				0	1402	167
Adj No. of Lanes				1	2	0				0	4	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				1	1	0				0	1	1
Cap, veh/h				397	623	0				0	3427	407
Arrive On Green				0.06	0.06	0.00				0.00	0.58	0.58
Sat Flow, veh/h				1792	3668	0				0	6148	699
Grp Volume(v), veh/h				106	152	0				0	1156	413
Grp Sat Flow(s),veh/h/ln				1792	1787	0				0	1618	1730
Q Serve(g_s), s				4.8	3.5	0.0				0.0	11.1	11.1
Cycle Q Clear(g_c), s				4.8	3.5	0.0				0.0	11.1	11.1
Prop In Lane				1.00		0.00				0.00		0.40
Lane Grp Cap(c), veh/h				397	623	0				0	2826	1008
V/C Ratio(X)				0.27	0.24	0.00				0.00	0.41	0.41
Avail Cap(c_a), veh/h				612	1051	0				0	2826	1008
HCM Platoon Ratio				0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.86	0.86	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				35.3	34.7	0.0				0.0	9.7	9.7
Incr Delay (d2), s/veh				0.1	0.1	0.0				0.0	0.4	1.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	1.7	0.0				0.0	5.0	5.6
LnGrp Delay(d),s/veh				35.5	34.8	0.0				0.0	10.2	11.0
LnGrp LOS				D	C						B	B
Approach Vol, veh/h					258						1569	
Approach Delay, s/veh					35.1						10.4	
Approach LOS					D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						55.5		19.3
Change Period (Y+Rc), s						6.0		4.5
Max Green Setting (Gmax), s						49.5		25.0
Max Q Clear Time (g_c+I1), s						13.1		6.8
Green Ext Time (p_c), s						9.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	380	109	0	186	67	0	0	10	0	0	11
Future Vol, veh/h	0	380	109	0	186	67	0	0	10	0	0	11
Conflicting Peds, #/hr	5	0	5	5	0	5	3	0	3	3	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	17	17	17	8	8	8	12	12	12	4	4	4
Mvmt Flow	0	380	109	0	186	67	0	0	10	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	258	0	0	494	0	0	668	698	443	668	719	228
Stage 1	-	-	-	-	-	-	440	440	-	225	225	-
Stage 2	-	-	-	-	-	-	228	258	-	443	494	-
Critical Hdwy	4.27	-	-	4.18	-	-	7.22	6.62	6.32	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.22	5.62	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.22	5.62	-	6.14	5.54	-
Follow-up Hdwy	2.353	-	-	2.272	-	-	3.608	4.108	3.408	3.536	4.036	3.336
Pot Cap-1 Maneuver	1224	-	-	1039	-	-	359	352	594	369	352	806
Stage 1	-	-	-	-	-	-	577	561	-	773	714	-
Stage 2	-	-	-	-	-	-	753	676	-	590	543	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1218	-	-	1034	-	-	351	348	589	360	348	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	351	348	-	360	348	-
Stage 1	-	-	-	-	-	-	574	558	-	769	710	-
Stage 2	-	-	-	-	-	-	741	673	-	578	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	11.2	9.6
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	589	1218	-	-	1034	-	-	800
HCM Lane V/C Ratio	0.017	-	-	-	-	-	-	0.014
HCM Control Delay (s)	11.2	0	-	-	0	-	-	9.6
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	1133	17	0	0	0	0	209	20	0	0	0
Future Vol, veh/h	83	1133	17	0	0	0	0	209	20	0	0	0
Conflicting Peds, #/hr	2	0	0	0	0	2	1	0	4	4	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	5	5	2	2	2	3	3	3	2	2	2
Mvmt Flow	83	1133	17	0	0	0	0	209	20	0	0	0

Major/Minor	Major1			Minor1		
Conflicting Flow All	2	0	0	-	1310	579
Stage 1	-	-	-	-	1308	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	5.4	-	-	-	6.56	7.16
Critical Hdwy Stg 1	-	-	-	-	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	3.15	-	-	-	4.03	3.93
Pot Cap-1 Maneuver	1140	-	-	0	~ 156	391
Stage 1	-	-	-	0	226	-
Stage 2	-	-	-	0	-	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1140	-	-	-	0	391
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB
HCM Control Delay, s	1	26.4
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR
Capacity (veh/h)	391	1140	-	-
HCM Lane V/C Ratio	0.586	0.073	-	-
HCM Control Delay (s)	26.4	8.4	0.5	-
HCM Lane LOS	D	A	A	-
HCM 95th %tile Q(veh)	3.6	0.2	-	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	16	192	14	274	0	0	0	0
Future Volume (veh/h)	0	0	0	0	16	192	14	274	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1881	1881	1900	1845	0			
Adj Flow Rate, veh/h				0	16	192	14	274	0			
Adj No. of Lanes				0	3	1	0	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	1	1	3	3	0			
Cap, veh/h				0	2825	879	101	1740	0			
Arrive On Green				0.00	0.55	0.55	0.36	0.37	0.00			
Sat Flow, veh/h				0	5305	1598	136	4870	0			
Grp Volume(v), veh/h				0	16	192	108	180	0			
Grp Sat Flow(s),veh/h/ln				0	1712	1598	1800	1528	0			
Q Serve(g_s), s				0.0	0.1	4.9	0.0	3.2	0.0			
Cycle Q Clear(g_c), s				0.0	0.1	4.9	3.2	3.2	0.0			
Prop In Lane				0.00		1.00	0.13		0.00			
Lane Grp Cap(c), veh/h				0	2825	879	703	1127	0			
V/C Ratio(X)				0.00	0.01	0.22	0.15	0.16	0.00			
Avail Cap(c_a), veh/h				0	2825	879	703	1127	0			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh				0.0	8.1	9.2	17.0	16.9	0.0			
Incr Delay (d2), s/veh				0.0	0.0	0.6	0.5	0.3	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	0.1	2.3	1.7	1.4	0.0			
LnGrp Delay(d),s/veh				0.0	8.1	9.8	17.4	17.2	0.0			
LnGrp LOS					A	A	B	B				
Approach Vol, veh/h					208			288				
Approach Delay, s/veh					9.7			17.3				
Approach LOS					A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		33.0						47.0
Change Period (Y+Rc), s		3.5						3.0
Max Green Setting (Gmax), s		29.5						44.0
Max Q Clear Time (g_c+I1), s		5.2						6.9
Green Ext Time (p_c), s		1.1						0.4

Intersection Summary		
HCM 2010 Ctrl Delay		14.1
HCM 2010 LOS		B



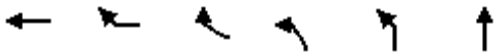
Movement	EBL2	EBT	NBL	NBT	NBR2	SWR	SWR2
Lane Configurations							
Traffic Volume (vph)	415	1321	16	418	30	147	6
Future Volume (vph)	415	1321	16	418	30	147	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	11
Total Lost time (s)	4.5	5.0		8.5		5.0	
Lane Util. Factor	0.97	0.95		0.91		0.76	
Frpb, ped/bikes	1.00	1.00		1.00		1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00	
Frt	1.00	1.00		0.99		0.85	
Flt Protected	0.95	1.00		1.00		1.00	
Satd. Flow (prot)	3467	3574		5018		3390	
Flt Permitted	0.95	1.00		1.00		1.00	
Satd. Flow (perm)	3467	3574		5018		3390	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	415	1321	16	418	30	147	6
RTOR Reduction (vph)	0	0	0	58	0	96	0
Lane Group Flow (vph)	415	1321	0	406	0	57	0
Confl. Peds. (#/hr)			1		12	1	22
Confl. Bikes (#/hr)					2	2	2
Heavy Vehicles (%)	1%	1%	2%	2%	2%	5%	5%
Turn Type	Prot	NA	Split	NA		Prot	
Protected Phases	5	2	4	4		6	
Permitted Phases							
Actuated Green, G (s)	19.5	45.5		26.0		21.5	
Effective Green, g (s)	19.5	45.5		26.0		21.5	
Actuated g/C Ratio	0.23	0.54		0.31		0.25	
Clearance Time (s)	4.5	5.0		8.5		5.0	
Lane Grp Cap (vph)	795	1913		1534		857	
v/s Ratio Prot	0.12	c0.37		c0.08		0.02	
v/s Ratio Perm							
v/c Ratio	0.52	0.69		0.26		0.07	
Uniform Delay, d1	28.7	14.6		22.3		24.1	
Progression Factor	1.02	0.94		1.00		1.00	
Incremental Delay, d2	2.2	1.9		0.4		0.2	
Delay (s)	31.5	15.6		22.7		24.3	
Level of Service	C	B		C		C	
Approach Delay (s)		19.4		22.7			
Approach LOS		B		C			

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	142	543	1256	65	90	44
Future Volume (vph)	142	543	1256	65	90	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	0.98	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1427	6145	5141		3339	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1427	6145	5141		3339	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	142	543	1256	65	90	44
RTOR Reduction (vph)	82	57	7	0	0	0
Lane Group Flow (vph)	46	500	1314	0	134	0
Confl. Peds. (#/hr)	20			10		10
Confl. Bikes (#/hr)						
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	30.7	30.7	32.5		7.3	
Effective Green, g (s)	30.7	30.7	32.5		7.3	
Actuated g/C Ratio	0.36	0.36	0.38		0.09	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	1.5	1.5	3.0		1.5	
Lane Grp Cap (vph)	515	2219	1965		286	
v/s Ratio Prot			c0.26		c0.04	
v/s Ratio Perm	0.03	0.08				
v/c Ratio	0.09	0.23	0.67		0.47	
Uniform Delay, d1	17.9	18.9	21.8		37.0	
Progression Factor	2.10	1.31	0.86		1.00	
Incremental Delay, d2	0.3	0.2	0.9		0.4	
Delay (s)	38.0	25.0	19.6		37.4	
Level of Service	D	C	B		D	
Approach Delay (s)		27.4	19.6		37.4	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	160	575	61	41	1133	311
Future Volume (vph)	160	575	61	41	1133	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91		0.86	0.81	0.81
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	0.91	0.85		1.00	1.00	1.00
Flt Protected	1.00	1.00		0.95	0.95	0.97
Satd. Flow (prot)	3036	1421		1552	1462	4473
Flt Permitted	1.00	1.00		0.95	0.95	0.97
Satd. Flow (perm)	3036	1421		1552	1462	4473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	160	575	61	41	1133	311
RTOR Reduction (vph)	0	18	0	16	8	0
Lane Group Flow (vph)	413	365	0	21	562	878
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Turn Type	NA	Perm		Perm	Perm	NA
Protected Phases	4					2
Permitted Phases		4		2	2	
Actuated Green, G (s)	27.2	27.2		48.3	48.3	48.3
Effective Green, g (s)	27.2	27.2		48.3	48.3	48.3
Actuated g/C Ratio	0.32	0.32		0.57	0.57	0.57
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	5.0	5.0		1.0	1.0	1.0
Lane Grp Cap (vph)	971	454		881	830	2541
v/s Ratio Prot	0.14					
v/s Ratio Perm		c0.26		0.01	c0.38	0.20
v/c Ratio	0.43	0.80		0.02	0.68	0.35
Uniform Delay, d1	22.7	26.5		8.0	12.9	9.9
Progression Factor	1.00	1.00		0.33	0.38	0.28
Incremental Delay, d2	0.6	11.3		0.0	3.6	0.3
Delay (s)	23.4	37.8		2.7	8.5	3.1
Level of Service	C	D		A	A	A
Approach Delay (s)	30.3					5.2
Approach LOS	C					A

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↑↑				
Traffic Volume (veh/h)	218	547	0	0	298	312	111	241	57	0	0	0
Future Volume (veh/h)	218	547	0	0	298	312	111	241	57	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1863	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	218	547	0	0	298	312	111	241	57			
Adj No. of Lanes	0	2	0	0	2	0	0	3	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	1	1	0	0	0			
Cap, veh/h	549	1307	0	0	1208	1034	214	504	118			
Arrive On Green	0.23	0.22	0.00	0.00	1.00	1.00	0.17	0.16	0.16			
Sat Flow, veh/h	661	2019	0	0	1881	1531	1357	3197	746			
Grp Volume(v), veh/h	312	453	0	0	298	312	150	126	133			
Grp Sat Flow(s),veh/h/ln	985	1610	0	0	1787	1531	1832	1729	1739			
Q Serve(g_s), s	15.0	14.5	0.0	0.0	0.0	0.0	4.5	4.0	4.2			
Cycle Q Clear(g_c), s	15.9	14.5	0.0	0.0	0.0	0.0	4.5	4.0	4.2			
Prop In Lane	0.70		0.00	0.00		1.00	0.74		0.43			
Lane Grp Cap(c), veh/h	784	1088	0	0	1208	1034	289	273	274			
V/C Ratio(X)	0.40	0.42	0.00	0.00	0.25	0.30	0.52	0.46	0.48			
Avail Cap(c_a), veh/h	784	1088	0	0	1208	1034	641	605	609			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.75	0.75	0.00	0.00	0.90	0.90	0.95	0.95	0.95			
Uniform Delay (d), s/veh	13.3	13.2	0.0	0.0	0.0	0.0	22.8	23.0	23.0			
Incr Delay (d2), s/veh	1.1	0.9	0.0	0.0	0.4	0.7	0.5	0.4	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	6.7	0.0	0.0	0.1	0.2	2.3	1.9	2.0			
LnGrp Delay(d),s/veh	14.5	14.1	0.0	0.0	0.4	0.7	23.3	23.4	23.5			
LnGrp LOS	B	B			A	A	C	C	C			
Approach Vol, veh/h		765			610			409				
Approach Delay, s/veh		14.2			0.6			23.4				
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		14.5		45.5				45.5
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		21.0		29.0				29.0
Max Q Clear Time (g_c+I1), s		6.5		17.9				2.0
Green Ext Time (p_c), s		1.4		3.1				2.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	211	420	843	42	438	54
Future Volume (vph)	211	420	843	42	438	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1728	4964	5093		3426	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1728	4964	5093		3426	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	211	420	843	42	438	54
RTOR Reduction (vph)	54	0	7	0	0	0
Lane Group Flow (vph)	157	420	878	0	492	0
Confl. Peds. (#/hr)				11		11
Confl. Bikes (#/hr)						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	34.1	34.1	20.0		16.4	
Effective Green, g (s)	34.1	34.1	20.0		16.4	
Actuated g/C Ratio	0.40	0.40	0.24		0.19	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	693	1991	1198		661	
v/s Ratio Prot		0.08	c0.17		c0.14	
v/s Ratio Perm	c0.09					
v/c Ratio	0.23	0.21	0.73		0.74	
Uniform Delay, d1	16.8	16.6	30.0		32.3	
Progression Factor	1.54	1.32	1.00		1.00	
Incremental Delay, d2	0.7	0.2	2.0		4.0	
Delay (s)	26.6	22.3	32.1		36.3	
Level of Service	C	C	C		D	
Approach Delay (s)		23.7	32.1		36.3	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	158	366	103	1389	0	0	0	0
Future Volume (veh/h)	0	0	0	0	158	366	103	1389	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h				0	158	366	103	1389	0			
Adj No. of Lanes				0	1	2	1	3	1			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	1	1	1	1	1			
Cap, veh/h				0	292	485	1398	4137	1172			
Arrive On Green				0.00	0.16	0.16	0.24	0.24	0.00			
Sat Flow, veh/h				0	1881	3128	1792	5644	1599			
Grp Volume(v), veh/h				0	158	366	103	1389	0			
Grp Sat Flow(s),veh/h/ln				0	1881	1564	1792	1881	1599			
Q Serve(g_s), s				0.0	6.6	9.5	3.8	17.3	0.0			
Cycle Q Clear(g_c), s				0.0	6.6	9.5	3.8	17.3	0.0			
Prop In Lane				0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h				0	292	485	1398	4137	1172			
V/C Ratio(X)				0.00	0.54	0.75	0.07	0.34	0.00			
Avail Cap(c_a), veh/h				0	443	736	1398	4137	1172			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)				0.00	0.99	0.99	0.68	0.68	0.00			
Uniform Delay (d), s/veh				0.0	33.1	34.4	10.0	15.1	0.0			
Incr Delay (d2), s/veh				0.0	1.5	2.4	0.1	0.1	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	3.5	4.3	1.9	9.0	0.0			
LnGrp Delay(d),s/veh				0.0	34.7	36.7	10.1	15.3	0.0			
LnGrp LOS					C	D	B	B				
Approach Vol, veh/h					524			1492				
Approach Delay, s/veh					36.1			14.9				
Approach LOS					D			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		67.3						17.7
Change Period (Y+Rc), s		5.0						4.5
Max Green Setting (Gmax), s		55.5						20.0
Max Q Clear Time (g_c+I1), s		19.3						11.5
Green Ext Time (p_c), s		14.1						1.7

Intersection Summary		
HCM 2010 Ctrl Delay		20.4
HCM 2010 LOS		C

Notes

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	29	16	0	0	0	10	59	12	85	44	2
Future Vol, veh/h	5	29	16	0	0	0	10	59	12	85	44	2
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
Heavy Vehicles, %	30	30	30	2	2	2	30	30	30	37	37	37
Mvmt Flow	5	29	16	0	0	0	10	59	12	85	44	2
Number of Lanes	0	1	0	0	0	0	0	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.2	8.2	9.3
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2
Vol Left, %	25%	0%	10%	79%	0%
Vol Thru, %	75%	71%	58%	21%	92%
Vol Right, %	0%	29%	32%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	42	50	107	24
LT Vol	10	0	5	85	0
Through Vol	30	30	29	22	22
RT Vol	0	12	16	0	2
Lane Flow Rate	40	42	50	107	24
Geometry Grp	7	7	2	7	7
Degree of Util (X)	0.059	0.058	0.067	0.168	0.035
Departure Headway (Hd)	5.392	5.062	4.814	5.656	5.2
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	668	712	748	630	683
Service Time	3.092	2.762	2.817	3.431	2.975
HCM Lane V/C Ratio	0.06	0.059	0.067	0.17	0.035
HCM Control Delay	8.4	8.1	8.2	9.6	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.2	0.6	0.1

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	4	32	4	7	42	72	2	61	5	34	120	4
Future Vol, veh/h	4	32	4	7	42	72	2	61	5	34	120	4
Conflicting Peds, #/hr	4	0	18	18	0	4	7	0	2	2	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	5	5	5	5	5	5	44	44	44	49	49	49
Mvmt Flow	4	32	4	7	42	72	2	61	5	34	120	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	257	269	87	232	269	39	131	0	0	68	0	0
Stage 1	197	197	-	70	70	-	-	-	-	-	-	-
Stage 2	60	72	-	162	199	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.6	7	7.6	6.6	7	4.98	-	-	5.08	-	-
Critical Hdwy Stg 1	6.6	5.6	-	6.6	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.6	-	6.6	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4.05	3.35	3.55	4.05	3.35	2.64	-	-	2.69	-	-
Pot Cap-1 Maneuver	667	629	945	695	629	1014	1193	-	-	1247	-	-
Stage 1	778	729	-	923	829	-	-	-	-	-	-	-
Stage 2	936	827	-	815	728	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	567	604	925	638	604	1009	1185	-	-	1245	-	-
Mov Cap-2 Maneuver	567	604	-	638	604	-	-	-	-	-	-	-
Stage 1	771	703	-	919	826	-	-	-	-	-	-	-
Stage 2	821	824	-	741	702	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.3	0.2	1.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	622	797	1245	-	-
HCM Lane V/C Ratio	0.002	-	-	0.064	0.152	0.027	-	-
HCM Control Delay (s)	8	0	-	11.2	10.3	8	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0.1	-	-

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	253	105	5	198	68	43	88	6	35	48	13
Future Vol, veh/h	34	253	105	5	198	68	43	88	6	35	48	13
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
Heavy Vehicles, %	21	21	21	4	4	4	22	22	22	5	5	5
Mvmt Flow	34	253	105	5	198	68	43	88	6	35	48	13
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	15.2	11.5	10.9	10.2
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	49%	0%	9%	2%	59%	0%
Vol Thru, %	51%	88%	65%	73%	41%	65%
Vol Right, %	0%	12%	27%	25%	0%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	50	392	271	59	37
LT Vol	43	0	34	5	35	0
Through Vol	44	44	253	198	24	24
RT Vol	0	6	105	68	0	13
Lane Flow Rate	87	50	392	271	59	37
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.171	0.094	0.575	0.39	0.113	0.065
Departure Headway (Hd)	7.07	6.732	5.277	5.175	6.925	6.371
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	507	532	686	694	517	561
Service Time	4.816	4.478	3.308	3.21	4.676	4.122
HCM Lane V/C Ratio	0.172	0.094	0.571	0.39	0.114	0.066
HCM Control Delay	11.3	10.2	15.2	11.5	10.6	9.6
HCM Lane LOS	B	B	C	B	B	A
HCM 95th-tile Q	0.6	0.3	3.7	1.9	0.4	0.2

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	7	173	13	1	39	38	5	173	13	125	57	5
Future Vol, veh/h	7	173	13	1	39	38	5	173	13	125	57	5
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	3	3	3	0	0	0	15	15	15	2	2	2
Mvmt Flow	7	173	13	1	39	38	5	173	13	125	57	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	426	506	36	560	502	93	62	0	0	186	0	0
Stage 1	310	310	-	190	190	-	-	-	-	-	-	-
Stage 2	116	196	-	370	312	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.5	6.5	6.9	4.4	-	-	4.14	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.5	4	3.3	2.35	-	-	2.22	-	-
Pot Cap-1 Maneuver	510	465	1025	415	474	952	1449	-	-	1386	-	-
Stage 1	672	655	-	799	747	-	-	-	-	-	-	-
Stage 2	873	735	-	628	661	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	422	420	1021	258	428	952	1449	-	-	1386	-	-
Mov Cap-2 Maneuver	422	420	-	258	428	-	-	-	-	-	-	-
Stage 1	669	594	-	796	744	-	-	-	-	-	-	-
Stage 2	791	732	-	397	600	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	12.2	0.2	5.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1449	-	-	437	578	1386	-	-
HCM Lane V/C Ratio	0.003	-	-	0.442	0.135	0.09	-	-
HCM Control Delay (s)	7.5	0	-	19.6	12.2	7.9	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.2	0.5	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	1015	106	0	0	0	0	196	41	35	43	0
Future Volume (veh/h)	38	1015	106	0	0	0	0	196	41	35	43	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900				0	1810	1900	1900	1845	0
Adj Flow Rate, veh/h	38	1015	106				0	196	41	35	43	0
Adj No. of Lanes	0	3	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	5	5	3	3	0
Cap, veh/h	107	3038	328				0	693	142	270	421	0
Arrive On Green	0.22	0.22	0.22				0.00	0.24	0.24	0.24	0.24	0.00
Sat Flow, veh/h	160	4520	488				0	2924	579	795	1807	0
Grp Volume(v), veh/h	429	357	373				0	117	120	40	38	0
Grp Sat Flow(s),veh/h/ln	1802	1647	1719				0	1719	1694	923	1595	0
Q Serve(g_s), s	18.1	16.3	16.4				0.0	5.0	5.2	2.1	1.7	0.0
Cycle Q Clear(g_c), s	18.1	16.3	16.4				0.0	5.0	5.2	7.3	1.7	0.0
Prop In Lane	0.09		0.28				0.00		0.34	0.88		0.00
Lane Grp Cap(c), veh/h	1211	1107	1156				0	420	414	301	390	0
V/C Ratio(X)	0.35	0.32	0.32				0.00	0.28	0.29	0.13	0.10	0.00
Avail Cap(c_a), veh/h	1211	1107	1156				0	420	414	301	390	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.5	17.8	17.9				0.0	27.6	27.6	29.8	26.3	0.0
Incr Delay (d2), s/veh	0.8	0.8	0.7				0.0	1.6	1.8	0.9	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	7.7	8.0				0.0	2.5	2.6	0.9	0.8	0.0
LnGrp Delay(d),s/veh	19.3	18.6	18.6				0.0	29.2	29.4	30.7	26.8	0.0
LnGrp LOS	B	B	B					C	C	C	C	
Approach Vol, veh/h		1159						237			78	
Approach Delay, s/veh		18.9						29.3			28.8	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		26.0		64.0		26.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		22.0		60.5		22.0		
Max Q Clear Time (g_c+I1), s		7.2		20.1		9.3		
Green Ext Time (p_c), s		0.8		6.0		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	21.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	9	115	11	91	147	0	0	55	4
Future Volume (veh/h)	0	0	0	9	115	11	91	147	0	0	55	4
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.99		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1693	1710	1710	1710	0	0	1660	1710
Adj Flow Rate, veh/h				9	115	11	91	147	0	0	55	4
Adj No. of Lanes				0	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	1	0	0	0	0	0	3	3
Cap, veh/h				129	1745	169	525	837	0	0	1293	93
Arrive On Green				0.40	0.42	0.42	0.56	0.58	0.00	0.00	0.43	0.43
Sat Flow, veh/h				306	4134	399	897	2010	0	0	3066	215
Grp Volume(v), veh/h				49	41	45	129	109	0	0	29	30
Grp Sat Flow(s),veh/h/ln				1678	1541	1620	1351	1478	0	0	1577	1621
Q Serve(g_s), s				0.8	0.7	0.7	1.1	1.6	0.0	0.0	0.5	0.5
Cycle Q Clear(g_c), s				0.8	0.7	0.7	1.9	1.6	0.0	0.0	0.5	0.5
Prop In Lane				0.18		0.25	0.70		0.00	0.00		0.13
Lane Grp Cap(c), veh/h				708	651	684	707	641	0	0	683	702
V/C Ratio(X)				0.07	0.06	0.07	0.18	0.17	0.00	0.00	0.04	0.04
Avail Cap(c_a), veh/h				708	651	684	707	641	0	0	683	702
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.8	7.7	7.7	5.9	5.7	0.0	0.0	7.4	7.4
Incr Delay (d2), s/veh				0.2	0.2	0.2	0.6	0.6	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	0.3	0.4	0.9	0.7	0.0	0.0	0.2	0.2
LnGrp Delay(d),s/veh				8.0	7.9	7.9	6.5	6.3	0.0	0.0	7.5	7.5
LnGrp LOS				A	A	A	A	A			A	A
Approach Vol, veh/h					135			238			59	
Approach Delay, s/veh					7.9			6.4			7.5	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		22.0		23.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		19.5		19.0		19.5		
Max Q Clear Time (g_c+I1), s		2.5		2.8		3.9		
Green Ext Time (p_c), s		0.2		0.6		1.2		

Intersection Summary		
HCM 2010 Ctrl Delay		7.0
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1323	14	0	0	0	0	121	43	72	48	0
Future Volume (veh/h)	12	1323	14	0	0	0	0	121	43	72	48	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.96	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1710	1710				0	1710	1710	1710	1693	0
Adj Flow Rate, veh/h	12	1323	14				0	121	43	72	48	0
Adj No. of Lanes	0	4	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0				0	0	0	1	1	0
Cap, veh/h	25	2905	32				0	839	283	508	520	0
Arrive On Green	0.47	0.47	0.47				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	53	6225	68				0	2444	796	979	1541	0
Grp Volume(v), veh/h	389	609	351				0	81	83	72	48	0
Grp Sat Flow(s),veh/h/ln	1707	1471	1696				0	1625	1530	979	1464	0
Q Serve(g_s), s	7.1	6.3	6.3				0.0	1.5	1.7	2.2	1.0	0.0
Cycle Q Clear(g_c), s	7.1	6.3	6.3				0.0	1.5	1.7	3.8	1.0	0.0
Prop In Lane	0.03		0.04				0.00		0.52	1.00		0.00
Lane Grp Cap(c), veh/h	797	1373	792				0	578	544	508	520	0
V/C Ratio(X)	0.49	0.44	0.44				0.00	0.14	0.15	0.14	0.09	0.00
Avail Cap(c_a), veh/h	797	1373	792				0	578	544	508	520	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.3	8.1	8.1				0.0	9.8	9.9	11.2	9.7	0.0
Incr Delay (d2), s/veh	2.1	1.0	1.8				0.0	0.5	0.6	0.6	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.7	3.3				0.0	0.8	0.8	0.7	0.4	0.0
LnGrp Delay(d),s/veh	10.4	9.1	9.9				0.0	10.3	10.5	11.8	10.0	0.0
LnGrp LOS	B	A	A					B	B	B	B	
Approach Vol, veh/h		1349						164			120	
Approach Delay, s/veh		9.7						10.4			11.1	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		5.8		9.1		3.7		
Green Ext Time (p_c), s		0.4		6.6		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A



Movement	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	SBT	SBR	SBR2
Lane Configurations										
Traffic Volume (vph)	11	116	266	29	7	60	72	109	30	12
Future Volume (vph)	11	116	266	29	7	60	72	109	30	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		3.0	3.0				4.5	4.5		
Lane Util. Factor		0.97	0.95				0.95	0.95		
Frpb, ped/bikes		1.00	1.00				1.00	0.99		
Flpb, ped/bikes		0.99	1.00				0.99	1.00		
Frt		1.00	0.99				1.00	0.96		
Flt Protected		0.95	1.00				0.98	1.00		
Satd. Flow (prot)		3018	3087				2932	2877		
Flt Permitted		0.95	1.00				0.80	1.00		
Satd. Flow (perm)		3018	3087				2414	2877		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	11	116	266	29	7	60	72	109	30	12
RTOR Reduction (vph)	0	0	17	0	0	0	0	7	0	0
Lane Group Flow (vph)	0	127	278	0	0	0	139	144	0	0
Confl. Peds. (#/hr)		13		16	8	26			8	26
Confl. Bikes (#/hr)										
Turn Type	Perm	Perm	NA		Perm	Perm	NA	NA		
Protected Phases			4				2	2		
Permitted Phases	4	4			2	2				
Actuated Green, G (s)		19.0	19.0				18.5	18.5		
Effective Green, g (s)		19.0	19.0				18.5	18.5		
Actuated g/C Ratio		0.42	0.42				0.41	0.41		
Clearance Time (s)		3.0	3.0				4.5	4.5		
Lane Grp Cap (vph)		1274	1303				992	1182		
v/s Ratio Prot			c0.09					0.05		
v/s Ratio Perm		0.04					c0.06			
v/c Ratio		0.10	0.21				0.14	0.12		
Uniform Delay, d1		7.8	8.3				8.3	8.2		
Progression Factor		0.41	0.33				1.74	0.47		
Incremental Delay, d2		0.2	0.4				0.3	0.2		
Delay (s)		3.4	3.1				14.7	4.1		
Level of Service		A	A				B	A		
Approach Delay (s)			3.1				14.7	4.1		
Approach LOS			A				B	A		

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	13	83	19	16	84	0	0	200	12
Future Volume (veh/h)	0	0	0	13	83	19	16	84	0	0	200	12
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.99		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1693	0	0	1676	1710
Adj Flow Rate, veh/h				13	83	19	16	84	0	0	200	12
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	1	1	0	0	2	2
Cap, veh/h				149	973	230	239	1116	0	0	1288	77
Arrive On Green				0.41	0.42	0.42	0.41	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h				353	2304	544	319	2720	0	0	3134	182
Grp Volume(v), veh/h				61	0	54	54	46	0	0	104	108
Grp Sat Flow(s),veh/h/ln				1643	0	1558	1498	1464	0	0	1593	1640
Q Serve(g_s), s				1.0	0.0	0.9	0.0	0.8	0.0	0.0	1.8	1.8
Cycle Q Clear(g_c), s				1.0	0.0	0.9	0.9	0.8	0.0	0.0	1.8	1.8
Prop In Lane				0.21		0.35	0.30		0.00	0.00		0.11
Lane Grp Cap(c), veh/h				694	0	658	720	618	0	0	672	692
V/C Ratio(X)				0.09	0.00	0.08	0.08	0.07	0.00	0.00	0.15	0.16
Avail Cap(c_a), veh/h				694	0	658	720	618	0	0	672	692
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.8	0.0	7.8	7.8	7.8	0.0	0.0	8.0	8.0
Incr Delay (d2), s/veh				0.2	0.0	0.2	0.2	0.2	0.0	0.0	0.5	0.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.4	0.4	0.4	0.0	0.0	0.9	0.9
LnGrp Delay(d),s/veh				8.1	0.0	8.0	8.0	8.0	0.0	0.0	8.5	8.5
LnGrp LOS				A		A	A	A			A	A
Approach Vol, veh/h					115			100			212	
Approach Delay, s/veh					8.1			8.0			8.5	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.5				22.5		22.5
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		19.0				19.0		19.0
Max Q Clear Time (g_c+I1), s		2.9				3.8		3.0
Green Ext Time (p_c), s		0.4				1.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	565	75	0	0	0	0	80	27	62	136	0
Future Volume (veh/h)	12	565	75	0	0	0	0	80	27	62	136	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1629	1710	1710	1598	0
Adj Flow Rate, veh/h	12	565	75				0	80	27	62	136	0
Adj No. of Lanes	0	4	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	5	5	7	7	0
Cap, veh/h	58	2904	384				0	611	196	270	533	0
Arrive On Green	0.57	0.55	0.55				0.00	0.27	0.27	0.29	0.27	0.00
Sat Flow, veh/h	106	5281	698				0	2371	734	657	2072	0
Grp Volume(v), veh/h	190	298	164				0	53	54	108	90	0
Grp Sat Flow(s),veh/h/ln	1671	1442	1530				0	1547	1476	1274	1382	0
Q Serve(g_s), s	3.5	3.1	3.2				0.0	1.6	1.7	2.1	3.1	0.0
Cycle Q Clear(g_c), s	3.5	3.1	3.2				0.0	1.6	1.7	3.8	3.1	0.0
Prop In Lane	0.06		0.46				0.00		0.50	0.58		0.00
Lane Grp Cap(c), veh/h	919	1586	841				0	413	394	466	368	0
V/C Ratio(X)	0.21	0.19	0.20				0.00	0.13	0.14	0.23	0.25	0.00
Avail Cap(c_a), veh/h	919	1586	841				0	413	394	466	368	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.8	6.8	6.8				0.0	16.7	16.7	17.1	17.3	0.0
Incr Delay (d2), s/veh	0.5	0.3	0.5				0.0	0.6	0.7	1.2	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.3	1.5				0.0	0.7	0.8	1.5	1.3	0.0
LnGrp Delay(d),s/veh	7.3	7.0	7.3				0.0	17.3	17.5	18.3	18.8	0.0
LnGrp LOS	A	A	A					B	B	B	B	
Approach Vol, veh/h		652						107			198	
Approach Delay, s/veh		7.2						17.4			18.5	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.5		38.5		21.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		16.0		33.0		16.0		
Max Q Clear Time (g_c+I1), s		3.7		5.5		5.8		
Green Ext Time (p_c), s		0.4		4.7		0.8		

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	24	717	41	26	72	0	0	171	53
Future Volume (veh/h)	0	0	0	24	717	41	26	72	0	0	171	53
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.96	0.98		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1676	0	0	1676	1710
Adj Flow Rate, veh/h				24	717	41	26	72	0	0	171	53
Adj No. of Lanes				0	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	2	2	0	0	2	2
Cap, veh/h				74	2331	137	236	607	0	0	677	201
Arrive On Green				0.56	0.53	0.53	0.31	0.28	0.00	0.00	0.28	0.28
Sat Flow, veh/h				138	4371	257	514	2219	0	0	2473	711
Grp Volume(v), veh/h				288	239	255	52	46	0	0	112	112
Grp Sat Flow(s),veh/h/ln				1653	1511	1602	1208	1449	0	0	1593	1507
Q Serve(g_s), s				5.9	5.3	5.3	0.1	1.4	0.0	0.0	3.2	3.5
Cycle Q Clear(g_c), s				5.9	5.3	5.3	3.5	1.4	0.0	0.0	3.2	3.5
Prop In Lane				0.08		0.16	0.50		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				882	806	854	462	411	0	0	451	427
V/C Ratio(X)				0.33	0.30	0.30	0.11	0.11	0.00	0.00	0.25	0.26
Avail Cap(c_a), veh/h				882	806	854	462	411	0	0	451	427
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				7.9	7.8	7.8	15.6	15.9	0.0	0.0	16.6	16.6
Incr Delay (d2), s/veh				1.0	0.9	0.9	0.5	0.6	0.0	0.0	1.3	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	2.4	2.6	0.7	0.6	0.0	0.0	1.6	1.6
LnGrp Delay(d),s/veh				8.9	8.7	8.7	16.1	16.5	0.0	0.0	17.9	18.1
LnGrp LOS				A	A	A	B	B			B	B
Approach Vol, veh/h					782			98			224	
Approach Delay, s/veh					8.7			16.3			18.0	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.5				22.5		37.5
Change Period (Y+Rc), s		5.5				5.5		5.5
Max Green Setting (Gmax), s		17.0				17.0		32.0
Max Q Clear Time (g_c+I1), s		5.5				5.5		7.9
Green Ext Time (p_c), s		0.3				0.9		5.3

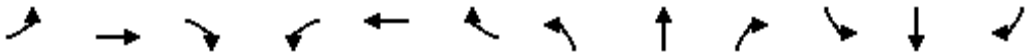
Intersection Summary		
HCM 2010 Ctrl Delay		11.3
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	536	49	24	512	24	39	99	23	43	126	41
Future Volume (veh/h)	19	536	49	24	512	24	39	99	23	43	126	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.94	0.99		0.93	0.98		0.95	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1693	1710
Adj Flow Rate, veh/h	19	536	49	24	512	24	39	99	23	43	126	41
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	1	1	1
Cap, veh/h	82	1308	117	92	1355	62	285	657	157	256	661	214
Arrive On Green	0.16	0.15	0.15	0.48	0.47	0.47	0.38	0.37	0.37	0.38	0.37	0.37
Sat Flow, veh/h	39	2803	251	57	2904	133	537	1792	428	472	1803	584
Grp Volume(v), veh/h	319	0	285	292	0	268	84	0	77	111	0	99
Grp Sat Flow(s),veh/h/ln	1631	0	1462	1603	0	1491	1331	0	1426	1453	0	1406
Q Serve(g_s), s	0.0	0.0	10.6	0.0	0.0	7.0	0.0	0.0	2.2	0.0	0.0	2.9
Cycle Q Clear(g_c), s	10.3	0.0	10.6	6.7	0.0	7.0	2.9	0.0	2.2	2.6	0.0	2.9
Prop In Lane	0.06		0.17	0.08		0.09	0.46		0.30	0.39		0.42
Lane Grp Cap(c), veh/h	852	0	682	840	0	696	598	0	523	640	0	515
V/C Ratio(X)	0.37	0.00	0.42	0.35	0.00	0.39	0.14	0.00	0.15	0.17	0.00	0.19
Avail Cap(c_a), veh/h	852	0	682	840	0	696	598	0	523	640	0	515
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.00	0.83	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	17.9	0.0	18.0	10.3	0.0	10.4	12.5	0.0	12.7	12.7	0.0	12.9
Incr Delay (d2), s/veh	1.0	0.0	1.6	1.1	0.0	1.6	0.5	0.0	0.6	0.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	4.6	3.2	0.0	3.1	1.0	0.0	0.9	1.3	0.0	1.2
LnGrp Delay(d),s/veh	18.9	0.0	19.6	11.4	0.0	12.0	13.0	0.0	13.3	13.3	0.0	13.8
LnGrp LOS	B		B	B		B	B		B	B		B
Approach Vol, veh/h		604			560			161			210	
Approach Delay, s/veh		19.2			11.7			13.1			13.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.0		33.0		27.0		33.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		22.0		28.0		22.0		28.0
Max Q Clear Time (g_c+I1), s		4.9		12.6		4.9		9.0
Green Ext Time (p_c), s		0.5		2.3		0.7		2.4

Intersection Summary		
HCM 2010 Ctrl Delay		15.1
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	31	185	33	25	109	0	0	162	21
Future Volume (vph)	0	0	0	31	185	33	25	109	0	0	162	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					0.98			1.00			0.98	
Flt Protected					0.99			0.99			1.00	
Satd. Flow (prot)					3447			3507			3478	
Flt Permitted					0.99			0.90			1.00	
Satd. Flow (perm)					3447			3178			3478	
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	0	0	31	185	33	25	109	0	0	162	21
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	231	0	0	134	0	0	169	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			2	
Permitted Phases				4			2					
Actuated Green, G (s)					21.0			16.0			16.0	
Effective Green, g (s)					21.0			16.0			16.0	
Actuated g/C Ratio					0.47			0.36			0.36	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					1608			1129			1236	
v/s Ratio Prot											c0.05	
v/s Ratio Perm					0.07			0.04				
v/c Ratio					0.14			0.12			0.14	
Uniform Delay, d1					6.9			9.8			9.8	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.2			0.2			0.2	
Delay (s)					7.0			10.0			10.1	
Level of Service					A			A			B	
Approach Delay (s)		0.0			7.0			10.0			10.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	417	69	0	0	0	0	124	14	8	114	0
Future Volume (veh/h)	30	417	69	0	0	0	0	124	14	8	114	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1710	1710				0	1710	1710	1710	1710	0
Adj Flow Rate, veh/h	30	417	69				0	124	14	8	114	0
Adj No. of Lanes	1	3	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	841	2084	335				0	881	98	95	915	0
Arrive On Green	0.52	0.52	0.52				0.00	0.30	0.30	0.32	0.30	0.00
Sat Flow, veh/h	1629	4033	648				0	3022	326	92	3127	0
Grp Volume(v), veh/h	30	319	167				0	68	70	66	56	0
Grp Sat Flow(s),veh/h/ln	1629	1556	1569				0	1625	1638	1662	1478	0
Q Serve(g_s), s	0.5	3.3	3.5				0.0	1.8	1.9	0.0	1.7	0.0
Cycle Q Clear(g_c), s	0.5	3.3	3.5				0.0	1.8	1.9	1.7	1.7	0.0
Prop In Lane	1.00		0.41				0.00		0.20	0.12		0.00
Lane Grp Cap(c), veh/h	841	1608	811				0	487	491	608	443	0
V/C Ratio(X)	0.04	0.20	0.21				0.00	0.14	0.14	0.11	0.13	0.00
Avail Cap(c_a), veh/h	841	1608	811				0	487	491	608	443	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.1	7.8	7.8				0.0	15.3	15.4	15.2	15.3	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.6				0.0	0.6	0.6	0.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.6				0.0	0.9	0.9	0.8	0.7	0.0
LnGrp Delay(d),s/veh	7.2	8.1	8.4				0.0	15.9	16.0	15.6	15.9	0.0
LnGrp LOS	A	A	A					B	B	B	B	
Approach Vol, veh/h		516						138			122	
Approach Delay, s/veh		8.1						16.0			15.7	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.5		36.5		23.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		18.0		31.0		18.0		
Max Q Clear Time (g_c+I1), s		3.9		5.5		3.7		
Green Ext Time (p_c), s		0.6		3.5		0.5		

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	20	391	0	39	113	0	0	105	122
Future Volume (veh/h)	0	0	0	20	391	0	39	113	0	0	105	122
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.99		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1710	1710	1710	1710	0	0	1676	1710
Adj Flow Rate, veh/h				20	391	0	39	113	0	0	105	122
Adj No. of Lanes				1	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	0	0	0	0	0	0	2	2
Cap, veh/h				719	2062	0	341	991	0	0	717	624
Arrive On Green				0.44	0.44	0.00	0.43	0.45	0.00	0.00	0.45	0.45
Sat Flow, veh/h				1629	4822	0	559	2279	0	0	1676	1387
Grp Volume(v), veh/h				20	391	0	80	72	0	0	105	122
Grp Sat Flow(s),veh/h/ln				1629	1556	0	1283	1478	0	0	1593	1387
Q Serve(g_s), s				0.4	3.1	0.0	0.1	1.7	0.0	0.0	2.3	3.2
Cycle Q Clear(g_c), s				0.4	3.1	0.0	3.3	1.7	0.0	0.0	2.3	3.2
Prop In Lane				1.00		0.00	0.49		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				719	2062	0	645	665	0	0	717	624
V/C Ratio(X)				0.03	0.19	0.00	0.12	0.11	0.00	0.00	0.15	0.20
Avail Cap(c_a), veh/h				719	2062	0	645	665	0	0	717	624
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.5	10.2	0.0	9.7	9.5	0.0	0.0	9.7	9.9
Incr Delay (d2), s/veh				0.1	0.2	0.0	0.4	0.3	0.0	0.0	0.4	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.2	1.3	0.0	0.9	0.7	0.0	0.0	1.1	1.3
LnGrp Delay(d),s/veh				9.5	10.4	0.0	10.1	9.9	0.0	0.0	10.1	10.6
LnGrp LOS				A	B		B	A			B	B
Approach Vol, veh/h					411			152			227	
Approach Delay, s/veh					10.4			10.0			10.4	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.0				30.0		30.0
Change Period (Y+Rc), s		3.0				3.0		3.5
Max Green Setting (Gmax), s		27.0				27.0		26.5
Max Q Clear Time (g_c+I1), s		5.3				5.2		5.1
Green Ext Time (p_c), s		0.8				1.4		2.8

Intersection Summary		
HCM 2010 Ctrl Delay		10.3
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	280	14	1	246	4	16	6	11	10	1	6
Future Vol, veh/h	8	280	14	1	246	4	16	6	11	10	1	6
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
Heavy Vehicles, %	4	4	4	2	2	2	3	3	3	6	6	6
Mvmt Flow	8	280	14	1	246	4	16	6	11	10	1	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.8	9.3	8.4	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	3%	0%	59%
Vol Thru, %	18%	93%	98%	6%
Vol Right, %	33%	5%	2%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	302	251	17
LT Vol	16	8	1	10
Through Vol	6	280	246	1
RT Vol	11	14	4	6
Lane Flow Rate	33	302	251	17
Geometry Grp	1	1	1	1
Degree of Util (X)	0.047	0.363	0.304	0.024
Departure Headway (Hd)	5.077	4.332	4.361	5.163
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	705	834	826	693
Service Time	3.108	2.347	2.378	3.197
HCM Lane V/C Ratio	0.047	0.362	0.304	0.025
HCM Control Delay	8.4	9.8	9.3	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	1.7	1.3	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	1009	0	0	0	0	0	0	0	72	0	0
Future Volume (veh/h)	82	1009	0	0	0	0	0	0	0	72	0	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	0				0	1900	1900	1900	1863	0
Adj Flow Rate, veh/h	82	1009	0				0	0	0	72	0	0
Adj No. of Lanes	0	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	0	0	2	2	0
Cap, veh/h	254	3334	0				0	401	0	377	0	0
Arrive On Green	0.23	0.23	0.00				0.00	0.00	0.00	0.21	0.00	0.00
Sat Flow, veh/h	360	4888	0				0	1900	0	1406	0	0
Grp Volume(v), veh/h	408	683	0				0	0	0	72	0	0
Grp Sat Flow(s),veh/h/ln	1792	1647	0				0	1900	0	1406	0	0
Q Serve(g_s), s	17.0	15.4	0.0				0.0	0.0	0.0	3.8	0.0	0.0
Cycle Q Clear(g_c), s	17.0	15.4	0.0				0.0	0.0	0.0	3.8	0.0	0.0
Prop In Lane	0.20		0.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1264	2324	0				0	401	0	377	0	0
V/C Ratio(X)	0.32	0.29	0.00				0.00	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1264	2324	0				0	401	0	377	0	0
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	16.1	0.0				0.0	0.0	0.0	29.5	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.3	0.0				0.0	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
%ile BackOfQ(50%),veh/ln	8.7	7.1	0.0				0.0	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	17.4	16.4	0.0				0.0	0.0	0.0	30.6	0.0	0.0
LnGrp LOS	B	B								C		
Approach Vol, veh/h		1091						0			72	
Approach Delay, s/veh		16.8						0.0			30.6	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		67.0		23.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		19.0		63.5		19.0		
Max Q Clear Time (g_c+I1), s		0.0		0.0		5.8		
Green Ext Time (p_c), s		0.0		0.0		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑						↱			↕↑	
Traffic Volume (veh/h)	10	1466	7	0	0	0	0	68	23	76	38	0
Future Volume (veh/h)	10	1466	7	0	0	0	0	68	23	76	38	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1710	1710	1710	1644	0
Adj Flow Rate, veh/h	10	1466	7				0	68	23	76	38	0
Adj No. of Lanes	0	4	0				0	1	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	0	0	4	4	0
Cap, veh/h	18	2874	14				0	434	147	521	505	0
Arrive On Green	0.15	0.15	0.15				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	39	6159	30				0	1219	412	1015	1496	0
Grp Volume(v), veh/h	427	669	387				0	0	91	76	38	0
Grp Sat Flow(s),veh/h/ln	1675	1442	1670				0	0	1632	1015	1421	0
Q Serve(g_s), s	10.6	9.6	9.6				0.0	0.0	1.7	2.2	0.8	0.0
Cycle Q Clear(g_c), s	10.6	9.6	9.6				0.0	0.0	1.7	3.9	0.8	0.0
Prop In Lane	0.02		0.02				0.00		0.25	1.00		0.00
Lane Grp Cap(c), veh/h	781	1346	780				0	0	580	521	505	0
V/C Ratio(X)	0.55	0.50	0.50				0.00	0.00	0.16	0.15	0.08	0.00
Avail Cap(c_a), veh/h	781	1346	780				0	0	580	521	505	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.6	14.2	14.2				0.0	0.0	9.9	11.2	9.6	0.0
Incr Delay (d2), s/veh	2.7	1.3	2.3				0.0	0.0	0.6	0.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	4.1	4.9				0.0	0.0	0.9	0.8	0.3	0.0
LnGrp Delay(d),s/veh	17.4	15.5	16.5				0.0	0.0	10.5	11.8	9.9	0.0
LnGrp LOS	B	B	B						B	B	A	
Approach Vol, veh/h		1483						91			114	
Approach Delay, s/veh		16.3						10.5			11.2	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		3.7		12.6		5.9		
Green Ext Time (p_c), s		0.3		5.7		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	16	359	33	41	42	0	0	94	23
Future Volume (veh/h)	0	0	0	16	359	33	41	42	0	0	94	23
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	0.99		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1676	1710	1710	1710	0	0	1644	1710
Adj Flow Rate, veh/h				16	359	33	41	42	0	0	94	23
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	2	0	0	0	0	0	4	4
Cap, veh/h				52	1219	117	550	654	0	0	1001	237
Arrive On Green				0.14	0.14	0.14	0.40	0.40	0.00	0.00	0.40	0.40
Sat Flow, veh/h				124	2887	278	999	1712	0	0	2585	593
Grp Volume(v), veh/h				216	0	192	46	37	0	0	57	60
Grp Sat Flow(s),veh/h/ln				1670	0	1619	1155	1478	0	0	1562	1534
Q Serve(g_s), s				5.2	0.0	4.8	0.7	0.7	0.0	0.0	1.0	1.1
Cycle Q Clear(g_c), s				5.2	0.0	4.8	1.8	0.7	0.0	0.0	1.0	1.1
Prop In Lane				0.07		0.17	0.88		0.00	0.00		0.39
Lane Grp Cap(c), veh/h				705	0	684	613	591	0	0	625	614
V/C Ratio(X)				0.31	0.00	0.28	0.08	0.06	0.00	0.00	0.09	0.10
Avail Cap(c_a), veh/h				705	0	684	613	591	0	0	625	614
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.4	0.0	13.2	8.7	8.3	0.0	0.0	8.4	8.4
Incr Delay (d2), s/veh				1.1	0.0	1.0	0.2	0.2	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.6	0.0	2.3	0.4	0.3	0.0	0.0	0.5	0.5
LnGrp Delay(d),s/veh				14.6	0.0	14.3	9.0	8.5	0.0	0.0	8.7	8.7
LnGrp LOS				B		B	A	A			A	A
Approach Vol, veh/h					408			83			117	
Approach Delay, s/veh					14.4			8.8			8.7	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.0		22.0				22.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		19.0		18.0				18.0
Max Q Clear Time (g_c+I1), s		7.2		3.8				3.1
Green Ext Time (p_c), s		1.9		0.3				0.5

Intersection Summary		
HCM 2010 Ctrl Delay		12.6
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	138	6	22	8	40	1	38	18	30	26	5
Future Vol, veh/h	3	138	6	22	8	40	1	38	18	30	26	5
Conflicting Peds, #/hr	30	0	66	66	0	30	22	0	113	113	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	4	4	4	4	4	4	0	0	0	0	0	0
Mvmt Flow	3	138	6	22	8	40	1	38	18	30	26	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	210	0	0	323	335	320	390	318	80
Stage 1	-	-	-	-	-	-	213	213	-	102	102	-
Stage 2	-	-	-	-	-	-	110	122	-	288	216	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1508	-	-	1349	-	-	634	589	725	573	602	986
Stage 1	-	-	-	-	-	-	794	730	-	909	815	-
Stage 2	-	-	-	-	-	-	900	799	-	724	728	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1465	-	-	1264	-	-	549	525	606	449	537	938
Mov Cap-2 Maneuver	-	-	-	-	-	-	549	525	-	449	537	-
Stage 1	-	-	-	-	-	-	742	683	-	881	778	-
Stage 2	-	-	-	-	-	-	832	762	-	591	681	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2.5	12.3	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	549	1465	-	-	1264	-	-	506
HCM Lane V/C Ratio	0.104	0.002	-	-	0.017	-	-	0.121
HCM Control Delay (s)	12.3	7.5	0	-	7.9	0	-	13.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	271	26	28	143	9	106	27	62	2	10	2
Future Vol, veh/h	8	271	26	28	143	9	106	27	62	2	10	2
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
Heavy Vehicles, %	3	3	3	10	10	10	2	2	2	0	0	0
Mvmt Flow	8	271	26	28	143	9	106	27	62	2	10	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.8	9.7	9.9	8.5
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	3%	16%	14%
Vol Thru, %	14%	89%	79%	71%
Vol Right, %	32%	9%	5%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	195	305	180	14
LT Vol	106	8	28	2
Through Vol	27	271	143	10
RT Vol	62	26	9	2
Lane Flow Rate	195	305	180	14
Geometry Grp	1	1	1	1
Degree of Util (X)	0.271	0.395	0.248	0.021
Departure Headway (Hd)	5.005	4.659	4.96	5.272
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	714	769	720	672
Service Time	3.069	2.713	3.022	3.362
HCM Lane V/C Ratio	0.273	0.397	0.25	0.021
HCM Control Delay	9.9	10.8	9.7	8.5
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	1.1	1.9	1	0.1

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑			↑	
Traffic Vol, veh/h	7	172	5	6	54	26	2	10	9	33	11	15
Future Vol, veh/h	7	172	5	6	54	26	2	10	9	33	11	15
Conflicting Peds, #/hr	42	0	49	49	0	42	84	0	42	42	0	84
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	3	3	3	2	2	2	10	10	10	2	2	2
Mvmt Flow	7	172	5	6	54	26	2	10	9	33	11	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	226	0	0	414	372	266	361	361	193
Stage 1	-	-	-	-	-	-	238	238	-	121	121	-
Stage 2	-	-	-	-	-	-	176	134	-	240	240	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.2	6.6	6.3	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.59	4.09	3.39	3.518	4.018	3.318
Pot Cap-1 Maneuver	1459	-	-	1342	-	-	535	546	754	595	566	849
Stage 1	-	-	-	-	-	-	748	694	-	883	796	-
Stage 2	-	-	-	-	-	-	807	770	-	763	707	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1279	-	-	448	494	690	528	512	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	494	-	528	512	-
Stage 1	-	-	-	-	-	-	709	657	-	842	760	-
Stage 2	-	-	-	-	-	-	713	735	-	708	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	11.5	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	571	1401	-	-	1279	-	-	627
HCM Lane V/C Ratio	0.033	0.005	-	-	0.005	-	-	0.041
HCM Control Delay (s)	11.5	7.6	0	-	7.8	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	288	15	9	135	21	17	82	17	32	63	48
Future Vol, veh/h	63	288	15	9	135	21	17	82	17	32	63	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
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	1	1	1
Mvmt Flow	63	288	15	9	135	21	17	82	17	32	63	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.8	9.8	9.7	9.8
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	17%	5%	22%
Vol Thru, %	71%	79%	82%	44%
Vol Right, %	15%	4%	13%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	366	165	143
LT Vol	17	63	9	32
Through Vol	82	288	135	63
RT Vol	17	15	21	48
Lane Flow Rate	116	366	165	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.176	0.502	0.238	0.211
Departure Headway (Hd)	5.477	4.941	5.182	5.318
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	655	736	693	675
Service Time	3.511	2.941	3.208	3.35
HCM Lane V/C Ratio	0.177	0.497	0.238	0.212
HCM Control Delay	9.7	12.8	9.8	9.8
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.6	2.8	0.9	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	996	80	0	0	0	0	110	134	64	92	0
Future Volume (veh/h)	5	996	80	0	0	0	0	110	134	64	92	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900				0	1881	1881	1900	1845	0
Adj Flow Rate, veh/h	5	996	80				0	110	134	64	92	0
Adj No. of Lanes	0	3	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0				0	1	1	3	3	0
Cap, veh/h	11	2303	191				0	726	586	274	365	0
Arrive On Green	0.49	0.49	0.49				0.00	0.39	0.39	0.40	0.39	0.00
Sat Flow, veh/h	22	4724	393				0	1881	1520	536	947	0
Grp Volume(v), veh/h	400	331	350				0	110	134	156	0	0
Grp Sat Flow(s),veh/h/ln	1791	1631	1717				0	1881	1520	1482	0	0
Q Serve(g_s), s	11.0	9.8	9.8				0.0	2.9	4.5	1.8	0.0	0.0
Cycle Q Clear(g_c), s	11.0	9.8	9.8				0.0	2.9	4.5	4.6	0.0	0.0
Prop In Lane	0.01		0.23				0.00		1.00	0.41		0.00
Lane Grp Cap(c), veh/h	873	795	837				0	726	586	659	0	0
V/C Ratio(X)	0.46	0.42	0.42				0.00	0.15	0.23	0.24	0.00	0.00
Avail Cap(c_a), veh/h	873	795	837				0	1217	983	1036	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96				0.00	1.00	1.00	0.99	0.00	0.00
Uniform Delay (d), s/veh	12.7	12.4	12.4				0.0	15.0	15.5	15.3	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.5	1.5				0.0	0.0	0.1	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
%ile BackOfQ(50%),veh/ln	5.8	4.8	5.0				0.0	1.5	1.9	2.1	0.0	0.0
LnGrp Delay(d),s/veh	14.3	13.9	13.8				0.0	15.1	15.6	15.4	0.0	0.0
LnGrp LOS	B	B	B					B	B	B		
Approach Vol, veh/h		1081						244			156	
Approach Delay, s/veh		14.0						15.3			15.4	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		33.9		41.1		33.9		
Change Period (Y+Rc), s		5.0		4.5		5.0		
Max Green Setting (Gmax), s		48.5		17.0		48.5		
Max Q Clear Time (g_c+I1), s		6.5		13.0		6.6		
Green Ext Time (p_c), s		0.7		1.9		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	38	73	35	31	96	0	0	118	19
Future Volume (veh/h)	0	0	0	38	73	35	31	96	0	0	118	19
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	0.96		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1676	1710	1710	1693	0	0	1693	1710
Adj Flow Rate, veh/h				38	73	35	31	96	0	0	118	19
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	2	0	1	1	0	0	1	1
Cap, veh/h				322	630	308	217	588	0	0	641	103
Arrive On Green				0.38	0.40	0.40	0.44	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				805	1574	771	258	1291	0	0	1406	226
Grp Volume(v), veh/h				77	0	69	127	0	0	0	0	137
Grp Sat Flow(s),veh/h/ln				1636	0	1514	1549	0	0	0	0	1633
Q Serve(g_s), s				1.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	2.2
Cycle Q Clear(g_c), s				1.4	0.0	1.3	2.0	0.0	0.0	0.0	0.0	2.2
Prop In Lane				0.49		0.51	0.24		0.00	0.00		0.14
Lane Grp Cap(c), veh/h				654	0	605	788	0	0	0	0	744
V/C Ratio(X)				0.12	0.00	0.11	0.16	0.00	0.00	0.00	0.00	0.18
Avail Cap(c_a), veh/h				654	0	605	788	0	0	0	0	744
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.7	0.0	8.5	7.2	0.0	0.0	0.0	0.0	7.3
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.4	0.0	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				0.7	0.0	0.6	1.1	0.0	0.0	0.0	0.0	1.1
LnGrp Delay(d),s/veh				9.0	0.0	8.9	7.7	0.0	0.0	0.0	0.0	7.8
LnGrp LOS				A		A	A					A
Approach Vol, veh/h					146			127			137	
Approach Delay, s/veh					9.0			7.7			7.8	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		21.0		24.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		20.5		18.0		20.5		
Max Q Clear Time (g_c+I1), s		4.0		3.4		4.2		
Green Ext Time (p_c), s		0.6		0.6		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑						↑	↗		↰	
Traffic Volume (veh/h)	48	1504	87	0	0	0	0	79	52	31	47	0
Future Volume (veh/h)	48	1504	87	0	0	0	0	79	52	31	47	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1676	1676	1710	1693	0
Adj Flow Rate, veh/h	48	1504	87				0	79	52	31	47	0
Adj No. of Lanes	0	4	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	2	2	1	1	0
Cap, veh/h	67	2255	134				0	688	561	301	400	0
Arrive On Green	0.41	0.40	0.40				0.00	0.41	0.41	0.42	0.41	0.00
Sat Flow, veh/h	168	5638	334				0	1676	1365	475	975	0
Grp Volume(v), veh/h	476	749	413				0	79	52	78	0	0
Grp Sat Flow(s),veh/h/ln	1668	1442	1589				0	1676	1365	1450	0	0
Q Serve(g_s), s	11.4	10.0	10.0				0.0	1.4	1.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.4	10.0	10.0				0.0	1.4	1.1	1.3	0.0	0.0
Prop In Lane	0.10		0.21				0.00		1.00	0.40		0.00
Lane Grp Cap(c), veh/h	667	1153	636				0	688	561	717	0	0
V/C Ratio(X)	0.71	0.65	0.65				0.00	0.11	0.09	0.11	0.00	0.00
Avail Cap(c_a), veh/h	667	1153	636				0	688	561	717	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	11.6	11.6				0.0	8.7	8.6	8.6	0.0	0.0
Incr Delay (d2), s/veh	6.4	2.8	5.1				0.0	0.3	0.3	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
%ile BackOfQ(50%),veh/ln	6.3	4.4	5.3				0.0	0.7	0.5	0.7	0.0	0.0
LnGrp Delay(d),s/veh	18.4	14.4	16.7				0.0	9.0	8.9	8.9	0.0	0.0
LnGrp LOS	B	B	B					A	A	A		
Approach Vol, veh/h		1639						131			78	
Approach Delay, s/veh		16.1						9.0			8.9	
Approach LOS		B						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		23.5		24.0		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		19.5		19.0		19.5		
Max Q Clear Time (g_c+I1), s		3.4		13.4		3.3		
Green Ext Time (p_c), s		0.5		4.3		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	37	308	30	63	68	0	0	41	37
Future Volume (veh/h)	0	0	0	37	308	30	63	68	0	0	41	37
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.84	0.89		1.00	1.00		0.86
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1676	1676	1710	1710	1693	0	0	1710	1710
Adj Flow Rate, veh/h				37	308	30	63	68	0	0	41	37
Adj No. of Lanes				1	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	2	2	1	1	0	0	0	0
Cap, veh/h				603	1089	104	396	385	0	0	374	337
Arrive On Green				0.38	0.38	0.38	0.47	0.49	0.00	0.00	0.49	0.49
Sat Flow, veh/h				1597	2883	276	568	787	0	0	764	690
Grp Volume(v), veh/h				37	168	170	131	0	0	0	0	78
Grp Sat Flow(s),veh/h/ln				1597	1593	1567	1355	0	0	0	0	1454
Q Serve(g_s), s				0.7	3.3	3.4	0.0	0.0	0.0	0.0	0.0	1.3
Cycle Q Clear(g_c), s				0.7	3.3	3.4	2.0	0.0	0.0	0.0	0.0	1.3
Prop In Lane				1.00		0.18	0.48		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				603	602	592	751	0	0	0	0	711
V/C Ratio(X)				0.06	0.28	0.29	0.17	0.00	0.00	0.00	0.00	0.11
Avail Cap(c_a), veh/h				603	602	592	751	0	0	0	0	711
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.9	9.7	9.8	6.5	0.0	0.0	0.0	0.0	6.2
Incr Delay (d2), s/veh				0.2	1.2	1.2	0.5	0.0	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.3	1.6	1.7	1.0	0.0	0.0	0.0	0.0	0.6
LnGrp Delay(d),s/veh				9.1	10.9	11.0	7.0	0.0	0.0	0.0	0.0	6.5
LnGrp LOS				A	B	B	A					A
Approach Vol, veh/h					375			131			78	
Approach Delay, s/veh					10.8			7.0			6.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		20.0		25.0		
Change Period (Y+Rc), s		3.0		3.0		3.0		
Max Green Setting (Gmax), s		22.0		17.0		22.0		
Max Q Clear Time (g_c+I1), s		4.0		5.4		3.3		
Green Ext Time (p_c), s		0.7		1.7		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	149	29	12	37	69	6	45	8	46	48	41
Future Vol, veh/h	24	149	29	12	37	69	6	45	8	46	48	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
Heavy Vehicles, %	1	1	1	7	7	7	2	2	2	6	6	6
Mvmt Flow	24	149	29	12	37	69	6	45	8	46	48	41
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9	8.2	8.3	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	12%	10%	66%	0%
Vol Thru, %	79%	74%	74%	31%	34%	37%
Vol Right, %	0%	26%	14%	58%	0%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	31	202	118	70	65
LT Vol	6	0	24	12	46	0
Through Vol	23	23	149	37	24	24
RT Vol	0	8	29	69	0	41
Lane Flow Rate	28	30	202	118	70	65
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.044	0.044	0.252	0.145	0.111	0.089
Departure Headway (Hd)	5.521	5.23	4.486	4.418	5.726	4.95
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	647	683	800	811	625	722
Service Time	3.269	2.978	2.514	2.451	3.47	2.693
HCM Lane V/C Ratio	0.043	0.044	0.253	0.145	0.112	0.09
HCM Control Delay	8.5	8.2	9	8.2	9.2	8.2
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	1	0.5	0.4	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	191	29	10	94	103	21	181	22	37	134	50
Future Volume (veh/h)	131	191	29	10	94	103	21	181	22	37	134	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.96	0.92		0.87	0.92		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1900	1845	1900	1900	1759	1900	1900	1776	1900
Adj Flow Rate, veh/h	131	191	29	10	94	103	21	181	22	37	134	50
Adj No. of Lanes	1	1	0	0	1	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	3	3	3	8	8	8	7	7	7
Cap, veh/h	580	663	101	62	340	348	150	1174	140	245	817	299
Arrive On Green	0.43	0.43	0.43	0.44	0.43	0.43	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1147	1554	236	28	796	816	206	2590	308	400	1803	660
Grp Volume(v), veh/h	131	0	220	207	0	0	118	0	106	117	0	104
Grp Sat Flow(s),veh/h/ln	1147	0	1790	1639	0	0	1615	0	1490	1485	0	1378
Q Serve(g_s), s	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	3.4
Cycle Q Clear(g_c), s	5.9	0.0	6.0	6.1	0.0	0.0	2.9	0.0	3.2	2.9	0.0	3.4
Prop In Lane	1.00		0.13	0.05		0.50	0.18		0.21	0.32		0.48
Lane Grp Cap(c), veh/h	580	0	764	772	0	0	789	0	675	736	0	625
V/C Ratio(X)	0.23	0.00	0.29	0.27	0.00	0.00	0.15	0.00	0.16	0.16	0.00	0.17
Avail Cap(c_a), veh/h	580	0	764	772	0	0	789	0	675	736	0	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	14.1	14.1	0.0	0.0	12.0	0.0	12.1	12.0	0.0	12.1
Incr Delay (d2), s/veh	0.9	0.0	1.0	0.9	0.0	0.0	0.4	0.0	0.5	0.5	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(50%),veh/ln	1.9	0.0	3.1	2.9	0.0	0.0	1.5	0.0	1.4	1.5	0.0	1.4
LnGrp Delay(d),s/veh	14.9	0.0	15.0	14.9	0.0	0.0	12.4	0.0	12.6	12.5	0.0	12.7
LnGrp LOS	B		B	B			B		B	B		B
Approach Vol, veh/h		351			207			224			221	
Approach Delay, s/veh		15.0			14.9			12.5			12.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.0		37.0		38.0		37.0
Change Period (Y+Rc), s		4.0		5.0		4.0		5.0
Max Green Setting (Gmax), s		34.0		32.0		34.0		32.0
Max Q Clear Time (g_c+I1), s		5.2		8.0		5.4		8.1
Green Ext Time (p_c), s		1.4		1.9		1.5		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Movement	EBL2	EBL	EBT	EBR	NBT	NBR	NBR2	SBL2	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	850	305	34	210	336	55	365	164	245
Future Volume (vph)	3	850	305	34	210	336	55	365	164	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		6.0	6.0	6.0	3.5	3.5		4.5	4.5	4.5
Lane Util. Factor		0.91	0.91	1.00	0.95	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	0.81		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85		1.00	1.00	1.00
Flt Protected		0.95	0.97	1.00	1.00	1.00		0.95	0.95	1.00
Satd. Flow (prot)		1550	3170	1495	3209	1160		1620	1620	1705
Flt Permitted		0.95	0.97	1.00	1.00	1.00		0.95	0.95	1.00
Satd. Flow (perm)		1550	3170	1495	3209	1160		1620	1620	1705
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	850	305	34	210	336	55	365	164	245
RTOR Reduction (vph)	0	0	0	20	0	61	0	0	0	0
Lane Group Flow (vph)	0	428	730	14	210	330	0	365	164	245
Confl. Peds. (#/hr)				4		70	80	70	80	
Confl. Bikes (#/hr)						3				
Heavy Vehicles (%)	6%	6%	6%	6%	5%	5%	5%	4%	4%	4%
Turn Type	Perm	Split	NA	Perm	NA	Perm		Prot	Prot	NA
Protected Phases		4	4		2			1	1	6
Permitted Phases	4			4		2				
Actuated Green, G (s)		42.0	42.0	42.0	23.5	23.5		25.5	25.5	52.5
Effective Green, g (s)		42.0	42.0	42.0	23.5	23.5		25.5	25.5	52.5
Actuated g/C Ratio		0.40	0.40	0.40	0.22	0.22		0.24	0.24	0.50
Clearance Time (s)		6.0	6.0	6.0	3.5	3.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		620	1268	598	718	259		393	393	852
v/s Ratio Prot			0.23		0.07			c0.23	0.10	0.14
v/s Ratio Perm		0.28		0.01		c0.28				
v/c Ratio		0.69	0.58	0.02	0.29	1.28		0.93	0.42	0.29
Uniform Delay, d1		26.1	24.6	19.1	33.8	40.8		38.9	33.5	15.3
Progression Factor		1.00	1.00	1.00	1.00	1.00		0.74	0.70	0.52
Incremental Delay, d2		6.2	1.9	0.1	1.0	150.6		29.2	3.0	0.8
Delay (s)		32.3	26.5	19.1	34.9	191.4		58.1	26.4	8.7
Level of Service		C	C	B	C	F		E	C	A
Approach Delay (s)			28.4		136.7					35.7
Approach LOS			C		F					D

Intersection Summary			
HCM 2000 Control Delay	55.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

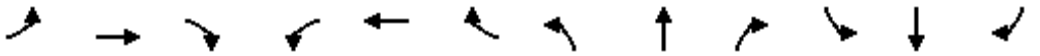


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	237	104	498	22	191	0	0	524	23
Future Volume (veh/h)	0	0	0	237	104	498	22	191	0	0	524	23
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.87
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1676	1676	1710	1598	1598	0	0	1629	1710
Adj Flow Rate, veh/h				237	104	0	22	191	0	0	524	23
Adj No. of Lanes				1	2	0	1	2	0	0	3	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	2	2	7	7	0	0	5	5
Cap, veh/h				684	1365	0	457	1995	0	0	1363	59
Arrive On Green				0.43	0.43	0.00	0.30	0.66	0.00	0.00	0.10	0.10
Sat Flow, veh/h				1597	3269	0	1522	3116	0	0	4484	188
Grp Volume(v), veh/h				237	104	0	22	191	0	0	356	191
Grp Sat Flow(s),veh/h/ln				1597	1593	0	1522	1518	0	0	1482	1562
Q Serve(g_s), s				10.5	2.0	0.0	1.1	2.4	0.0	0.0	11.8	12.0
Cycle Q Clear(g_c), s				10.5	2.0	0.0	1.1	2.4	0.0	0.0	11.8	12.0
Prop In Lane				1.00		0.00	1.00		0.00	0.00		0.12
Lane Grp Cap(c), veh/h				684	1365	0	457	1995	0	0	932	491
V/C Ratio(X)				0.35	0.08	0.00	0.05	0.10	0.00	0.00	0.38	0.39
Avail Cap(c_a), veh/h				684	1365	0	457	1995	0	0	932	491
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00	0.97	0.97	0.00	0.00	0.68	0.68
Uniform Delay (d), s/veh				20.1	17.7	0.0	26.1	6.6	0.0	0.0	37.5	37.6
Incr Delay (d2), s/veh				1.4	0.1	0.0	0.2	0.1	0.0	0.0	0.8	1.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	0.9	0.0	0.5	1.0	0.0	0.0	4.9	5.4
LnGrp Delay(d),s/veh				21.5	17.8	0.0	26.3	6.7	0.0	0.0	38.4	39.2
LnGrp LOS				C	B		C	A			D	D
Approach Vol, veh/h					341			213			547	
Approach Delay, s/veh					20.4			8.7			38.6	
Approach LOS					C			A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		73.5			36.5	37.0		49.0
Change Period (Y+Rc), s		4.0			4.0	* 4		4.0
Max Green Setting (Gmax), s		52.0			15.5	* 33		45.0
Max Q Clear Time (g_c+I1), s		4.4			3.1	14.0		12.5
Green Ext Time (p_c), s		0.9			0.0	2.4		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	1438	79	0	0	0	0	341	338	183	471	0
Future Volume (vph)	70	1438	79	0	0	0	0	341	338	183	471	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		4.5						5.0	5.0		5.0	
Lane Util. Factor		0.86						0.91	0.91		0.95	
Frpb, ped/bikes		1.00						0.95	0.82		1.00	
Flpb, ped/bikes		1.00						1.00	1.00		0.98	
Frt		0.99						0.96	0.85		1.00	
Flt Protected		1.00						1.00	1.00		0.99	
Satd. Flow (prot)		5449						2546	972		2732	
Flt Permitted		1.00						1.00	1.00		0.67	
Satd. Flow (perm)		5449						2546	972		1862	
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)	70	1438	79	0	0	0	0	341	338	183	471	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	26	36	0	0	0
Lane Group Flow (vph)	0	1579	0	0	0	0	0	443	174	0	654	0
Confl. Peds. (#/hr)	26		22	22		26	121		103	103		121
Confl. Bikes (#/hr)			2						6			8
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	7%	7%	7%
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Actuated Green, G (s)		41.5						54.0	54.0		54.0	
Effective Green, g (s)		41.5						54.0	54.0		54.0	
Actuated g/C Ratio		0.40						0.51	0.51		0.51	
Clearance Time (s)		4.5						5.0	5.0		5.0	
Vehicle Extension (s)		2.0						2.0	2.0		2.0	
Lane Grp Cap (vph)		2153						1309	499		957	
v/s Ratio Prot								0.17				
v/s Ratio Perm		0.29							0.18		c0.35	
v/c Ratio		0.73						0.34	0.35		0.68	
Uniform Delay, d1		27.0						15.0	15.1		19.1	
Progression Factor		1.00						1.31	1.46		1.00	
Incremental Delay, d2		1.1						0.7	1.8		1.6	
Delay (s)		28.2						20.3	23.9		20.7	
Level of Service		C						C	C		C	
Approach Delay (s)		28.2			0.0			21.4			20.7	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	94	284	111	34	377	0	0	565	60
Future Volume (veh/h)	0	0	0	94	284	111	34	377	0	0	565	60
Number				3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.90	0.96		1.00	1.00		0.83
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1644	1644	1710	1710	1583	0	0	1583	1710
Adj Flow Rate, veh/h				94	284	111	34	377	0	0	565	60
Adj No. of Lanes				1	3	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				4	4	4	8	8	0	0	8	8
Cap, veh/h				379	770	269	160	1595	0	0	1672	177
Arrive On Green				0.24	0.24	0.24	0.64	0.62	0.00	0.00	0.62	0.62
Sat Flow, veh/h				1566	3180	1113	160	2635	0	0	2767	284
Grp Volume(v), veh/h				94	265	130	210	201	0	0	315	310
Grp Sat Flow(s),veh/h/ln				1566	1496	1300	1354	1369	0	0	1504	1467
Q Serve(g_s), s				3.4	5.2	5.9	0.0	4.5	0.0	0.0	7.0	7.1
Cycle Q Clear(g_c), s				3.4	5.2	5.9	4.0	4.5	0.0	0.0	7.0	7.1
Prop In Lane				1.00		0.86	0.16		0.00	0.00		0.19
Lane Grp Cap(c), veh/h				379	724	315	922	852	0	0	936	913
V/C Ratio(X)				0.25	0.37	0.41	0.23	0.24	0.00	0.00	0.34	0.34
Avail Cap(c_a), veh/h				570	1090	474	922	852	0	0	936	913
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.98	0.98	0.98	0.94	0.94	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.4	22.1	22.3	5.7	5.9	0.0	0.0	6.3	6.3
Incr Delay (d2), s/veh				0.1	0.1	0.3	0.5	0.6	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	2.1	2.1	1.8	1.8	0.0	0.0	3.1	3.1
LnGrp Delay(d),s/veh				21.5	22.2	22.7	6.3	6.5	0.0	0.0	7.3	7.3
LnGrp LOS				C	C	C	A	A			A	A
Approach Vol, veh/h					489			411			625	
Approach Delay, s/veh					22.2			6.4			7.3	
Approach LOS					C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		48.6				48.6		21.4
Change Period (Y+Rc), s		5.0				5.0		4.5
Max Green Setting (Gmax), s		35.0				35.0		25.5
Max Q Clear Time (g_c+I1), s		9.1				6.5		7.9
Green Ext Time (p_c), s		2.9				1.9		1.8

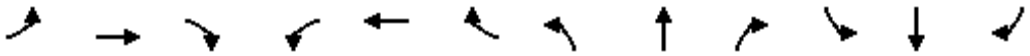
Intersection Summary		
HCM 2010 Ctrl Delay		11.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1810	9	0	0	0	0	39	36	0	0	0
Future Volume (veh/h)	117	1810	9	0	0	0	0	39	36	0	0	0
Number	7	4	14				5	2	12			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.90				1.00		0.93			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1660	1710				0	1693	1710			
Adj Flow Rate, veh/h	117	1810	9				0	39	36			
Adj No. of Lanes	0	4	0				0	2	0			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	3	3	3				0	1	1			
Cap, veh/h	228	3045	15				0	502	388			
Arrive On Green	0.57	0.57	0.57				0.00	0.30	0.30			
Sat Flow, veh/h	273	5373	26				0	1757	1292			
Grp Volume(v), veh/h	543	883	510				0	37	38			
Grp Sat Flow(s),veh/h/ln	1571	1299	1503				0	1608	1356			
Q Serve(g_s), s	7.1	13.4	13.4				0.0	1.0	1.2			
Cycle Q Clear(g_c), s	13.3	13.4	13.4				0.0	1.0	1.2			
Prop In Lane	0.22		0.02				0.00		0.95			
Lane Grp Cap(c), veh/h	963	1473	852				0	483	407			
V/C Ratio(X)	0.56	0.60	0.60				0.00	0.08	0.09			
Avail Cap(c_a), veh/h	963	1473	852				0	483	407			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	8.4	8.5	8.5				0.0	15.0	15.1			
Incr Delay (d2), s/veh	2.4	1.8	3.1				0.0	0.3	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.4	5.0	6.1				0.0	0.5	0.5			
LnGrp Delay(d),s/veh	10.8	10.3	11.6				0.0	15.4	15.6			
LnGrp LOS	B	B	B					B	B			
Approach Vol, veh/h		1936						75				
Approach Delay, s/veh		10.8						15.5				
Approach LOS		B						B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		22.0		38.0				
Change Period (Y+Rc), s		4.0		4.0				
Max Green Setting (Gmax), s		18.0		34.0				
Max Q Clear Time (g_c+I1), s		3.2		15.4				
Green Ext Time (p_c), s		0.2		9.8				

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	431	192	50	121	0	0	0	0
Future Volume (vph)	0	0	0	0	431	192	50	121	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.86			0.86				
Frpb, ped/bikes					0.98			1.00				
Flpb, ped/bikes					1.00			0.96				
Frt					0.95			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					5327			5040				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					5327			5040				
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	0	0	0	431	192	50	121	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	89	0	0	52	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	534	0	0	119	0	0	0	0
Confl. Peds. (#/hr)	90		88	88		90	67		191	191		67
Confl. Bikes (#/hr)						7			2			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type					NA		Perm	NA				
Protected Phases					2			1				
Permitted Phases							1					
Actuated Green, G (s)					42.0			13.0				
Effective Green, g (s)					42.0			13.0				
Actuated g/C Ratio					0.47			0.14				
Clearance Time (s)					4.0			4.0				
Lane Grp Cap (vph)					2485			728				
v/s Ratio Prot					c0.10							
v/s Ratio Perm								0.02				
v/c Ratio					0.21			0.16				
Uniform Delay, d1					14.2			33.7				
Progression Factor					0.82			1.00				
Incremental Delay, d2					0.2			0.5				
Delay (s)					11.9			34.2				
Level of Service					B			C				
Approach Delay (s)		0.0			11.9			34.2			0.0	
Approach LOS		A			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

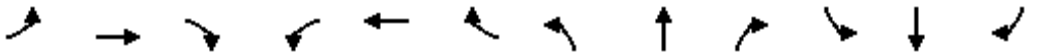


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	815	63	0	0	0	0	0	0	150	912	0
Future Volume (veh/h)	0	815	63	0	0	0	0	0	0	150	912	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1660	1660							1710	1693	0
Adj Flow Rate, veh/h	0	815	63							150	912	0
Adj No. of Lanes	0	3	1							0	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	3	3							1	1	0
Cap, veh/h	0	1992	564							309	1535	0
Arrive On Green	0.00	0.40	0.40							0.14	0.13	0.00
Sat Flow, veh/h	0	4981	1411							497	3977	0
Grp Volume(v), veh/h	0	815	63							393	669	0
Grp Sat Flow(s),veh/h/ln	0	1660	1411							1531	1402	0
Q Serve(g_s), s	0.0	5.3	1.3							8.3	10.1	0.0
Cycle Q Clear(g_c), s	0.0	5.3	1.3							10.8	10.1	0.0
Prop In Lane	0.00		1.00							0.38		0.00
Lane Grp Cap(c), veh/h	0	1992	564							740	1122	0
V/C Ratio(X)	0.00	0.41	0.11							0.53	0.60	0.00
Avail Cap(c_a), veh/h	0	1992	564							740	1122	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	9.7	8.5							16.3	16.1	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.4							2.7	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	0.6							5.1	4.3	0.0
LnGrp Delay(d),s/veh	0.0	10.3	8.9							19.0	18.5	0.0
LnGrp LOS		B	A							B	B	
Approach Vol, veh/h		878									1062	
Approach Delay, s/veh		10.2									18.6	
Approach LOS		B									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				22.5		22.5		
Change Period (Y+Rc), s				4.5		4.5		
Max Green Setting (Gmax), s				18.0		18.0		
Max Q Clear Time (g_c+I1), s				7.3		12.8		
Green Ext Time (p_c), s				4.5		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	347	398	0	0	0	0	0	698	225
Future Volume (vph)	0	0	0	347	398	0	0	0	0	0	698	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.86	0.86						0.86	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.87
Flpb, ped/bikes				0.79	0.94						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1072	3959						4041	1009
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1072	3959						4041	1009
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	0	0	347	398	0	0	0	0	0	698	225
RTOR Reduction (vph)	0	0	0	128	85	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	52	480	0	0	0	0	0	721	202
Confl. Peds. (#/hr)	82		202	202		82	122		193	193		122
Confl. Bikes (#/hr)						9						5
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Actuated Green, G (s)				26.0	26.0						29.0	29.0
Effective Green, g (s)				26.0	26.0						29.0	29.0
Actuated g/C Ratio				0.29	0.29						0.32	0.32
Clearance Time (s)				4.0	4.0						4.0	4.0
Lane Grp Cap (vph)				309	1143						1302	325
v/s Ratio Prot											0.18	
v/s Ratio Perm				0.05	0.12							c0.20
v/c Ratio				0.17	0.42						0.55	0.62
Uniform Delay, d1				23.9	25.9						25.2	25.8
Progression Factor				1.00	1.00						1.00	1.00
Incremental Delay, d2				1.2	1.1						1.7	8.7
Delay (s)				25.1	27.0						26.9	34.5
Level of Service				C	C						C	C
Approach Delay (s)		0.0			26.6			0.0			28.5	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	839	0	0	0	0	0	876	1294	0	0	0
Future Volume (veh/h)	126	839	0	0	0	0	0	876	1294	0	0	0
Number	5	2	12				7	4	14			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1644	0				0	1693	1693			
Adj Flow Rate, veh/h	126	839	0				0	876	1294			
Adj No. of Lanes	0	3	0				0	2	2			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0				0	1	1			
Cap, veh/h	217	1086	0				0	1772	1413			
Arrive On Green	0.32	0.29	0.00				0.00	0.52	0.52			
Sat Flow, veh/h	469	3880	0				0	3386	2701			
Grp Volume(v), veh/h	357	608	0				0	876	1294			
Grp Sat Flow(s),veh/h/ln	1492	1362	0				0	1693	1350			
Q Serve(g_s), s	11.0	12.2	0.0				0.0	10.0	26.3			
Cycle Q Clear(g_c), s	12.9	12.2	0.0				0.0	10.0	26.3			
Prop In Lane	0.35		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	554	790	0				0	1772	1413			
V/C Ratio(X)	0.64	0.77	0.00				0.00	0.49	0.92			
Avail Cap(c_a), veh/h	554	790	0				0	1772	1413			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	19.4	19.5	0.0				0.0	9.2	13.1			
Incr Delay (d2), s/veh	5.7	7.1	0.0				0.0	1.0	10.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.0	5.3	0.0				0.0	4.9	11.6			
LnGrp Delay(d),s/veh	25.1	26.6	0.0				0.0	10.2	23.8			
LnGrp LOS	C	C						B	C			
Approach Vol, veh/h		965						2170				
Approach Delay, s/veh		26.0						18.3				
Approach LOS		C						B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		23.0		37.0				
Change Period (Y+Rc), s		5.6		5.6				
Max Green Setting (Gmax), s		17.4		31.4				
Max Q Clear Time (g_c+I1), s		14.9		28.3				
Green Ext Time (p_c), s		0.6		1.1				

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	532	131	213	790	0	0	0	0
Future Volume (veh/h)	0	0	0	0	532	131	213	790	0	0	0	0
Number				5	2	12	7	4	14			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.89	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1676	1710	1676	1676	0			
Adj Flow Rate, veh/h				0	532	131	213	790	0			
Adj No. of Lanes				0	3	0	1	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1712	404	759	2012	0			
Arrive On Green				0.00	0.47	0.47	0.13	0.13	0.00			
Sat Flow, veh/h				0	3754	851	1597	5029	0			
Grp Volume(v), veh/h				0	447	216	213	790	0			
Grp Sat Flow(s),veh/h/ln				0	1526	1403	1597	1676	0			
Q Serve(g_s), s				0.0	5.4	5.7	7.3	8.6	0.0			
Cycle Q Clear(g_c), s				0.0	5.4	5.7	7.3	8.6	0.0			
Prop In Lane				0.00		0.61	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1449	667	759	2012	0			
V/C Ratio(X)				0.00	0.31	0.32	0.28	0.39	0.00			
Avail Cap(c_a), veh/h				0	1449	667	759	2012	0			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.61	0.61	0.00			
Uniform Delay (d), s/veh				0.0	9.7	9.8	18.8	19.4	0.0			
Incr Delay (d2), s/veh				0.0	0.6	1.3	0.6	0.4	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	2.3	2.5	3.3	4.1	0.0			
LnGrp Delay(d),s/veh				0.0	10.2	11.1	19.3	19.7	0.0			
LnGrp LOS					B	B	B	B				
Approach Vol, veh/h					663			1003				
Approach Delay, s/veh					10.5			19.6				
Approach LOS					B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		32.5		27.5				
Change Period (Y+Rc), s		4.0		3.5				
Max Green Setting (Gmax), s		28.5		24.0				
Max Q Clear Time (g_c+I1), s		7.7		10.6				
Green Ext Time (p_c), s		1.1		1.2				

Intersection Summary		
HCM 2010 Ctrl Delay		16.0
HCM 2010 LOS		B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	95	86	296	200	25	69	139	839	0	275	93
Future Volume (veh/h)	17	95	86	296	200	25	69	139	839	0	275	93
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1900	1652	1652	1900	1759	1759	1759	0	1863	1900
Adj Flow Rate, veh/h	17	95	52	296	200	21	69	139	434	0	275	56
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	7	7	7	15	15	15	8	8	8	0	2	2
Cap, veh/h	362	366	200	375	375	39	110	542	656	0	546	110
Arrive On Green	0.21	0.34	0.34	0.12	0.26	0.26	0.07	0.31	0.31	0.00	0.19	0.19
Sat Flow, veh/h	1691	1078	590	3053	1467	154	1675	1759	1494	0	3032	590
Grp Volume(v), veh/h	17	0	147	296	0	221	69	139	434	0	164	167
Grp Sat Flow(s),veh/h/ln	1691	0	1668	1526	0	1621	1675	1759	1494	0	1770	1759
Q Serve(g_s), s	0.5	0.0	4.2	6.2	0.0	7.7	2.6	3.9	15.0	0.0	5.4	5.6
Cycle Q Clear(g_c), s	0.5	0.0	4.2	6.2	0.0	7.7	2.6	3.9	15.0	0.0	5.4	5.6
Prop In Lane	1.00		0.35	1.00		0.10	1.00		1.00	0.00		0.34
Lane Grp Cap(c), veh/h	362	0	566	375	0	414	110	542	656	0	329	327
V/C Ratio(X)	0.05	0.00	0.26	0.79	0.00	0.53	0.63	0.26	0.66	0.00	0.50	0.51
Avail Cap(c_a), veh/h	363	0	935	552	0	866	162	986	1033	0	732	727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	15.6	27.8	0.0	21.0	29.7	17.0	14.5	0.0	23.8	23.9
Incr Delay (d2), s/veh	0.0	0.0	0.2	4.7	0.0	0.8	4.3	0.4	1.6	0.0	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.9	2.8	0.0	3.5	1.3	1.9	6.4	0.0	2.7	2.7
LnGrp Delay(d),s/veh	20.4	0.0	15.8	32.5	0.0	21.8	34.0	17.3	16.1	0.0	24.3	24.4
LnGrp LOS	C		B	C		C	C	B	B		C	C
Approach Vol, veh/h		164			517			642			331	
Approach Delay, s/veh		16.3			27.9			18.3			24.3	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	20.9	8.0	17.7	13.2	26.4		25.7
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.3	* 27	* 12	* 37		36.6
Max Q Clear Time (g_c+I1), s	2.5	9.7	4.6	7.6	8.2	6.2		5.9
Green Ext Time (p_c), s	0.0	1.1	0.0	1.3	0.4	0.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	284	24	326	443	36	17	35	114	23	40	18
Future Volume (veh/h)	9	284	24	326	443	36	17	35	114	23	40	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.99		0.94	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1863	1863	1900	1900	1810	1810	1900	1743	1900
Adj Flow Rate, veh/h	9	284	24	326	443	36	17	35	114	23	40	18
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	2	2	2	5	5	5	9	9	9
Cap, veh/h	449	1432	120	500	1517	123	267	526	703	217	362	152
Arrive On Green	0.46	0.46	0.46	0.92	0.92	0.92	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	847	3113	261	1055	3299	267	477	1143	1528	371	788	331
Grp Volume(v), veh/h	9	151	157	326	237	242	52	0	114	81	0	0
Grp Sat Flow(s),veh/h/ln	847	1671	1703	1055	1770	1796	1620	0	1528	1490	0	0
Q Serve(g_s), s	0.6	5.4	5.5	15.3	1.5	1.5	0.0	0.0	4.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	5.4	5.5	20.8	1.5	1.5	1.6	0.0	4.4	2.7	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.15	0.33		1.00	0.28		0.22
Lane Grp Cap(c), veh/h	449	769	783	500	814	826	793	0	703	732	0	0
V/C Ratio(X)	0.02	0.20	0.20	0.65	0.29	0.29	0.07	0.00	0.16	0.11	0.00	0.00
Avail Cap(c_a), veh/h	449	769	783	500	814	826	793	0	703	732	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	16.0	16.1	4.3	2.2	2.2	15.0	0.0	15.8	15.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.6	6.5	0.9	0.9	0.2	0.0	0.5	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(50%),veh/ln	0.2	2.6	2.7	5.1	0.9	0.9	0.8	0.0	1.9	1.3	0.0	0.0
LnGrp Delay(d),s/veh	15.6	16.6	16.6	10.8	3.1	3.1	15.2	0.0	16.3	15.6	0.0	0.0
LnGrp LOS	B	B	B	B	A	A	B		B	B		
Approach Vol, veh/h		317			805			166			81	
Approach Delay, s/veh		16.6			6.2			15.9			15.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		50.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		46.0		46.0		46.0		46.0
Max Q Clear Time (g_c+I1), s		6.4		7.5		4.7		22.8
Green Ext Time (p_c), s		0.7		2.0		0.5		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	69	8	143	49	78	0	207	57	79	149	21
Future Volume (veh/h)	22	69	8	143	49	78	0	207	57	79	149	21
Number	3	8	18	7	4	14	1	6	16	5	2	12
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		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1545	1900	1900	1180	1900	0	1033	1900	1329	1329	1900
Adj Flow Rate, veh/h	22	69	8	143	49	78	0	207	57	79	149	21
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	23	23	23	61	61	61	0	84	84	43	43	43
Cap, veh/h	144	360	38	243	74	89	0	282	76	152	952	132
Arrive On Green	0.34	0.33	0.34	0.34	0.33	0.34	0.00	0.18	0.20	0.12	0.43	0.45
Sat Flow, veh/h	205	1100	115	448	225	273	0	1579	410	1265	2226	309
Grp Volume(v), veh/h	99	0	0	270	0	0	0	131	133	79	83	87
Grp Sat Flow(s),veh/h/ln	1420	0	0	947	0	0	0	981	957	1265	1262	1273
Q Serve(g_s), s	0.0	0.0	0.0	12.1	0.0	0.0	0.0	7.2	7.5	3.3	2.3	2.4
Cycle Q Clear(g_c), s	2.6	0.0	0.0	14.7	0.0	0.0	0.0	7.2	7.5	3.3	2.3	2.4
Prop In Lane	0.22		0.08	0.53		0.29	0.00		0.43	1.00		0.24
Lane Grp Cap(c), veh/h	566	0	0	423	0	0	0	181	176	152	540	544
V/C Ratio(X)	0.17	0.00	0.00	0.64	0.00	0.00	0.00	0.72	0.75	0.52	0.15	0.16
Avail Cap(c_a), veh/h	913	0	0	622	0	0	0	516	504	222	997	1005
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	0.0	17.3	0.0	0.0	0.0	21.9	21.8	23.5	10.0	9.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.6	0.0	0.0	0.0	2.1	2.5	1.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	3.8	0.0	0.0	0.0	2.0	2.1	1.2	0.8	0.8
LnGrp Delay(d),s/veh	13.7	0.0	0.0	17.9	0.0	0.0	0.0	23.9	24.2	24.5	10.0	10.0
LnGrp LOS	B			B				C	C	C	B	A
Approach Vol, veh/h		99			270			264			249	
Approach Delay, s/veh		13.7			17.9			24.1			14.6	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		31.4		25.6	13.8	17.5		25.6
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		46.0		32.0	11.0	31.0		34.0
Max Q Clear Time (g_c+I1), s		4.4		16.7	5.3	9.5		4.6
Green Ext Time (p_c), s		0.7		1.1	0.0	1.1		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		18.4
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	785	114	93	354	54	104	21	182	102	51	71
Future Volume (veh/h)	14	785	114	93	354	54	104	21	182	102	51	71
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1759	1610	1610	1900	1080	1080	1080	1743	1743	1743
Adj Flow Rate, veh/h	14	785	114	93	354	54	104	21	182	102	51	71
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	18	18	18	76	76	76	9	9	9
Cap, veh/h	77	1033	474	115	1251	189	157	165	140	247	259	216
Arrive On Green	0.31	0.32	0.32	0.07	0.47	0.47	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	19	3243	1488	1533	2665	403	1028	1080	916	1660	1743	1452
Grp Volume(v), veh/h	427	372	114	93	202	206	104	21	182	102	51	71
Grp Sat Flow(s),veh/h/ln	1742	1521	1488	1533	1530	1538	1028	1080	916	1660	1743	1452
Q Serve(g_s), s	1.0	11.6	3.0	3.1	4.2	4.3	5.0	0.9	8.0	2.9	1.3	2.3
Cycle Q Clear(g_c), s	11.6	11.6	3.0	3.1	4.2	4.3	5.0	0.9	8.0	2.9	1.3	2.3
Prop In Lane	0.03		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	609	484	474	115	718	722	157	165	140	247	259	216
V/C Ratio(X)	0.70	0.77	0.24	0.81	0.28	0.29	0.66	0.13	1.30	0.41	0.20	0.33
Avail Cap(c_a), veh/h	1042	870	851	672	729	733	451	473	402	728	764	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	16.1	13.2	23.9	8.5	8.5	20.9	19.2	22.2	20.2	19.6	20.0
Incr Delay (d2), s/veh	0.6	1.0	0.1	9.7	0.2	0.2	5.1	0.4	146.9	1.1	0.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	5.0	1.2	1.6	1.8	1.9	1.6	0.3	7.7	1.4	0.7	1.0
LnGrp Delay(d),s/veh	16.7	17.1	13.3	33.6	8.7	8.7	26.0	19.6	169.1	21.3	19.9	20.9
LnGrp LOS	B	B	B	C	A	A	C	B	F	C	B	C
Approach Vol, veh/h		913			501			307			224	
Approach Delay, s/veh		16.4			13.4			110.4			20.9	
Approach LOS		B			B			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		28.6		12.0	7.9	20.7		11.8
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		25.0		23.0	23.0	30.0		23.0
Max Q Clear Time (g_c+I1), s		6.3		7.0	5.1	13.6		4.9
Green Ext Time (p_c), s		2.5		0.1	0.1	2.9		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		31.0
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	356	38	81	704	47	12	42	31	51	104	90
Future Volume (veh/h)	35	356	38	81	704	47	12	42	31	51	104	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1845	1845	1900	1900	1743	1900
Adj Flow Rate, veh/h	35	356	38	81	704	47	12	42	31	51	104	90
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	9	9	9
Cap, veh/h	362	2022	214	693	1181	980	323	562	368	195	363	303
Arrive On Green	1.00	1.00	1.00	0.64	0.64	0.64	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	693	3159	335	970	1845	1531	1169	2006	1314	517	1296	1083
Grp Volume(v), veh/h	35	194	200	81	704	47	12	36	37	131	0	114
Grp Sat Flow(s),veh/h/ln	693	1736	1758	970	1845	1531	1169	1752	1568	1527	0	1369
Q Serve(g_s), s	1.9	0.0	0.0	3.3	22.2	1.1	0.8	1.5	1.7	3.2	0.0	6.5
Cycle Q Clear(g_c), s	24.1	0.0	0.0	3.3	22.2	1.1	7.3	1.5	1.7	6.3	0.0	6.5
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.84	0.39		0.79
Lane Grp Cap(c), veh/h	362	1111	1125	693	1181	980	323	491	439	477	0	383
V/C Ratio(X)	0.10	0.18	0.18	0.12	0.60	0.05	0.04	0.07	0.08	0.27	0.00	0.30
Avail Cap(c_a), veh/h	362	1111	1125	693	1181	980	323	491	439	477	0	383
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.2	0.0	0.0	7.1	10.5	6.7	31.2	26.5	26.5	28.1	0.0	28.3
Incr Delay (d2), s/veh	0.5	0.3	0.3	0.3	2.2	0.1	0.2	0.3	0.4	1.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.1	0.9	11.9	0.5	0.3	0.8	0.8	3.0	0.0	2.7
LnGrp Delay(d),s/veh	4.7	0.3	0.3	7.4	12.7	6.8	31.4	26.8	26.9	29.5	0.0	30.2
LnGrp LOS	A	A	A	A	B	A	C	C	C	C		C
Approach Vol, veh/h		429			832			85			245	
Approach Delay, s/veh		0.7			11.9			27.5			29.9	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		68.0		32.0		68.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		64.0		28.0		64.0
Max Q Clear Time (g_c+I1), s		9.3		26.1		8.5		24.2
Green Ext Time (p_c), s		0.3		2.9		1.4		6.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	0	0	0	0	0	0	460	0	0	615	251
Future Volume (veh/h)	48	0	0	0	0	0	0	460	0	0	615	251
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1080	0	0				1900	1005	0	0	1105	1900
Adj Flow Rate, veh/h	48	0	0				0	460	0	0	615	251
Adj No. of Lanes	2	0	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	76	0	0				89	89	0	0	72	72
Cap, veh/h	0	0	0				0	1399	0	0	1066	435
Arrive On Green	0.00	0.00	0.00				0.00	0.73	0.00	0.00	0.73	0.73
Sat Flow, veh/h	0	0	0				0	2011	0	0	1511	594
Grp Volume(v), veh/h	0	0	0				0	460	0	0	443	423
Grp Sat Flow(s),veh/h/ln	0	0	0				0	955	0	0	1049	1000
Q Serve(g_s), s	0.0	0.0	0.0				0.0	1.3	0.0	0.0	2.9	2.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0				0.0	1.3	0.0	0.0	2.9	2.9
Prop In Lane	0.00		0.00				0.00		0.00	0.00		0.59
Lane Grp Cap(c), veh/h	0	0	0				0	1399	0	0	769	732
V/C Ratio(X)	0.00	0.00	0.00				0.00	0.33	0.00	0.00	0.58	0.58
Avail Cap(c_a), veh/h	0	0	0				0	3576	0	0	1965	1872
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00				0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0				0.0	0.7	0.0	0.0	0.9	0.9
Incr Delay (d2), s/veh	0.0	0.0	0.0				0.0	0.1	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.0	0.3	0.0	0.0	0.8	0.8
LnGrp Delay(d),s/veh	0.0	0.0	0.0				0.0	0.8	0.0	0.0	1.2	1.2
LnGrp LOS								A			A	A
Approach Vol, veh/h		0						460			866	
Approach Delay, s/veh		0.0						0.8			1.2	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		15.0		0.0		15.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		28.0		24.0		28.0		
Max Q Clear Time (g_c+I1), s		3.3		0.0		4.9		
Green Ext Time (p_c), s		2.4		0.0		4.8		

Intersection Summary	
HCM 2010 Ctrl Delay	1.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	101	36	76	182	15	22	445	50	23	781	120
Future Volume (veh/h)	8	101	36	76	182	15	22	445	50	23	781	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1387	1900	1900	1496	1900	1900	1080	1900	1496	1496	1900
Adj Flow Rate, veh/h	8	101	36	76	182	15	22	445	50	23	781	120
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	37	37	37	27	27	27	76	76	76	27	27	27
Cap, veh/h	113	330	112	212	356	26	120	758	84	368	1076	165
Arrive On Green	0.36	0.35	0.35	0.36	0.35	0.35	0.45	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	25	957	324	249	1032	75	30	1739	192	722	2471	380
Grp Volume(v), veh/h	145	0	0	273	0	0	271	0	246	23	449	452
Grp Sat Flow(s),veh/h/ln	1306	0	0	1356	0	0	1018	0	944	722	1421	1429
Q Serve(g_s), s	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	7.3	0.9	9.5	9.5
Cycle Q Clear(g_c), s	2.9	0.0	0.0	5.6	0.0	0.0	6.8	0.0	7.3	8.2	9.5	9.5
Prop In Lane	0.06		0.25	0.28		0.05	0.08		0.20	1.00		0.27
Lane Grp Cap(c), veh/h	573	0	0	613	0	0	564	0	411	368	619	623
V/C Ratio(X)	0.25	0.00	0.00	0.45	0.00	0.00	0.48	0.00	0.60	0.06	0.73	0.73
Avail Cap(c_a), veh/h	1744	0	0	1802	0	0	1075	0	931	765	1402	1409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	9.5	0.0	0.0	7.7	0.0	7.9	11.0	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.5	0.0	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	2.1	0.0	0.0	2.0	0.0	1.9	0.2	3.7	3.7
LnGrp Delay(d),s/veh	8.9	0.0	0.0	9.7	0.0	0.0	8.0	0.0	8.4	11.0	9.1	9.1
LnGrp LOS	A			A			A		A	B	A	A
Approach Vol, veh/h		145			273			517			924	
Approach Delay, s/veh		8.9			9.7			8.2			9.2	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		19.9		16.6		19.9		16.6
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		46.0		36.0		46.0
Max Q Clear Time (g_c+I1), s		9.3		4.9		11.5		7.6
Green Ext Time (p_c), s		2.7		0.7		4.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	541	153	0	0	0	0	405	81	49	740	0
Future Volume (veh/h)	11	541	153	0	0	0	0	405	81	49	740	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1900				0	1532	1900	1570	1570	0
Adj Flow Rate, veh/h	11	541	153				0	405	81	49	740	0
Adj No. of Lanes	0	3	0				0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	8	0				0	24	24	21	21	0
Cap, veh/h	42	2178	627				0	750	149	210	927	0
Arrive On Green	0.59	0.58	0.58				0.00	0.31	0.31	0.10	0.10	0.00
Sat Flow, veh/h	73	3766	1084				0	2492	479	763	3062	0
Grp Volume(v), veh/h	264	219	221				0	243	243	49	740	0
Grp Sat Flow(s),veh/h/ln	1756	1601	1567				0	1456	1439	763	1492	0
Q Serve(g_s), s	6.7	6.0	6.2				0.0	12.4	12.7	5.6	21.8	0.0
Cycle Q Clear(g_c), s	6.7	6.0	6.2				0.0	12.4	12.7	18.2	21.8	0.0
Prop In Lane	0.04		0.69				0.00		0.33	1.00		0.00
Lane Grp Cap(c), veh/h	1015	926	906				0	452	447	210	927	0
V/C Ratio(X)	0.26	0.24	0.24				0.00	0.54	0.54	0.23	0.80	0.00
Avail Cap(c_a), veh/h	1015	926	906				0	720	711	350	1475	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	9.4	9.3	9.3				0.0	25.7	25.8	42.1	37.6	0.0
Incr Delay (d2), s/veh	0.6	0.6	0.6				0.0	0.4	0.4	0.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.8	2.9				0.0	5.0	5.1	1.2	9.1	0.0
LnGrp Delay(d),s/veh	10.0	9.9	10.0				0.0	26.0	26.2	42.3	38.2	0.0
LnGrp LOS	B	A	A					C	C	D	D	
Approach Vol, veh/h		705						486			789	
Approach Delay, s/veh		10.0						26.1			38.5	
Approach LOS		A						C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		32.5		57.5		32.5		
Change Period (Y+Rc), s		4.5		5.5		4.5		
Max Green Setting (Gmax), s		44.5		35.5		44.5		
Max Q Clear Time (g_c+I1), s		14.7		8.7		23.8		
Green Ext Time (p_c), s		2.2		3.2		4.1		

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Notes



Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	SWR2
Lane Configurations								
Traffic Volume (vph)	270	328	199	110	309	515	125	29
Future Volume (vph)	270	328	199	110	309	515	125	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	10	10	12
Total Lost time (s)		5.0	5.0	4.5	4.5	4.5		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95	0.95		1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00	1.00		0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00	0.97		0.86
Flt Protected		0.98	1.00	0.95	1.00	1.00		1.00
Satd. Flow (prot)		2918	1317	1416	2837	3017		1341
Flt Permitted		0.98	1.00	0.38	1.00	1.00		1.00
Satd. Flow (perm)		2918	1317	573	2837	3017		1341
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	270	328	199	110	309	515	125	29
RTOR Reduction (vph)	0	0	0	0	0	18	0	21
Lane Group Flow (vph)	0	598	199	110	309	622	0	8
Confl. Peds. (#/hr)			1	4			4	1
Confl. Bikes (#/hr)							7	
Heavy Vehicles (%)	21%	21%	21%	23%	23%	8%	8%	21%
Turn Type	Perm	NA	Perm	Perm	NA	NA		Perm
Protected Phases		4			2	6		
Permitted Phases	4		4	2				4
Actuated Green, G (s)		24.7	24.7	55.8	55.8	55.8		24.7
Effective Green, g (s)		24.7	24.7	55.8	55.8	55.8		24.7
Actuated g/C Ratio		0.27	0.27	0.62	0.62	0.62		0.27
Clearance Time (s)		5.0	5.0	4.5	4.5	4.5		5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		800	361	355	1758	1870		368
v/s Ratio Prot					0.11	c0.21		
v/s Ratio Perm		0.20	0.15	0.19				0.01
v/c Ratio		0.75	0.55	0.31	0.18	0.33		0.02
Uniform Delay, d1		29.8	27.9	8.0	7.3	8.2		23.8
Progression Factor		1.00	1.00	1.77	1.45	1.73		1.00
Incremental Delay, d2		3.4	1.0	2.2	0.2	0.4		0.0
Delay (s)		33.2	28.9	16.4	10.8	14.6		23.8
Level of Service		C	C	B	B	B		C
Approach Delay (s)		32.1			12.3	14.6		
Approach LOS		C			B	B		

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	341	45	396	776	28	85	358	65	60	187	112
Future Volume (veh/h)	52	341	45	396	776	28	85	358	65	60	187	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1792	1792	1792	1845	1845	1845	1743	1743	1900	1810	1810	1900
Adj Flow Rate, veh/h	52	341	45	396	776	28	85	358	65	60	187	112
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	6	6	3	3	3	9	9	9	5	5	5
Cap, veh/h	69	847	707	471	1053	891	223	654	118	182	488	275
Arrive On Green	0.04	0.47	0.47	0.09	0.38	0.38	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	1707	1792	1497	3408	1845	1562	1002	2803	504	931	2088	1180
Grp Volume(v), veh/h	52	341	45	396	776	28	85	210	213	60	152	147
Grp Sat Flow(s),veh/h/ln	1707	1792	1497	1704	1845	1562	1002	1656	1651	931	1719	1549
Q Serve(g_s), s	2.7	11.1	1.5	10.3	32.6	1.0	7.5	11.0	11.2	5.7	7.6	8.1
Cycle Q Clear(g_c), s	2.7	11.1	1.5	10.3	32.6	1.0	15.6	11.0	11.2	16.9	7.6	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		0.76
Lane Grp Cap(c), veh/h	69	847	707	471	1053	891	223	387	385	182	401	362
V/C Ratio(X)	0.75	0.40	0.06	0.84	0.74	0.03	0.38	0.54	0.55	0.33	0.38	0.41
Avail Cap(c_a), veh/h	95	847	707	500	1053	891	329	561	560	280	583	525
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	0.99	0.99	0.99	0.50	0.50	0.50	0.96	0.96	0.96	0.99	0.99	0.99
Uniform Delay (d), s/veh	42.7	15.5	12.9	39.9	22.0	12.2	43.0	36.9	37.0	45.2	35.3	35.6
Incr Delay (d2), s/veh	19.6	1.4	0.2	6.2	2.3	0.0	0.4	0.4	0.4	0.4	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	5.8	0.6	5.2	17.2	0.4	2.1	5.1	5.2	1.5	3.6	3.5
LnGrp Delay(d),s/veh	62.3	16.9	13.1	46.0	24.3	12.3	43.4	37.3	37.4	45.5	35.5	35.9
LnGrp LOS	E	B	B	D	C	B	D	D	D	D	D	D
Approach Vol, veh/h		438			1200			508			359	
Approach Delay, s/veh		21.9			31.2			38.4			37.3	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.5	16.9	47.5		25.5	8.1	56.4
Change Period (Y+Rc), s		4.5	4.5	5.0		4.5	4.5	5.0
Max Green Setting (Gmax), s		30.5	13.2	32.3		30.5	5.0	40.5
Max Q Clear Time (g_c+I1), s		17.6	12.3	13.1		18.9	4.7	34.6
Green Ext Time (p_c), s		1.7	0.2	1.1		1.1	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	24	29	25	40	49	40	350	48	42	245	59
Future Volume (veh/h)	69	24	29	25	40	49	40	350	48	42	245	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.98	0.99		0.99	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1881	1900	1776	1776	1900	1863	1863	1900
Adj Flow Rate, veh/h	69	24	29	25	40	49	40	350	48	42	245	59
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	1	1	1	7	7	7	2	2	2
Cap, veh/h	348	121	127	151	239	257	563	1556	212	590	1473	346
Arrive On Green	0.38	0.37	0.38	0.38	0.37	0.38	1.00	1.00	1.00	0.52	0.52	0.53
Sat Flow, veh/h	778	331	346	279	651	701	1014	2980	405	976	2821	663
Grp Volume(v), veh/h	122	0	0	114	0	0	40	197	201	42	151	153
Grp Sat Flow(s),veh/h/ln	1455	0	0	1631	0	0	1014	1687	1699	976	1770	1714
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	1.9	4.0	4.2
Cycle Q Clear(g_c), s	4.2	0.0	0.0	4.0	0.0	0.0	4.5	0.0	0.0	1.9	4.0	4.2
Prop In Lane	0.57		0.24	0.22		0.43	1.00		0.24	1.00		0.39
Lane Grp Cap(c), veh/h	612	0	0	665	0	0	563	881	887	590	924	895
V/C Ratio(X)	0.20	0.00	0.00	0.17	0.00	0.00	0.07	0.22	0.23	0.07	0.16	0.17
Avail Cap(c_a), veh/h	612	0	0	665	0	0	563	881	887	590	924	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	0.0	0.0	19.1	0.0	0.0	0.2	0.0	0.0	10.7	11.2	11.2
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.6	0.0	0.0	0.2	0.6	0.6	0.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	2.0	0.0	0.0	0.1	0.1	0.1	0.6	2.0	2.1
LnGrp Delay(d),s/veh	19.8	0.0	0.0	19.6	0.0	0.0	0.4	0.6	0.6	11.0	11.6	11.6
LnGrp LOS	B			B			A	A	A	B	B	B
Approach Vol, veh/h		122			114			438			346	
Approach Delay, s/veh		19.8			19.6			0.6			11.5	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		38.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		48.0		34.0		48.0		34.0
Max Q Clear Time (g_c+I1), s		6.5		6.2		6.2		6.0
Green Ext Time (p_c), s		3.0		0.7		2.2		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	120	15	28	38	23	23	297	166	50	297	47
Future Volume (veh/h)	23	120	15	28	38	23	23	297	166	50	297	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.97	0.99		0.99	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1743	1900	1792	1792	1792	1810	1810	1900
Adj Flow Rate, veh/h	23	120	15	28	38	23	23	297	166	50	297	47
Adj No. of Lanes	0	1	0	0	2	0	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	9	9	9	6	6	6	5	5	5
Cap, veh/h	86	315	36	241	291	177	789	2373	1047	699	2064	322
Arrive On Green	0.20	0.22	0.22	0.20	0.22	0.22	0.70	0.70	0.70	1.00	1.00	1.00
Sat Flow, veh/h	124	1450	165	736	1336	813	985	3406	1503	893	2963	462
Grp Volume(v), veh/h	158	0	0	49	0	40	23	297	166	50	171	173
Grp Sat Flow(s),veh/h/ln	1738	0	0	1476	0	1409	985	1703	1503	893	1719	1706
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	1.6	0.5	2.0	2.6	0.2	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	1.6	0.0	1.6	0.5	2.0	2.6	2.2	0.0	0.0
Prop In Lane	0.15		0.09	0.57		0.58	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	412	0	0	381	0	306	789	2373	1047	699	1198	1189
V/C Ratio(X)	0.38	0.00	0.00	0.13	0.00	0.13	0.03	0.13	0.16	0.07	0.14	0.15
Avail Cap(c_a), veh/h	865	0	0	742	0	684	789	2373	1047	699	1198	1189
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.98	0.98	0.98	0.99	0.99	0.99
Uniform Delay (d), s/veh	23.6	0.0	0.0	22.3	0.0	22.1	3.3	3.5	3.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.2	0.0	0.2	0.1	0.1	0.3	0.2	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	0.8	0.0	0.6	0.1	1.0	1.2	0.1	0.1	0.1
LnGrp Delay(d),s/veh	24.2	0.0	0.0	22.4	0.0	22.2	3.4	3.6	3.9	0.2	0.2	0.3
LnGrp LOS	C			C		C	A	A	A	A	A	A
Approach Vol, veh/h		158			89			486			394	
Approach Delay, s/veh		24.2			22.4			3.7			0.3	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		51.8		18.2		51.8		18.2
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		30.0		34.0		30.0		34.0
Max Q Clear Time (g_c+I1), s		4.6		7.3		4.2		3.6
Green Ext Time (p_c), s		2.7		0.9		2.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	0	37	16	54	41	17	322	0	0	332	42
Future Volume (veh/h)	60	0	37	16	54	41	17	322	0	0	332	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.96	0.96		0.96	0.98		1.00	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1792	1792	1900	1900	1759	0	0	1810	1900
Adj Flow Rate, veh/h	60	0	37	16	54	41	17	322	0	0	332	42
Adj No. of Lanes	1	1	0	1	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	6	6	6	8	8	0	0	5	5
Cap, veh/h	511	0	524	532	656	440	107	1781	0	0	1750	219
Arrive On Green	0.34	0.00	0.34	0.34	0.34	0.34	1.00	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1262	0	1533	1263	1918	1285	89	3193	0	0	3148	383
Grp Volume(v), veh/h	60	0	37	16	47	48	180	159	0	0	185	189
Grp Sat Flow(s),veh/h/ln	1262	0	1533	1263	1703	1501	1681	1521	0	0	1719	1722
Q Serve(g_s), s	2.4	0.0	1.1	0.6	1.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	0.0	1.1	0.7	1.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.86	0.09		0.00	0.00		0.22
Lane Grp Cap(c), veh/h	511	0	524	532	583	513	994	870	0	0	984	985
V/C Ratio(X)	0.12	0.00	0.07	0.03	0.08	0.09	0.18	0.18	0.00	0.00	0.19	0.19
Avail Cap(c_a), veh/h	710	0	767	732	851	750	994	870	0	0	984	985
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.99	0.99
Uniform Delay (d), s/veh	16.8	0.0	15.5	15.4	15.6	15.6	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.1	0.1	0.4	0.5	0.0	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	0.2	0.6	0.6	0.1	0.1	0.0	0.0	0.1	0.1
LnGrp Delay(d),s/veh	16.9	0.0	15.6	15.5	15.6	15.7	0.4	0.5	0.0	0.0	0.4	0.4
LnGrp LOS	B		B	B	B	B	A	A			A	A
Approach Vol, veh/h		97			111			339			374	
Approach Delay, s/veh		16.4			15.7			0.4			0.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.1		26.9		43.1		26.9
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		29.0		35.0		29.0		35.0
Max Q Clear Time (g_c+I1), s		3.0		6.7		3.0		4.3
Green Ext Time (p_c), s		2.1		0.4		2.3		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	3.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	354	30	57	304	56	41	267	108	36	280	26
Future Volume (veh/h)	60	354	30	57	304	56	41	267	108	36	280	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.97	0.99		0.98	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1845	1845	1900	1792	1792	1900	1810	1810	1900
Adj Flow Rate, veh/h	60	354	30	57	304	56	41	267	108	36	280	26
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	5	3	3	3	6	6	6	5	5	5
Cap, veh/h	487	1572	675	488	1347	244	489	1087	428	532	1451	134
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.91	0.91	0.91	0.15	0.15	0.15
Sat Flow, veh/h	977	3438	1476	974	2946	535	1019	2377	935	966	3174	292
Grp Volume(v), veh/h	60	354	30	57	179	181	41	189	186	36	151	155
Grp Sat Flow(s),veh/h/ln	977	1719	1476	974	1752	1729	1019	1703	1610	966	1719	1748
Q Serve(g_s), s	2.8	4.4	0.8	2.6	4.3	4.4	0.7	0.9	0.9	2.3	5.4	5.4
Cycle Q Clear(g_c), s	7.2	4.4	0.8	7.0	4.3	4.4	6.2	0.9	0.9	3.2	5.4	5.4
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.58	1.00		0.17
Lane Grp Cap(c), veh/h	487	1572	675	488	801	790	489	778	736	532	786	799
V/C Ratio(X)	0.12	0.23	0.04	0.12	0.22	0.23	0.08	0.24	0.25	0.07	0.19	0.19
Avail Cap(c_a), veh/h	487	1572	675	488	801	790	489	778	736	532	786	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.7	11.5	10.5	13.6	11.5	11.5	2.6	1.7	1.7	17.9	18.4	18.4
Incr Delay (d2), s/veh	0.5	0.3	0.1	0.5	0.6	0.7	0.3	0.7	0.8	0.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.1	0.3	0.8	2.2	2.3	0.3	0.5	0.5	0.6	2.7	2.8
LnGrp Delay(d),s/veh	14.2	11.8	10.7	14.1	12.1	12.2	2.9	2.4	2.5	18.1	19.0	19.0
LnGrp LOS	B	B	B	B	B	B	A	A	A	B	B	B
Approach Vol, veh/h		444			417			416			342	
Approach Delay, s/veh		12.1			12.4			2.5			18.9	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.0		35.0		35.0		35.0
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		32.0		32.0		32.0		32.0
Max Q Clear Time (g_c+I1), s		8.2		9.2		7.4		9.0
Green Ext Time (p_c), s		1.6		1.8		1.3		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	121	20	32	152	53	30	306	29	47	296	25
Future Volume (veh/h)	20	121	20	32	152	53	30	306	29	47	296	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	0.99		0.98	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1845	1900	1827	1827	1900	1900	1827	1900
Adj Flow Rate, veh/h	20	121	20	32	152	53	30	306	29	47	296	25
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	4	4	4	4	4	4
Cap, veh/h	167	923	150	179	773	261	585	1692	159	234	1396	118
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.17	0.17	0.17	0.53	0.53	0.53
Sat Flow, veh/h	289	2585	421	321	2165	730	1028	3200	301	321	2642	223
Grp Volume(v), veh/h	85	0	76	125	0	112	30	165	170	187	0	181
Grp Sat Flow(s),veh/h/ln	1688	0	1607	1679	0	1537	1028	1736	1766	1570	0	1616
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	3.5	1.7	5.7	5.8	0.0	0.0	4.2
Cycle Q Clear(g_c), s	2.1	0.0	2.2	3.3	0.0	3.5	5.9	5.7	5.8	3.8	0.0	4.2
Prop In Lane	0.24		0.26	0.26		0.47	1.00		0.17	0.25		0.14
Lane Grp Cap(c), veh/h	666	0	574	664	0	549	585	917	933	894	0	854
V/C Ratio(X)	0.13	0.00	0.13	0.19	0.00	0.20	0.05	0.18	0.18	0.21	0.00	0.21
Avail Cap(c_a), veh/h	666	0	574	664	0	549	585	917	933	894	0	854
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	15.2	15.5	0.0	15.6	17.8	16.0	16.0	8.7	0.0	8.8
Incr Delay (d2), s/veh	0.4	0.0	0.5	0.6	0.0	0.8	0.2	0.4	0.4	0.5	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(50%),veh/ln	1.2	0.0	1.1	1.8	0.0	1.6	0.5	2.8	2.9	2.0	0.0	2.0
LnGrp Delay(d),s/veh	15.5	0.0	15.7	16.1	0.0	16.4	18.0	16.4	16.4	9.2	0.0	9.3
LnGrp LOS	B		B	B		B	B	B	B	A		A
Approach Vol, veh/h		161			237			365			368	
Approach Delay, s/veh		15.6			16.3			16.5			9.3	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.0		29.0		41.0		29.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		37.0		25.0		37.0		25.0
Max Q Clear Time (g_c+I1), s		7.9		4.2		6.2		5.5
Green Ext Time (p_c), s		1.4		0.5		1.5		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		14.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	324	56	63	737	14	98	208	72	40	223	47
Future Volume (veh/h)	19	324	56	63	737	14	98	208	72	40	223	47
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	0.99		0.96	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1712	1712	1845	1845	1845	1792	1792	1792	1900	1792	1900
Adj Flow Rate, veh/h	19	324	56	63	737	14	98	208	72	40	223	47
Adj No. of Lanes	0	2	1	1	2	1	1	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	11	11	11	3	3	3	6	6	6	6	6	6
Cap, veh/h	98	1447	691	132	2168	937	292	482	393	86	338	67
Arrive On Green	0.51	0.49	0.49	0.08	0.62	0.62	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	97	2935	1400	1757	3505	1515	1049	1792	1462	132	1258	248
Grp Volume(v), veh/h	179	164	56	63	737	14	98	208	72	310	0	0
Grp Sat Flow(s),veh/h/ln	1552	1480	1400	1757	1752	1515	1049	1792	1462	1638	0	0
Q Serve(g_s), s	0.0	5.1	1.7	2.8	8.1	0.3	0.0	7.7	3.0	5.7	0.0	0.0
Cycle Q Clear(g_c), s	4.7	5.1	1.7	2.8	8.1	0.3	12.1	7.7	3.0	13.3	0.0	0.0
Prop In Lane	0.11		1.00	1.00		1.00	1.00		1.00	0.13		0.15
Lane Grp Cap(c), veh/h	835	730	691	132	2168	937	292	482	393	491	0	0
V/C Ratio(X)	0.21	0.22	0.08	0.48	0.34	0.01	0.34	0.43	0.18	0.63	0.00	0.00
Avail Cap(c_a), veh/h	835	730	691	242	2168	937	403	672	548	660	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	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.4	11.6	10.7	35.5	7.4	5.9	25.8	24.2	22.5	26.1	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.7	0.2	2.6	0.4	0.0	0.7	0.6	0.2	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.2	0.7	1.4	4.0	0.1	2.0	3.9	1.2	6.3	0.0	0.0
LnGrp Delay(d),s/veh	12.0	12.3	10.9	38.1	7.8	5.9	26.5	24.8	22.7	27.5	0.0	0.0
LnGrp LOS	B	B	B	D	A	A	C	C	C	C		
Approach Vol, veh/h		399			814			378			310	
Approach Delay, s/veh		12.0			10.1			24.8			27.5	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	10.0	44.5		25.5		54.5		25.5
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s	10.0	26.0		30.0		41.0		30.0
Max Q Clear Time (g_c+I1), s	14.8	7.1		15.3		10.1		14.1
Green Ext Time (p_c), s	0.0	2.2		1.6		5.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	15	37	14	4	8	31	209	14	3	240	22
Future Vol, veh/h	27	15	37	14	4	8	31	209	14	3	240	22
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
Heavy Vehicles, %	1	1	1	4	4	4	5	5	5	7	7	7
Mvmt Flow	27	15	37	14	4	8	31	209	14	3	240	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	8.4	9.7	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	34%	54%	1%
Vol Thru, %	82%	19%	15%	91%
Vol Right, %	6%	47%	31%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	254	79	26	265
LT Vol	31	27	14	3
Through Vol	209	15	4	240
RT Vol	14	37	8	22
Lane Flow Rate	254	79	26	265
Geometry Grp	1	1	1	1
Degree of Util (X)	0.319	0.108	0.037	0.332
Departure Headway (Hd)	4.527	4.907	5.175	4.512
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	795	728	689	798
Service Time	2.557	2.95	3.225	2.54
HCM Lane V/C Ratio	0.319	0.109	0.038	0.332
HCM Control Delay	9.7	8.5	8.4	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.4	0.4	0.1	1.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	25	29	24	51	7	30	196	23	7	209	7
Future Volume (veh/h)	13	25	29	24	51	7	30	196	23	7	209	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.95	0.96		0.93	0.97		0.93	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1863	1900	1827	1827	1827	1759	1759	1759
Adj Flow Rate, veh/h	13	25	29	24	51	7	30	196	23	7	209	7
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	8	8	8
Cap, veh/h	132	239	236	196	389	48	634	992	788	620	955	756
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	205	697	688	379	1136	141	1104	1827	1451	1060	1759	1393
Grp Volume(v), veh/h	67	0	0	82	0	0	30	196	23	7	209	7
Grp Sat Flow(s),veh/h/ln	1590	0	0	1656	0	0	1104	1827	1451	1060	1759	1393
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.8	0.5	0.2	4.3	0.2
Cycle Q Clear(g_c), s	1.9	0.0	0.0	2.2	0.0	0.0	5.3	3.8	0.5	4.1	4.3	0.2
Prop In Lane	0.19		0.43	0.29		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	606	0	0	634	0	0	634	992	788	620	955	756
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.05	0.20	0.03	0.01	0.22	0.01
Avail Cap(c_a), veh/h	606	0	0	634	0	0	634	992	788	620	955	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	0.0	15.8	0.0	0.0	9.7	8.2	7.4	9.2	8.3	7.4
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.1	0.4	0.1	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.2	0.0	0.0	0.3	2.0	0.2	0.1	2.2	0.1
LnGrp Delay(d),s/veh	16.1	0.0	0.0	16.2	0.0	0.0	9.8	8.6	7.5	9.3	8.8	7.4
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		67			82			249			223	
Approach Delay, s/veh		16.1			16.2			8.7			8.8	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		28.0		42.0		28.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		38.0		24.0		38.0		24.0
Max Q Clear Time (g_c+I1), s		7.3		3.9		6.3		4.2
Green Ext Time (p_c), s		1.4		0.3		1.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	548	194	0	400	0	204	0	7	0	0	0
Future Volume (veh/h)	0	548	194	0	400	0	204	0	7	0	0	0
Number	1	6	16	5	2	12	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1810	0	1810	1810	1900			
Adj Flow Rate, veh/h	0	548	194	0	400	0	211	0	0			
Adj No. of Lanes	0	2	0	0	2	0	2	1	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	3	3	0	5	0	5	5	5			
Cap, veh/h	0	1775	626	0	2407	0	633	332	0			
Arrive On Green	0.00	0.70	0.70	0.00	0.70	0.00	0.18	0.00	0.00			
Sat Flow, veh/h	0	2627	894	0	3619	0	3447	1810	0			
Grp Volume(v), veh/h	0	378	364	0	400	0	211	0	0			
Grp Sat Flow(s),veh/h/ln	0	1752	1677	0	1719	0	1723	1810	0			
Q Serve(g_s), s	0.0	7.1	7.1	0.0	3.4	0.0	4.6	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	7.1	7.1	0.0	3.4	0.0	4.6	0.0	0.0			
Prop In Lane	0.00		0.53	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1227	1174	0	2407	0	633	332	0			
V/C Ratio(X)	0.00	0.31	0.31	0.00	0.17	0.00	0.33	0.00	0.00			
Avail Cap(c_a), veh/h	0	1227	1174	0	2407	0	1042	547	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	0.99	0.00	0.00			
Uniform Delay (d), s/veh	0.0	4.9	4.9	0.0	4.4	0.0	30.5	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.7	0.7	0.0	0.1	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			
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.5	0.0	1.7	0.0	2.2	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	5.6	5.6	0.0	4.5	0.0	30.8	0.0	0.0			
LnGrp LOS		A	A		A		C					
Approach Vol, veh/h		742			400			211				
Approach Delay, s/veh		5.6			4.5			30.8				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		66.2				66.2		19.8
Change Period (Y+Rc), s		6.0				6.0		4.0
Max Green Setting (Gmax), s		22.0				22.0		26.0
Max Q Clear Time (g_c+I1), s		5.4				9.1		6.6
Green Ext Time (p_c), s		2.4				3.9		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	163	0	2	134	8	2	1	1	54	0	144
Future Vol, veh/h	10	163	0	2	134	8	2	1	1	54	0	144
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
Heavy Vehicles, %	26	26	26	32	32	32	50	50	50	17	17	17
Mvmt Flow	10	163	0	2	134	8	2	1	1	54	0	144
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	9.5	8.9	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	6%	1%	27%
Vol Thru, %	25%	94%	93%	0%
Vol Right, %	25%	0%	6%	73%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	173	144	198
LT Vol	2	10	2	54
Through Vol	1	163	134	0
RT Vol	1	0	8	144
Lane Flow Rate	4	173	144	198
Geometry Grp	1	1	1	1
Degree of Util (X)	0.006	0.241	0.205	0.254
Departure Headway (Hd)	5.77	5.02	5.114	4.62
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	619	714	701	776
Service Time	3.821	3.059	3.154	2.653
HCM Lane V/C Ratio	0.006	0.242	0.205	0.255
HCM Control Delay	8.9	9.7	9.5	9.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.9	0.8	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	656	11	0	0	0	0	19	10	329	261	0
Future Volume (veh/h)	0	656	11	0	0	0	0	19	10	329	261	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1759	1900				0	1900	1900	1827	1827	0
Adj Flow Rate, veh/h	0	656	11				0	19	10	329	261	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	8	0				0	0	0	4	4	0
Cap, veh/h	0	0	0				0	0	0	370	399	0
Arrive On Green	0.00	0.00	0.00				0.00	0.00	0.00	0.21	0.22	0.00
Sat Flow, veh/h		0					0	-46775	-24618	1740	1827	0
Grp Volume(v), veh/h		0.0					0	0	29	329	261	0
Grp Sat Flow(s),veh/h/ln							0	0	-71393	1740	1827	0
Q Serve(g_s), s							0.0	0.0	0.1	16.5	11.7	0.0
Cycle Q Clear(g_c), s							0.0	0.0	0.1	16.5	11.7	0.0
Prop In Lane							0.00		0.34	1.00		0.00
Lane Grp Cap(c), veh/h							0	0	-79	370	399	0
V/C Ratio(X)							0.00	0.00	-0.37	0.89	0.65	0.00
Avail Cap(c_a), veh/h							0	0	-19831	512	1137	0
HCM Platoon Ratio							1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)							0.00	0.00	1.00	0.93	0.93	0.00
Uniform Delay (d), s/veh							0.0	0.0	0.0	34.4	32.1	0.0
Incr Delay (d2), s/veh							0.0	0.0	0.0	12.6	1.7	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							0.0	0.0	0.0	9.2	6.1	0.0
LnGrp Delay(d),s/veh							0.0	0.0	0.0	47.0	33.8	0.0
LnGrp LOS										D	C	
Approach Vol, veh/h								29			590	
Approach Delay, s/veh								0.0			41.1	
Approach LOS								A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		23.7			23.7	0.0		
Change Period (Y+Rc), s		4.0			4.5	4.0		
Max Green Setting (Gmax), s		56.0			26.5	25.0		
Max Q Clear Time (g_c+I1), s		13.7			18.5	0.0		
Green Ext Time (p_c), s		1.7			0.6	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	6	19	0	1	18	0	0	574	8
Future Volume (veh/h)	0	0	0	6	19	0	1	18	0	0	574	8
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1759	1759	0	1900	1863	0	0	1827	1900
Adj Flow Rate, veh/h				6	19	0	1	18	0	0	574	8
Adj No. of Lanes				1	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				8	8	0	2	2	0	0	4	4
Cap, veh/h				796	1588	0	89	1430	0	0	1533	21
Arrive On Green				0.47	0.47	0.00	0.44	0.44	0.00	0.00	0.44	0.44
Sat Flow, veh/h				1675	3431	0	91	3353	0	0	3595	49
Grp Volume(v), veh/h				6	19	0	10	9	0	0	284	298
Grp Sat Flow(s),veh/h/ln				1675	1671	0	1749	1610	0	0	1736	1817
Q Serve(g_s), s				0.2	0.2	0.0	0.0	0.2	0.0	0.0	8.8	8.8
Cycle Q Clear(g_c), s				0.2	0.2	0.0	0.2	0.2	0.0	0.0	8.8	8.8
Prop In Lane				1.00		0.00	0.10		0.00	0.00		0.03
Lane Grp Cap(c), veh/h				796	1588	0	815	705	0	0	759	795
V/C Ratio(X)				0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.37	0.37
Avail Cap(c_a), veh/h				796	1588	0	815	705	0	0	759	795
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.1	11.1	0.0	12.7	12.7	0.0	0.0	15.1	15.1
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	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
%ile BackOfQ(50%),veh/ln				0.1	0.1	0.0	0.1	0.1	0.0	0.0	4.5	4.7
LnGrp Delay(d),s/veh				11.1	11.1	0.0	12.8	12.8	0.0	0.0	16.5	16.5
LnGrp LOS				B	B		B	B			B	B
Approach Vol, veh/h					25			19			582	
Approach Delay, s/veh					11.1			12.8			16.5	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		38.5				38.5		41.5
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		35.0				35.0		38.0
Max Q Clear Time (g_c+I1), s		0.0				10.8		2.2
Green Ext Time (p_c), s		0.0				3.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	454	20	14	191	0	13	0	5	417	560	1013
Future Volume (veh/h)	0	454	20	14	191	0	13	0	5	417	560	1013
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1792	1900	1759	1759	0	1863	0	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	454	5	14	191	0	13	0	5	417	560	933
Adj No. of Lanes	0	2	0	1	1	0	1	0	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	6	8	8	0	2	0	2	2	2	2
Cap, veh/h	0	577	6	113	294	0	2	0	0	1290	1334	1118
Arrive On Green	0.00	0.06	0.06	0.17	0.17	0.00	0.00	0.00	0.00	0.73	0.72	0.72
Sat Flow, veh/h	0	3539	38	874	1759	0	1774	13		1774	1863	1562
Grp Volume(v), veh/h	0	224	235	14	191	0	13	2777.9		417	560	933
Grp Sat Flow(s),veh/h/ln	0	1703	1785	874	1759	0	1774	F		1774	1863	1562
Q Serve(g_s), s	0.0	11.7	11.7	1.4	9.1	0.0	0.1			7.5	11.0	37.9
Cycle Q Clear(g_c), s	0.0	11.7	11.7	13.1	9.1	0.0	0.1			7.5	11.0	37.9
Prop In Lane	0.00		0.02	1.00		0.00	1.00			1.00		1.00
Lane Grp Cap(c), veh/h	0	285	299	113	294	0	2			1290	1334	1118
V/C Ratio(X)	0.00	0.79	0.79	0.12	0.65	0.00	6.59			0.32	0.42	0.83
Avail Cap(c_a), veh/h	0	388	406	165	401	0	99			1290	1334	1118
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	1.00	1.00	0.00	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	40.9	40.9	42.4	35.0	0.0	45.0			4.4	5.2	9.0
Incr Delay (d2), s/veh	0.0	4.5	4.4	0.2	0.9	0.0	2732.0			0.1	1.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	6.2	0.3	4.5	0.0	2.5			3.6	6.0	18.4
LnGrp Delay(d),s/veh	0.0	45.4	45.3	42.6	35.9	0.0	2777.9			4.4	6.2	16.4
LnGrp LOS		D	D	D	D		F			A	A	B
Approach Vol, veh/h		459			205						1910	
Approach Delay, s/veh		45.4			36.3						10.8	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	
Phs Duration (G+Y+Rc), s		20.6	0.0	69.4		20.6	69.4	
Change Period (Y+Rc), s		4.0	4.5	3.5		4.0	3.5	
Max Green Setting (Gmax), s		22.0	5.0	51.0		22.0	20.6	
Max Q Clear Time (g_c+I1), s		13.7	0.0	13.0		15.1	9.5	
Green Ext Time (p_c), s		1.2	0.0	0.3		0.4	0.5	

Intersection Summary		
HCM 2010 Ctrl Delay		32.8
HCM 2010 LOS		C



Movement	EBT	EBR	EBR2	SBL2	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	234	77	2	752	104	1984	31
Future Volume (vph)	234	77	2	752	104	1984	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12
Total Lost time (s)	4.5			5.0		5.0	
Lane Util. Factor	0.95			1.00		0.91	
Frpb, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.96			1.00		1.00	
Flt Protected	1.00			0.95		1.00	
Satd. Flow (prot)	3156			1770		5061	
Flt Permitted	1.00			0.95		1.00	
Satd. Flow (perm)	3156			1770		5061	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	234	77	2	752	104	1984	31
RTOR Reduction (vph)	1	0	0	83	0	1	0
Lane Group Flow (vph)	312	0	0	669	0	2118	0
Confl. Peds. (#/hr)			3				
Confl. Bikes (#/hr)							2
Heavy Vehicles (%)	6%	6%	0%	2%	2%	2%	2%
Turn Type	NA			Perm	Perm	NA	
Protected Phases	4					6	
Permitted Phases				6	6		
Actuated Green, G (s)	14.2			61.3		61.3	
Effective Green, g (s)	14.2			61.3		61.3	
Actuated g/C Ratio	0.17			0.72		0.72	
Clearance Time (s)	4.5			5.0		5.0	
Vehicle Extension (s)	3.0			3.0		3.0	
Lane Grp Cap (vph)	527			1276		3649	
v/s Ratio Prot	c0.10						
v/s Ratio Perm				0.38		0.42	
v/c Ratio	0.59			0.52		0.58	
Uniform Delay, d1	32.7			5.3		5.7	
Progression Factor	1.00			1.06		0.96	
Incremental Delay, d2	1.8			0.6		0.2	
Delay (s)	34.5			6.2		5.7	
Level of Service	C			A		A	
Approach Delay (s)	34.5					5.8	
Approach LOS	C					A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Traffic Volume (vph)	3	71	123	796	35	2032	30
Future Volume (vph)	3	71	123	796	35	2032	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	0.95	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.96	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.99		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1456	1538	4600	5049		3470	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1456	1538	4600	5049		3470	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	71	123	796	35	2032	30
RTOR Reduction (vph)	3	67	0	6	0	0	0
Lane Group Flow (vph)	0	4	123	825	0	2062	0
Confl. Peds. (#/hr)	34	34			4		4
Confl. Bikes (#/hr)					2		
Heavy Vehicles (%)	0%	9%	9%	2%	2%	1%	1%
Turn Type	Perm	Perm	NA	NA		Prot	
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	5.1	5.1	5.1	16.7		48.2	
Effective Green, g (s)	5.1	5.1	5.1	16.7		48.2	
Actuated g/C Ratio	0.06	0.06	0.06	0.20		0.57	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2	
Lane Grp Cap (vph)	87	92	276	991		1967	
v/s Ratio Prot			c0.03	c0.16		c0.59	
v/s Ratio Perm	0.00	0.00					
v/c Ratio	0.00	0.05	0.45	0.83		1.05	
Uniform Delay, d1	37.6	37.7	38.6	32.8		18.4	
Progression Factor	1.00	0.82	0.51	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.4	5.8		34.3	
Delay (s)	37.6	31.1	19.9	38.6		52.7	
Level of Service	D	C	B	D		D	
Approach Delay (s)			24.0	38.6		52.7	
Approach LOS			C	D		D	

Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	424	74	43	267	0	0	0	0	435	754	299
Future Volume (veh/h)	0	424	74	43	267	0	0	0	0	435	754	299
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	0.98		1.00				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1827	1827	1827	0				1900	1863	1900
Adj Flow Rate, veh/h	0	424	74	43	267	0				435	754	299
Adj No. of Lanes	0	2	1	1	2	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4	4	4	0				0	2	0
Cap, veh/h	0	770	307	192	770	0				768	1442	580
Arrive On Green	0.00	0.07	0.07	0.07	0.07	0.00				0.56	0.54	0.54
Sat Flow, veh/h	0	3563	1384	859	3563	0				1414	2656	1068
Grp Volume(v), veh/h	0	424	74	43	267	0				551	475	462
Grp Sat Flow(s),veh/h/ln	0	1736	1384	859	1736	0				1792	1695	1651
Q Serve(g_s), s	0.0	8.3	3.5	3.4	5.1	0.0				14.0	12.4	12.4
Cycle Q Clear(g_c), s	0.0	8.3	3.5	11.7	5.1	0.0				14.0	12.4	12.4
Prop In Lane	0.00		1.00	1.00		0.00				0.79		0.65
Lane Grp Cap(c), veh/h	0	770	307	192	770	0				973	920	896
V/C Ratio(X)	0.00	0.55	0.24	0.22	0.35	0.00				0.57	0.52	0.52
Avail Cap(c_a), veh/h	0	1091	435	272	1091	0				973	920	896
HCM Platoon Ratio	1.00	0.33	0.33	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.98	0.98	0.99	0.99	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	29.1	26.9	34.7	27.6	0.0				10.3	10.2	10.2
Incr Delay (d2), s/veh	0.0	0.6	0.4	0.6	0.3	0.0				2.4	2.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.0	1.4	0.9	2.5	0.0				7.5	6.3	6.2
LnGrp Delay(d),s/veh	0.0	29.7	27.3	35.3	27.9	0.0				12.6	12.2	12.3
LnGrp LOS		C	C	D	C					B	B	B
Approach Vol, veh/h		498			310						1488	
Approach Delay, s/veh		29.3			28.9						12.4	
Approach LOS		C			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				20.5		43.0		20.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				22.0		38.0		22.0
Max Q Clear Time (g_c+I1), s				10.3		16.0		13.7
Green Ext Time (p_c), s				2.4		10.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	196	105	0	0	0	0	0	0	1099	1852	0
Future Volume (veh/h)	0	196	105	0	0	0	0	0	0	1099	1852	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1900							1881	1881	0
Adj Flow Rate, veh/h	0	196	105							738	2358	0
Adj No. of Lanes	0	2	0							1	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	4	4							1	1	0
Cap, veh/h	0	329	165							1284	3794	0
Arrive On Green	0.00	0.15	0.15							0.22	0.22	0.00
Sat Flow, veh/h	0	2265	1092							1792	5644	0
Grp Volume(v), veh/h	0	154	147							738	2358	0
Grp Sat Flow(s),veh/h/ln	0	1736	1530							1792	1881	0
Q Serve(g_s), s	0.0	7.4	8.1							33.4	33.9	0.0
Cycle Q Clear(g_c), s	0.0	7.4	8.1							33.4	33.9	0.0
Prop In Lane	0.00		0.71							1.00		0.00
Lane Grp Cap(c), veh/h	0	263	232							1284	3794	0
V/C Ratio(X)	0.00	0.59	0.64							0.57	0.62	0.00
Avail Cap(c_a), veh/h	0	386	340							1284	3794	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.72	0.72	0.00
Uniform Delay (d), s/veh	0.0	35.6	35.9							24.5	24.7	0.0
Incr Delay (d2), s/veh	0.0	0.8	1.1							1.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.5							17.0	17.9	0.0
LnGrp Delay(d),s/veh	0.0	36.3	36.9							25.8	25.2	0.0
LnGrp LOS		D	D							C	C	
Approach Vol, veh/h		301									3096	
Approach Delay, s/veh		36.6									25.4	
Approach LOS		D									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				18.1		65.5		
Change Period (Y+Rc), s				4.5		5.0		
Max Green Setting (Gmax), s				20.0		60.5		
Max Q Clear Time (g_c+I1), s				10.1		35.9		
Green Ext Time (p_c), s				0.9		17.5		

Intersection Summary	
HCM 2010 Ctrl Delay	26.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	110	112	0	0	0	0	0	2841	263
Future Volume (veh/h)	0	0	0	110	112	0	0	0	0	0	2841	263
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1810	1810	0				0	1863	1900
Adj Flow Rate, veh/h				110	112	0				0	2841	263
Adj No. of Lanes				1	2	0				0	4	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				5	5	0				0	2	2
Cap, veh/h				363	564	0				0	3639	331
Arrive On Green				0.16	0.16	0.00				0.00	0.61	0.61
Sat Flow, veh/h				1723	3529	0				0	6270	547
Grp Volume(v), veh/h				110	112	0				0	2262	842
Grp Sat Flow(s),veh/h/ln				1723	1719	0				0	1602	1750
Q Serve(g_s), s				5.1	2.5	0.0				0.0	31.6	32.9
Cycle Q Clear(g_c), s				5.1	2.5	0.0				0.0	31.6	32.9
Prop In Lane				1.00		0.00				0.00		0.31
Lane Grp Cap(c), veh/h				363	564	0				0	2910	1060
V/C Ratio(X)				0.30	0.20	0.00				0.00	0.78	0.79
Avail Cap(c_a), veh/h				559	955	0				0	2910	1060
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.88	0.88	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				33.6	32.5	0.0				0.0	13.2	13.5
Incr Delay (d2), s/veh				0.2	0.1	0.0				0.0	2.1	6.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	1.2	0.0				0.0	14.4	17.5
LnGrp Delay(d),s/veh				33.7	32.6	0.0				0.0	15.3	19.6
LnGrp LOS				C	C						B	B
Approach Vol, veh/h					222						3104	
Approach Delay, s/veh					33.1						16.5	
Approach LOS					C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						60.5		19.3
Change Period (Y+Rc), s						6.0		4.5
Max Green Setting (Gmax), s						54.5		25.0
Max Q Clear Time (g_c+I1), s						34.9		7.1
Green Ext Time (p_c), s						16.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	163	10	2	130	39	16	8	1	17	6	4
Future Vol, veh/h	42	163	10	2	130	39	16	8	1	17	6	4
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
Heavy Vehicles, %	25	25	25	31	31	31	24	24	24	7	7	7
Mvmt Flow	42	163	10	2	130	39	16	8	1	17	6	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.5	9	8.6	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	64%	20%	1%	63%
Vol Thru, %	32%	76%	76%	22%
Vol Right, %	4%	5%	23%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	215	171	27
LT Vol	16	42	2	17
Through Vol	8	163	130	6
RT Vol	1	10	39	4
Lane Flow Rate	25	215	171	27
Geometry Grp	1	1	1	1
Degree of Util (X)	0.037	0.278	0.222	0.038
Departure Headway (Hd)	5.371	4.661	4.665	5.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	668	774	771	715
Service Time	3.396	2.676	2.681	3.036
HCM Lane V/C Ratio	0.037	0.278	0.222	0.038
HCM Control Delay	8.6	9.5	9	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	1.1	0.8	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	940	22	0	0	0	0	84	10	120	20	0
Future Volume (veh/h)	34	940	22	0	0	0	0	84	10	120	20	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900				0	1712	1900	1863	1863	0
Adj Flow Rate, veh/h	34	940	22				0	84	10	120	20	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	11	11	2	2	0
Cap, veh/h	110	3246	78				0	179	21	154	477	0
Arrive On Green	0.22	0.21	0.21				0.00	0.12	0.12	0.09	0.26	0.00
Sat Flow, veh/h	170	4996	121				0	1501	179	1774	1863	0
Grp Volume(v), veh/h	364	303	329				0	0	94	120	20	0
Grp Sat Flow(s),veh/h/ln	1818	1663	1805				0	0	1680	1774	1863	0
Q Serve(g_s), s	15.2	13.7	13.7				0.0	0.0	4.7	6.0	0.7	0.0
Cycle Q Clear(g_c), s	15.2	13.7	13.7				0.0	0.0	4.7	6.0	0.7	0.0
Prop In Lane	0.09		0.07				0.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	1181	1080	1173				0	0	200	154	477	0
V/C Ratio(X)	0.31	0.28	0.28				0.00	0.00	0.47	0.78	0.04	0.00
Avail Cap(c_a), veh/h	1181	1080	1173				0	0	504	345	1004	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91				0.00	0.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	18.3	17.8	17.8				0.0	0.0	37.0	40.3	25.2	0.0
Incr Delay (d2), s/veh	0.6	0.6	0.5				0.0	0.0	0.6	8.2	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
%ile BackOfQ(50%),veh/ln	7.8	6.5	7.1				0.0	0.0	2.2	3.3	0.4	0.0
LnGrp Delay(d),s/veh	19.0	18.4	18.3				0.0	0.0	37.6	48.5	25.2	0.0
LnGrp LOS	B	B	B						D	D	C	
Approach Vol, veh/h		996						94			140	
Approach Delay, s/veh		18.6						37.6			45.2	
Approach LOS		B						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	12.3	15.2		62.5		27.5		
Change Period (Y+Rc), s	4.5	* 4.5		4.0		4.5		
Max Green Setting (Gmax), s	7.5	* 27		33.0		48.5		
Max Q Clear Time (g_c+I1), s	9.0	6.7		17.2		2.7		
Green Ext Time (p_c), s	0.2	0.3		4.1		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	325	27	1	111	0	0	140	0
Future Volume (veh/h)	0	0	0	0	325	27	1	111	0	0	140	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.99		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				0	1759	1759	1900	1638	0	0	1863	1900
Adj Flow Rate, veh/h				0	325	27	1	111	0	0	140	0
Adj No. of Lanes				0	3	1	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	8	8	16	16	0	0	2	2
Cap, veh/h				0	0	0	46	603	0	0	687	0
Arrive On Green				0.00	0.00	0.00	0.36	0.37	0.00	0.00	0.37	0.00
Sat Flow, veh/h					0		2	1635	0	0	1863	0
Grp Volume(v), veh/h					0.0		112	0	0	0	140	0
Grp Sat Flow(s),veh/h/ln							1637	0	0	0	1863	0
Q Serve(g_s), s							0.0	0.0	0.0	0.0	4.1	0.0
Cycle Q Clear(g_c), s							3.7	0.0	0.0	0.0	4.1	0.0
Prop In Lane							0.01		0.00	0.00		0.00
Lane Grp Cap(c), veh/h							639	0	0	0	687	0
V/C Ratio(X)							0.18	0.00	0.00	0.00	0.20	0.00
Avail Cap(c_a), veh/h							639	0	0	0	687	0
HCM Platoon Ratio							1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)							0.91	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh							17.1	0.0	0.0	0.0	17.2	0.0
Incr Delay (d2), s/veh							0.5	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							1.8	0.0	0.0	0.0	2.1	0.0
LnGrp Delay(d),s/veh							17.7	0.0	0.0	0.0	17.4	0.0
LnGrp LOS							B				B	
Approach Vol, veh/h								112			140	
Approach Delay, s/veh								17.7			17.4	
Approach LOS								B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		
Phs Duration (G+Y+Rc), s		33.0				33.0		
Change Period (Y+Rc), s		3.5				3.5		
Max Green Setting (Gmax), s		29.5				29.5		
Max Q Clear Time (g_c+I1), s		5.7				0.0		
Green Ext Time (p_c), s		0.4				0.0		

Intersection Summary		
HCM 2010 Ctrl Delay		17.5
HCM 2010 LOS		B



Movement	EBL2	EBT	EBR	NBL	NBT	NBR2	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	163	573	140	7	117	10	207	2
Future Volume (vph)	163	573	140	7	117	10	207	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11
Total Lost time (s)	4.5	5.0			8.5		5.0	
Lane Util. Factor	0.97	0.95			1.00		0.88	
Frpb, ped/bikes	1.00	0.99			1.00		1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	
Frt	1.00	0.97			0.99		0.85	
Flt Protected	0.95	1.00			1.00		1.00	
Satd. Flow (prot)	3400	3363			1603		2617	
Flt Permitted	0.95	1.00			1.00		1.00	
Satd. Flow (perm)	3400	3363			1603		2617	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	163	573	140	7	117	10	207	2
RTOR Reduction (vph)	0	0	0	0	72	0	47	0
Lane Group Flow (vph)	163	713	0	0	62	0	162	0
Confl. Peds. (#/hr)	17		15	1			1	17
Confl. Bikes (#/hr)			3					
Heavy Vehicles (%)	3%	3%	3%	17%	17%	17%	5%	5%
Turn Type	Prot	NA		Split	NA		Prot	
Protected Phases	5	2		4	4		6	
Permitted Phases								
Actuated Green, G (s)	8.7	68.3			8.2		55.1	
Effective Green, g (s)	8.7	68.3			8.2		55.1	
Actuated g/C Ratio	0.10	0.76			0.09		0.61	
Clearance Time (s)	4.5	5.0			8.5		5.0	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	
Lane Grp Cap (vph)	328	2552			146		1602	
v/s Ratio Prot	c0.05	c0.21			c0.04		0.06	
v/s Ratio Perm								
v/c Ratio	0.50	0.28			0.43		0.10	
Uniform Delay, d1	38.6	3.3			38.7		7.2	
Progression Factor	0.97	1.14			1.00		1.45	
Incremental Delay, d2	0.3	0.2			0.7		0.0	
Delay (s)	37.6	4.0			39.4		10.4	
Level of Service	D	A			D		B	
Approach Delay (s)		10.2			39.4			
Approach LOS		B			D			

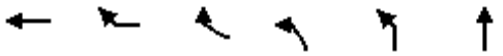
Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	181	800	494	25	100	99
Future Volume (vph)	181	800	494	25	100	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	0.96	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.93	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1372	6023	4945		3230	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1372	6023	4945		3230	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	181	800	494	25	100	99
RTOR Reduction (vph)	74	41	8	0	0	0
Lane Group Flow (vph)	89	777	511	0	199	0
Confl. Peds. (#/hr)	35			8		
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	46.6	46.6	14.8		9.1	
Effective Green, g (s)	46.6	46.6	14.8		9.1	
Actuated g/C Ratio	0.55	0.55	0.17		0.11	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	1.5	1.5	3.0		1.5	
Lane Grp Cap (vph)	752	3302	861		345	
v/s Ratio Prot			c0.10		c0.06	
v/s Ratio Perm	0.07	0.13				
v/c Ratio	0.12	0.24	0.59		0.58	
Uniform Delay, d1	9.3	10.0	32.3		36.1	
Progression Factor	2.01	1.22	1.00		1.00	
Incremental Delay, d2	0.3	0.1	1.1		1.5	
Delay (s)	19.0	12.3	33.4		37.6	
Level of Service	B	B	C		D	
Approach Delay (s)		13.4	33.4		37.6	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	157	243	25	37	520	198
Future Volume (vph)	157	243	25	37	520	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5
Lane Util. Factor	0.91	0.91		0.86	0.81	0.81
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	0.95	0.85		1.00	1.00	1.00
Flt Protected	1.00	1.00		0.95	0.95	0.97
Satd. Flow (prot)	3045	1373		1478	1392	4276
Flt Permitted	1.00	1.00		0.95	0.95	0.97
Satd. Flow (perm)	3045	1373		1478	1392	4276
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	157	243	25	37	520	198
RTOR Reduction (vph)	0	20	0	11	6	0
Lane Group Flow (vph)	242	163	0	22	258	458
Confl. Peds. (#/hr)						
Heavy Vehicles (%)	4%	4%	0%	5%	5%	5%
Turn Type	NA	Perm		Split	Split	NA
Protected Phases	4			2	2	2
Permitted Phases		4				
Actuated Green, G (s)	18.5	18.5		57.0	57.0	57.0
Effective Green, g (s)	18.0	18.0		56.5	56.5	56.5
Actuated g/C Ratio	0.21	0.21		0.66	0.66	0.66
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	5.0	5.0		1.0	1.0	1.0
Lane Grp Cap (vph)	644	290		982	925	2842
v/s Ratio Prot	0.08			0.01	c0.19	0.11
v/s Ratio Perm		c0.12				
v/c Ratio	0.38	0.56		0.02	0.28	0.16
Uniform Delay, d1	28.7	30.0		4.8	5.9	5.4
Progression Factor	1.00	1.00		0.16	0.38	0.26
Incremental Delay, d2	0.8	4.0		0.0	0.7	0.1
Delay (s)	29.5	34.0		0.8	2.9	1.5
Level of Service	C	C		A	A	A
Approach Delay (s)	31.4					2.0
Approach LOS	C					A

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↑↑				
Traffic Volume (veh/h)	283	576	0	0	270	139	43	102	81	0	0	0
Future Volume (veh/h)	283	576	0	0	270	139	43	102	81	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1863	0	0	1845	1900	1900	1845	1900			
Adj Flow Rate, veh/h	283	576	0	0	270	139	43	102	81			
Adj No. of Lanes	0	2	0	0	2	0	0	3	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	3	3	0	3	0			
Cap, veh/h	705	1384	0	0	1659	825	114	291	178			
Arrive On Green	1.00	0.99	0.00	0.00	1.00	1.00	0.13	0.12	0.12			
Sat Flow, veh/h	828	1954	0	0	2333	1113	977	2497	1528			
Grp Volume(v), veh/h	364	495	0	0	209	200	79	66	81			
Grp Sat Flow(s),veh/h/ln	1086	1610	0	0	1752	1601	1796	1679	1528			
Q Serve(g_s), s	0.0	0.5	0.0	0.0	0.0	0.0	2.8	2.5	3.5			
Cycle Q Clear(g_c), s	0.1	0.5	0.0	0.0	0.0	0.0	2.8	2.5	3.5			
Prop In Lane	0.78		0.00	0.00		0.70	0.54		1.00			
Lane Grp Cap(c), veh/h	912	1193	0	0	1298	1186	209	195	178			
V/C Ratio(X)	0.40	0.41	0.00	0.00	0.16	0.17	0.38	0.34	0.46			
Avail Cap(c_a), veh/h	912	1193	0	0	1298	1186	513	480	436			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00	0.00	0.94	0.94	0.99	0.99	0.99			
Uniform Delay (d), s/veh	0.0	0.1	0.0	0.0	0.0	0.0	28.3	28.4	28.9			
Incr Delay (d2), s/veh	1.0	0.8	0.0	0.0	0.3	0.3	0.4	0.4	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.0	0.0	0.1	0.1	1.4	1.2	1.5			
LnGrp Delay(d),s/veh	1.0	0.9	0.0	0.0	0.3	0.3	28.7	28.8	29.5			
LnGrp LOS	A	A			A	A	C	C	C			
Approach Vol, veh/h		859			409			226				
Approach Delay, s/veh		1.0			0.3			29.0				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		13.1		56.9				56.9
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		20.0		40.0				40.0
Max Q Clear Time (g_c+I1), s		5.5		2.5				2.0
Green Ext Time (p_c), s		0.7		4.8				1.7

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A

Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	216	1088	558	48	342	117
Future Volume (vph)	216	1088	558	48	342	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.96	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1728	4964	4969		3255	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1728	4964	4969		3255	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	216	1088	558	48	342	117
RTOR Reduction (vph)	57	0	12	0	0	0
Lane Group Flow (vph)	159	1088	594	0	459	0
Confl. Peds. (#/hr)				4		
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	3%	3%	5%	5%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	43.8	43.8	15.9		16.8	
Effective Green, g (s)	43.8	43.8	15.9		16.8	
Actuated g/C Ratio	0.48	0.48	0.17		0.18	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	831	2389	868		600	
v/s Ratio Prot		c0.22	c0.12		c0.14	
v/s Ratio Perm	0.09					
v/c Ratio	0.19	0.46	0.68		0.77	
Uniform Delay, d1	13.5	15.7	35.2		35.2	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.5	0.6	1.8		5.2	
Delay (s)	14.0	16.3	37.0		40.4	
Level of Service	B	B	D		D	
Approach Delay (s)		15.9	37.0		40.4	
Approach LOS		B	D		D	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

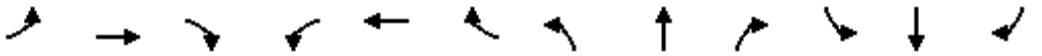


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	140	269	77	1009	0	0	0	0
Future Volume (veh/h)	0	0	0	0	140	269	77	1009	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1863	1863	1827	1827	1827			
Adj Flow Rate, veh/h				0	140	269	77	1009	0			
Adj No. of Lanes				0	1	2	1	3	1			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	2	2	4	4	4			
Cap, veh/h				0	225	378	1426	4239	1201			
Arrive On Green				0.00	0.12	0.12	0.77	0.77	0.00			
Sat Flow, veh/h				0	1863	3123	1740	5481	1553			
Grp Volume(v), veh/h				0	140	269	77	1009	0			
Grp Sat Flow(s),veh/h/ln				0	1863	1561	1740	1827	1553			
Q Serve(g_s), s				0.0	6.4	7.5	0.9	4.6	0.0			
Cycle Q Clear(g_c), s				0.0	6.4	7.5	0.9	4.6	0.0			
Prop In Lane				0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h				0	225	378	1426	4239	1201			
V/C Ratio(X)				0.00	0.62	0.71	0.05	0.24	0.00			
Avail Cap(c_a), veh/h				0	414	694	1426	4239	1201			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	0.99	0.99	0.72	0.72	0.00			
Uniform Delay (d), s/veh				0.0	37.6	38.0	2.4	2.8	0.0			
Incr Delay (d2), s/veh				0.0	2.8	2.5	0.1	0.1	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	3.5	3.3	0.5	2.3	0.0			
LnGrp Delay(d),s/veh				0.0	40.4	40.5	2.5	2.9	0.0			
LnGrp LOS					D	D	A	A				
Approach Vol, veh/h					409			1086				
Approach Delay, s/veh					40.5			2.9				
Approach LOS					D			A				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		74.6						15.4
Change Period (Y+Rc), s		5.0						4.5
Max Green Setting (Gmax), s		60.5						20.0
Max Q Clear Time (g_c+I1), s		6.6						9.5
Green Ext Time (p_c), s		9.7						1.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	0	0	16	17	0	246	0	0	308	6
Future Volume (vph)	0	8	0	0	16	17	0	246	0	0	308	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.93			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		1743			1617			896			1350	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		1743			1617			896			1350	
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	8	0	0	16	17	0	246	0	0	308	6
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	8	0	0	17	0	0	246	0	0	313	0
Confl. Peds. (#/hr)	3		1	1		3	1					1
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	9%	9%	9%	8%	8%	8%	98%	98%	98%	31%	31%	31%
Turn Type		NA			NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		2.2			2.2			26.3			26.3	
Effective Green, g (s)		2.7			2.7			26.8			26.8	
Actuated g/C Ratio		0.07			0.07			0.71			0.71	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		125			116			640			964	
v/s Ratio Prot		0.00			c0.01			c0.27			0.23	
v/s Ratio Perm												
v/c Ratio		0.06			0.15			0.38			0.33	
Uniform Delay, d1		16.2			16.3			2.1			2.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.6			0.4			0.2	
Delay (s)		16.4			16.9			2.5			2.2	
Level of Service		B			B			A			A	
Approach Delay (s)		16.4			16.9			2.5			2.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	131	41	12	97	13	62	190	11	104	264	18
Future Volume (veh/h)	5	131	41	12	97	13	62	190	11	104	264	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.95	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1570	1900	1900	1727	1900	1105	1105	1900	1792	1792	1900
Adj Flow Rate, veh/h	5	131	41	12	97	13	62	190	11	104	264	18
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	21	21	21	10	10	10	72	72	72	6	6	6
Cap, veh/h	88	318	97	108	398	50	64	273	16	308	617	42
Arrive On Green	0.29	0.28	0.28	0.29	0.28	0.28	0.06	0.26	0.26	0.18	0.37	0.37
Sat Flow, veh/h	14	1125	343	65	1409	176	1052	1034	60	1707	1659	113
Grp Volume(v), veh/h	177	0	0	122	0	0	62	0	201	104	0	282
Grp Sat Flow(s),veh/h/ln	1481	0	0	1650	0	0	1052	0	1094	1707	0	1772
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	7.3	2.3	0.0	5.2
Cycle Q Clear(g_c), s	4.2	0.0	0.0	2.4	0.0	0.0	2.6	0.0	7.3	2.3	0.0	5.2
Prop In Lane	0.03		0.23	0.10		0.11	1.00		0.05	1.00		0.06
Lane Grp Cap(c), veh/h	520	0	0	575	0	0	64	0	288	308	0	659
V/C Ratio(X)	0.34	0.00	0.00	0.21	0.00	0.00	0.98	0.00	0.70	0.34	0.00	0.43
Avail Cap(c_a), veh/h	1177	0	0	1290	0	0	324	0	873	428	0	1293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	0.0	0.0	12.2	0.0	0.0	20.6	0.0	14.6	15.7	0.0	10.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	46.5	0.0	1.1	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	1.1	0.0	0.0	1.5	0.0	2.3	1.1	0.0	2.5
LnGrp Delay(d),s/veh	12.9	0.0	0.0	12.2	0.0	0.0	67.1	0.0	15.7	15.9	0.0	10.4
LnGrp LOS	B			B			E		B	B		B
Approach Vol, veh/h		177			122			263			386	
Approach Delay, s/veh		12.9			12.2			27.8			11.9	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.9	15.6		16.4	7.2	20.3		16.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.5	4.0		4.0
Max Green Setting (Gmax), s	11.0	35.0		32.0	13.5	32.0		32.0
Max Q Clear Time (g_c+I1), s	14.3	9.3		6.2	4.6	7.2		4.4
Green Ext Time (p_c), s	0.1	0.9		0.7	0.1	1.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	22	17	5	30	11	2	223	2	43	373	9
Future Vol, veh/h	2	22	17	5	30	11	2	223	2	43	373	9
Conflicting Peds, #/hr	1	0	9	9	0	1	4	0	3	3	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	5	5	5	9	9	9	35	35	35	6	6	6
Mvmt Flow	2	22	17	5	30	11	2	223	2	43	373	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	718	700	391	723	703	228	386	0	0	228	0	0
Stage 1	468	468	-	231	231	-	-	-	-	-	-	-
Stage 2	250	232	-	492	472	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.55	6.25	7.19	6.59	6.29	4.45	-	-	4.16	-	-
Critical Hdwy Stg 1	6.15	5.55	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.55	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.045	3.345	3.581	4.081	3.381	2.515	-	-	2.254	-	-
Pot Cap-1 Maneuver	340	360	651	333	353	794	1013	-	-	1317	-	-
Stage 1	570	556	-	756	700	-	-	-	-	-	-	-
Stage 2	747	707	-	546	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	301	342	644	295	335	791	1009	-	-	1313	-	-
Mov Cap-2 Maneuver	301	342	-	295	335	-	-	-	-	-	-	-
Stage 1	567	530	-	752	697	-	-	-	-	-	-	-
Stage 2	703	703	-	485	522	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.5	15.7	0.1	0.8
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1009	-	-	421	382	1313	-	-
HCM Lane V/C Ratio	0.002	-	-	0.097	0.12	0.033	-	-
HCM Control Delay (s)	8.6	0	-	14.5	15.7	7.8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	876	181	0	0	0	0	177	58	23	247	0
Future Volume (veh/h)	6	876	181	0	0	0	0	177	58	23	247	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900				0	1473	1900	1759	1759	0
Adj Flow Rate, veh/h	6	876	181				0	177	58	23	247	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	29	29	8	8	0
Cap, veh/h	19	2991	640				0	220	72	133	365	0
Arrive On Green	0.23	0.23	0.23				0.00	0.21	0.21	0.28	0.28	0.00
Sat Flow, veh/h	27	4217	903				0	1062	348	1076	1759	0
Grp Volume(v), veh/h	399	331	333				0	0	235	23	247	0
Grp Sat Flow(s),veh/h/ln	1826	1663	1659				0	0	1410	1076	1759	0
Q Serve(g_s), s	16.3	14.7	14.8				0.0	0.0	14.3	1.9	11.3	0.0
Cycle Q Clear(g_c), s	16.3	14.7	14.8				0.0	0.0	14.3	16.1	11.3	0.0
Prop In Lane	0.02		0.54				0.00		0.25	1.00		0.00
Lane Grp Cap(c), veh/h	1295	1179	1177				0	0	292	133	365	0
V/C Ratio(X)	0.31	0.28	0.28				0.00	0.00	0.80	0.17	0.68	0.00
Avail Cap(c_a), veh/h	1295	1179	1177				0	0	345	172	430	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	0.95	0.95	0.95				0.00	0.00	1.00	0.69	0.69	0.00
Uniform Delay (d), s/veh	16.2	15.6	15.7				0.0	0.0	33.9	38.5	29.9	0.0
Incr Delay (d2), s/veh	0.6	0.6	0.6				0.0	0.0	9.4	0.2	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	7.0	7.0				0.0	0.0	6.3	0.6	5.6	0.0
LnGrp Delay(d),s/veh	16.8	16.2	16.3				0.0	0.0	43.4	38.7	31.4	0.0
LnGrp LOS	B	B	B						D	D	C	
Approach Vol, veh/h		1063						235			270	
Approach Delay, s/veh		16.5						43.4			32.1	
Approach LOS		B						D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		22.7		67.3		22.7		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		22.0		60.5		22.0		
Max Q Clear Time (g_c+I1), s		16.3		18.3		18.1		
Green Ext Time (p_c), s		0.5		5.4		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	78	46	18	0	184	0	0	196	8
Future Volume (veh/h)	0	0	0	78	46	18	0	184	0	0	196	8
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	0	1513	0	0	1598	1710
Adj Flow Rate, veh/h				78	46	18	0	184	0	0	196	8
Adj No. of Lanes				0	3	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	0	13	0	0	7	7
Cap, veh/h				1209	1679	620	0	247	0	0	248	10
Arrive On Green				0.75	0.76	0.76	0.00	0.05	0.00	0.00	0.16	0.16
Sat Flow, veh/h				1581	2195	811	0	1513	0	0	1523	62
Grp Volume(v), veh/h				78	31	33	0	184	0	0	0	204
Grp Sat Flow(s),veh/h/ln				1581	1511	1496	0	1513	0	0	0	1586
Q Serve(g_s), s				1.1	0.4	0.5	0.0	10.8	0.0	0.0	0.0	11.1
Cycle Q Clear(g_c), s				1.1	0.4	0.5	0.0	10.8	0.0	0.0	0.0	11.1
Prop In Lane				1.00		0.54	0.00		0.00	0.00		0.04
Lane Grp Cap(c), veh/h				1209	1155	1144	0	247	0	0	0	259
V/C Ratio(X)				0.06	0.03	0.03	0.00	0.75	0.00	0.00	0.00	0.79
Avail Cap(c_a), veh/h				1209	1155	1144	0	967	0	0	0	1013
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	0.44	0.00	0.00	0.00	0.91
Uniform Delay (d), s/veh				2.8	2.5	2.5	0.0	40.7	0.0	0.0	0.0	36.2
Incr Delay (d2), s/veh				0.1	0.0	0.0	0.0	2.0	0.0	0.0	0.0	4.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.2	0.2	0.0	4.7	0.0	0.0	0.0	5.2
LnGrp Delay(d),s/veh				2.9	2.6	2.6	0.0	42.7	0.0	0.0	0.0	41.0
LnGrp LOS				A	A	A		D				D
Approach Vol, veh/h					142			184			204	
Approach Delay, s/veh					2.7			42.7			41.0	
Approach LOS					A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		18.2		71.8		18.2		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		57.5		26.0		57.5		
Max Q Clear Time (g_c+I1), s		13.1		3.1		12.8		
Green Ext Time (p_c), s		1.4		0.8		1.2		

Intersection Summary		
HCM 2010 Ctrl Delay		31.4
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	540	21	0	0	0	0	173	30	44	183	0
Future Volume (veh/h)	15	540	21	0	0	0	0	173	30	44	183	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1644	1710				0	1583	1710	1644	1644	1710
Adj Flow Rate, veh/h	15	540	21				0	173	30	44	183	0
Adj No. of Lanes	0	2	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	8	8	4	4	4
Cap, veh/h	53	1978	81				0	214	37	87	433	0
Arrive On Green	0.21	0.21	0.21				0.00	0.16	0.16	0.11	0.53	0.00
Sat Flow, veh/h	81	3052	125				0	1309	227	1566	1644	0
Grp Volume(v), veh/h	303	0	273				0	0	203	44	183	0
Grp Sat Flow(s),veh/h/ln	1640	0	1618				0	0	1536	1566	1644	0
Q Serve(g_s), s	13.9	0.0	12.6				0.0	0.0	11.5	2.4	6.1	0.0
Cycle Q Clear(g_c), s	13.9	0.0	12.6				0.0	0.0	11.5	2.4	6.1	0.0
Prop In Lane	0.05		0.08				0.00		0.15	1.00		0.00
Lane Grp Cap(c), veh/h	1063	0	1048				0	0	251	87	433	0
V/C Ratio(X)	0.29	0.00	0.26				0.00	0.00	0.81	0.51	0.42	0.00
Avail Cap(c_a), veh/h	1063	0	1048				0	0	444	313	877	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.97	0.00	0.97				0.00	0.00	0.72	0.69	0.69	0.00
Uniform Delay (d), s/veh	17.9	0.0	17.4				0.0	0.0	36.3	38.9	17.2	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.6				0.0	0.0	4.5	3.2	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	5.8				0.0	0.0	5.2	1.1	2.8	0.0
LnGrp Delay(d),s/veh	18.6	0.0	18.0				0.0	0.0	40.8	42.0	17.6	0.0
LnGrp LOS	B		B						D	D	B	
Approach Vol, veh/h		576						203			227	
Approach Delay, s/veh		18.3						40.8			22.3	
Approach LOS		B						D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		27.7		62.3	9.0	18.7		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		48.0		34.0	18.0	26.0		
Max Q Clear Time (g_c+I1), s		8.1		15.9	4.4	13.5		
Green Ext Time (p_c), s		1.2		3.3	0.1	0.9		

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C



Movement	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	SBT	SBR	SBR2
Lane Configurations										
Traffic Volume (vph)	61	179	140	31	3	35	160	155	31	14
Future Volume (vph)	61	179	140	31	3	35	160	155	31	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		3.0	3.0			4.5	4.5	4.5		
Lane Util. Factor		0.97	1.00			1.00	1.00	1.00		
Frpb, ped/bikes		1.00	0.99			1.00	1.00	0.99		
Flpb, ped/bikes		0.98	1.00			0.99	1.00	1.00		
Frt		1.00	0.97			1.00	1.00	0.97		
Flt Protected		0.95	1.00			0.95	1.00	1.00		
Satd. Flow (prot)		2937	1554			1402	1492	1465		
Flt Permitted		0.95	1.00			0.48	1.00	1.00		
Satd. Flow (perm)		2937	1554			704	1492	1465		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	61	179	140	31	3	35	160	155	31	14
RTOR Reduction (vph)	0	0	4	0	0	0	0	5	0	0
Lane Group Flow (vph)	0	240	167	0	0	38	160	195	0	0
Confl. Peds. (#/hr)	7			25		11				11
Heavy Vehicles (%)	2%	2%	2%	2%	7%	7%	7%	5%	5%	5%
Turn Type	Perm	Perm	NA		Perm	Perm	NA	NA		
Protected Phases			4				2	2		
Permitted Phases	4	4			2	2				
Actuated Green, G (s)		64.3	64.3			18.2	18.2	18.2		
Effective Green, g (s)		64.3	64.3			18.2	18.2	18.2		
Actuated g/C Ratio		0.71	0.71			0.20	0.20	0.20		
Clearance Time (s)		3.0	3.0			4.5	4.5	4.5		
Vehicle Extension (s)		3.0	3.0			3.0	3.0	3.0		
Lane Grp Cap (vph)		2098	1110			142	301	296		
v/s Ratio Prot			c0.11				0.11	c0.13		
v/s Ratio Perm		0.08				0.05				
v/c Ratio		0.11	0.15			0.27	0.53	0.66		
Uniform Delay, d1		4.0	4.1			30.3	32.1	33.0		
Progression Factor		1.76	1.78			1.41	1.18	1.00		
Incremental Delay, d2		0.1	0.3			0.9	1.6	5.2		
Delay (s)		7.1	7.6			43.6	39.6	38.3		
Level of Service		A	A			D	D	D		
Approach Delay (s)			7.3				40.4	38.3		
Approach LOS			A				D	D		

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	11	49	11	7	155	0	0	255	14
Future Volume (veh/h)	0	0	0	11	49	11	7	155	0	0	255	14
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1583	1710	1710	1644	0	0	1629	1710
Adj Flow Rate, veh/h				11	49	11	7	155	0	0	255	14
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	8	0	4	4	0	0	5	5
Cap, veh/h				135	615	142	69	973	0	0	928	51
Arrive On Green				0.29	0.29	0.29	0.60	0.61	0.00	0.00	1.00	1.00
Sat Flow, veh/h				460	2099	484	25	1602	0	0	1528	84
Grp Volume(v), veh/h				37	0	34	162	0	0	0	0	269
Grp Sat Flow(s),veh/h/ln				1560	0	1483	1627	0	0	0	0	1612
Q Serve(g_s), s				1.2	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				1.2	0.0	1.2	3.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.29		0.33	0.04		0.00	0.00		0.05
Lane Grp Cap(c), veh/h				457	0	434	1030	0	0	0	0	979
V/C Ratio(X)				0.08	0.00	0.08	0.16	0.00	0.00	0.00	0.00	0.27
Avail Cap(c_a), veh/h				457	0	434	1030	0	0	0	0	979
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				18.0	0.0	17.9	6.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.6	0.0	0.5	1.4	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh				18.3	0.0	18.3	6.3	0.0	0.0	0.0	0.0	0.7
LnGrp LOS				B		B	A					A
Approach Vol, veh/h					71			162			269	
Approach Delay, s/veh					18.3			6.3			0.7	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.0				46.0		24.0
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		42.5				42.5		20.5
Max Q Clear Time (g_c+I1), s		5.0				2.0		3.2
Green Ext Time (p_c), s		1.0				1.8		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	760	77	0	0	0	0	132	34	63	193	0
Future Volume (veh/h)	92	760	77	0	0	0	0	132	34	63	193	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1613	1710	1555	1555	0
Adj Flow Rate, veh/h	92	760	77				0	132	34	63	193	0
Adj No. of Lanes	0	4	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	6	6	10	10	0
Cap, veh/h	172	1528	156				0	523	135	75	836	0
Arrive On Green	0.33	0.31	0.31				0.00	0.85	0.85	0.10	1.00	0.00
Sat Flow, veh/h	564	5005	510				0	1237	319	1481	1555	0
Grp Volume(v), veh/h	269	426	234				0	0	166	63	193	0
Grp Sat Flow(s),veh/h/ln	1648	1442	1546				0	0	1555	1481	1555	0
Q Serve(g_s), s	9.4	8.4	8.7				0.0	0.0	1.5	2.9	0.0	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.7				0.0	0.0	1.5	2.9	0.0	0.0
Prop In Lane	0.34		0.33				0.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	503	880	472				0	0	657	75	836	0
V/C Ratio(X)	0.53	0.48	0.49				0.00	0.00	0.25	0.84	0.23	0.00
Avail Cap(c_a), veh/h	777	1359	729				0	0	657	116	836	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	2.00	2.00	2.00	2.00	1.00
Upstream Filter(I)	0.98	0.98	0.98				0.00	0.00	0.99	0.88	0.88	0.00
Uniform Delay (d), s/veh	20.0	19.8	19.9				0.0	0.0	3.2	31.2	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.4	0.8				0.0	0.0	0.9	23.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	3.4	3.8				0.0	0.0	0.7	1.7	0.1	0.0
LnGrp Delay(d),s/veh	20.8	20.2	20.7				0.0	0.0	4.1	55.1	0.6	0.0
LnGrp LOS	C	C	C						A	E	A	
Approach Vol, veh/h		929						166			256	
Approach Delay, s/veh		20.5						4.1			14.0	
Approach LOS		C						A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.0	35.1		26.9		43.1		
Change Period (Y+Rc), s	4.5	5.5		5.5		5.5		
Max Green Setting (Gmax), s	5.5	16.0		33.0		26.0		
Max Q Clear Time (g_c+I1), s	4.9	3.5		11.4		2.0		
Green Ext Time (p_c), s	0.0	0.7		6.5		1.1		

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	31	324	66	71	154	0	0	227	33
Future Volume (veh/h)	0	0	0	31	324	66	71	154	0	0	227	33
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1613	1710	1676	1676	0	0	1629	1710
Adj Flow Rate, veh/h				31	324	66	71	154	0	0	227	33
Adj No. of Lanes				0	3	0	1	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	6	0	2	2	0	0	5	5
Cap, veh/h				152	1665	336	314	611	0	0	504	73
Arrive On Green				0.50	0.48	0.48	0.12	0.12	0.00	0.00	0.12	0.12
Sat Flow, veh/h				317	3479	703	996	1676	0	0	1382	201
Grp Volume(v), veh/h				156	130	135	71	154	0	0	0	260
Grp Sat Flow(s),veh/h/ln				1597	1468	1433	996	1676	0	0	0	1583
Q Serve(g_s), s				3.9	3.5	3.8	4.8	5.8	0.0	0.0	0.0	10.7
Cycle Q Clear(g_c), s				3.9	3.5	3.8	15.4	5.8	0.0	0.0	0.0	10.7
Prop In Lane				0.20		0.49	1.00		0.00	0.00		0.13
Lane Grp Cap(c), veh/h				764	703	686	314	611	0	0	0	577
V/C Ratio(X)				0.20	0.19	0.20	0.23	0.25	0.00	0.00	0.00	0.45
Avail Cap(c_a), veh/h				764	703	686	314	611	0	0	0	577
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				10.5	10.4	10.5	31.5	22.1	0.0	0.0	0.0	24.3
Incr Delay (d2), s/veh				0.6	0.6	0.6	1.7	1.0	0.0	0.0	0.0	2.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.9	1.5	1.6	1.5	2.9	0.0	0.0	0.0	5.1
LnGrp Delay(d),s/veh				11.1	11.0	11.1	33.1	23.1	0.0	0.0	0.0	26.8
LnGrp LOS				B	B	B	C	C				C
Approach Vol, veh/h					421			225			260	
Approach Delay, s/veh					11.1			26.3			26.8	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		31.0				31.0		39.0
Change Period (Y+Rc), s		5.5				5.5		5.5
Max Green Setting (Gmax), s		25.5				25.5		33.5
Max Q Clear Time (g_c+I1), s		17.4				12.7		5.9
Green Ext Time (p_c), s		0.7				1.2		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	531	91	53	347	36	28	80	22	43	229	40
Future Volume (veh/h)	12	531	91	53	347	36	28	80	22	43	229	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	0.98		0.92	0.99		0.96	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1629	1710	1710	1676	1710	1710	1644	1710
Adj Flow Rate, veh/h	12	531	91	53	347	36	28	80	22	43	229	40
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	5	5	5	2	2	2	4	4	4
Cap, veh/h	63	1339	225	193	1141	119	140	350	87	104	415	68
Arrive On Green	1.00	1.00	1.00	0.53	0.51	0.51	0.12	0.11	0.11	0.36	0.34	0.34
Sat Flow, veh/h	19	2603	438	250	2218	231	227	1021	254	132	1210	197
Grp Volume(v), veh/h	343	0	291	215	0	221	130	0	0	312	0	0
Grp Sat Flow(s),veh/h/ln	1659	0	1402	1281	0	1417	1503	0	0	1538	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.1	0.0	6.3	5.1	0.0	0.0	11.2	0.0	0.0
Prop In Lane	0.04		0.31	0.25		0.16	0.22		0.17	0.14		0.13
Lane Grp Cap(c), veh/h	930	0	721	741	0	729	599	0	0	608	0	0
V/C Ratio(X)	0.37	0.00	0.40	0.29	0.00	0.30	0.22	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	930	0	721	741	0	729	599	0	0	608	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)	0.84	0.00	0.84	1.00	0.00	1.00	0.97	0.00	0.00	0.97	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	9.4	0.0	9.8	22.6	0.0	0.0	18.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.4	1.0	0.0	1.1	0.8	0.0	0.0	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	2.4	0.0	2.7	2.4	0.0	0.0	5.2	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	1.4	10.4	0.0	10.9	23.4	0.0	0.0	21.7	0.0	0.0
LnGrp LOS	A		A	B		B	C			C		
Approach Vol, veh/h		634			436			130			312	
Approach Delay, s/veh		1.2			10.6			23.4			21.7	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		41.0		29.0		41.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		24.0		36.0		24.0		36.0
Max Q Clear Time (g_c+I1), s		7.1		2.0		13.2		8.3
Green Ext Time (p_c), s		0.4		2.8		1.0		2.1

Intersection Summary		
HCM 2010 Ctrl Delay		10.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	50	70	17	10	95	0	0	253	6
Future Volume (veh/h)	0	0	0	50	70	17	10	95	0	0	253	6
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1900	1900	1900	1900	0	0	1900	1900
Adj Flow Rate, veh/h				50	70	17	10	95	0	0	253	6
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				415	618	154	109	862	0	0	909	22
Arrive On Green				0.35	0.32	0.35	0.52	0.49	0.00	0.00	0.49	0.52
Sat Flow, veh/h				1278	1901	474	88	1753	0	0	1848	44
Grp Volume(v), veh/h				72	0	65	105	0	0	0	0	259
Grp Sat Flow(s),veh/h/ln				1836	0	1816	1841	0	0	0	0	1892
Q Serve(g_s), s				1.6	0.0	1.5	0.0	0.0	0.0	0.0	0.0	4.8
Cycle Q Clear(g_c), s				1.6	0.0	1.5	1.8	0.0	0.0	0.0	0.0	4.8
Prop In Lane				0.70		0.26	0.10		0.00	0.00		0.02
Lane Grp Cap(c), veh/h				597	0	590	1017	0	0	0	0	930
V/C Ratio(X)				0.12	0.00	0.11	0.10	0.00	0.00	0.00	0.00	0.28
Avail Cap(c_a), veh/h				597	0	590	1017	0	0	0	0	930
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				13.8	0.0	14.0	8.2	0.0	0.0	0.0	0.0	9.0
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	0.8	0.9	0.0	0.0	0.0	0.0	2.7
LnGrp Delay(d),s/veh				14.3	0.0	14.4	8.4	0.0	0.0	0.0	0.0	9.7
LnGrp LOS				B		B	A					A
Approach Vol, veh/h					137			105			259	
Approach Delay, s/veh					14.3			8.4			9.7	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		35.0		25.0		35.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		31.0		21.0		31.0		
Max Q Clear Time (g_c+I1), s		3.8		3.6		6.8		
Green Ext Time (p_c), s		0.6		0.6		1.6		

Intersection Summary		
HCM 2010 Ctrl Delay		10.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	1063	140	0	0	0	0	88	19	14	151	0
Future Volume (veh/h)	48	1063	140	0	0	0	0	88	19	14	151	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94				1.00		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1693	1710				0	1660	1710	1710	1598	0
Adj Flow Rate, veh/h	48	1063	140				0	88	19	14	151	0
Adj No. of Lanes	1	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1				0	3	3	7	7	0
Cap, veh/h	833	2120	279				0	395	85	83	454	0
Arrive On Green	0.52	0.52	0.52				0.00	0.30	0.30	0.32	0.30	0.00
Sat Flow, veh/h	1612	4102	539				0	1315	284	58	1512	0
Grp Volume(v), veh/h	48	798	405				0	0	107	165	0	0
Grp Sat Flow(s),veh/h/ln	1612	1541	1560				0	0	1599	1571	0	0
Q Serve(g_s), s	0.9	10.1	10.2				0.0	0.0	3.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	10.1	10.2				0.0	0.0	3.0	4.8	0.0	0.0
Prop In Lane	1.00		0.35				0.00		0.18	0.08		0.00
Lane Grp Cap(c), veh/h	833	1592	806				0	0	480	576	0	0
V/C Ratio(X)	0.06	0.50	0.50				0.00	0.00	0.22	0.29	0.00	0.00
Avail Cap(c_a), veh/h	833	1592	806				0	0	480	576	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.2	9.5	9.5				0.0	0.0	15.8	16.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.1	2.2				0.0	0.0	1.1	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.5	4.8				0.0	0.0	1.5	2.2	0.0	0.0
LnGrp Delay(d),s/veh	7.4	10.6	11.7				0.0	0.0	16.8	17.6	0.0	0.0
LnGrp LOS	A	B	B						B	B		
Approach Vol, veh/h		1251						107			165	
Approach Delay, s/veh		10.8						16.8			17.6	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.5		36.5		23.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		18.0		31.0		18.0		
Max Q Clear Time (g_c+I1), s		5.0		12.2		6.8		
Green Ext Time (p_c), s		0.4		8.7		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	51	300	2	60	57	0	0	115	74
Future Volume (veh/h)	0	0	0	51	300	2	60	57	0	0	115	74
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.96	0.99		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1676	1676	1710	1710	1676	0	0	1644	1710
Adj Flow Rate, veh/h				51	300	2	60	57	0	0	115	74
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				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	0	0	4	4
Cap, veh/h				705	2071	14	335	287	0	0	416	268
Arrive On Green				0.44	0.44	0.44	0.43	0.45	0.00	0.00	0.45	0.45
Sat Flow, veh/h				1597	4689	31	543	638	0	0	924	594
Grp Volume(v), veh/h				51	195	107	117	0	0	0	0	189
Grp Sat Flow(s),veh/h/ln				1597	1526	1669	1181	0	0	0	0	1518
Q Serve(g_s), s				1.1	2.3	2.3	1.1	0.0	0.0	0.0	0.0	4.7
Cycle Q Clear(g_c), s				1.1	2.3	2.3	5.8	0.0	0.0	0.0	0.0	4.7
Prop In Lane				1.00		0.02	0.51		0.00	0.00		0.39
Lane Grp Cap(c), veh/h				705	1348	737	602	0	0	0	0	683
V/C Ratio(X)				0.07	0.14	0.15	0.19	0.00	0.00	0.00	0.00	0.28
Avail Cap(c_a), veh/h				705	1348	737	602	0	0	0	0	683
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				9.7	10.0	10.0	10.4	0.0	0.0	0.0	0.0	10.4
Incr Delay (d2), s/veh				0.2	0.2	0.4	0.7	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	1.0	1.1	1.4	0.0	0.0	0.0	0.0	2.1
LnGrp Delay(d),s/veh				9.9	10.2	10.4	11.1	0.0	0.0	0.0	0.0	11.4
LnGrp LOS				A	B	B	B					B
Approach Vol, veh/h					353			117			189	
Approach Delay, s/veh					10.2			11.1			11.4	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.0				30.0		30.0
Change Period (Y+Rc), s		3.0				3.0		3.5
Max Green Setting (Gmax), s		27.0				27.0		26.5
Max Q Clear Time (g_c+I1), s		7.8				6.7		4.3
Green Ext Time (p_c), s		0.6				1.1		2.0

Intersection Summary		
HCM 2010 Ctrl Delay		10.7
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	169	59	14	110	1	8	0	1	6	6	3
Future Vol, veh/h	6	169	59	14	110	1	8	0	1	6	6	3
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
Heavy Vehicles, %	5	5	5	10	10	10	11	11	11	0	0	0
Mvmt Flow	6	169	59	14	110	1	8	0	1	6	6	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.1	8.1	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	89%	3%	11%	40%
Vol Thru, %	0%	72%	88%	40%
Vol Right, %	11%	25%	1%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	234	125	15
LT Vol	8	6	14	6
Through Vol	0	169	110	6
RT Vol	1	59	1	3
Lane Flow Rate	9	234	125	15
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.258	0.149	0.019
Departure Headway (Hd)	4.991	3.973	4.304	4.643
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	721	899	826	776
Service Time	2.991	2.025	2.367	2.643
HCM Lane V/C Ratio	0.012	0.26	0.151	0.019
HCM Control Delay	8.1	8.4	8.1	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	1	0.5	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	911	0	0	0	0	0	0	0	35	0	0
Future Volume (veh/h)	13	911	0	0	0	0	0	0	0	35	0	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	0				0	1900	1900	1900	1863	0
Adj Flow Rate, veh/h	13	911	0				0	0	0	35	0	0
Adj No. of Lanes	0	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	0	0	2	2	0
Cap, veh/h	44	3254	0				0	481	0	452	0	0
Arrive On Green	0.64	0.65	0.00				0.00	0.00	0.00	0.25	0.00	0.00
Sat Flow, veh/h	68	5195	0				0	1900	0	1406	0	0
Grp Volume(v), veh/h	348	576	0				0	0	0	35	0	0
Grp Sat Flow(s),veh/h/ln	1806	1647	0				0	1900	0	1406	0	0
Q Serve(g_s), s	6.3	5.6	0.0				0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	6.3	5.6	0.0				0.0	0.0	0.0	1.4	0.0	0.0
Prop In Lane	0.04		0.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1168	2130	0				0	481	0	452	0	0
V/C Ratio(X)	0.30	0.27	0.00				0.00	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1168	2130	0				0	481	0	452	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	5.7	0.0				0.0	0.0	0.0	21.4	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.3	0.0				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
%ile BackOfQ(50%),veh/ln	3.3	2.6	0.0				0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	6.5	6.0	0.0				0.0	0.0	0.0	21.8	0.0	0.0
LnGrp LOS	A	A								C		
Approach Vol, veh/h		924						0			35	
Approach Delay, s/veh		6.2						0.0			21.8	
Approach LOS		A									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		52.0		23.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		19.0		48.5		19.0		
Max Q Clear Time (g_c+I1), s		0.0		0.0		3.4		
Green Ext Time (p_c), s		0.0		0.0		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	567	28	0	0	0	0	59	89	50	28	0
Future Volume (veh/h)	17	567	28	0	0	0	0	59	89	50	28	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1644	1710				0	1676	1710	1710	1644	0
Adj Flow Rate, veh/h	17	567	28				0	59	89	50	28	0
Adj No. of Lanes	0	4	0				0	1	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	2	2	4	4	0
Cap, veh/h	73	2620	131				0	212	320	468	505	0
Arrive On Green	0.15	0.15	0.15				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	157	5614	281				0	596	899	867	1496	0
Grp Volume(v), veh/h	177	277	158				0	0	148	50	28	0
Grp Sat Flow(s),veh/h/ln	1636	1414	1588				0	0	1494	867	1421	0
Q Serve(g_s), s	4.3	3.9	3.9				0.0	0.0	3.2	1.6	0.6	0.0
Cycle Q Clear(g_c), s	4.3	3.9	3.9				0.0	0.0	3.2	4.7	0.6	0.0
Prop In Lane	0.10		0.18				0.00		0.60	1.00		0.00
Lane Grp Cap(c), veh/h	764	1320	741				0	0	531	468	505	0
V/C Ratio(X)	0.23	0.21	0.21				0.00	0.00	0.28	0.11	0.06	0.00
Avail Cap(c_a), veh/h	764	1320	741				0	0	531	468	505	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.0	11.8	11.8				0.0	0.0	10.4	12.1	9.5	0.0
Incr Delay (d2), s/veh	0.7	0.4	0.7				0.0	0.0	1.3	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.6	1.9				0.0	0.0	1.5	0.5	0.3	0.0
LnGrp Delay(d),s/veh	12.7	12.1	12.5				0.0	0.0	11.7	12.5	9.7	0.0
LnGrp LOS	B	B	B						B	B	A	
Approach Vol, veh/h		612						148			78	
Approach Delay, s/veh		12.4						11.7			11.5	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		5.2		6.3		6.7		
Green Ext Time (p_c), s		0.6		3.5		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	29	370	41	14	58	0	0	45	25
Future Volume (veh/h)	0	0	0	29	370	41	14	58	0	0	45	25
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1644	0	0	1644	1710
Adj Flow Rate, veh/h				29	370	41	14	58	0	0	45	25
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	4	4	0	0	4	4
Cap, veh/h				87	1151	134	272	995	0	0	798	409
Arrive On Green				0.14	0.14	0.14	0.40	0.40	0.00	0.00	0.40	0.40
Sat Flow, veh/h				206	2727	316	409	2562	0	0	2078	1024
Grp Volume(v), veh/h				233	0	207	39	33	0	0	34	36
Grp Sat Flow(s),veh/h/ln				1650	0	1599	1475	1421	0	0	1562	1457
Q Serve(g_s), s				5.7	0.0	5.2	0.0	0.6	0.0	0.0	0.6	0.7
Cycle Q Clear(g_c), s				5.7	0.0	5.2	0.7	0.6	0.0	0.0	0.6	0.7
Prop In Lane				0.12		0.20	0.36		0.00	0.00		0.70
Lane Grp Cap(c), veh/h				697	0	675	699	569	0	0	625	583
V/C Ratio(X)				0.33	0.00	0.31	0.06	0.06	0.00	0.00	0.06	0.06
Avail Cap(c_a), veh/h				697	0	675	699	569	0	0	625	583
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	13.4	8.3	8.3	0.0	0.0	8.3	8.3
Incr Delay (d2), s/veh				1.3	0.0	1.2	0.2	0.2	0.0	0.0	0.2	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	0.0	2.5	0.3	0.3	0.0	0.0	0.3	0.3
LnGrp Delay(d),s/veh				14.9	0.0	14.6	8.5	8.5	0.0	0.0	8.5	8.5
LnGrp LOS				B		B	A	A			A	A
Approach Vol, veh/h					440			72			70	
Approach Delay, s/veh					14.8			8.5			8.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.0		22.0				22.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		19.0		18.0				18.0
Max Q Clear Time (g_c+I1), s		7.7		2.7				2.7
Green Ext Time (p_c), s		2.1		0.2				0.2

Intersection Summary		
HCM 2010 Ctrl Delay		13.3
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	17	10	19	10	48	2	9	3	12	8	1
Future Vol, veh/h	5	17	10	19	10	48	2	9	3	12	8	1
Conflicting Peds, #/hr	3	0	20	20	0	3	10	0	71	71	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	12	12	12	5	5	5	7	7	7	10	10	10
Mvmt Flow	5	17	10	19	10	48	2	9	3	12	8	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	47	0	0	139	151	113	184	132	47
Stage 1	-	-	-	-	-	-	52	52	-	75	75	-
Stage 2	-	-	-	-	-	-	87	99	-	109	57	-
Critical Hdwy	4.22	-	-	4.15	-	-	7.17	6.57	6.27	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.2	5.6	-
Follow-up Hdwy	2.308	-	-	2.245	-	-	3.563	4.063	3.363	3.59	4.09	3.39
Pot Cap-1 Maneuver	1481	-	-	1541	-	-	820	732	926	760	744	1000
Stage 1	-	-	-	-	-	-	948	842	-	915	817	-
Stage 2	-	-	-	-	-	-	908	803	-	877	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1477	-	-	1512	-	-	780	704	847	689	716	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	780	704	-	689	716	-
Stage 1	-	-	-	-	-	-	927	823	-	910	804	-
Stage 2	-	-	-	-	-	-	878	790	-	803	814	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.8	10	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	741	1477	-	-	1512	-	-	709
HCM Lane V/C Ratio	0.019	0.003	-	-	0.013	-	-	0.03
HCM Control Delay (s)	10	7.4	0	-	7.4	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	111	59	27	95	6	27	0	6	3	17	3
Future Vol, veh/h	6	111	59	27	95	6	27	0	6	3	17	3
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
Heavy Vehicles, %	3	3	3	15	15	15	12	12	12	3	3	3
Mvmt Flow	6	111	59	27	95	6	27	0	6	3	17	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	8.3	8.1	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	82%	3%	21%	13%
Vol Thru, %	0%	63%	74%	74%
Vol Right, %	18%	34%	5%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	176	128	23
LT Vol	27	6	27	3
Through Vol	0	111	95	17
RT Vol	6	59	6	3
Lane Flow Rate	33	176	128	23
Geometry Grp	1	1	1	1
Degree of Util (X)	0.044	0.193	0.156	0.029
Departure Headway (Hd)	4.852	3.949	4.399	4.606
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	742	896	805	782
Service Time	2.853	2.034	2.479	2.607
HCM Lane V/C Ratio	0.044	0.196	0.159	0.029
HCM Control Delay	8.1	8	8.3	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.7	0.6	0.1

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	3	23	4	9	57	25	6	25	11	11	22	14
Future Vol, veh/h	3	23	4	9	57	25	6	25	11	11	22	14
Conflicting Peds, #/hr	21	0	19	19	0	21	72	0	19	19	0	72
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	17	17	17	8	8	8	5	5	5	9	9	9
Mvmt Flow	3	23	4	9	57	25	6	25	11	11	22	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	46	0	0	228	171	63	177	161	163
Stage 1	-	-	-	-	-	-	50	50	-	109	109	-
Stage 2	-	-	-	-	-	-	178	121	-	68	52	-
Critical Hdwy	4.27	-	-	4.18	-	-	7.15	6.55	6.25	7.19	6.59	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.19	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.19	5.59	-
Follow-up Hdwy	2.353	-	-	2.272	-	-	3.545	4.045	3.345	3.581	4.081	3.381
Pot Cap-1 Maneuver	1400	-	-	1524	-	-	721	717	993	770	719	864
Stage 1	-	-	-	-	-	-	956	847	-	879	792	-
Stage 2	-	-	-	-	-	-	817	790	-	925	838	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1372	-	-	1496	-	-	628	685	957	708	687	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	628	685	-	708	687	-
Stage 1	-	-	-	-	-	-	937	830	-	860	771	-
Stage 2	-	-	-	-	-	-	722	769	-	869	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.7	10	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	750	1372	-	-	1496	-	-	723
HCM Lane V/C Ratio	0.048	0.002	-	-	0.006	-	-	0.05
HCM Control Delay (s)	10	7.6	0	-	7.4	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	82	18	20	84	9	13	28	3	12	123	23
Future Vol, veh/h	9	82	18	20	84	9	13	28	3	12	123	23
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
Heavy Vehicles, %	10	10	10	16	16	16	7	7	7	4	4	4
Mvmt Flow	9	82	18	20	84	9	13	28	3	12	123	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.6	8.1	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	8%	18%	8%
Vol Thru, %	64%	75%	74%	78%
Vol Right, %	7%	17%	8%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	44	109	113	158
LT Vol	13	9	20	12
Through Vol	28	82	84	123
RT Vol	3	18	9	23
Lane Flow Rate	44	109	113	158
Geometry Grp	1	1	1	1
Degree of Util (X)	0.058	0.139	0.149	0.197
Departure Headway (Hd)	4.753	4.598	4.761	4.482
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	754	780	754	801
Service Time	2.781	2.622	2.786	2.503
HCM Lane V/C Ratio	0.058	0.14	0.15	0.197
HCM Control Delay	8.1	8.4	8.6	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.5	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	897	61	0	0	0	0	63	15	33	101	0
Future Volume (veh/h)	20	897	61	0	0	0	0	63	15	33	101	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1792	1900				0	1652	1652	1900	1827	0
Adj Flow Rate, veh/h	20	897	61				0	63	15	33	101	0
Adj No. of Lanes	0	3	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0				0	15	15	4	4	0
Cap, veh/h	65	3080	216				0	393	321	118	326	0
Arrive On Green	0.66	0.65	0.66				0.00	0.24	0.24	0.26	0.24	0.00
Sat Flow, veh/h	99	4719	331				0	1652	1351	316	1372	0
Grp Volume(v), veh/h	360	299	319				0	63	15	134	0	0
Grp Sat Flow(s),veh/h/ln	1787	1631	1731				0	1652	1351	1687	0	0
Q Serve(g_s), s	9.2	8.2	8.2				0.0	3.2	0.9	0.3	0.0	0.0
Cycle Q Clear(g_c), s	9.2	8.2	8.2				0.0	3.2	0.9	6.3	0.0	0.0
Prop In Lane	0.06		0.19				0.00		1.00	0.25		0.00
Lane Grp Cap(c), veh/h	1167	1065	1130				0	393	321	476	0	0
V/C Ratio(X)	0.31	0.28	0.28				0.00	0.16	0.05	0.28	0.00	0.00
Avail Cap(c_a), veh/h	1167	1065	1130				0	842	688	924	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97				0.00	1.00	1.00	0.99	0.00	0.00
Uniform Delay (d), s/veh	7.9	7.8	7.7				0.0	31.7	30.8	32.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.6	0.6				0.0	0.1	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
%ile BackOfQ(50%),veh/ln	4.7	3.8	4.1				0.0	1.5	0.3	3.1	0.0	0.0
LnGrp Delay(d),s/veh	8.6	8.4	8.3				0.0	31.8	30.9	32.8	0.0	0.0
LnGrp LOS	A	A	A					C	C	C		
Approach Vol, veh/h		978						78			134	
Approach Delay, s/veh		8.4						31.6			32.8	
Approach LOS		A						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		31.0		74.0		31.0		
Change Period (Y+Rc), s		5.0		4.5		5.0		
Max Green Setting (Gmax), s		54.5		41.0		54.5		
Max Q Clear Time (g_c+I1), s		5.2		11.2		8.3		
Green Ext Time (p_c), s		0.3		4.7		0.6		

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	59	217	41	39	47	0	0	66	43
Future Volume (veh/h)	0	0	0	59	217	41	39	47	0	0	66	43
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	0.94		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1598	0	0	1629	1710
Adj Flow Rate, veh/h				59	217	41	39	47	0	0	66	43
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	7	7	0	0	5	5
Cap, veh/h				229	873	171	348	367	0	0	401	261
Arrive On Green				0.38	0.40	0.40	0.44	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				572	2184	428	509	806	0	0	881	574
Grp Volume(v), veh/h				168	0	149	86	0	0	0	0	109
Grp Sat Flow(s),veh/h/ln				1632	0	1552	1315	0	0	0	0	1455
Q Serve(g_s), s				3.1	0.0	2.9	0.0	0.0	0.0	0.0	0.0	2.0
Cycle Q Clear(g_c), s				3.1	0.0	2.9	1.4	0.0	0.0	0.0	0.0	2.0
Prop In Lane				0.35		0.28	0.45		0.00	0.00		0.39
Lane Grp Cap(c), veh/h				653	0	621	701	0	0	0	0	663
V/C Ratio(X)				0.26	0.00	0.24	0.12	0.00	0.00	0.00	0.00	0.16
Avail Cap(c_a), veh/h				653	0	621	701	0	0	0	0	663
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				9.2	0.0	9.0	7.1	0.0	0.0	0.0	0.0	7.2
Incr Delay (d2), s/veh				1.0	0.0	0.9	0.4	0.0	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				1.6	0.0	1.4	0.7	0.0	0.0	0.0	0.0	0.9
LnGrp Delay(d),s/veh				10.1	0.0	9.9	7.5	0.0	0.0	0.0	0.0	7.7
LnGrp LOS				B		A	A					A
Approach Vol, veh/h					317			86			109	
Approach Delay, s/veh					10.0			7.5			7.7	
Approach LOS					A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		21.0		24.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		20.5		18.0		20.5		
Max Q Clear Time (g_c+I1), s		3.4		5.1		4.0		
Green Ext Time (p_c), s		0.4		1.5		0.5		

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑						↱			↰↑	
Traffic Volume (veh/h)	17	491	64	0	0	0	0	58	29	16	45	0
Future Volume (veh/h)	17	491	64	0	0	0	0	58	29	16	45	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.88				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1629	1710				0	1629	1710	1710	1629	0
Adj Flow Rate, veh/h	17	491	64				0	58	29	16	45	0
Adj No. of Lanes	0	4	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	5	5	5	5	0
Cap, veh/h	60	1846	234				0	437	219	220	532	0
Arrive On Green	0.36	0.37	0.37				0.00	0.43	0.43	0.42	0.43	0.00
Sat Flow, veh/h	165	5035	638				0	1009	504	274	1227	0
Grp Volume(v), veh/h	167	263	142				0	0	87	61	0	0
Grp Sat Flow(s),veh/h/ln	1620	1401	1416				0	0	1513	1501	0	0
Q Serve(g_s), s	3.3	2.9	3.2				0.0	0.0	1.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	2.9	3.2				0.0	0.0	1.6	1.0	0.0	0.0
Prop In Lane	0.10		0.45				0.00		0.33	0.26		0.00
Lane Grp Cap(c), veh/h	594	1027	519				0	0	656	735	0	0
V/C Ratio(X)	0.28	0.26	0.27				0.00	0.00	0.13	0.08	0.00	0.00
Avail Cap(c_a), veh/h	594	1027	519				0	0	656	735	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.1	10.0	10.0				0.0	0.0	7.7	7.5	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.6	1.3				0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln	1.6	1.2	1.4				0.0	0.0	0.7	0.5	0.0	0.0
LnGrp Delay(d),s/veh	11.3	10.6	11.3				0.0	0.0	8.1	7.8	0.0	0.0
LnGrp LOS	B	B	B						A	A		
Approach Vol, veh/h		572						87			61	
Approach Delay, s/veh		11.0						8.1			7.8	
Approach LOS		B						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.0		21.0		24.0		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		19.5		16.5		19.5		
Max Q Clear Time (g_c+I1), s		3.6		5.3		3.0		
Green Ext Time (p_c), s		0.3		2.9		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	479	25	39	39	0	0	23	5
Future Volume (veh/h)	0	0	0	42	479	25	39	39	0	0	23	5
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.91	0.92		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1660	1660	1710	1710	1629	0	0	1541	1710
Adj Flow Rate, veh/h				42	479	25	39	39	0	0	23	5
Adj No. of Lanes				1	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				3	3	3	5	5	0	0	11	11
Cap, veh/h				597	1146	60	411	367	0	0	586	127
Arrive On Green				0.38	0.38	0.38	0.47	0.49	0.00	0.00	0.49	0.49
Sat Flow, veh/h				1581	3033	158	596	751	0	0	1199	261
Grp Volume(v), veh/h				42	248	256	78	0	0	0	0	28
Grp Sat Flow(s),veh/h/ln				1581	1577	1613	1347	0	0	0	0	1459
Q Serve(g_s), s				0.8	5.2	5.3	0.0	0.0	0.0	0.0	0.0	0.4
Cycle Q Clear(g_c), s				0.8	5.2	5.3	1.2	0.0	0.0	0.0	0.0	0.4
Prop In Lane				1.00		0.10	0.50		0.00	0.00		0.18
Lane Grp Cap(c), veh/h				597	596	610	748	0	0	0	0	713
V/C Ratio(X)				0.07	0.42	0.42	0.10	0.00	0.00	0.00	0.00	0.04
Avail Cap(c_a), veh/h				597	596	610	748	0	0	0	0	713
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.9	10.3	10.4	6.3	0.0	0.0	0.0	0.0	6.0
Incr Delay (d2), s/veh				0.2	2.1	2.1	0.3	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	2.6	2.7	0.6	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh				9.2	12.5	12.5	6.6	0.0	0.0	0.0	0.0	6.1
LnGrp LOS				A	B	B	A					A
Approach Vol, veh/h					546			78			28	
Approach Delay, s/veh					12.2			6.6			6.1	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		20.0		25.0		
Change Period (Y+Rc), s		3.0		3.0		3.0		
Max Green Setting (Gmax), s		22.0		17.0		22.0		
Max Q Clear Time (g_c+I1), s		3.2		7.3		2.4		
Green Ext Time (p_c), s		0.3		2.3		0.1		

Intersection Summary		
HCM 2010 Ctrl Delay		11.3
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	33	3	13	71	61	2	5	2	34	21	15
Future Vol, veh/h	8	33	3	13	71	61	2	5	2	34	21	15
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
Heavy Vehicles, %	16	16	16	15	15	15	11	11	11	14	14	14
Mvmt Flow	8	33	3	13	71	61	2	5	2	34	21	15
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	8	7.6	8
HCM LOS	A	A	A	A

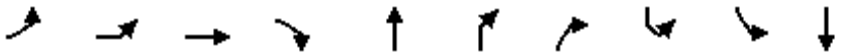
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	18%	9%	49%
Vol Thru, %	56%	75%	49%	30%
Vol Right, %	22%	7%	42%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	44	145	70
LT Vol	2	8	13	34
Through Vol	5	33	71	21
RT Vol	2	3	61	15
Lane Flow Rate	9	44	145	70
Geometry Grp	1	1	1	1
Degree of Util (X)	0.011	0.054	0.165	0.088
Departure Headway (Hd)	4.502	4.416	4.091	4.541
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	799	799	867	794
Service Time	2.504	2.506	2.161	2.541
HCM Lane V/C Ratio	0.011	0.055	0.167	0.088
HCM Control Delay	7.6	7.8	8	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.6	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	35	9	8	52	49	18	101	14	26	102	41
Future Volume (veh/h)	53	35	9	8	52	49	18	101	14	26	102	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.90	0.94		0.91	0.96		0.93	0.96		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
Adj Sat Flow, veh/h/ln	1743	1743	1900	1638	1638	1900	1900	1508	1508	1900	1696	1696
Adj Flow Rate, veh/h	53	35	9	8	52	49	18	101	14	26	102	41
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	16	16	16	26	26	26	12	12	12
Cap, veh/h	387	403	104	434	227	214	145	722	683	203	748	767
Arrive On Green	0.31	0.31	0.31	0.32	0.31	0.31	0.57	0.57	0.57	0.19	0.19	0.19
Sat Flow, veh/h	1136	1306	336	1117	737	695	157	1264	1195	255	1308	1342
Grp Volume(v), veh/h	53	0	44	8	0	101	119	0	14	128	0	41
Grp Sat Flow(s),veh/h/ln	1136	0	1641	1117	0	1432	1420	0	1195	1563	0	1342
Q Serve(g_s), s	2.7	0.0	1.4	0.4	0.0	3.9	0.0	0.0	0.4	0.0	0.0	1.9
Cycle Q Clear(g_c), s	6.7	0.0	1.4	1.8	0.0	3.9	2.8	0.0	0.4	4.7	0.0	1.9
Prop In Lane	1.00		0.20	1.00		0.49	0.15		1.00	0.20		1.00
Lane Grp Cap(c), veh/h	387	0	506	434	0	442	867	0	683	951	0	767
V/C Ratio(X)	0.14	0.00	0.09	0.02	0.00	0.23	0.14	0.00	0.02	0.13	0.00	0.05
Avail Cap(c_a), veh/h	521	0	700	566	0	611	867	0	683	951	0	767
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	18.4	18.4	0.0	19.3	7.5	0.0	7.0	14.9	0.0	13.8
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.0	0.0	0.3	0.3	0.0	0.1	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.7	0.1	0.0	1.6	1.2	0.0	0.1	2.3	0.0	0.7
LnGrp Delay(d),s/veh	21.9	0.0	18.5	18.4	0.0	19.6	7.8	0.0	7.0	15.2	0.0	13.9
LnGrp LOS	C		B	B		B	A		A	B		B
Approach Vol, veh/h		97			109			133			169	
Approach Delay, s/veh		20.4			19.5			7.7			14.9	
Approach LOS		C			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.9		28.1		46.9		28.1
Change Period (Y+Rc), s		4.0		5.0		4.0		5.0
Max Green Setting (Gmax), s		34.0		32.0		34.0		32.0
Max Q Clear Time (g_c+I1), s		4.8		8.7		6.7		5.9
Green Ext Time (p_c), s		0.6		0.4		0.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B



Movement	EBL2	EBL	EBT	EBR	NBT	NBR	NBR2	SBL2	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	21	684	220	53	101	190	72	181	110	196
Future Volume (vph)	21	684	220	53	101	190	72	181	110	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		6.0	6.0		3.5	3.5		4.5	4.5	4.5
Lane Util. Factor		0.91	0.91		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.93		1.00	1.00	1.00
Flpb, ped/bikes		0.97	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.85		1.00	1.00	1.00
Flt Protected		0.95	0.97		1.00	1.00		0.95	0.95	1.00
Satd. Flow (prot)		1506	3126		1583	1288		1685	1546	1627
Flt Permitted		0.95	0.97		1.00	1.00		0.95	0.95	1.00
Satd. Flow (perm)		1506	3126		1583	1288		1685	1546	1627
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	684	220	53	101	190	72	181	110	196
RTOR Reduction (vph)	0	0	7	0	0	61	0	0	0	0
Lane Group Flow (vph)	0	363	608	0	101	201	0	181	110	196
Confl. Peds. (#/hr)		17		9		17	33	33	17	
Confl. Bikes (#/hr)										
Heavy Vehicles (%)	6%	6%	6%	6%	12%	12%	0%	0%	9%	9%
Turn Type	Perm	Split	NA		NA	Perm		Prot	Prot	NA
Protected Phases		4	4		2			1	1	6
Permitted Phases	4					2				
Actuated Green, G (s)		42.0	42.0		23.5	23.5		25.5	25.5	52.5
Effective Green, g (s)		42.0	42.0		23.5	23.5		25.5	25.5	52.5
Actuated g/C Ratio		0.40	0.40		0.22	0.22		0.24	0.24	0.50
Clearance Time (s)		6.0	6.0		3.5	3.5		4.5	4.5	4.5
Lane Grp Cap (vph)		602	1250		354	288		409	375	813
v/s Ratio Prot			0.19		0.06			c0.11	0.07	0.12
v/s Ratio Perm		0.24				c0.16				
v/c Ratio		0.60	0.49		0.29	0.70		0.44	0.29	0.24
Uniform Delay, d1		24.9	23.5		33.8	37.5		33.7	32.4	14.9
Progression Factor		1.22	1.23		1.00	1.00		1.19	1.21	1.26
Incremental Delay, d2		4.4	1.3		2.0	13.3		3.4	1.9	0.7
Delay (s)		34.7	30.1		35.8	50.8		43.7	41.0	19.5
Level of Service		C	C		D	D		D	D	B
Approach Delay (s)			31.8		46.6					33.3
Approach LOS			C		D					C

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	210	287	517	0	139	0	0	276	33
Future Volume (veh/h)	0	0	0	210	287	517	0	139	0	0	276	33
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1644	1644	1710	0	1437	0	0	1541	1541
Adj Flow Rate, veh/h				210	287	0	0	139	0	0	276	33
Adj No. of Lanes				1	2	0	0	1	0	0	2	1
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				4	4	4	0	19	0	0	11	11
Cap, veh/h				671	1339	0	0	712	0	0	1450	609
Arrive On Green				0.43	0.43	0.00	0.00	0.99	0.00	0.00	0.99	0.99
Sat Flow, veh/h				1566	3206	0	0	1437	0	0	3004	1230
Grp Volume(v), veh/h				210	287	0	0	139	0	0	276	33
Grp Sat Flow(s),veh/h/ln				1566	1562	0	0	1437	0	0	1464	1230
Q Serve(g_s), s				9.3	6.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Cycle Q Clear(g_c), s				9.3	6.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Prop In Lane				1.00		0.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				671	1339	0	0	712	0	0	1450	609
V/C Ratio(X)				0.31	0.21	0.00	0.00	0.20	0.00	0.00	0.19	0.05
Avail Cap(c_a), veh/h				671	1339	0	0	712	0	0	1450	609
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				19.8	18.9	0.0	0.0	0.3	0.0	0.0	0.3	0.3
Incr Delay (d2), s/veh				1.2	0.4	0.0	0.0	0.6	0.0	0.0	0.3	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.3	2.7	0.0	0.0	0.2	0.0	0.0	0.1	0.0
LnGrp Delay(d),s/veh				21.0	19.2	0.0	0.0	0.9	0.0	0.0	0.5	0.4
LnGrp LOS				C	B			A			A	A
Approach Vol, veh/h					497			139			309	
Approach Delay, s/veh					20.0			0.9			0.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		49.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		52.0				33.0		45.0
Max Q Clear Time (g_c+I1), s		2.1				2.1		11.3
Green Ext Time (p_c), s		0.6				1.2		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	435	45	0	0	0	0	404	255	122	262	0
Future Volume (veh/h)	38	435	45	0	0	0	0	404	255	122	262	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93				1.00		0.95	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1629	1629				0	1583	1583	1513	1513	0
Adj Flow Rate, veh/h	38	435	45				0	404	255	122	262	0
Adj No. of Lanes	0	3	1				0	1	2	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	5				0	8	8	13	13	0
Cap, veh/h	64	786	238				0	990	1408	526	1095	0
Arrive On Green	0.18	0.19	0.19				0.00	1.00	1.00	0.05	0.72	0.00
Sat Flow, veh/h	345	4230	1281				0	1583	2252	1441	1513	0
Grp Volume(v), veh/h	177	296	45				0	404	255	122	262	0
Grp Sat Flow(s),veh/h/ln	1611	1482	1281				0	1583	1126	1441	1513	0
Q Serve(g_s), s	10.6	9.5	3.1				0.0	0.0	0.0	3.0	6.1	0.0
Cycle Q Clear(g_c), s	10.6	9.5	3.1				0.0	0.0	0.0	3.0	6.1	0.0
Prop In Lane	0.21		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	299	551	238				0	990	1408	526	1095	0
V/C Ratio(X)	0.59	0.54	0.19				0.00	0.41	0.18	0.23	0.24	0.00
Avail Cap(c_a), veh/h	714	1313	567				0	990	1408	535	1095	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97				0.00	0.99	0.99	0.95	0.95	0.00
Uniform Delay (d), s/veh	39.2	38.7	36.1				0.0	0.0	0.0	5.5	4.8	0.0
Incr Delay (d2), s/veh	0.7	0.3	0.1				0.0	1.2	0.3	0.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	3.9	1.1				0.0	0.3	0.1	1.2	2.6	0.0
LnGrp Delay(d),s/veh	39.8	39.0	36.2				0.0	1.2	0.3	5.6	5.3	0.0
LnGrp LOS	D	D	D					A	A	A	A	
Approach Vol, veh/h		518						659			384	
Approach Delay, s/veh		39.0						0.9			5.4	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.3	70.7		24.0		81.0		
Change Period (Y+Rc), s	4.5	5.0		4.5		5.0		
Max Green Setting (Gmax), s	6.5	38.0		46.5		49.0		
Max Q Clear Time (g_c+I1), s	5.0	2.0		12.6		8.1		
Green Ext Time (p_c), s	0.0	2.5		2.0		1.1		

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	66	450	82	45	407	0	0	322	47
Future Volume (veh/h)	0	0	0	66	450	82	45	407	0	0	322	47
Number				3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.91	0.95		1.00	1.00		0.83
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1613	1613	1613	1527	1527	0	0	1500	1500
Adj Flow Rate, veh/h				66	450	82	45	407	0	0	322	47
Adj No. of Lanes				1	2	1	1	1	0	0	1	1
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				6	6	6	12	12	0	0	14	14
Cap, veh/h				399	797	324	502	923	0	0	906	637
Arrive On Green				0.26	0.26	0.26	0.62	0.60	0.00	0.00	0.60	0.60
Sat Flow, veh/h				1536	3065	1247	782	1527	0	0	1500	1055
Grp Volume(v), veh/h				66	450	82	45	407	0	0	322	47
Grp Sat Flow(s),veh/h/ln				1536	1533	1247	782	1527	0	0	1500	1055
Q Serve(g_s), s				2.3	8.9	3.6	2.1	10.1	0.0	0.0	7.6	1.3
Cycle Q Clear(g_c), s				2.3	8.9	3.6	9.7	10.1	0.0	0.0	7.6	1.3
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				399	797	324	502	923	0	0	906	637
V/C Ratio(X)				0.17	0.56	0.25	0.09	0.44	0.00	0.00	0.36	0.07
Avail Cap(c_a), veh/h				560	1117	454	502	923	0	0	906	637
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.99	0.99	0.99	0.85	0.85	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				20.0	22.5	20.5	8.9	7.5	0.0	0.0	7.0	5.7
Incr Delay (d2), s/veh				0.1	0.2	0.1	0.3	1.3	0.0	0.0	1.1	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.0	3.8	1.3	0.5	4.5	0.0	0.0	3.4	0.4
LnGrp Delay(d),s/veh				20.1	22.7	20.7	9.2	8.8	0.0	0.0	8.1	6.0
LnGrp LOS				C	C	C	A	A			A	A
Approach Vol, veh/h					598			452			369	
Approach Delay, s/veh					22.1			8.8			7.8	
Approach LOS					C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		47.3				47.3		22.7
Change Period (Y+Rc), s		5.0				5.0		4.5
Max Green Setting (Gmax), s		35.0				35.0		25.5
Max Q Clear Time (g_c+I1), s		9.6				12.1		10.9
Green Ext Time (p_c), s		1.2				2.0		1.7

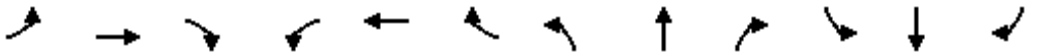
Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	653	11	0	0	0	0	27	25	0	0	0
Future Volume (veh/h)	154	653	11	0	0	0	0	27	25	0	0	0
Number	7	4	14				5	2	12			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.84			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1613	1613				0	1583	1710			
Adj Flow Rate, veh/h	154	653	11				0	27	25			
Adj No. of Lanes	0	2	1				0	2	0			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	6	6	6				0	8	8			
Cap, veh/h	469	1898	1069				0	151	107			
Arrive On Green	0.81	0.81	0.81				0.00	0.10	0.10			
Sat Flow, veh/h	509	2333	1313				0	1635	1099			
Grp Volume(v), veh/h	415	392	11				0	26	26			
Grp Sat Flow(s),veh/h/ln	1448	1395	1313				0	1504	1151			
Q Serve(g_s), s	2.8	6.6	0.1				0.0	1.4	1.9			
Cycle Q Clear(g_c), s	6.2	6.6	0.1				0.0	1.4	1.9			
Prop In Lane	0.37		1.00				0.00		0.96			
Lane Grp Cap(c), veh/h	1233	1135	1069				0	146	112			
V/C Ratio(X)	0.34	0.35	0.01				0.00	0.18	0.23			
Avail Cap(c_a), veh/h	1233	1135	1069				0	318	243			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.94	0.94	0.94				0.00	1.00	1.00			
Uniform Delay (d), s/veh	2.1	2.2	1.6				0.0	37.3	37.5			
Incr Delay (d2), s/veh	0.7	0.8	0.0				0.0	0.2	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.8	2.6	0.1				0.0	0.6	0.6			
LnGrp Delay(d),s/veh	2.8	3.0	1.6				0.0	37.5	37.9			
LnGrp LOS	A	A	A					D	D			
Approach Vol, veh/h		818						52				
Approach Delay, s/veh		2.9						37.7				
Approach LOS		A						D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		12.8		77.2				
Change Period (Y+Rc), s		4.0		4.0				
Max Green Setting (Gmax), s		19.0		63.0				
Max Q Clear Time (g_c+I1), s		3.9		8.6				
Green Ext Time (p_c), s		0.1		3.9				

Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	566	154	50	133	0	0	0	0
Future Volume (vph)	0	0	0	0	566	154	50	133	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)					5.0	4.0		5.0				
Lane Util. Factor					0.91	1.00		0.86				
Frpb, ped/bikes					1.00	0.96		1.00				
Flpb, ped/bikes					1.00	1.00		0.93				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					4446	1334		4858				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					4446	1334		4858				
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	0	0	0	566	154	50	133	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	58	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	566	100	0	125	0	0	0	0
Confl. Peds. (#/hr)	51		50	50		51	41		132	132		41
Confl. Bikes (#/hr)						4			2			
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	4%	4%	4%	2%	2%	2%
Turn Type					NA	Perm	Perm	NA				
Protected Phases					2			1				
Permitted Phases						2	1					
Actuated Green, G (s)					58.7	58.7		5.5				
Effective Green, g (s)					57.7	58.7		4.5				
Actuated g/C Ratio					0.64	0.65		0.05				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					0.2	0.2		0.2				
Lane Grp Cap (vph)					2850	870		242				
v/s Ratio Prot					c0.13							
v/s Ratio Perm						0.08		0.03				
v/c Ratio					0.20	0.12		0.52				
Uniform Delay, d1					6.6	5.9		41.7				
Progression Factor					2.14	6.60		1.02				
Incremental Delay, d2					0.1	0.2		0.8				
Delay (s)					14.3	39.0		43.2				
Level of Service					B	D		D				
Approach Delay (s)		0.0			19.6			43.2			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	275	403	0	0	0	0	0	0	144	616	0
Future Volume (veh/h)	0	275	403	0	0	0	0	0	0	144	616	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1613	1710							1710	1669	0
Adj Flow Rate, veh/h	0	275	403							144	616	0
Adj No. of Lanes	0	2	1							0	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0							3	3	0
Cap, veh/h	0	1017	482							317	1262	0
Arrive On Green	0.00	0.11	0.11							0.12	0.12	0.00
Sat Flow, veh/h	0	3146	1454							709	3632	0
Grp Volume(v), veh/h	0	275	403							276	484	0
Grp Sat Flow(s),veh/h/ln	0	1533	1454							1439	1382	0
Q Serve(g_s), s	0.0	7.4	24.5							14.5	14.7	0.0
Cycle Q Clear(g_c), s	0.0	7.4	24.5							16.1	14.7	0.0
Prop In Lane	0.00		1.00							0.52		0.00
Lane Grp Cap(c), veh/h	0	1017	482							573	998	0
V/C Ratio(X)	0.00	0.27	0.84							0.48	0.48	0.00
Avail Cap(c_a), veh/h	0	1652	783							573	998	0
HCM Platoon Ratio	1.00	0.33	0.33							0.33	0.33	1.00
Upstream Filter(I)	0.00	0.96	0.96							0.98	0.98	0.00
Uniform Delay (d), s/veh	0.0	30.1	37.7							32.3	31.8	0.0
Incr Delay (d2), s/veh	0.0	0.1	4.1							2.8	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	10.4							7.0	5.9	0.0
LnGrp Delay(d),s/veh	0.0	30.2	41.8							35.2	33.5	0.0
LnGrp LOS		C	D							D	C	
Approach Vol, veh/h		678									760	
Approach Delay, s/veh		37.1									34.1	
Approach LOS		D									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				34.4		37.0		
Change Period (Y+Rc), s				4.5		4.5		
Max Green Setting (Gmax), s				48.5		32.5		
Max Q Clear Time (g_c+I1), s				26.5		18.1		
Green Ext Time (p_c), s				3.4		4.5		

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	362	583	0	0	0	0	0	407	156
Future Volume (vph)	0	0	0	362	583	0	0	0	0	0	407	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.91	0.91						0.86	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.95
Flpb, ped/bikes				0.88	0.97						1.00	1.00
Frt				1.00	1.00						0.99	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1248	2876						3968	1078
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1248	2876						3968	1078
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	0	0	362	583	0	0	0	0	0	407	156
RTOR Reduction (vph)	0	0	0	135	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	53	728	0	0	0	0	0	423	140
Confl. Peds. (#/hr)	96		115	115		96	72		160	160		72
Confl. Bikes (#/hr)						2						8
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	0%	0%	0%	3%	3%	3%
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Actuated Green, G (s)				25.5	25.5						56.5	56.5
Effective Green, g (s)				25.5	25.5						56.5	56.5
Actuated g/C Ratio				0.28	0.28						0.63	0.63
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				353	814						2491	676
v/s Ratio Prot											0.11	
v/s Ratio Perm				0.04	0.25							c0.13
v/c Ratio				0.15	0.89						0.17	0.21
Uniform Delay, d1				24.1	31.0						7.0	7.2
Progression Factor				1.93	0.95						1.00	1.00
Incremental Delay, d2				0.2	11.7						0.1	0.7
Delay (s)				46.9	41.1						7.1	7.9
Level of Service				D	D						A	A
Approach Delay (s)		0.0			42.2			0.0			7.3	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	315	0	0	0	0	0	1013	1445	0	0	0
Future Volume (veh/h)	65	315	0	0	0	0	0	1013	1445	0	0	0
Number	5	2	12				7	4	14			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1598	0				0	1676	1676			
Adj Flow Rate, veh/h	65	315	0				0	1013	1445			
Adj No. of Lanes	0	2	0				0	2	2			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	7	7	0				0	2	2			
Cap, veh/h	182	788	0				0	1855	1507			
Arrive On Green	0.34	0.32	0.00				0.00	0.55	0.55			
Sat Flow, veh/h	402	2519	0				0	3353	2723			
Grp Volume(v), veh/h	202	178	0				0	1013	1445			
Grp Sat Flow(s),veh/h/ln	1467	1382	0				0	1676	1361			
Q Serve(g_s), s	5.0	9.0	0.0				0.0	17.4	45.5			
Cycle Q Clear(g_c), s	9.2	9.0	0.0				0.0	17.4	45.5			
Prop In Lane	0.32		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	552	445	0				0	1855	1507			
V/C Ratio(X)	0.37	0.40	0.00				0.00	0.55	0.96			
Avail Cap(c_a), veh/h	552	445	0				0	2287	1858			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	23.5	23.7	0.0				0.0	12.9	19.1			
Incr Delay (d2), s/veh	1.9	2.7	0.0				0.0	0.1	10.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.1	3.8	0.0				0.0	8.0	19.1			
LnGrp Delay(d),s/veh	25.4	26.4	0.0				0.0	13.0	29.7			
LnGrp LOS	C	C						B	C			
Approach Vol, veh/h		380						2458				
Approach Delay, s/veh		25.9						22.8				
Approach LOS		C						C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		34.6		55.4				
Change Period (Y+Rc), s		5.6		5.6				
Max Green Setting (Gmax), s		17.4		61.4				
Max Q Clear Time (g_c+I1), s		11.2		47.5				
Green Ext Time (p_c), s		0.3		2.3				

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	558	133	387	673	0	0	0	0
Future Volume (veh/h)	0	0	0	0	558	133	387	673	0	0	0	0
Number				5	2	12	7	4	14			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.93	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1644	1644	1660	1660	0			
Adj Flow Rate, veh/h				0	558	133	265	844	0			
Adj No. of Lanes				0	2	1	1	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	4	4	3	3	0			
Cap, veh/h				0	2226	930	403	1016	0			
Arrive On Green				0.00	0.71	0.71	0.07	0.07	0.00			
Sat Flow, veh/h				0	3206	1305	1581	4981	0			
Grp Volume(v), veh/h				0	558	133	265	844	0			
Grp Sat Flow(s),veh/h/ln				0	1562	1305	1581	1660	0			
Q Serve(g_s), s				0.0	5.6	2.9	14.9	15.1	0.0			
Cycle Q Clear(g_c), s				0.0	5.6	2.9	14.9	15.1	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	2226	930	403	1016	0			
V/C Ratio(X)				0.00	0.25	0.14	0.66	0.83	0.00			
Avail Cap(c_a), veh/h				0	2226	930	932	2684	0			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.71	0.71	0.00			
Uniform Delay (d), s/veh				0.0	4.5	4.1	40.3	40.4	0.0			
Incr Delay (d2), s/veh				0.0	0.3	0.3	0.5	0.5	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	2.5	1.1	6.6	7.0	0.0			
LnGrp Delay(d),s/veh				0.0	4.8	4.5	40.8	40.9	0.0			
LnGrp LOS					A	A	D	D				
Approach Vol, veh/h					691			1109				
Approach Delay, s/veh					4.7			40.9				
Approach LOS					A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		68.1		21.9				
Change Period (Y+Rc), s		4.0		3.5				
Max Green Setting (Gmax), s		34.0		48.5				
Max Q Clear Time (g_c+I1), s		7.6		17.1				
Green Ext Time (p_c), s		0.7		1.3				

Intersection Summary		
HCM 2010 Ctrl Delay		27.0
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	119	86	339	127	22	61	543	894	0	80	24
Future Volume (veh/h)	78	119	86	339	127	22	61	543	894	0	80	24
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1827	1827	1900	1810	1810	1810	0	1810	1900
Adj Flow Rate, veh/h	78	119	56	339	127	13	61	543	573	0	80	7
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	4	4	4	5	5	5	0	5	5
Cap, veh/h	367	379	178	447	392	40	104	618	729	0	728	63
Arrive On Green	0.20	0.31	0.31	0.13	0.24	0.24	0.06	0.34	0.34	0.00	0.23	0.23
Sat Flow, veh/h	1792	1209	569	3375	1627	167	1723	1810	1537	0	3293	277
Grp Volume(v), veh/h	78	0	175	339	0	140	61	543	573	0	42	45
Grp Sat Flow(s),veh/h/ln	1792	0	1778	1688	0	1794	1723	1810	1537	0	1719	1760
Q Serve(g_s), s	2.5	0.0	5.1	6.6	0.0	4.4	2.4	19.3	21.4	0.0	1.3	1.4
Cycle Q Clear(g_c), s	2.5	0.0	5.1	6.6	0.0	4.4	2.4	19.3	21.4	0.0	1.3	1.4
Prop In Lane	1.00		0.32	1.00		0.09	1.00		1.00	0.00		0.16
Lane Grp Cap(c), veh/h	367	0	558	447	0	433	104	618	729	0	391	400
V/C Ratio(X)	0.21	0.00	0.31	0.76	0.00	0.32	0.59	0.88	0.79	0.00	0.11	0.11
Avail Cap(c_a), veh/h	367	0	957	608	0	921	154	964	1022	0	679	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	17.9	28.6	0.0	21.3	31.3	21.1	15.1	0.0	20.9	20.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	3.8	0.0	0.3	3.9	7.3	3.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	2.5	3.3	0.0	2.2	1.2	10.8	9.6	0.0	0.6	0.7
LnGrp Delay(d),s/veh	22.7	0.0	18.1	32.3	0.0	21.7	35.2	28.5	18.5	0.0	21.0	21.0
LnGrp LOS	C		B	C		C	D	C	B		C	C
Approach Vol, veh/h		253			479			1177			87	
Approach Delay, s/veh		19.5			29.2			24.0			21.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	20.7	7.8	21.1	13.7	25.6		29.0
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	4.5	6.4	4.4	3.4	8.6	7.1		21.3
Green Ext Time (p_c), s	0.1	0.6	0.0	0.3	0.4	0.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	576	11	80	395	35	16	71	619	18	7	13
Future Volume (veh/h)	20	576	11	80	395	35	16	71	619	18	7	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.94	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1900	1900	1845	1845	1900	1743	1900
Adj Flow Rate, veh/h	20	576	11	80	395	35	16	71	619	18	7	13
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	3	3	3	3	3	3	9	9	9
Cap, veh/h	487	1567	30	366	1458	128	162	683	694	264	107	158
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	915	3481	66	809	3240	285	242	1518	1543	439	237	352
Grp Volume(v), veh/h	20	287	300	80	212	218	87	0	619	38	0	0
Grp Sat Flow(s),veh/h/ln	915	1736	1812	809	1752	1773	1760	0	1543	1028	0	0
Q Serve(g_s), s	1.0	8.7	8.7	3.1	1.3	1.3	0.0	0.0	29.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	8.7	8.7	11.9	1.3	1.3	2.2	0.0	29.5	1.0	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.16	0.18		1.00	0.47		0.34
Lane Grp Cap(c), veh/h	487	781	815	366	789	798	845	0	694	529	0	0
V/C Ratio(X)	0.04	0.37	0.37	0.22	0.27	0.27	0.10	0.00	0.89	0.07	0.00	0.00
Avail Cap(c_a), veh/h	487	781	815	366	789	798	845	0	694	529	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	14.5	14.5	4.5	2.3	2.3	12.7	0.0	20.2	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.3	1.3	1.4	0.8	0.8	0.2	0.0	16.0	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(50%),veh/ln	0.3	4.4	4.6	0.8	0.7	0.7	1.2	0.0	15.5	0.5	0.0	0.0
LnGrp Delay(d),s/veh	13.3	15.8	15.8	5.9	3.1	3.1	12.9	0.0	36.2	12.7	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		D	B		
Approach Vol, veh/h		607			510			706			38	
Approach Delay, s/veh		15.7			3.5			33.4			12.7	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		31.5		10.7		3.0		13.9
Green Ext Time (p_c), s		1.4		3.9		0.2		3.1

Intersection Summary		
HCM 2010 Ctrl Delay		19.0
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	106	24	90	112	123	0	277	149	64	215	15
Future Volume (veh/h)	31	106	24	90	112	123	0	277	149	64	215	15
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1712	1900	0	1367	1900	1439	1439	1900
Adj Flow Rate, veh/h	31	106	24	90	112	123	0	277	149	64	215	15
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	11	11	11	0	39	39	32	32	32
Cap, veh/h	140	414	84	178	192	175	0	377	196	171	1200	83
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.23	0.23	0.12	0.46	0.46
Sat Flow, veh/h	196	1295	261	297	601	547	0	1707	854	1371	2591	179
Grp Volume(v), veh/h	161	0	0	325	0	0	0	218	208	64	113	117
Grp Sat Flow(s),veh/h/ln	1753	0	0	1446	0	0	0	1299	1194	1371	1367	1403
Q Serve(g_s), s	0.0	0.0	0.0	6.5	0.0	0.0	0.0	8.6	9.0	2.4	2.7	2.7
Cycle Q Clear(g_c), s	3.6	0.0	0.0	10.6	0.0	0.0	0.0	8.6	9.0	2.4	2.7	2.7
Prop In Lane	0.19		0.15	0.28		0.38	0.00		0.71	1.00		0.13
Lane Grp Cap(c), veh/h	638	0	0	545	0	0	0	299	275	171	633	650
V/C Ratio(X)	0.25	0.00	0.00	0.60	0.00	0.00	0.00	0.73	0.76	0.37	0.18	0.18
Avail Cap(c_a), veh/h	1178	0	0	1011	0	0	0	588	540	273	1039	1066
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	0.0	16.3	0.0	0.0	0.0	19.7	19.8	22.2	8.7	8.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.0	1.3	1.6	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	4.3	0.0	0.0	0.0	3.1	3.1	0.9	1.0	1.1
LnGrp Delay(d),s/veh	14.1	0.0	0.0	16.7	0.0	0.0	0.0	21.0	21.5	22.7	8.7	8.7
LnGrp LOS	B			B				C	C	C	A	A
Approach Vol, veh/h		161			325			426			294	
Approach Delay, s/veh		14.1			16.7			21.2			11.8	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		31.6		23.7	12.9	18.7		23.7
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		4.7		12.6	4.4	11.0		5.6
Green Ext Time (p_c), s		0.9		1.5	0.0	1.6		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		16.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	890	101	91	312	40	157	115	153	89	99	11
Future Volume (veh/h)	38	890	101	91	312	40	157	115	153	89	99	11
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1810	1827	1827	1900	1532	1532	1532	1667	1667	1667
Adj Flow Rate, veh/h	38	890	101	91	312	40	157	115	153	89	99	11
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	5	5	4	4	4	24	24	24	14	14	14
Cap, veh/h	95	1102	521	115	1484	189	228	239	198	231	243	201
Arrive On Green	0.33	0.34	0.34	0.07	0.48	0.48	0.16	0.16	0.16	0.15	0.15	0.15
Sat Flow, veh/h	71	3244	1534	1740	3099	394	1459	1532	1268	1587	1667	1383
Grp Volume(v), veh/h	492	436	101	91	174	178	157	115	153	89	99	11
Grp Sat Flow(s),veh/h/ln	1751	1564	1534	1740	1736	1757	1459	1532	1268	1587	1667	1383
Q Serve(g_s), s	5.9	13.9	2.5	2.8	3.2	3.2	5.6	3.7	6.3	2.8	3.0	0.4
Cycle Q Clear(g_c), s	14.1	13.9	2.5	2.8	3.2	3.2	5.6	3.7	6.3	2.8	3.0	0.4
Prop In Lane	0.08		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	650	531	521	115	831	841	228	239	198	231	243	201
V/C Ratio(X)	0.76	0.82	0.19	0.79	0.21	0.21	0.69	0.48	0.77	0.39	0.41	0.05
Avail Cap(c_a), veh/h	787	658	645	159	1015	1028	614	644	533	667	701	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	16.5	12.8	25.2	8.3	8.3	21.8	21.1	22.1	21.2	21.2	20.1
Incr Delay (d2), s/veh	2.6	5.5	0.1	14.5	0.1	0.1	4.0	1.6	6.8	1.0	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	6.7	1.1	1.8	1.5	1.6	2.5	1.7	2.6	1.3	1.4	0.1
LnGrp Delay(d),s/veh	19.1	22.0	12.8	39.7	8.4	8.4	25.8	22.7	28.9	22.2	22.3	20.2
LnGrp LOS	B	C	B	D	A	A	C	C	C	C	C	C
Approach Vol, veh/h		1029			443			425			199	
Approach Delay, s/veh		19.7			14.8			26.1			22.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		30.2		12.5	7.6	22.6		12.0
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		5.2		7.6	4.8	16.1		5.0
Green Ext Time (p_c), s		2.2		0.7	0.0	2.4		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		20.2
HCM 2010 LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	1144	36	73	410	101	13	113	91	71	88	51
Future Volume (veh/h)	54	1144	36	73	410	101	13	113	91	71	88	51
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.96	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1845	1845	1845	1792	1792	1900	1900	1863	1900
Adj Flow Rate, veh/h	54	1144	36	73	410	101	13	113	91	71	88	51
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	6	6	6	2	2	2
Cap, veh/h	460	1924	61	347	1015	834	451	647	471	344	432	266
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	877	3498	110	467	1845	1517	1189	1849	1345	769	1235	760
Grp Volume(v), veh/h	54	578	602	73	410	101	13	103	101	106	0	104
Grp Sat Flow(s),veh/h/ln	877	1770	1839	467	1845	1517	1189	1703	1492	1212	0	1552
Q Serve(g_s), s	1.3	0.0	0.0	6.7	10.3	2.6	0.6	3.4	3.8	3.3	0.0	3.7
Cycle Q Clear(g_c), s	11.6	0.0	0.0	6.7	10.3	2.6	4.4	3.4	3.8	7.1	0.0	3.7
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.90	0.67		0.49
Lane Grp Cap(c), veh/h	460	973	1011	347	1015	834	451	596	522	499	0	543
V/C Ratio(X)	0.12	0.59	0.59	0.21	0.40	0.12	0.03	0.17	0.19	0.21	0.00	0.19
Avail Cap(c_a), veh/h	460	973	1011	347	1015	834	451	596	522	499	0	543
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.4	0.0	0.0	9.6	10.4	8.7	19.6	18.0	18.1	19.5	0.0	18.1
Incr Delay (d2), s/veh	0.5	2.7	2.6	1.4	1.2	0.3	0.1	0.6	0.8	1.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.7	0.7	1.0	5.6	1.1	0.2	1.7	1.7	1.9	0.0	1.7
LnGrp Delay(d),s/veh	1.9	2.7	2.6	11.0	11.6	9.0	19.8	18.6	19.0	20.5	0.0	18.9
LnGrp LOS	A	A	A	B	B	A	B	B	B	C		B
Approach Vol, veh/h		1234			584			217			210	
Approach Delay, s/veh		2.6			11.1			18.8			19.7	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		6.4		13.6		9.1		12.3
Green Ext Time (p_c), s		1.2		10.1		1.1		4.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	0	0	0	0	0	0	831	0	0	520	204
Future Volume (veh/h)	65	0	0	0	0	0	0	831	0	0	520	204
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	0	0				1900	1900	0	0	1863	1900
Adj Flow Rate, veh/h	65	0	0				0	831	0	0	520	204
Adj No. of Lanes	2	0	0				0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	0	0				0	0	0	0	2	2
Cap, veh/h	0	0	0				0	2646	0	0	1824	713
Arrive On Green	0.00	0.00	0.00				0.00	0.73	0.00	0.00	0.73	0.73
Sat Flow, veh/h	0	0	0				0	3800	0	0	2582	972
Grp Volume(v), veh/h	0	0	0				0	831	0	0	369	355
Grp Sat Flow(s),veh/h/ln	0	0	0				0	1805	0	0	1770	1691
Q Serve(g_s), s	0.0	0.0	0.0				0.0	1.2	0.0	0.0	1.1	1.1
Cycle Q Clear(g_c), s	0.0	0.0	0.0				0.0	1.2	0.0	0.0	1.1	1.1
Prop In Lane	0.00		0.00				0.00		0.00	0.00		0.57
Lane Grp Cap(c), veh/h	0	0	0				0	2646	0	0	1297	1240
V/C Ratio(X)	0.00	0.00	0.00				0.00	0.31	0.00	0.00	0.28	0.29
Avail Cap(c_a), veh/h	0	0	0				0	6746	0	0	3307	3160
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00				0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0				0.0	0.7	0.0	0.0	0.7	0.7
Incr Delay (d2), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.0	0.5	0.0	0.0	0.4	0.4
LnGrp Delay(d),s/veh	0.0	0.0	0.0				0.0	0.7	0.0	0.0	0.7	0.7
LnGrp LOS								A			A	A
Approach Vol, veh/h		0						831			724	
Approach Delay, s/veh		0.0						0.7			0.7	
Approach LOS								A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		15.0		0.0		15.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		28.0		24.0		28.0		
Max Q Clear Time (g_c+I1), s		3.2		0.0		3.1		
Green Ext Time (p_c), s		4.2		0.0		3.4		

Intersection Summary	
HCM 2010 Ctrl Delay	0.7
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	365	17	56	267	39	3	791	96	53	645	53
Future Volume (veh/h)	45	365	17	56	267	39	3	791	96	53	645	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1652	1900	1900	1727	1900	1900	1900	1900	1827	1827	1900
Adj Flow Rate, veh/h	45	365	17	56	267	39	3	791	96	53	645	53
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	15	15	15	10	10	10	0	0	0	4	4	4
Cap, veh/h	141	511	23	166	466	63	99	1345	163	336	1378	113
Arrive On Green	0.37	0.36	0.36	0.37	0.36	0.36	0.44	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	93	1419	63	151	1292	174	3	3168	383	611	3247	266
Grp Volume(v), veh/h	427	0	0	362	0	0	475	0	415	53	344	354
Grp Sat Flow(s),veh/h/ln	1575	0	0	1618	0	0	1896	0	1658	611	1736	1778
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	2.7	5.3	5.3
Cycle Q Clear(g_c), s	8.5	0.0	0.0	6.4	0.0	0.0	7.1	0.0	7.1	9.9	5.3	5.3
Prop In Lane	0.11		0.04	0.15		0.11	0.01		0.23	1.00		0.15
Lane Grp Cap(c), veh/h	695	0	0	716	0	0	928	0	704	336	737	755
V/C Ratio(X)	0.61	0.00	0.00	0.51	0.00	0.00	0.51	0.00	0.59	0.16	0.47	0.47
Avail Cap(c_a), veh/h	2029	0	0	2025	0	0	1952	0	1606	668	1681	1722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.2	0.0	0.0	9.6	0.0	0.0	8.2	0.0	8.2	12.0	7.7	7.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	2.9	0.0	0.0	3.6	0.0	3.3	0.5	2.5	2.6
LnGrp Delay(d),s/veh	10.6	0.0	0.0	9.8	0.0	0.0	8.3	0.0	8.5	12.1	7.8	7.8
LnGrp LOS	B			A			A		A	B	A	A
Approach Vol, veh/h		427			362			890			751	
Approach Delay, s/veh		10.6			9.8			8.4			8.1	
Approach LOS		B			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		19.8		17.4		19.8		17.4
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		46.0		36.0		46.0
Max Q Clear Time (g_c+I1), s		9.1		10.5		11.9		8.4
Green Ext Time (p_c), s		4.3		2.1		3.3		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	731	179	0	0	0	0	737	151	65	561	0
Future Volume (veh/h)	15	731	179	0	0	0	0	737	151	65	561	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900				0	1863	1900	1810	1810	0
Adj Flow Rate, veh/h	15	731	179				0	737	151	65	561	0
Adj No. of Lanes	0	3	0				0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	2	2	5	5	0
Cap, veh/h	40	2066	521				0	1079	221	175	1273	0
Arrive On Green	0.54	0.52	0.52				0.00	0.37	0.36	0.12	0.12	0.00
Sat Flow, veh/h	78	3984	1005				0	3006	597	605	3529	0
Grp Volume(v), veh/h	348	289	287				0	448	440	65	561	0
Grp Sat Flow(s),veh/h/ln	1806	1647	1614				0	1770	1740	605	1719	0
Q Serve(g_s), s	10.3	9.2	9.4				0.0	19.2	19.2	9.5	13.6	0.0
Cycle Q Clear(g_c), s	10.3	9.2	9.4				0.0	19.2	19.2	28.7	13.6	0.0
Prop In Lane	0.04		0.62				0.00		0.34	1.00		0.00
Lane Grp Cap(c), veh/h	936	854	837				0	655	644	175	1273	0
V/C Ratio(X)	0.37	0.34	0.34				0.00	0.68	0.68	0.37	0.44	0.00
Avail Cap(c_a), veh/h	936	854	837				0	836	821	237	1624	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	12.9	12.7	12.7				0.0	23.9	24.0	46.9	30.9	0.0
Incr Delay (d2), s/veh	1.1	1.1	1.1				0.0	0.9	0.9	0.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	4.4	4.4				0.0	9.5	9.3	1.6	6.5	0.0
LnGrp Delay(d),s/veh	14.0	13.7	13.8				0.0	24.7	24.8	47.4	30.9	0.0
LnGrp LOS	B	B	B					C	C	D	C	
Approach Vol, veh/h		925						888			626	
Approach Delay, s/veh		13.9						24.8			32.7	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		37.8		52.2		37.8		
Change Period (Y+Rc), s		4.5		5.5		4.5		
Max Green Setting (Gmax), s		42.5		37.5		42.5		
Max Q Clear Time (g_c+I1), s		21.2		12.3		30.7		
Green Ext Time (p_c), s		4.2		4.3		2.6		

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C



Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	SWR2
Lane Configurations								
Traffic Volume (vph)	173	213	202	217	554	453	19	39
Future Volume (vph)	173	213	202	217	554	453	19	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	11	10	10	12
Total Lost time (s)		5.0	5.0	4.5	4.5	4.5		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95	0.95		1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00	1.00		0.98
Flpb, ped/bikes		1.00	1.00	0.99	1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00	0.99		0.86
Flt Protected		0.98	1.00	0.95	1.00	1.00		1.00
Satd. Flow (prot)		3097	1394	1717	3455	3280		1618
Flt Permitted		0.98	1.00	0.48	1.00	1.00		1.00
Satd. Flow (perm)		3097	1394	870	3455	3280		1618
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	173	213	202	217	554	453	19	39
RTOR Reduction (vph)	0	0	0	0	0	2	0	31
Lane Group Flow (vph)	0	386	202	217	554	470	0	8
Confl. Peds. (#/hr)			4	11			11	4
Confl. Bikes (#/hr)							4	
Heavy Vehicles (%)	14%	14%	14%	1%	1%	2%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	NA		Perm
Protected Phases		4			2	6		
Permitted Phases	4		4	2				4
Actuated Green, G (s)		18.4	18.4	62.1	62.1	62.1		18.4
Effective Green, g (s)		18.4	18.4	62.1	62.1	62.1		18.4
Actuated g/C Ratio		0.20	0.20	0.69	0.69	0.69		0.20
Clearance Time (s)		5.0	5.0	4.5	4.5	4.5		5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		633	284	600	2383	2263		330
v/s Ratio Prot					0.16	0.14		
v/s Ratio Perm		0.12	c0.14	c0.25				0.00
v/c Ratio		0.61	0.71	0.36	0.23	0.21		0.02
Uniform Delay, d1		32.5	33.3	5.8	5.2	5.0		28.6
Progression Factor		1.00	1.00	0.21	0.09	0.37		1.00
Incremental Delay, d2		1.1	6.8	1.4	0.2	0.1		0.0
Delay (s)		33.7	40.2	2.6	0.7	2.0		28.6
Level of Service		C	D	A	A	A		C
Approach Delay (s)		35.9			1.2	2.0		
Approach LOS		D			A	A		

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	1233	58	258	392	33	103	561	127	79	160	67
Future Volume (veh/h)	143	1233	58	258	392	33	103	561	127	79	160	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1881	1881	1900	1863	1863	1900
Adj Flow Rate, veh/h	143	1233	26	258	392	15	103	561	76	79	160	23
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	306	828	684	387	716	589	391	906	122	192	890	125
Arrive On Green	0.17	0.44	0.44	0.04	0.13	0.13	0.38	0.38	0.38	0.58	0.58	0.58
Sat Flow, veh/h	1774	1863	1539	3442	1863	1533	1184	3149	425	784	3094	435
Grp Volume(v), veh/h	143	1233	26	258	392	15	103	318	319	79	90	93
Grp Sat Flow(s),veh/h/ln	1774	1863	1539	1721	1863	1533	1184	1787	1787	784	1770	1759
Q Serve(g_s), s	6.5	40.0	0.9	6.7	17.8	0.8	5.8	12.9	13.0	8.1	2.2	2.3
Cycle Q Clear(g_c), s	6.5	40.0	0.9	6.7	17.8	0.8	8.0	12.9	13.0	21.1	2.2	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.24	1.00		0.25
Lane Grp Cap(c), veh/h	306	828	684	387	716	589	391	514	514	192	509	506
V/C Ratio(X)	0.47	1.49	0.04	0.67	0.55	0.03	0.26	0.62	0.62	0.41	0.18	0.18
Avail Cap(c_a), veh/h	306	828	684	387	716	589	452	606	606	232	600	596
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	0.74	0.74	0.74	0.91	0.91	0.91	0.95	0.95	0.95	0.99	0.99	0.99
Uniform Delay (d), s/veh	33.5	25.0	14.1	41.7	31.9	24.5	23.1	23.8	23.8	23.9	14.1	14.1
Incr Delay (d2), s/veh	0.8	225.0	0.1	3.9	2.7	0.1	0.1	0.7	0.7	0.5	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	72.2	0.4	3.4	9.7	0.3	1.9	6.4	6.4	1.8	1.1	1.1
LnGrp Delay(d),s/veh	34.3	250.0	14.2	45.6	34.7	24.6	23.2	24.5	24.5	24.5	14.1	14.2
LnGrp LOS	C	F	B	D	C	C	C	C	C	C	B	B
Approach Vol, veh/h		1402			665			740			262	
Approach Delay, s/veh		223.6			38.7			24.3			17.3	
Approach LOS		F			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.4	14.6	45.0		30.4	20.0	39.6
Change Period (Y+Rc), s		4.5	4.5	5.0		4.5	4.5	5.0
Max Green Setting (Gmax), s		30.5	5.5	40.0		30.5	10.9	34.6
Max Q Clear Time (g_c+I1), s		15.0	8.7	42.0		23.1	8.5	19.8
Green Ext Time (p_c), s		2.7	0.0	0.0		0.6	0.1	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	117.9
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	39	57	39	47	73	48	613	75	47	215	62
Future Volume (veh/h)	88	39	57	39	47	73	48	613	75	47	215	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1881	1900	1863	1863	1900	1881	1881	1900
Adj Flow Rate, veh/h	88	39	57	39	47	73	48	613	75	47	215	62
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	312	142	177	169	206	276	619	1687	206	484	1461	409
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	1.00	1.00	1.00	0.53	0.53	0.53
Sat Flow, veh/h	670	375	469	314	545	730	1095	3164	386	758	2740	768
Grp Volume(v), veh/h	184	0	0	159	0	0	48	342	346	47	138	139
Grp Sat Flow(s),veh/h/ln	1514	0	0	1589	0	0	1095	1770	1780	758	1787	1720
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	2.8	3.5	3.7
Cycle Q Clear(g_c), s	6.5	0.0	0.0	5.7	0.0	0.0	4.0	0.0	0.0	2.8	3.5	3.7
Prop In Lane	0.48		0.31	0.25		0.46	1.00		0.22	1.00		0.45
Lane Grp Cap(c), veh/h	631	0	0	650	0	0	619	944	950	484	953	918
V/C Ratio(X)	0.29	0.00	0.00	0.24	0.00	0.00	0.08	0.36	0.36	0.10	0.14	0.15
Avail Cap(c_a), veh/h	631	0	0	650	0	0	619	944	950	484	953	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	0.0	19.2	0.0	0.0	0.2	0.0	0.0	10.4	10.6	10.7
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.9	0.0	0.0	0.2	1.1	1.1	0.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	2.9	0.0	0.0	0.1	0.3	0.3	0.6	1.8	1.8
LnGrp Delay(d),s/veh	20.6	0.0	0.0	20.1	0.0	0.0	0.4	1.1	1.1	10.8	10.9	11.0
LnGrp LOS	C			C			A	A	A	B	B	B
Approach Vol, veh/h		184			159			736			324	
Approach Delay, s/veh		20.6			20.1			1.0			11.0	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		38.0		52.0		38.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		48.0		34.0		48.0		34.0
Max Q Clear Time (g_c+I1), s		6.0		8.5		5.7		7.7
Green Ext Time (p_c), s		5.5		1.1		2.2		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	115	12	29	36	18	23	496	277	46	277	22
Future Volume (veh/h)	17	115	12	29	36	18	23	496	277	46	277	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.99		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1759	1900	1881	1881	1881	1863	1863	1900
Adj Flow Rate, veh/h	17	115	12	29	36	18	23	496	277	46	277	22
Adj No. of Lanes	0	1	0	0	2	0	1	2	1	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	8	8	8	1	1	1	2	2	2
Cap, veh/h	77	324	31	258	291	150	862	2516	1085	557	2333	184
Arrive On Green	0.20	0.21	0.21	0.20	0.21	0.21	0.70	0.70	0.70	1.00	1.00	1.00
Sat Flow, veh/h	91	1537	148	826	1384	710	1079	3574	1542	692	3314	261
Grp Volume(v), veh/h	144	0	0	46	0	37	23	496	277	46	147	152
Grp Sat Flow(s),veh/h/ln	1777	0	0	1464	0	1456	1079	1787	1542	692	1770	1806
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	1.4	0.5	3.3	4.5	0.3	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	1.5	0.0	1.4	0.5	3.3	4.5	3.7	0.0	0.0
Prop In Lane	0.12		0.08	0.63		0.49	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	406	0	0	371	0	306	862	2516	1085	557	1245	1271
V/C Ratio(X)	0.35	0.00	0.00	0.12	0.00	0.12	0.03	0.20	0.26	0.08	0.12	0.12
Avail Cap(c_a), veh/h	882	0	0	738	0	707	862	2516	1085	557	1245	1271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	0.0	22.7	0.0	22.4	3.1	3.6	3.7	0.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.2	0.1	0.2	0.5	0.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	0.8	0.0	0.6	0.1	1.6	2.1	0.1	0.1	0.1
LnGrp Delay(d),s/veh	24.3	0.0	0.0	22.8	0.0	22.6	3.2	3.7	4.3	0.4	0.2	0.2
LnGrp LOS	C			C		C	A	A	A	A	A	A
Approach Vol, veh/h		144			83			796			345	
Approach Delay, s/veh		24.3			22.7			3.9			0.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.3		17.7		52.3		17.7
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		30.0		34.0		30.0		34.0
Max Q Clear Time (g_c+I1), s		6.5		6.8		5.7		3.5
Green Ext Time (p_c), s		4.6		0.8		2.1		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		6.3
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	19	21	64	69	18	528	0	0	298	24
Future Volume (veh/h)	20	0	19	21	64	69	18	528	0	0	298	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1845	0	0	1863	1900
Adj Flow Rate, veh/h	20	0	19	21	64	69	18	528	0	0	298	24
Adj No. of Lanes	1	1	0	1	2	0	0	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	0	0	0	3	3	0	0	2	2
Cap, veh/h	276	0	266	336	303	262	97	2491	0	0	2474	198
Arrive On Green	0.17	0.00	0.17	0.17	0.17	0.17	1.00	1.00	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1258	0	1583	1388	1805	1560	57	3422	0	0	3407	265
Grp Volume(v), veh/h	20	0	19	21	64	69	291	255	0	0	158	164
Grp Sat Flow(s),veh/h/ln	1258	0	1583	1388	1805	1560	1800	1595	0	0	1770	1810
Q Serve(g_s), s	1.0	0.0	0.7	0.9	2.1	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.7	0.9	2.1	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.06		0.00	0.00		0.15
Lane Grp Cap(c), veh/h	276	0	266	336	303	262	1373	1190	0	0	1321	1351
V/C Ratio(X)	0.07	0.00	0.07	0.06	0.21	0.26	0.21	0.21	0.00	0.00	0.12	0.12
Avail Cap(c_a), veh/h	693	0	792	797	903	780	1373	1190	0	0	1321	1351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.99	0.99	0.00	0.00	0.99	0.99
Uniform Delay (d), s/veh	26.5	0.0	24.5	24.6	25.1	25.4	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.3	0.5	0.3	0.4	0.0	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.4	1.1	1.2	0.1	0.1	0.0	0.0	0.1	0.1
LnGrp Delay(d),s/veh	26.6	0.0	24.6	24.7	25.5	25.9	0.3	0.4	0.0	0.0	0.2	0.2
LnGrp LOS	C		C	C	C	C	A	A			A	A
Approach Vol, veh/h		39			154			546			322	
Approach Delay, s/veh		25.6			25.5			0.4			0.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		55.2		14.8		55.2		14.8
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		29.0		35.0		29.0		35.0
Max Q Clear Time (g_c+I1), s		3.0		6.1		3.0		5.1
Green Ext Time (p_c), s		3.5		0.1		1.9		0.8

Intersection Summary		
HCM 2010 Ctrl Delay		4.9
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	592	32	40	338	58	78	378	165	65	253	34
Future Volume (veh/h)	46	592	32	40	338	58	78	378	165	65	253	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	46	592	32	40	338	58	78	378	165	65	253	34
Adj No. of Lanes	1	2	1	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	464	1567	672	367	1344	228	489	1058	454	458	1386	184
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.46	0.89	0.89	0.89	0.15	0.15	0.15
Sat Flow, veh/h	971	3539	1517	798	3035	514	1077	2388	1025	853	3129	415
Grp Volume(v), veh/h	46	592	32	40	197	199	78	278	265	65	142	145
Grp Sat Flow(s),veh/h/ln	971	1770	1517	798	1787	1762	1077	1770	1644	853	1770	1775
Q Serve(g_s), s	2.2	7.8	0.8	2.5	4.8	4.9	1.7	1.8	1.9	4.7	4.9	5.0
Cycle Q Clear(g_c), s	7.1	7.8	0.8	10.3	4.8	4.9	7.6	1.8	1.9	6.6	4.9	5.0
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.62	1.00		0.23
Lane Grp Cap(c), veh/h	464	1567	672	367	791	780	489	784	728	458	784	786
V/C Ratio(X)	0.10	0.38	0.05	0.11	0.25	0.25	0.16	0.36	0.36	0.14	0.18	0.19
Avail Cap(c_a), veh/h	464	1567	672	367	791	780	489	784	728	458	784	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.5	13.0	11.1	16.5	12.2	12.1	3.6	2.3	2.3	20.3	18.7	18.8
Incr Delay (d2), s/veh	0.4	0.7	0.1	0.6	0.8	0.8	0.7	1.3	1.4	0.6	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.9	0.4	0.6	2.5	2.5	0.6	1.0	1.0	1.2	2.5	2.6
LnGrp Delay(d),s/veh	14.9	13.7	11.2	17.1	13.0	12.9	4.3	3.6	3.7	21.0	19.3	19.3
LnGrp LOS	B	B	B	B	B	B	A	A	A	C	B	B
Approach Vol, veh/h		670			436			621			352	
Approach Delay, s/veh		13.7			13.3			3.8			19.6	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		35.0		35.0		35.0		35.0
Change Period (Y+Rc), s		3.0		3.0		3.0		3.0
Max Green Setting (Gmax), s		32.0		32.0		32.0		32.0
Max Q Clear Time (g_c+I1), s		9.6		9.8		8.6		12.3
Green Ext Time (p_c), s		2.4		2.9		1.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	148	30	17	170	64	44	411	36	65	302	19
Future Volume (veh/h)	27	148	30	17	170	64	44	411	36	65	302	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1881	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	27	148	30	17	170	64	44	411	36	65	302	19
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	174	876	175	102	850	300	589	1737	151	273	1271	83
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.17	0.17	0.17	0.53	0.53	0.53
Sat Flow, veh/h	308	2452	489	122	2380	839	1048	3286	286	385	2405	157
Grp Volume(v), veh/h	108	0	97	134	0	117	44	220	227	185	0	201
Grp Sat Flow(s),veh/h/ln	1661	0	1588	1811	0	1530	1048	1770	1803	1285	0	1663
Q Serve(g_s), s	0.0	0.0	2.9	0.0	0.0	3.7	2.5	7.5	7.6	0.6	0.0	4.5
Cycle Q Clear(g_c), s	2.8	0.0	2.9	3.5	0.0	3.7	7.1	7.5	7.6	8.2	0.0	4.5
Prop In Lane	0.25		0.31	0.13		0.55	1.00		0.16	0.35		0.09
Lane Grp Cap(c), veh/h	658	0	567	705	0	546	589	935	953	749	0	879
V/C Ratio(X)	0.16	0.00	0.17	0.19	0.00	0.21	0.07	0.24	0.24	0.25	0.00	0.23
Avail Cap(c_a), veh/h	658	0	567	705	0	546	589	935	953	749	0	879
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	15.4	15.6	0.0	15.7	18.5	16.7	16.8	8.8	0.0	8.8
Incr Delay (d2), s/veh	0.5	0.0	0.7	0.6	0.0	0.9	0.2	0.6	0.6	0.8	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(50%),veh/ln	1.5	0.0	1.4	1.9	0.0	1.7	0.8	3.8	3.9	2.0	0.0	2.2
LnGrp Delay(d),s/veh	15.9	0.0	16.1	16.2	0.0	16.6	18.7	17.3	17.3	9.6	0.0	9.5
LnGrp LOS	B		B	B		B	B	B	B	A		A
Approach Vol, veh/h		205			251			491			386	
Approach Delay, s/veh		16.0			16.4			17.5			9.5	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.0		29.0		41.0		29.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		37.0		25.0		37.0		25.0
Max Q Clear Time (g_c+I1), s		9.6		4.9		10.2		5.7
Green Ext Time (p_c), s		1.9		0.7		1.6		0.9

Intersection Summary		
HCM 2010 Ctrl Delay		14.7
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	709	110	73	645	19	104	301	99	37	224	45
Future Volume (veh/h)	52	709	110	73	645	19	104	301	99	37	224	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
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	1.00		0.96	0.99		0.94	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900	1845	1900
Adj Flow Rate, veh/h	52	709	110	73	645	19	104	301	99	37	224	45
Adj No. of Lanes	0	2	1	1	2	1	1	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	126	1619	791	123	2249	962	227	511	410	67	302	57
Arrive On Green	0.54	0.53	0.53	0.07	0.64	0.64	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	162	3077	1503	1774	3539	1514	1093	1863	1495	96	1102	206
Grp Volume(v), veh/h	384	377	110	73	645	19	104	301	99	306	0	0
Grp Sat Flow(s),veh/h/ln	1628	1610	1503	1774	1770	1514	1093	1863	1495	1404	0	0
Q Serve(g_s), s	0.0	14.5	3.7	4.0	8.1	0.5	0.9	14.0	5.1	7.4	0.0	0.0
Cycle Q Clear(g_c), s	12.2	14.5	3.7	4.0	8.1	0.5	22.3	14.0	5.1	21.4	0.0	0.0
Prop In Lane	0.14		1.00	1.00		1.00	1.00		1.00	0.12		0.15
Lane Grp Cap(c), veh/h	914	847	791	123	2249	962	227	511	410	426	0	0
V/C Ratio(X)	0.42	0.44	0.14	0.59	0.29	0.02	0.46	0.59	0.24	0.72	0.00	0.00
Avail Cap(c_a), veh/h	914	847	791	213	2249	962	255	559	448	467	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	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	14.7	12.1	45.2	8.1	6.7	35.0	31.4	28.2	33.5	0.0	0.0
Incr Delay (d2), s/veh	1.4	1.7	0.4	4.5	0.3	0.0	1.4	1.4	0.3	4.8	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(50%),veh/ln	6.5	6.8	1.6	2.1	4.0	0.2	2.8	7.4	2.2	8.5	0.0	0.0
LnGrp Delay(d),s/veh	15.5	16.4	12.5	49.6	8.4	6.8	36.4	32.8	28.5	38.3	0.0	0.0
LnGrp LOS	B	B	B	D	A	A	D	C	C	D		
Approach Vol, veh/h		871			737			504			306	
Approach Delay, s/veh		15.5			12.5			32.7			38.3	
Approach LOS		B			B			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	10.9	57.6		31.4		68.6		31.4
Change Period (Y+Rc), s	4.0	5.0		4.0		5.0		4.0
Max Green Setting (Gmax), s	12.0	45.0		30.0		61.0		30.0
Max Q Clear Time (g_c+I1), s	6.0	16.5		23.4		10.1		24.3
Green Ext Time (p_c), s	0.1	6.0		1.0		5.3		1.3

Intersection Summary		
HCM 2010 Ctrl Delay		21.0
HCM 2010 LOS		C

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	17	38	9	15	22	23	338	23	8	242	20
Future Vol, veh/h	16	17	38	9	15	22	23	338	23	8	242	20
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
Heavy Vehicles, %	3	3	3	0	0	0	2	2	2	3	3	3
Mvmt Flow	16	17	38	9	15	22	23	338	23	8	242	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.7	11.7	10.1
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	23%	20%	3%
Vol Thru, %	88%	24%	33%	90%
Vol Right, %	6%	54%	48%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	384	71	46	270
LT Vol	23	16	9	8
Through Vol	338	17	15	242
RT Vol	23	38	22	20
Lane Flow Rate	384	71	46	270
Geometry Grp	1	1	1	1
Degree of Util (X)	0.481	0.103	0.067	0.347
Departure Headway (Hd)	4.512	5.2	5.221	4.632
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	795	684	680	772
Service Time	2.555	3.27	3.296	2.68
HCM Lane V/C Ratio	0.483	0.104	0.068	0.35
HCM Control Delay	11.7	8.9	8.7	10.1
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.6	0.3	0.2	1.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	27	27	27	44	13	23	304	47	7	220	8
Future Volume (veh/h)	12	27	27	27	44	13	23	304	47	7	220	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.98		0.94	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1863	1845	1845	1845
Adj Flow Rate, veh/h	12	27	27	27	44	13	23	304	47	7	220	8
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	127	268	231	214	329	87	646	1011	811	558	1001	812
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	193	781	674	425	959	254	1130	1863	1494	1003	1845	1496
Grp Volume(v), veh/h	66	0	0	84	0	0	23	304	47	7	220	8
Grp Sat Flow(s),veh/h/ln	1649	0	0	1638	0	0	1130	1863	1494	1003	1845	1496
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.8	6.2	1.0	0.3	4.3	0.2
Cycle Q Clear(g_c), s	1.8	0.0	0.0	2.2	0.0	0.0	5.1	6.2	1.0	6.5	4.3	0.2
Prop In Lane	0.18		0.41	0.32		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	626	0	0	630	0	0	646	1011	811	558	1001	812
V/C Ratio(X)	0.11	0.00	0.00	0.13	0.00	0.00	0.04	0.30	0.06	0.01	0.22	0.01
Avail Cap(c_a), veh/h	626	0	0	630	0	0	646	1011	811	558	1001	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	0.0	15.9	0.0	0.0	9.6	8.7	7.6	10.5	8.3	7.4
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.4	0.0	0.0	0.1	0.8	0.1	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	1.2	0.0	0.0	0.3	3.4	0.5	0.1	2.3	0.1
LnGrp Delay(d),s/veh	16.1	0.0	0.0	16.3	0.0	0.0	9.7	9.5	7.7	10.6	8.8	7.4
LnGrp LOS	B			B			A	A	A	B	A	A
Approach Vol, veh/h		66			84			374			235	
Approach Delay, s/veh		16.1			16.3			9.3			8.8	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		28.0		42.0		28.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		38.0		24.0		38.0		24.0
Max Q Clear Time (g_c+I1), s		8.2		3.8		8.5		4.2
Green Ext Time (p_c), s		2.2		0.3		1.4		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		10.5
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	734	194	0	673	0	321	0	5	0	0	0
Future Volume (veh/h)	0	734	194	0	673	0	321	0	5	0	0	0
Number	1	6	16	5	2	12	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1863	0	1881	1881	1900			
Adj Flow Rate, veh/h	0	734	194	0	673	0	326	0	0			
Adj No. of Lanes	0	2	0	0	2	0	2	1	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	0	2	2	0	2	0	1	1	1			
Cap, veh/h	0	1952	516	0	2501	0	653	343	0			
Arrive On Green	0.00	0.71	0.71	0.00	0.71	0.00	0.18	0.00	0.00			
Sat Flow, veh/h	0	2856	730	0	3725	0	3583	1881	0			
Grp Volume(v), veh/h	0	470	458	0	673	0	326	0	0			
Grp Sat Flow(s),veh/h/ln	0	1770	1723	0	1770	0	1792	1881	0			
Q Serve(g_s), s	0.0	9.6	9.6	0.0	6.2	0.0	7.4	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	9.6	9.6	0.0	6.2	0.0	7.4	0.0	0.0			
Prop In Lane	0.00		0.42	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	0	1251	1218	0	2501	0	653	343	0			
V/C Ratio(X)	0.00	0.38	0.38	0.00	0.27	0.00	0.50	0.00	0.00			
Avail Cap(c_a), veh/h	0	1251	1218	0	2501	0	1035	543	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00	0.96	0.00	0.00			
Uniform Delay (d), s/veh	0.0	5.3	5.3	0.0	4.8	0.0	33.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.9	0.9	0.0	0.3	0.0	0.6	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			
%ile BackOfQ(50%),veh/ln	0.0	4.9	4.8	0.0	3.1	0.0	3.7	0.0	0.0			
LnGrp Delay(d),s/veh	0.0	6.1	6.2	0.0	5.0	0.0	33.7	0.0	0.0			
LnGrp LOS		A	A		A		C					
Approach Vol, veh/h		928			673			326				
Approach Delay, s/veh		6.1			5.0			33.7				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		69.6				69.6		20.4
Change Period (Y+Rc), s		6.0				6.0		4.0
Max Green Setting (Gmax), s		22.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		8.2				11.6		9.4
Green Ext Time (p_c), s		3.9				5.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	458	15	0	217	14	22	5	4	46	18	122
Future Vol, veh/h	46	458	15	0	217	14	22	5	4	46	18	122
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
Heavy Vehicles, %	10	10	10	9	9	9	10	10	10	9	9	9
Mvmt Flow	46	458	15	0	217	14	22	5	4	46	18	122
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20.6	11.3	9.9	11.1
HCM LOS	C	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	71%	9%	0%	25%
Vol Thru, %	16%	88%	94%	10%
Vol Right, %	13%	3%	6%	66%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	519	231	186
LT Vol	22	46	0	46
Through Vol	5	458	217	18
RT Vol	4	15	14	122
Lane Flow Rate	31	519	231	186
Geometry Grp	1	1	1	1
Degree of Util (X)	0.056	0.73	0.346	0.294
Departure Headway (Hd)	6.474	5.066	5.388	5.685
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	552	716	668	632
Service Time	4.528	3.093	3.424	3.726
HCM Lane V/C Ratio	0.056	0.725	0.346	0.294
HCM Control Delay	9.9	20.6	11.3	11.1
HCM Lane LOS	A	C	B	B
HCM 95th-tile Q	0.2	6.4	1.5	1.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	940	7	0	0	0	0	25	48	356	236	0
Future Volume (veh/h)	0	940	7	0	0	0	0	25	48	356	236	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1792	1900				0	1827	1900	1845	1845	0
Adj Flow Rate, veh/h	0	940	7				0	25	48	296	320	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	6	0				0	4	4	3	3	0
Cap, veh/h	0	0	0				0	0	0	344	399	0
Arrive On Green	0.00	0.00	0.00				0.00	0.00	0.00	0.06	0.07	0.00
Sat Flow, veh/h		0					0	-14883	-28576	1757	1845	0
Grp Volume(v), veh/h		0.0					0	0	73	296	320	0
Grp Sat Flow(s),veh/h/ln							0	0	-43459	1757	1845	0
Q Serve(g_s), s							0.0	0.0	0.1	15.0	15.4	0.0
Cycle Q Clear(g_c), s							0.0	0.0	0.1	15.0	15.4	0.0
Prop In Lane							0.00		0.66	1.00		0.00
Lane Grp Cap(c), veh/h							0	0	-48	344	399	0
V/C Ratio(X)							0.00	0.00	-1.51	0.86	0.80	0.00
Avail Cap(c_a), veh/h							0	0	-12072	517	1148	0
HCM Platoon Ratio							1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)							0.00	0.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh							0.0	0.0	0.0	40.9	39.9	0.0
Incr Delay (d2), s/veh							0.0	0.0	0.0	8.8	3.6	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							0.0	0.0	0.0	8.2	8.3	0.0
LnGrp Delay(d),s/veh							0.0	0.0	0.0	49.7	43.5	0.0
LnGrp LOS										D	D	
Approach Vol, veh/h								73			616	
Approach Delay, s/veh								0.0			46.5	
Approach LOS								A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		23.5			22.1	1.3		
Change Period (Y+Rc), s		4.0			4.5	4.0		
Max Green Setting (Gmax), s		56.0			26.5	25.0		
Max Q Clear Time (g_c+I1), s		17.4			17.0	0.0		
Green Ext Time (p_c), s		2.1			0.6	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	41.5
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	12	22	0	4	21	0	0	590	14
Future Volume (veh/h)	0	0	0	12	22	0	4	21	0	0	590	14
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1681	1681	0	1900	1900	0	0	1863	1900
Adj Flow Rate, veh/h				12	22	0	4	21	0	0	590	14
Adj No. of Lanes				1	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				13	13	0	0	0	0	0	2	2
Cap, veh/h				685	1367	0	206	1205	0	0	1747	41
Arrive On Green				0.43	0.43	0.00	0.49	0.49	0.00	0.00	0.16	0.16
Sat Flow, veh/h				1601	3279	0	309	2523	0	0	3627	84
Grp Volume(v), veh/h				12	22	0	12	13	0	0	295	309
Grp Sat Flow(s),veh/h/ln				1601	1597	0	1103	1643	0	0	1770	1848
Q Serve(g_s), s				0.4	0.4	0.0	0.1	0.4	0.0	0.0	13.3	13.3
Cycle Q Clear(g_c), s				0.4	0.4	0.0	13.4	0.4	0.0	0.0	13.3	13.3
Prop In Lane				1.00		0.00	0.33		0.00	0.00		0.05
Lane Grp Cap(c), veh/h				685	1367	0	599	812	0	0	875	914
V/C Ratio(X)				0.02	0.02	0.00	0.02	0.02	0.00	0.00	0.34	0.34
Avail Cap(c_a), veh/h				685	1367	0	599	812	0	0	875	914
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33
Upstream Filter(I)				1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				14.8	14.8	0.0	12.1	11.6	0.0	0.0	24.6	24.6
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.2	0.2	0.0	0.2	0.2	0.0	0.0	6.8	7.1
LnGrp Delay(d),s/veh				14.9	14.9	0.0	12.1	11.6	0.0	0.0	25.6	25.6
LnGrp LOS				B	B		B	B			C	C
Approach Vol, veh/h					34			25			604	
Approach Delay, s/veh					14.9			11.9			25.6	
Approach LOS					B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		48.0				48.0		42.0
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		44.5				44.5		38.5
Max Q Clear Time (g_c+I1), s		0.0				15.3		2.4
Green Ext Time (p_c), s		0.0				4.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1423	16	4	185	0	13	0	8	476	586	471
Future Volume (veh/h)	0	1423	16	4	185	0	13	0	8	476	586	471
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1827	1827	0	1900	0	1900	1881	1881	1881
Adj Flow Rate, veh/h	0	1423	16	4	185	0	13	0	8	476	586	471
Adj No. of Lanes	0	2	0	1	1	0	1	0	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	4	4	0	0	0	0	1	1	1
Cap, veh/h	0	2070	23	169	1055	0	2	0	0	598	638	538
Arrive On Green	0.00	0.39	0.39	0.58	0.58	0.00	0.00	0.00	0.00	0.33	0.34	0.34
Sat Flow, veh/h	0	3677	40	362	1827	0	1810	13		1792	1881	1586
Grp Volume(v), veh/h	0	702	737	4	185	0	13	2716.2		476	586	471
Grp Sat Flow(s),veh/h/ln	0	1770	1854	362	1827	0	1810	F		1792	1881	1586
Q Serve(g_s), s	0.0	29.8	29.9	0.8	4.3	0.0	0.1			21.7	26.9	25.1
Cycle Q Clear(g_c), s	0.0	29.8	29.9	30.6	4.3	0.0	0.1			21.7	26.9	25.1
Prop In Lane	0.00		0.02	1.00		0.00	1.00			1.00		1.00
Lane Grp Cap(c), veh/h	0	1022	1071	169	1055	0	2			598	638	538
V/C Ratio(X)	0.00	0.69	0.69	0.02	0.18	0.00	6.47			0.80	0.92	0.88
Avail Cap(c_a), veh/h	0	1022	1071	169	1055	0	101			598	951	802
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.81	0.81	0.00	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	20.8	20.8	25.9	8.9	0.0	45.0			27.2	28.5	28.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.2	0.3	0.0	2670.2			6.9	7.7	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.7	15.4	0.1	2.2	0.0	2.5			11.8	15.2	11.8
LnGrp Delay(d),s/veh	0.0	21.1	21.1	26.1	9.2	0.0	2716.2			34.1	36.3	33.1
LnGrp LOS		C	C	C	A		F			C	D	C
Approach Vol, veh/h		1439			189						1533	
Approach Delay, s/veh		21.1			9.6						34.6	
Approach LOS		C			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	
Phs Duration (G+Y+Rc), s		56.0	0.0	34.0		56.0	34.0	
Change Period (Y+Rc), s		4.0	4.5	3.5		4.0	3.5	
Max Green Setting (Gmax), s		27.5	5.0	45.5		27.5	15.5	
Max Q Clear Time (g_c+I1), s		31.9	0.0	28.9		32.6	23.7	
Green Ext Time (p_c), s		0.0	0.0	1.1		0.0	0.0	

Intersection Summary		
HCM 2010 Ctrl Delay		38.0
HCM 2010 LOS		D



Movement	EBT	EBR	EBR2	SBL2	SBL	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	333	90	8	453	140	1459	38
Future Volume (vph)	333	90	8	453	140	1459	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12
Total Lost time (s)	4.5			5.0		5.0	
Lane Util. Factor	0.95			1.00		0.91	
Frpb, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.97			1.00		1.00	
Flt Protected	1.00			0.95		1.00	
Satd. Flow (prot)	3356			1805		5143	
Flt Permitted	1.00			0.95		1.00	
Satd. Flow (perm)	3356			1805		5143	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	333	90	8	453	140	1459	38
RTOR Reduction (vph)	2	0	0	69	0	2	0
Lane Group Flow (vph)	429	0	0	384	0	1635	0
Confl. Peds. (#/hr)			2				13
Confl. Bikes (#/hr)		2	2				1
Turn Type	NA			Perm	Perm	NA	
Protected Phases	4					6	
Permitted Phases				6	6		
Actuated Green, G (s)	16.6			58.9		58.9	
Effective Green, g (s)	16.6			58.9		58.9	
Actuated g/C Ratio	0.20			0.69		0.69	
Clearance Time (s)	4.5			5.0		5.0	
Vehicle Extension (s)	3.0			3.0		3.0	
Lane Grp Cap (vph)	655			1250		3563	
v/s Ratio Prot	c0.13						
v/s Ratio Perm				0.21		0.32	
v/c Ratio	0.66			0.31		0.46	
Uniform Delay, d1	31.6			5.1		5.9	
Progression Factor	1.00			0.59		0.67	
Incremental Delay, d2	2.4			0.5		0.3	
Delay (s)	33.9			3.5		4.3	
Level of Service	C			A		A	
Approach Delay (s)	33.9					4.1	
Approach LOS	C					A	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBR	WBL	WBT	SBT	SBR	SWL	SWR
Lane Configurations							
Traffic Volume (vph)	3	84	131	540	30	1449	33
Future Volume (vph)	3	84	131	540	30	1449	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	12	12
Total Lost time (s)	5.0	5.0	5.0	5.0		5.0	
Lane Util. Factor	1.00	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	0.95	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	0.96	1.00	1.00		1.00	
Frt	0.86	1.00	1.00	0.99		1.00	
Flt Protected	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (prot)	1453	1672	5014	5138		3501	
Flt Permitted	1.00	0.95	1.00	1.00		0.95	
Satd. Flow (perm)	1453	1672	5014	5138		3501	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	84	131	540	30	1449	33
RTOR Reduction (vph)	3	79	0	8	0	0	0
Lane Group Flow (vph)	0	5	131	562	0	1482	0
Confl. Peds. (#/hr)	36	36			10		10
Confl. Bikes (#/hr)							
Turn Type	Perm	Perm	NA	NA		Prot	
Protected Phases			4	5		6	
Permitted Phases	4	4					
Actuated Green, G (s)	5.0	5.0	5.0	12.1		52.9	
Effective Green, g (s)	5.0	5.0	5.0	12.1		52.9	
Actuated g/C Ratio	0.06	0.06	0.06	0.14		0.62	
Clearance Time (s)	5.0	5.0	5.0	5.0		5.0	
Vehicle Extension (s)	0.2	0.2	0.2	0.2		0.2	
Lane Grp Cap (vph)	85	98	294	731		2178	
v/s Ratio Prot			c0.03	c0.11		c0.42	
v/s Ratio Perm	0.00	0.00					
v/c Ratio	0.00	0.05	0.45	0.77		0.68	
Uniform Delay, d1	37.7	37.8	38.7	35.1		10.5	
Progression Factor	1.00	0.45	0.58	1.00		1.00	
Incremental Delay, d2	0.0	0.1	0.4	4.4		1.7	
Delay (s)	37.7	17.0	23.0	39.5		12.3	
Level of Service	D	B	C	D		B	
Approach Delay (s)			20.6	39.5		12.3	
Approach LOS			C	D		B	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	638	184	56	362	0	0	0	0	212	440	142
Future Volume (veh/h)	0	638	184	56	362	0	0	0	0	212	440	142
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	0.99		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1881	1881	0				1900	1881	1900
Adj Flow Rate, veh/h	0	638	184	56	362	0				212	440	142
Adj No. of Lanes	0	2	1	1	2	0				0	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	1	1	0				0	1	0
Cap, veh/h	0	971	407	196	981	0				636	1428	462
Arrive On Green	0.00	0.27	0.27	0.09	0.09	0.00				0.52	0.48	0.50
Sat Flow, veh/h	0	3632	1482	663	3668	0				1316	2955	956
Grp Volume(v), veh/h	0	638	184	56	362	0				292	249	253
Grp Sat Flow(s),veh/h/ln	0	1770	1482	663	1787	0				1815	1712	1701
Q Serve(g_s), s	0.0	9.6	6.2	5.0	5.7	0.0				5.7	5.3	5.3
Cycle Q Clear(g_c), s	0.0	9.6	6.2	14.6	5.7	0.0				5.7	5.3	5.3
Prop In Lane	0.00		1.00	1.00		0.00				0.73		0.56
Lane Grp Cap(c), veh/h	0	971	407	196	981	0				877	827	822
V/C Ratio(X)	0.00	0.66	0.45	0.29	0.37	0.00				0.33	0.30	0.31
Avail Cap(c_a), veh/h	0	1121	469	224	1132	0				877	827	822
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	0.96	0.96	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.3	18.0	31.2	22.4	0.0				9.0	9.4	9.2
Incr Delay (d2), s/veh	0.0	1.1	0.7	0.8	0.2	0.0				1.0	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.8	2.6	1.0	2.9	0.0				3.1	2.7	2.7
LnGrp Delay(d),s/veh	0.0	20.3	18.8	31.9	22.6	0.0				10.1	10.3	10.2
LnGrp LOS		C	B	C	C					B	B	B
Approach Vol, veh/h		822			418						794	
Approach Delay, s/veh		20.0			23.9						10.2	
Approach LOS		B			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				22.5		35.0		22.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				20.0		30.0		20.0
Max Q Clear Time (g_c+I1), s				11.6		7.7		16.6
Green Ext Time (p_c), s				3.2		5.1		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	194	126	0	0	0	0	0	0	437	1174	0
Future Volume (veh/h)	0	194	126	0	0	0	0	0	0	437	1174	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900							1881	1881	0
Adj Flow Rate, veh/h	0	194	126							403	1222	0
Adj No. of Lanes	0	2	0							1	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2							1	1	0
Cap, veh/h	0	325	197							1255	3685	0
Arrive On Green	0.00	0.16	0.16							0.22	0.22	0.00
Sat Flow, veh/h	0	2150	1243							1792	5644	0
Grp Volume(v), veh/h	0	165	155							403	1222	0
Grp Sat Flow(s),veh/h/ln	0	1770	1531							1792	1881	0
Q Serve(g_s), s	0.0	7.4	8.1							16.2	15.6	0.0
Cycle Q Clear(g_c), s	0.0	7.4	8.1							16.2	15.6	0.0
Prop In Lane	0.00		0.81							1.00		0.00
Lane Grp Cap(c), veh/h	0	280	242							1255	3685	0
V/C Ratio(X)	0.00	0.59	0.64							0.32	0.33	0.00
Avail Cap(c_a), veh/h	0	416	360							1255	3685	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.94	0.94	0.00
Uniform Delay (d), s/veh	0.0	33.2	33.5							17.9	17.7	0.0
Incr Delay (d2), s/veh	0.0	0.7	1.1							0.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.5							8.3	8.2	0.0
LnGrp Delay(d),s/veh	0.0	33.9	34.6							18.6	17.9	0.0
LnGrp LOS		C	C							B	B	
Approach Vol, veh/h		320									1625	
Approach Delay, s/veh		34.2									18.1	
Approach LOS		C									B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				17.9		60.5		
Change Period (Y+Rc), s				4.5		5.0		
Max Green Setting (Gmax), s				20.0		55.5		
Max Q Clear Time (g_c+I1), s				10.1		18.2		
Green Ext Time (p_c), s				1.0		8.0		

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	106	152	0	0	0	0	0	1513	167
Future Volume (veh/h)	0	0	0	106	152	0	0	0	0	0	1513	167
Number				3	8	18				1	6	16
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	1881	0				0	1881	1900
Adj Flow Rate, veh/h				106	152	0				0	1513	167
Adj No. of Lanes				1	2	0				0	4	0
Peak Hour Factor				1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %				1	1	0				0	1	1
Cap, veh/h				397	623	0				0	3458	381
Arrive On Green				0.06	0.06	0.00				0.00	0.58	0.58
Sat Flow, veh/h				1792	3668	0				0	6202	655
Grp Volume(v), veh/h				106	152	0				0	1236	444
Grp Sat Flow(s),veh/h/ln				1792	1787	0				0	1618	1740
Q Serve(g_s), s				4.8	3.5	0.0				0.0	12.1	12.2
Cycle Q Clear(g_c), s				4.8	3.5	0.0				0.0	12.1	12.2
Prop In Lane				1.00		0.00				0.00		0.38
Lane Grp Cap(c), veh/h				397	623	0				0	2826	1013
V/C Ratio(X)				0.27	0.24	0.00				0.00	0.44	0.44
Avail Cap(c_a), veh/h				612	1051	0				0	2826	1013
HCM Platoon Ratio				0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.85	0.85	0.00				0.00	1.00	1.00
Uniform Delay (d), s/veh				35.3	34.7	0.0				0.0	9.9	10.0
Incr Delay (d2), s/veh				0.1	0.1	0.0				0.0	0.5	1.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	1.7	0.0				0.0	5.5	6.2
LnGrp Delay(d),s/veh				35.5	34.8	0.0				0.0	10.4	11.3
LnGrp LOS				D	C						B	B
Approach Vol, veh/h					258						1680	
Approach Delay, s/veh					35.0						10.7	
Approach LOS					D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs						6		8
Phs Duration (G+Y+Rc), s						55.5		19.3
Change Period (Y+Rc), s						6.0		4.5
Max Green Setting (Gmax), s						49.5		25.0
Max Q Clear Time (g_c+I1), s						14.2		6.8
Green Ext Time (p_c), s						10.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	342	109	0	220	109	0	0	10	0	0	11
Future Vol, veh/h	58	342	109	0	220	109	0	0	10	0	0	11
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
Heavy Vehicles, %	9	9	9	3	3	3	12	12	12	4	4	4
Mvmt Flow	58	342	109	0	220	109	0	0	10	0	0	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14	10.1	8.4	8.3
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	11%	0%	0%
Vol Thru, %	0%	67%	67%	0%
Vol Right, %	100%	21%	33%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	509	329	11
LT Vol	0	58	0	0
Through Vol	0	342	220	0
RT Vol	10	109	109	11
Lane Flow Rate	10	509	329	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.015	0.614	0.394	0.016
Departure Headway (Hd)	5.28	4.341	4.311	5.141
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	835	836	694
Service Time	3.33	2.341	2.331	3.19
HCM Lane V/C Ratio	0.015	0.61	0.394	0.016
HCM Control Delay	8.4	14	10.1	8.3
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0	4.3	1.9	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	1236	17	0	0	0	0	306	20	50	20	0
Future Volume (veh/h)	102	1236	17	0	0	0	0	306	20	50	20	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900				0	1863	1900	1900	1900	0
Adj Flow Rate, veh/h	102	1236	17				0	306	20	50	20	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	2	2	0	0	0
Cap, veh/h	226	2930	41				0	364	24	72	571	0
Arrive On Green	0.20	0.20	0.20				0.00	0.21	0.21	0.04	0.30	0.00
Sat Flow, veh/h	374	4843	69				0	1727	113	1810	1900	0
Grp Volume(v), veh/h	493	412	450				0	0	326	50	20	0
Grp Sat Flow(s),veh/h/ln	1808	1663	1815				0	0	1840	1810	1900	0
Q Serve(g_s), s	21.6	19.5	19.5				0.0	0.0	15.3	2.5	0.7	0.0
Cycle Q Clear(g_c), s	21.6	19.5	19.5				0.0	0.0	15.3	2.5	0.7	0.0
Prop In Lane	0.21		0.04				0.00		0.06	1.00		0.00
Lane Grp Cap(c), veh/h	1094	1006	1098				0	0	388	72	571	0
V/C Ratio(X)	0.45	0.41	0.41				0.00	0.00	0.84	0.70	0.04	0.00
Avail Cap(c_a), veh/h	1094	1006	1098				0	0	593	171	876	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.8	22.0	22.0				0.0	0.0	34.1	42.7	22.2	0.0
Incr Delay (d2), s/veh	0.9	0.9	0.8				0.0	0.0	4.0	11.5	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
%ile BackOfQ(50%),veh/ln	11.1	9.2	10.0				0.0	0.0	8.2	1.5	0.4	0.0
LnGrp Delay(d),s/veh	23.8	22.9	22.8				0.0	0.0	38.0	54.2	22.3	0.0
LnGrp LOS	C	C	C						D	D	C	
Approach Vol, veh/h		1355						326			70	
Approach Delay, s/veh		23.2						38.0			45.1	
Approach LOS		C						D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.1	23.5		58.4		31.6		
Change Period (Y+Rc), s	4.5	* 4.5		4.0		4.5		
Max Green Setting (Gmax), s	8.5	* 29		40.0		41.5		
Max Q Clear Time (g_c+I1), s	4.5	17.3		23.6		2.7		
Green Ext Time (p_c), s	0.0	1.0		5.9		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	16	101	10	393	0	0	70	0
Future Volume (veh/h)	0	0	0	0	16	101	10	393	0	0	70	0
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				0	1881	1881	1900	1863	0	0	1900	1900
Adj Flow Rate, veh/h				0	16	101	10	393	0	0	70	0
Adj No. of Lanes				0	3	1	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	1	1	2	2	0	0	0	0
Cap, veh/h				0	0	0	47	685	0	0	707	0
Arrive On Green				0.00	0.00	0.00	0.73	0.74	0.00	0.00	0.37	0.00
Sat Flow, veh/h					0		16	1840	0	0	1900	0
Grp Volume(v), veh/h					0.0		403	0	0	0	70	0
Grp Sat Flow(s),veh/h/ln							1856	0	0	0	1900	0
Q Serve(g_s), s							0.0	0.0	0.0	0.0	2.2	0.0
Cycle Q Clear(g_c), s							8.9	0.0	0.0	0.0	2.2	0.0
Prop In Lane							0.02		0.00	0.00		0.00
Lane Grp Cap(c), veh/h							722	0	0	0	707	0
V/C Ratio(X)							0.56	0.00	0.00	0.00	0.10	0.00
Avail Cap(c_a), veh/h							722	0	0	0	707	0
HCM Platoon Ratio							2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)							0.53	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh							8.4	0.0	0.0	0.0	18.4	0.0
Incr Delay (d2), s/veh							1.6	0.0	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh							0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln							4.7	0.0	0.0	0.0	1.2	0.0
LnGrp Delay(d),s/veh							10.0	0.0	0.0	0.0	18.7	0.0
LnGrp LOS							B				B	
Approach Vol, veh/h								403			70	
Approach Delay, s/veh								10.0			18.7	
Approach LOS								B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		
Phs Duration (G+Y+Rc), s		37.0				37.0		
Change Period (Y+Rc), s		3.5				3.5		
Max Green Setting (Gmax), s		33.5				33.5		
Max Q Clear Time (g_c+I1), s		10.9				4.2		
Green Ext Time (p_c), s		1.6				0.2		

Intersection Summary		
HCM 2010 Ctrl Delay		11.3
HCM 2010 LOS		B



Movement	EBL2	EBT	EBR	NBL	NBT	NBR2	SWR	SWR2
Lane Configurations								
Traffic Volume (vph)	461	1375	70	16	446	30	172	6
Future Volume (vph)	461	1375	70	16	446	30	172	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11
Total Lost time (s)	4.5	5.0			8.5		5.0	
Lane Util. Factor	0.97	0.95			1.00		0.88	
Frpb, ped/bikes	1.00	1.00			1.00		1.00	
Flpb, ped/bikes	1.00	1.00			1.00		1.00	
Frt	1.00	0.99			0.99		0.85	
Flt Protected	0.95	1.00			1.00		1.00	
Satd. Flow (prot)	3467	3572			1876		2617	
Flt Permitted	0.95	1.00			1.00		1.00	
Satd. Flow (perm)	3467	3572			1876		2617	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	461	1375	70	16	446	30	172	6
RTOR Reduction (vph)	0	0	0	0	65	0	117	0
Lane Group Flow (vph)	461	1445	0	0	427	0	61	0
Confl. Peds. (#/hr)			19	1		12	1	22
Confl. Bikes (#/hr)			3			2	2	2
Heavy Vehicles (%)	1%	0%	0%	0%	0%	2%	5%	5%
Turn Type	Prot	NA		Split	NA		Prot	
Protected Phases	5	2		4	4		6	
Permitted Phases								
Actuated Green, G (s)	43.7	55.2			21.3		7.0	
Effective Green, g (s)	43.7	55.2			21.3		7.0	
Actuated g/C Ratio	0.49	0.61			0.24		0.08	
Clearance Time (s)	4.5	5.0			8.5		5.0	
Vehicle Extension (s)	2.0	2.0			2.0		2.0	
Lane Grp Cap (vph)	1683	2190			443		203	
v/s Ratio Prot	0.13	c0.40			c0.23		0.02	
v/s Ratio Perm								
v/c Ratio	0.27	0.66			0.96		0.30	
Uniform Delay, d1	13.7	11.3			34.0		39.2	
Progression Factor	1.46	1.55			0.55		1.43	
Incremental Delay, d2	0.0	0.9			30.9		0.3	
Delay (s)	20.1	18.4			49.6		56.2	
Level of Service	C	B			D		E	
Approach Delay (s)		18.9			49.6			
Approach LOS		B			D			

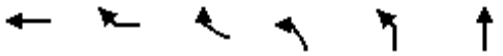
Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	206	580	1403	65	90	44
Future Volume (vph)	206	580	1403	65	90	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	0.81	0.81	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	0.98	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.95	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1427	6140	5146		3339	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1427	6140	5146		3339	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	206	580	1403	65	90	44
RTOR Reduction (vph)	123	60	5	0	0	0
Lane Group Flow (vph)	62	541	1463	0	134	0
Confl. Peds. (#/hr)	20			10		10
Confl. Bikes (#/hr)						
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	28.3	28.3	34.9		7.3	
Effective Green, g (s)	28.3	28.3	34.9		7.3	
Actuated g/C Ratio	0.33	0.33	0.41		0.09	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	1.5	1.5	3.0		1.5	
Lane Grp Cap (vph)	475	2044	2112		286	
v/s Ratio Prot			c0.28		c0.04	
v/s Ratio Perm	0.04	0.09				
v/c Ratio	0.13	0.26	0.69		0.47	
Uniform Delay, d1	19.8	20.7	20.6		37.0	
Progression Factor	2.90	1.40	1.00		1.00	
Incremental Delay, d2	0.5	0.3	1.0		0.4	
Delay (s)	57.9	29.4	21.6		37.4	
Level of Service	E	C	C		D	
Approach Delay (s)		36.1	21.6		37.4	
Approach LOS		D	C		D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	174	651	61	41	1307	348
Future Volume (vph)	174	651	61	41	1307	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0
Lane Util. Factor	0.91	0.91		0.86	0.81	0.81
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	0.91	0.85		1.00	1.00	1.00
Flt Protected	1.00	1.00		0.95	0.95	0.97
Satd. Flow (prot)	3058	1421		1552	1462	4471
Flt Permitted	1.00	1.00		0.95	0.95	0.97
Satd. Flow (perm)	3058	1421		1552	1462	4471
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	174	651	61	41	1307	348
RTOR Reduction (vph)	0	17	0	17	9	0
Lane Group Flow (vph)	402	467	0	20	648	1002
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Turn Type	NA	Perm		Split	Split	NA
Protected Phases	4			2	2	2
Permitted Phases		4				
Actuated Green, G (s)	29.0	29.0		46.5	46.5	46.5
Effective Green, g (s)	29.0	29.0		46.5	46.5	46.5
Actuated g/C Ratio	0.34	0.34		0.55	0.55	0.55
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0
Vehicle Extension (s)	5.0	5.0		1.0	1.0	1.0
Lane Grp Cap (vph)	1043	484		849	799	2445
v/s Ratio Prot	0.13			0.01	c0.44	0.22
v/s Ratio Perm		c0.33				
v/c Ratio	0.39	0.96		0.02	0.81	0.41
Uniform Delay, d1	21.2	27.5		8.8	15.7	11.2
Progression Factor	1.00	1.00		0.33	0.36	0.30
Incremental Delay, d2	0.5	32.2		0.0	6.9	0.4
Delay (s)	21.7	59.7		3.0	12.7	3.8
Level of Service	C	E		A	B	A
Approach Delay (s)	42.5					7.2
Approach LOS	D					A

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↑↑				
Traffic Volume (veh/h)	303	547	0	0	305	312	111	260	76	0	0	0
Future Volume (veh/h)	303	547	0	0	305	312	111	260	76	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1863	0	0	1881	1900	1900	1900	1900			
Adj Flow Rate, veh/h	303	547	0	0	305	312	111	260	76			
Adj No. of Lanes	0	2	0	0	2	0	0	3	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	1	1	0	0	0			
Cap, veh/h	629	1116	0	0	1193	1022	206	519	149			
Arrive On Green	0.23	0.22	0.00	0.00	1.00	1.00	0.18	0.17	0.17			
Sat Flow, veh/h	769	1757	0	0	1881	1530	1240	3132	902			
Grp Volume(v), veh/h	325	525	0	0	305	312	165	139	144			
Grp Sat Flow(s),veh/h/ln	831	1610	0	0	1787	1530	1838	1729	1707			
Q Serve(g_s), s	20.6	17.1	0.0	0.0	0.0	0.0	4.9	4.4	4.6			
Cycle Q Clear(g_c), s	20.8	17.1	0.0	0.0	0.0	0.0	4.9	4.4	4.6			
Prop In Lane	0.93		0.00	0.00		1.00	0.67		0.53			
Lane Grp Cap(c), veh/h	684	1075	0	0	1193	1022	305	287	283			
V/C Ratio(X)	0.47	0.49	0.00	0.00	0.26	0.31	0.54	0.48	0.51			
Avail Cap(c_a), veh/h	684	1075	0	0	1193	1022	643	605	598			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.65	0.65	0.00	0.00	0.82	0.82	0.92	0.92	0.92			
Uniform Delay (d), s/veh	15.7	14.4	0.0	0.0	0.0	0.0	22.6	22.7	22.8			
Incr Delay (d2), s/veh	1.5	1.0	0.0	0.0	0.4	0.6	0.5	0.4	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.9	8.0	0.0	0.0	0.1	0.2	2.5	2.1	2.2			
LnGrp Delay(d),s/veh	17.2	15.5	0.0	0.0	0.4	0.6	23.1	23.1	23.3			
LnGrp LOS	B	B			A	A	C	C	C			
Approach Vol, veh/h		850			617			447				
Approach Delay, s/veh		16.1			0.5			23.2				
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		14.9		45.1				45.1
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		21.0		29.0				29.0
Max Q Clear Time (g_c+I1), s		6.9		22.8				2.0
Green Ext Time (p_c), s		1.5		2.5				2.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B



Movement	EBL	EBT	NBT	NBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	211	420	928	61	438	54
Future Volume (vph)	211	420	928	61	438	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	12	12	12
Total Lost time (s)	4.5	4.5	5.0		5.0	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1728	4964	5080		3426	
Flt Permitted	0.95	1.00	1.00		0.96	
Satd. Flow (perm)	1728	4964	5080		3426	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	211	420	928	61	438	54
RTOR Reduction (vph)	56	0	9	0	0	0
Lane Group Flow (vph)	155	420	980	0	492	0
Confl. Peds. (#/hr)				11		11
Confl. Bikes (#/hr)						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		4	2		1	
Permitted Phases	4					
Actuated Green, G (s)	32.5	32.5	21.6		16.4	
Effective Green, g (s)	32.5	32.5	21.6		16.4	
Actuated g/C Ratio	0.38	0.38	0.25		0.19	
Clearance Time (s)	4.5	4.5	5.0		5.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	660	1898	1290		661	
v/s Ratio Prot		0.08	c0.19		c0.14	
v/s Ratio Perm	c0.09					
v/c Ratio	0.24	0.22	0.76		0.74	
Uniform Delay, d1	17.8	17.7	29.3		32.3	
Progression Factor	1.58	1.34	1.00		1.00	
Incremental Delay, d2	0.8	0.3	2.3		4.0	
Delay (s)	28.9	24.0	31.6		36.3	
Level of Service	C	C	C		D	
Approach Delay (s)		25.7	31.6		36.3	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

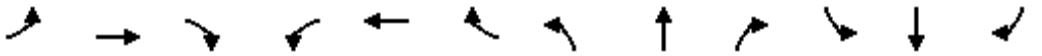


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	158	430	103	1474	0	0	0	0
Future Volume (veh/h)	0	0	0	0	158	430	103	1474	0	0	0	0
Number				3	8	18	5	2	12			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h				0	158	430	103	1474	0			
Adj No. of Lanes				0	1	2	1	3	1			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	1	1	1	1	1			
Cap, veh/h				0	328	546	1364	4029	1142			
Arrive On Green				0.00	0.17	0.17	0.24	0.24	0.00			
Sat Flow, veh/h				0	1881	3131	1792	5644	1599			
Grp Volume(v), veh/h				0	158	430	103	1474	0			
Grp Sat Flow(s),veh/h/ln				0	1881	1566	1792	1881	1599			
Q Serve(g_s), s				0.0	6.4	11.2	3.8	18.6	0.0			
Cycle Q Clear(g_c), s				0.0	6.4	11.2	3.8	18.6	0.0			
Prop In Lane				0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h				0	328	546	1364	4029	1142			
V/C Ratio(X)				0.00	0.48	0.79	0.08	0.37	0.00			
Avail Cap(c_a), veh/h				0	443	737	1364	4029	1142			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)				0.00	0.99	0.99	0.65	0.65	0.00			
Uniform Delay (d), s/veh				0.0	31.6	33.6	10.8	16.4	0.0			
Incr Delay (d2), s/veh				0.0	1.1	4.0	0.1	0.2	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	3.4	5.1	1.9	9.8	0.0			
LnGrp Delay(d),s/veh				0.0	32.7	37.6	10.8	16.6	0.0			
LnGrp LOS					C	D	B	B				
Approach Vol, veh/h					588			1577				
Approach Delay, s/veh					36.3			16.2				
Approach LOS					D			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2						8
Phs Duration (G+Y+Rc), s		65.7						19.3
Change Period (Y+Rc), s		5.0						4.5
Max Green Setting (Gmax), s		55.5						20.0
Max Q Clear Time (g_c+I1), s		20.6						13.2
Green Ext Time (p_c), s		15.1						1.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	32	1	0	42	72	0	447	0	0	293	4
Future Volume (vph)	0	32	1	0	42	72	0	447	0	0	293	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			0.91			1.00			1.00	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		1853			1653			1773			1654	
Flt Permitted		1.00			1.00			1.00			1.00	
Satd. Flow (perm)		1853			1653			1773			1654	
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	32	1	0	42	72	0	447	0	0	293	4
RTOR Reduction (vph)	0	1	0	0	59	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	55	0	0	447	0	0	297	0
Confl. Peds. (#/hr)	4		18	18		4	7		2	2		7
Confl. Bikes (#/hr)			3			4			1			
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	0%	0%	0%	7%	7%	7%
Turn Type		NA			NA			NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases												
Actuated Green, G (s)		5.6			5.6			20.2			20.2	
Effective Green, g (s)		6.1			6.1			20.7			20.7	
Actuated g/C Ratio		0.18			0.18			0.59			0.59	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		324			289			1054			983	
v/s Ratio Prot		0.02			c0.03			c0.25			0.18	
v/s Ratio Perm												
v/c Ratio		0.10			0.19			0.42			0.30	
Uniform Delay, d1		12.0			12.2			3.8			3.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			0.3			0.3			0.2	
Delay (s)		12.2			12.6			4.1			3.7	
Level of Service		B			B			A			A	
Approach Delay (s)		12.2			12.6			4.1			3.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	34.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	276	44	9	205	68	112	387	24	69	244	13
Future Volume (veh/h)	34	276	44	9	205	68	112	387	24	69	244	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.95	0.99		0.95	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1696	1900	1900	1845	1900	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	34	276	44	9	205	68	112	387	24	69	244	13
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	12	12	12	3	3	3	1	1	1	0	0	0
Cap, veh/h	110	397	60	86	392	126	148	521	32	253	615	33
Arrive On Green	0.31	0.30	0.30	0.31	0.30	0.30	0.08	0.30	0.30	0.14	0.34	0.34
Sat Flow, veh/h	83	1311	198	20	1292	417	1792	1749	108	1810	1787	95
Grp Volume(v), veh/h	354	0	0	282	0	0	112	0	411	69	0	257
Grp Sat Flow(s),veh/h/ln	1591	0	0	1729	0	0	1792	0	1858	1810	0	1882
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	0.0	2.8	0.0	9.2	1.6	0.0	4.8
Cycle Q Clear(g_c), s	8.9	0.0	0.0	6.2	0.0	0.0	2.8	0.0	9.2	1.6	0.0	4.8
Prop In Lane	0.10		0.12	0.03		0.24	1.00		0.06	1.00		0.05
Lane Grp Cap(c), veh/h	585	0	0	623	0	0	148	0	553	253	0	648
V/C Ratio(X)	0.61	0.00	0.00	0.45	0.00	0.00	0.76	0.00	0.74	0.27	0.00	0.40
Avail Cap(c_a), veh/h	1186	0	0	1285	0	0	523	0	1406	430	0	1302
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	0.0	13.4	0.0	0.0	20.8	0.0	14.6	17.8	0.0	11.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.2	0.0	0.0	7.7	0.0	0.8	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0	2.9	0.0	0.0	1.7	0.0	4.8	0.8	0.0	2.5
LnGrp Delay(d),s/veh	14.7	0.0	0.0	13.6	0.0	0.0	28.5	0.0	15.4	18.0	0.0	11.7
LnGrp LOS	B			B			C		B	B		B
Approach Vol, veh/h		354			282			523			326	
Approach Delay, s/veh		14.7			13.6			18.2			13.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	17.8		18.0	8.3	19.9		18.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.5	4.0		4.0
Max Green Setting (Gmax), s	11.0	35.0		32.0	13.5	32.0		32.0
Max Q Clear Time (g_c+I1), s	13.6	11.2		10.9	4.8	6.8		8.2
Green Ext Time (p_c), s	0.0	1.8		1.6	0.2	1.0		1.2

Intersection Summary		
HCM 2010 Ctrl Delay	15.3	
HCM 2010 LOS	B	

Intersection	
Int Delay, s/veh	18.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	173	13	1	39	38	5	472	13	125	287	5
Future Vol, veh/h	7	173	13	1	39	38	5	472	13	125	287	5
Conflicting Peds, #/hr	0	0	5	5	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	3	3	3	0	0	0	2	2	2	0	0	0
Mvmt Flow	7	173	13	1	39	38	5	472	13	125	287	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1067	1035	295	1127	1031	479	292	0	0	485	0	0
Stage 1	540	540	-	489	489	-	-	-	-	-	-	-
Stage 2	527	495	-	638	542	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.1	6.5	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.5	4	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	199	231	742	183	235	591	1270	-	-	1088	-	-
Stage 1	524	520	-	564	553	-	-	-	-	-	-	-
Stage 2	533	544	-	468	523	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	142	198	739	42	202	591	1270	-	-	1088	-	-
Mov Cap-2 Maneuver	142	198	-	42	202	-	-	-	-	-	-	-
Stage 1	521	449	-	561	550	-	-	-	-	-	-	-
Stage 2	461	541	-	243	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	96.6	23	0.1	2.6
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1270	-	-	205	277	1088	-	-
HCM Lane V/C Ratio	0.004	-	-	0.941	0.282	0.115	-	-
HCM Control Delay (s)	7.8	0	-	96.6	23	8.7	0	-
HCM Lane LOS	A	A	-	F	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	7.8	1.1	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	1118	156	0	0	0	0	436	101	35	224	0
Future Volume (veh/h)	38	1118	156	0	0	0	0	436	101	35	224	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900				0	1900	1900	1900	1900	0
Adj Flow Rate, veh/h	38	1118	156				0	436	101	35	224	0
Adj No. of Lanes	0	3	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	0	0	0	0	0
Cap, veh/h	92	2865	415				0	397	92	80	507	0
Arrive On Green	0.21	0.21	0.21				0.00	0.27	0.27	0.18	0.18	0.00
Sat Flow, veh/h	142	4408	638				0	1487	344	882	1900	0
Grp Volume(v), veh/h	489	406	417				0	0	537	35	224	0
Grp Sat Flow(s),veh/h/ln	1820	1663	1706				0	0	1831	882	1900	0
Q Serve(g_s), s	20.8	18.8	18.8				0.0	0.0	24.0	0.0	9.5	0.0
Cycle Q Clear(g_c), s	20.8	18.8	18.8				0.0	0.0	24.0	24.0	9.5	0.0
Prop In Lane	0.08		0.37				0.00		0.19	1.00		0.00
Lane Grp Cap(c), veh/h	1183	1081	1109				0	0	488	80	507	0
V/C Ratio(X)	0.41	0.38	0.38				0.00	0.00	1.10	0.44	0.44	0.00
Avail Cap(c_a), veh/h	1183	1081	1109				0	0	488	80	507	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	0.89	0.89	0.89				0.00	0.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	20.6	19.8	19.8				0.0	0.0	33.0	49.0	31.0	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.9				0.0	0.0	70.6	1.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	8.9	9.2				0.0	0.0	21.7	0.9	5.0	0.0
LnGrp Delay(d),s/veh	21.5	20.6	20.6				0.0	0.0	103.6	50.3	31.2	0.0
LnGrp LOS	C	C	C						F	D	C	
Approach Vol, veh/h		1312						537			259	
Approach Delay, s/veh		21.0						103.6			33.8	
Approach LOS		C						F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		28.0		62.0		28.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		24.0		58.5		24.0		
Max Q Clear Time (g_c+I1), s		26.0		22.8		26.0		
Green Ext Time (p_c), s		0.0		7.2		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	43.6
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	47	115	11	0	478	0	0	198	4
Future Volume (veh/h)	0	0	0	47	115	11	0	478	0	0	198	4
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1710	1710	0	1710	0	1710	1710	1710
Adj Flow Rate, veh/h				47	115	11	0	478	0	0	198	4
Adj No. of Lanes				0	3	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	0	0	0	0	0	0	0	0
Cap, veh/h				301	809	77	0	1168	0	0	1141	23
Arrive On Green				0.23	0.24	0.24	0.00	1.00	0.00	0.00	0.23	0.23
Sat Flow, veh/h				1229	3308	316	0	1710	0	0	1670	34
Grp Volume(v), veh/h				63	53	57	0	478	0	0	0	202
Grp Sat Flow(s),veh/h/ln				1649	1556	1649	0	1710	0	0	0	1704
Q Serve(g_s), s				2.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	8.6
Cycle Q Clear(g_c), s				2.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	8.6
Prop In Lane				0.75		0.19	0.00		0.00	0.00		0.02
Lane Grp Cap(c), veh/h				403	380	403	0	1169	0	0	0	1164
V/C Ratio(X)				0.16	0.14	0.14	0.00	0.41	0.00	0.00	0.00	0.17
Avail Cap(c_a), veh/h				403	380	403	0	1169	0	0	0	1164
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	0.33	0.33	0.33
Upstream Filter(I)				1.00	1.00	1.00	0.00	0.09	0.00	0.00	0.00	0.97
Uniform Delay (d), s/veh				27.0	26.6	26.6	0.0	0.0	0.0	0.0	0.0	14.4
Incr Delay (d2), s/veh				0.8	0.8	0.7	0.0	0.1	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	1.1	1.2	0.0	0.0	0.0	0.0	0.0	4.2
LnGrp Delay(d),s/veh				27.8	27.3	27.4	0.0	0.1	0.0	0.0	0.0	14.7
LnGrp LOS				C	C	C		A				B
Approach Vol, veh/h					173			478			202	
Approach Delay, s/veh					27.5			0.1			14.7	
Approach LOS					C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		65.0		25.0		65.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		35.5		22.0		61.5		
Max Q Clear Time (g_c+I1), s		10.6		4.7		2.0		
Green Ext Time (p_c), s		1.2		0.8		3.7		

Intersection Summary		
HCM 2010 Ctrl Delay		9.1
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	1362	11	0	0	0	0	426	69	72	194	0
Future Volume (veh/h)	31	1362	11	0	0	0	0	426	69	72	194	0
Number	7	4	14				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1710	1710				0	1710	1710	1710	1710	1710
Adj Flow Rate, veh/h	31	1362	11				0	426	69	72	194	0
Adj No. of Lanes	0	2	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	33	1508	13				0	493	80	106	779	0
Arrive On Green	0.15	0.15	0.15				0.00	0.11	0.11	0.13	0.91	0.00
Sat Flow, veh/h	72	3310	28				0	1426	231	1629	1710	0
Grp Volume(v), veh/h	736	0	668				0	0	495	72	194	0
Grp Sat Flow(s),veh/h/ln	1706	0	1704				0	0	1658	1629	1710	0
Q Serve(g_s), s	38.4	0.0	34.5				0.0	0.0	26.4	3.8	1.2	0.0
Cycle Q Clear(g_c), s	38.4	0.0	34.5				0.0	0.0	26.4	3.8	1.2	0.0
Prop In Lane	0.04		0.02				0.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	777	0	776				0	0	573	106	779	0
V/C Ratio(X)	0.95	0.00	0.86				0.00	0.00	0.86	0.68	0.25	0.00
Avail Cap(c_a), veh/h	777	0	776				0	0	573	290	779	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	0.70	0.00	0.70				0.00	0.00	0.90	0.77	0.77	0.00
Uniform Delay (d), s/veh	37.1	0.0	35.5				0.0	0.0	37.8	38.2	2.2	0.0
Incr Delay (d2), s/veh	16.8	0.0	8.8				0.0	0.0	14.5	5.7	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.8	0.0	18.2				0.0	0.0	14.5	1.8	0.6	0.0
LnGrp Delay(d),s/veh	54.0	0.0	44.3				0.0	0.0	52.3	43.9	2.8	0.0
LnGrp LOS	D		D						D	D	A	
Approach Vol, veh/h		1404						495			266	
Approach Delay, s/veh		49.4						52.3			13.9	
Approach LOS		D						D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		45.0		45.0	9.9	35.1		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		41.0		41.0	16.0	21.0		
Max Q Clear Time (g_c+I1), s		3.2		40.4	5.8	28.4		
Green Ext Time (p_c), s		1.2		0.5	0.1	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	45.7
HCM 2010 LOS	D



Movement	WBL2	WBL	WBT	WBR	NBL2	NBL	NBT	SBT	SBR	SBR2
Lane Configurations										
Traffic Volume (vph)	46	134	266	29	7	152	304	220	37	12
Future Volume (vph)	46	134	266	29	7	152	304	220	37	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	10	10	10	10	10	10
Total Lost time (s)		3.0	3.0			4.5	4.5	4.5		
Lane Util. Factor		0.97	1.00			1.00	1.00	1.00		
Frpb, ped/bikes		1.00	0.99			1.00	1.00	0.99		
Flpb, ped/bikes		0.97	1.00			0.97	1.00	1.00		
Frt		1.00	0.99			1.00	1.00	0.98		
Flt Protected		0.95	1.00			0.95	1.00	1.00		
Satd. Flow (prot)		2953	1619			1474	1596	1540		
Flt Permitted		0.95	1.00			0.44	1.00	1.00		
Satd. Flow (perm)		2953	1619			685	1596	1540		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	46	134	266	29	7	152	304	220	37	12
RTOR Reduction (vph)	0	0	3	0	0	0	0	3	0	0
Lane Group Flow (vph)	0	180	292	0	0	159	304	266	0	0
Confl. Peds. (#/hr)		13		16	8	26			8	26
Confl. Bikes (#/hr)										
Turn Type	Perm	Perm	NA		Perm	Perm	NA	NA		
Protected Phases			4				2	2		
Permitted Phases	4	4			2	2				
Actuated Green, G (s)		56.3	56.3			26.2	26.2	26.2		
Effective Green, g (s)		56.3	56.3			26.2	26.2	26.2		
Actuated g/C Ratio		0.63	0.63			0.29	0.29	0.29		
Clearance Time (s)		3.0	3.0			4.5	4.5	4.5		
Vehicle Extension (s)		3.0	3.0			3.0	3.0	3.0		
Lane Grp Cap (vph)		1847	1012			199	464	448		
v/s Ratio Prot			c0.18				0.19	0.17		
v/s Ratio Perm		0.06				c0.23				
v/c Ratio		0.10	0.29			0.80	0.66	0.59		
Uniform Delay, d1		6.7	7.7			29.5	27.9	27.3		
Progression Factor		0.58	0.60			0.22	0.19	0.56		
Incremental Delay, d2		0.1	0.7			7.0	1.1	2.0		
Delay (s)		4.0	5.3			13.4	6.4	17.3		
Level of Service		A	A			B	A	B		
Approach Delay (s)			4.8				8.8	17.3		
Approach LOS			A				A	B		

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	13	83	19	16	279	0	0	318	12
Future Volume (veh/h)	0	0	0	13	83	19	16	279	0	0	318	12
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1710	0	0	1693	1710
Adj Flow Rate, veh/h				13	83	19	16	279	0	0	318	12
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	0	0	0	0	1	1
Cap, veh/h				114	741	175	67	925	0	0	918	35
Arrive On Green				0.33	0.32	0.34	0.58	0.57	0.00	0.00	1.00	1.00
Sat Flow, veh/h				352	2300	542	43	1633	0	0	1620	61
Grp Volume(v), veh/h				61	0	54	295	0	0	0	0	330
Grp Sat Flow(s),veh/h/ln				1643	0	1551	1676	0	0	0	0	1681
Q Serve(g_s), s				2.3	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				2.3	0.0	2.2	8.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane				0.21		0.35	0.05		0.00	0.00		0.04
Lane Grp Cap(c), veh/h				529	0	500	1010	0	0	0	0	953
V/C Ratio(X)				0.11	0.00	0.11	0.29	0.00	0.00	0.00	0.00	0.35
Avail Cap(c_a), veh/h				529	0	500	1010	0	0	0	0	953
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.4	0.0	21.2	10.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.7	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	1.0	3.9	0.0	0.0	0.0	0.0	0.3
LnGrp Delay(d),s/veh				21.8	0.0	21.7	10.9	0.0	0.0	0.0	0.0	1.0
LnGrp LOS				C		C	B					A
Approach Vol, veh/h					115			295			330	
Approach Delay, s/veh					21.8			10.9			1.0	
Approach LOS					C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		56.0				56.0		34.0
Change Period (Y+Rc), s		3.5				3.5		3.5
Max Green Setting (Gmax), s		52.5				52.5		30.5
Max Q Clear Time (g_c+I1), s		10.1				2.0		4.3
Green Ext Time (p_c), s		2.1				2.4		0.6

Intersection Summary		
HCM 2010 Ctrl Delay		8.2
HCM 2010 LOS		A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	602	75	0	0	0	0	220	83	62	254	0
Future Volume (veh/h)	12	602	75	0	0	0	0	220	83	62	254	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1710	1710	1644	1644	0
Adj Flow Rate, veh/h	12	602	75				0	220	83	62	254	0
Adj No. of Lanes	0	4	0				0	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	0	0	4	4	0
Cap, veh/h	24	1258	155				0	638	241	76	1053	0
Arrive On Green	0.25	0.24	0.24				0.00	0.18	0.18	0.05	0.64	0.00
Sat Flow, veh/h	100	5296	653				0	1177	444	1566	1644	0
Grp Volume(v), veh/h	202	316	171				0	0	303	62	254	0
Grp Sat Flow(s),veh/h/ln	1671	1442	1493				0	0	1622	1566	1644	0
Q Serve(g_s), s	9.4	8.4	8.9				0.0	0.0	14.7	3.5	5.9	0.0
Cycle Q Clear(g_c), s	9.4	8.4	8.9				0.0	0.0	14.7	3.5	5.9	0.0
Prop In Lane	0.06		0.44				0.00		0.27	1.00		0.00
Lane Grp Cap(c), veh/h	397	685	355				0	0	878	76	1053	0
V/C Ratio(X)	0.51	0.46	0.48				0.00	0.00	0.34	0.81	0.24	0.00
Avail Cap(c_a), veh/h	641	1105	572				0	0	878	165	1053	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97				0.00	0.00	0.95	0.50	0.50	0.00
Uniform Delay (d), s/veh	29.7	29.4	29.6				0.0	0.0	23.0	42.4	6.9	0.0
Incr Delay (d2), s/veh	1.0	0.5	1.0				0.0	0.0	1.0	9.9	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	3.4	3.8				0.0	0.0	6.9	1.7	2.8	0.0
LnGrp Delay(d),s/veh	30.7	29.9	30.5				0.0	0.0	24.0	52.3	7.2	0.0
LnGrp LOS	C	C	C						C	D	A	
Approach Vol, veh/h		689						303			316	
Approach Delay, s/veh		30.3						24.0			16.0	
Approach LOS		C						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.9	54.2		26.9		63.1		
Change Period (Y+Rc), s	4.5	5.5		5.5		5.5		
Max Green Setting (Gmax), s	9.5	30.5		34.5		44.5		
Max Q Clear Time (g_c+I1), s	5.5	16.7		11.4		7.9		
Green Ext Time (p_c), s	0.0	1.6		4.8		1.7		

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	24	717	41	102	136	0	0	289	67
Future Volume (veh/h)	0	0	0	24	717	41	102	136	0	0	289	67
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.93	0.99		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1660	1710	1710	1710	0	0	1693	1710
Adj Flow Rate, veh/h				24	717	41	102	136	0	0	289	67
Adj No. of Lanes				0	3	0	1	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	3	0	0	0	0	0	1	1
Cap, veh/h				73	2327	137	195	484	0	0	373	86
Arrive On Green				0.56	0.53	0.53	0.28	0.28	0.00	0.00	0.28	0.28
Sat Flow, veh/h				138	4363	257	924	1710	0	0	1315	305
Grp Volume(v), veh/h				288	239	255	102	136	0	0	0	356
Grp Sat Flow(s),veh/h/ln				1653	1511	1593	924	1710	0	0	0	1620
Q Serve(g_s), s				5.9	5.3	5.3	4.9	3.7	0.0	0.0	0.0	12.1
Cycle Q Clear(g_c), s				5.9	5.3	5.3	17.0	3.7	0.0	0.0	0.0	12.1
Prop In Lane				0.08		0.16	1.00		0.00	0.00		0.19
Lane Grp Cap(c), veh/h				882	806	850	195	485	0	0	0	459
V/C Ratio(X)				0.33	0.30	0.30	0.52	0.28	0.00	0.00	0.00	0.78
Avail Cap(c_a), veh/h				882	806	850	195	485	0	0	0	459
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				7.9	7.8	7.8	28.2	16.7	0.0	0.0	0.0	19.7
Incr Delay (d2), s/veh				1.0	0.9	0.9	9.6	1.4	0.0	0.0	0.0	12.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.9	2.4	2.5	2.2	1.9	0.0	0.0	0.0	6.9
LnGrp Delay(d),s/veh				8.9	8.7	8.7	37.8	18.2	0.0	0.0	0.0	31.8
LnGrp LOS				A	A	A	D	B				C
Approach Vol, veh/h					782			238			356	
Approach Delay, s/veh					8.8			26.6			31.8	
Approach LOS					A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.5				22.5		37.5
Change Period (Y+Rc), s		5.5				5.5		5.5
Max Green Setting (Gmax), s		17.0				17.0		32.0
Max Q Clear Time (g_c+I1), s		19.0				14.1		7.9
Green Ext Time (p_c), s		0.0				0.6		5.3

Intersection Summary		
HCM 2010 Ctrl Delay		17.8
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	555	49	73	519	24	39	163	23	43	209	41
Future Volume (veh/h)	19	555	49	73	519	24	39	163	23	43	209	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.90	0.98		0.89	0.98		0.95	0.98		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1693	1710	1710	1693	1710
Adj Flow Rate, veh/h	19	555	49	73	519	24	39	163	23	43	209	41
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	81	1308	113	165	1082	52	130	449	58	118	443	80
Arrive On Green	0.16	0.15	0.15	0.48	0.47	0.47	0.77	0.73	0.73	0.38	0.37	0.37
Sat Flow, veh/h	37	2802	243	193	2318	112	162	1225	158	136	1208	219
Grp Volume(v), veh/h	330	0	293	297	0	319	225	0	0	293	0	0
Grp Sat Flow(s),veh/h/ln	1631	0	1451	1134	0	1489	1546	0	0	1562	0	0
Q Serve(g_s), s	0.0	0.0	11.0	2.6	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	11.0	13.5	0.0	8.7	2.9	0.0	0.0	8.2	0.0	0.0
Prop In Lane	0.06		0.17	0.25		0.08	0.17		0.10	0.15		0.14
Lane Grp Cap(c), veh/h	852	0	677	623	0	695	663	0	0	667	0	0
V/C Ratio(X)	0.39	0.00	0.43	0.48	0.00	0.46	0.34	0.00	0.00	0.44	0.00	0.00
Avail Cap(c_a), veh/h	852	0	677	623	0	695	663	0	0	667	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.00	0.74	1.00	0.00	1.00	0.96	0.00	0.00	0.94	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	18.2	10.9	0.0	10.9	5.3	0.0	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.5	2.6	0.0	2.2	1.3	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(50%),veh/ln	5.0	0.0	4.7	4.0	0.0	4.0	1.4	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	19.0	0.0	19.7	13.5	0.0	13.0	6.7	0.0	0.0	16.5	0.0	0.0
LnGrp LOS	B		B	B		B	A			B		
Approach Vol, veh/h		623			616			225			293	
Approach Delay, s/veh		19.3			13.3			6.7			16.5	
Approach LOS		B			B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.0		33.0		27.0		33.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		22.0		28.0		22.0		28.0
Max Q Clear Time (g_c+I1), s		4.9		13.0		10.2		15.5
Green Ext Time (p_c), s		0.8		2.3		1.0		2.4

Intersection Summary		
HCM 2010 Ctrl Delay		15.1
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	59	185	33	25	173	0	0	218	21
Future Volume (veh/h)	0	0	0	59	185	33	25	173	0	0	218	21
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1900	1863	1900	1900	1863	0	0	1863	1900
Adj Flow Rate, veh/h				59	185	33	25	173	0	0	218	21
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				345	1130	209	126	603	0	0	595	57
Arrive On Green				0.47	0.47	0.47	0.36	0.36	0.00	0.00	0.36	0.36
Sat Flow, veh/h				739	2422	449	101	1697	0	0	1673	161
Grp Volume(v), veh/h				146	0	131	198	0	0	0	0	239
Grp Sat Flow(s),veh/h/ln				1826	0	1784	1798	0	0	0	0	1834
Q Serve(g_s), s				2.1	0.0	1.9	0.0	0.0	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s				2.1	0.0	1.9	3.4	0.0	0.0	0.0	0.0	4.3
Prop In Lane				0.40		0.25	0.13		0.00	0.00		0.09
Lane Grp Cap(c), veh/h				852	0	832	729	0	0	0	0	652
V/C Ratio(X)				0.17	0.00	0.16	0.27	0.00	0.00	0.00	0.00	0.37
Avail Cap(c_a), veh/h				852	0	832	729	0	0	0	0	652
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				7.0	0.0	6.9	10.5	0.0	0.0	0.0	0.0	10.7
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.9	0.0	0.0	0.0	0.0	1.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	1.0	1.9	0.0	0.0	0.0	0.0	2.5
LnGrp Delay(d),s/veh				7.4	0.0	7.3	11.4	0.0	0.0	0.0	0.0	12.3
LnGrp LOS				A		A	B					B
Approach Vol, veh/h					277			198			239	
Approach Delay, s/veh					7.4			11.4			12.3	
Approach LOS					A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		5.4		4.1		6.3		
Green Ext Time (p_c), s		0.8		1.4		0.9		

Intersection Summary		
HCM 2010 Ctrl Delay		10.1
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	436	69	0	0	0	0	188	14	8	170	0
Future Volume (veh/h)	30	436	69	0	0	0	0	188	14	8	170	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94				1.00		0.96	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1710	1710				0	1710	1710	1710	1710	0
Adj Flow Rate, veh/h	30	436	69				0	188	14	8	170	0
Adj No. of Lanes	1	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0				0	0	0	0	0	0
Cap, veh/h	841	2091	321				0	470	35	71	499	0
Arrive On Green	0.52	0.52	0.52				0.00	0.30	0.30	0.32	0.30	0.00
Sat Flow, veh/h	1629	4048	622				0	1567	117	28	1665	0
Grp Volume(v), veh/h	30	332	173				0	0	202	178	0	0
Grp Sat Flow(s),veh/h/ln	1629	1556	1557				0	0	1684	1693	0	0
Q Serve(g_s), s	0.5	3.5	3.6				0.0	0.0	5.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	3.5	3.6				0.0	0.0	5.7	4.8	0.0	0.0
Prop In Lane	1.00		0.40				0.00		0.07	0.04		0.00
Lane Grp Cap(c), veh/h	841	1608	805				0	0	505	613	0	0
V/C Ratio(X)	0.04	0.21	0.21				0.00	0.00	0.40	0.29	0.00	0.00
Avail Cap(c_a), veh/h	841	1608	805				0	0	505	613	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	7.8	7.9				0.0	0.0	16.7	16.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.6				0.0	0.0	2.4	1.2	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
%ile BackOfQ(50%),veh/ln	0.3	1.5	1.7				0.0	0.0	3.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	7.2	8.1	8.5				0.0	0.0	19.1	17.6	0.0	0.0
LnGrp LOS	A	A	A						B	B		
Approach Vol, veh/h		535						202			178	
Approach Delay, s/veh		8.2						19.1			17.6	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.5		36.5		23.5		
Change Period (Y+Rc), s		5.5		5.5		5.5		
Max Green Setting (Gmax), s		18.0		31.0		18.0		
Max Q Clear Time (g_c+I1), s		7.7		5.6		6.8		
Green Ext Time (p_c), s		0.8		3.7		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	69	391	0	103	113	0	0	112	122
Future Volume (veh/h)	0	0	0	69	391	0	103	113	0	0	112	122
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.99		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1710	1710	1710	1710	0	0	1676	1710
Adj Flow Rate, veh/h				69	391	0	103	113	0	0	112	122
Adj No. of Lanes				1	3	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	0	0	0	0	0	0	2	2
Cap, veh/h				719	2062	0	304	301	0	0	326	355
Arrive On Green				0.44	0.44	0.00	0.14	0.15	0.00	0.00	0.45	0.45
Sat Flow, veh/h				1629	4822	0	479	669	0	0	724	788
Grp Volume(v), veh/h				69	391	0	216	0	0	0	0	234
Grp Sat Flow(s),veh/h/ln				1629	1556	0	1148	0	0	0	0	1512
Q Serve(g_s), s				1.5	3.1	0.0	6.3	0.0	0.0	0.0	0.0	6.0
Cycle Q Clear(g_c), s				1.5	3.1	0.0	12.3	0.0	0.0	0.0	0.0	6.0
Prop In Lane				1.00		0.00	0.48		0.00	0.00		0.52
Lane Grp Cap(c), veh/h				719	2062	0	586	0	0	0	0	681
V/C Ratio(X)				0.10	0.19	0.00	0.37	0.00	0.00	0.00	0.00	0.34
Avail Cap(c_a), veh/h				719	2062	0	586	0	0	0	0	681
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				9.8	10.2	0.0	19.8	0.0	0.0	0.0	0.0	10.7
Incr Delay (d2), s/veh				0.3	0.2	0.0	1.8	0.0	0.0	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				0.7	1.3	0.0	3.7	0.0	0.0	0.0	0.0	2.7
LnGrp Delay(d),s/veh				10.0	10.4	0.0	21.6	0.0	0.0	0.0	0.0	12.1
LnGrp LOS				B	B		C					B
Approach Vol, veh/h					460			216			234	
Approach Delay, s/veh					10.4			21.6			12.1	
Approach LOS					B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		30.0				30.0		30.0
Change Period (Y+Rc), s		3.0				3.0		3.5
Max Green Setting (Gmax), s		27.0				27.0		26.5
Max Q Clear Time (g_c+I1), s		14.3				8.0		5.1
Green Ext Time (p_c), s		1.0				1.4		2.9

Intersection Summary		
HCM 2010 Ctrl Delay		13.5
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	320	49	1	257	4	16	6	11	10	1	6
Future Vol, veh/h	8	320	49	1	257	4	16	6	11	10	1	6
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
Heavy Vehicles, %	2	2	2	1	1	1	3	3	3	6	6	6
Mvmt Flow	8	320	49	1	257	4	16	6	11	10	1	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.7	9.5	8.6	8.5
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	2%	0%	59%
Vol Thru, %	18%	85%	98%	6%
Vol Right, %	33%	13%	2%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	377	262	17
LT Vol	16	8	1	10
Through Vol	6	320	257	1
RT Vol	11	49	4	6
Lane Flow Rate	33	377	262	17
Geometry Grp	1	1	1	1
Degree of Util (X)	0.048	0.446	0.322	0.025
Departure Headway (Hd)	5.245	4.263	4.418	5.333
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	681	848	815	670
Service Time	3.286	2.281	2.437	3.377
HCM Lane V/C Ratio	0.048	0.445	0.321	0.025
HCM Control Delay	8.6	10.7	9.5	8.5
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.2	2.3	1.4	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	1172	0	0	0	0	0	0	0	72	0	0
Future Volume (veh/h)	82	1172	0	0	0	0	0	0	0	72	0	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	0				0	1900	1900	1900	1863	0
Adj Flow Rate, veh/h	82	1172	0				0	0	0	72	0	0
Adj No. of Lanes	0	3	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	4	0				0	0	0	2	2	0
Cap, veh/h	223	3401	0				0	401	0	377	0	0
Arrive On Green	0.23	0.23	0.00				0.00	0.00	0.00	0.21	0.00	0.00
Sat Flow, veh/h	316	4984	0				0	1900	0	1406	0	0
Grp Volume(v), veh/h	470	784	0				0	0	0	72	0	0
Grp Sat Flow(s),veh/h/ln	1811	1663	0				0	1900	0	1406	0	0
Q Serve(g_s), s	19.6	17.7	0.0				0.0	0.0	0.0	3.8	0.0	0.0
Cycle Q Clear(g_c), s	19.6	17.7	0.0				0.0	0.0	0.0	3.8	0.0	0.0
Prop In Lane	0.17		0.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	1278	2346	0				0	401	0	377	0	0
V/C Ratio(X)	0.37	0.33	0.00				0.00	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1278	2346	0				0	401	0	377	0	0
HCM Platoon Ratio	0.33	0.33	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.7	16.9	0.0				0.0	0.0	0.0	29.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.4	0.0				0.0	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
%ile BackOfQ(50%),veh/ln	10.1	8.3	0.0				0.0	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	18.5	17.3	0.0				0.0	0.0	0.0	30.6	0.0	0.0
LnGrp LOS	B	B								C		
Approach Vol, veh/h		1254						0			72	
Approach Delay, s/veh		17.8						0.0			30.6	
Approach LOS		B									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.0		67.0		23.0		
Change Period (Y+Rc), s		4.0		3.5		4.0		
Max Green Setting (Gmax), s		19.0		63.5		19.0		
Max Q Clear Time (g_c+I1), s		0.0		0.0		5.8		
Green Ext Time (p_c), s		0.0		0.0		0.2		

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1531	7	0	0	0	0	68	23	76	38	0
Future Volume (veh/h)	10	1531	7	0	0	0	0	68	23	76	38	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.99	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1710	1710	1710	1644	0
Adj Flow Rate, veh/h	10	1531	7				0	68	23	76	38	0
Adj No. of Lanes	0	4	0				0	1	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	0	0	4	4	0
Cap, veh/h	18	2876	13				0	434	147	521	505	0
Arrive On Green	0.47	0.47	0.47				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	38	6162	29				0	1219	412	1015	1496	0
Grp Volume(v), veh/h	445	698	404				0	0	91	76	38	0
Grp Sat Flow(s),veh/h/ln	1675	1442	1671				0	0	1632	1015	1421	0
Q Serve(g_s), s	8.7	7.7	7.7				0.0	0.0	1.7	2.2	0.8	0.0
Cycle Q Clear(g_c), s	8.7	7.7	7.7				0.0	0.0	1.7	3.9	0.8	0.0
Prop In Lane	0.02		0.02				0.00		0.25	1.00		0.00
Lane Grp Cap(c), veh/h	781	1346	780				0	0	580	521	505	0
V/C Ratio(X)	0.57	0.52	0.52				0.00	0.00	0.16	0.15	0.08	0.00
Avail Cap(c_a), veh/h	781	1346	780				0	0	580	521	505	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.7	8.4	8.4				0.0	0.0	9.9	11.2	9.6	0.0
Incr Delay (d2), s/veh	3.0	1.4	2.5				0.0	0.0	0.6	0.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.3	4.0				0.0	0.0	0.9	0.8	0.3	0.0
LnGrp Delay(d),s/veh	11.7	9.9	10.9				0.0	0.0	10.5	11.8	9.9	0.0
LnGrp LOS	B	A	B						B	B	A	
Approach Vol, veh/h		1548						91			114	
Approach Delay, s/veh		10.7						10.5			11.2	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.0		25.0		20.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		16.0		21.0		16.0		
Max Q Clear Time (g_c+I1), s		3.7		10.7		5.9		
Green Ext Time (p_c), s		0.3		6.9		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	16	412	33	41	42	0	0	94	23
Future Volume (veh/h)	0	0	0	16	412	33	41	42	0	0	94	23
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	0.99		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1710	1676	1710	1710	1710	0	0	1644	1710
Adj Flow Rate, veh/h				16	412	33	41	42	0	0	94	23
Adj No. of Lanes				0	2	0	0	2	0	0	2	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	2	0	0	0	0	0	4	4
Cap, veh/h				46	1241	104	550	654	0	0	1001	237
Arrive On Green				0.14	0.14	0.14	0.40	0.40	0.00	0.00	0.40	0.40
Sat Flow, veh/h				110	2940	247	999	1712	0	0	2585	593
Grp Volume(v), veh/h				244	0	217	46	37	0	0	57	60
Grp Sat Flow(s),veh/h/ln				1671	0	1625	1155	1478	0	0	1562	1534
Q Serve(g_s), s				5.9	0.0	5.4	0.7	0.7	0.0	0.0	1.0	1.1
Cycle Q Clear(g_c), s				5.9	0.0	5.4	1.8	0.7	0.0	0.0	1.0	1.1
Prop In Lane				0.07		0.15	0.88		0.00	0.00		0.39
Lane Grp Cap(c), veh/h				706	0	686	613	591	0	0	625	614
V/C Ratio(X)				0.35	0.00	0.32	0.08	0.06	0.00	0.00	0.09	0.10
Avail Cap(c_a), veh/h				706	0	686	613	591	0	0	625	614
HCM Platoon Ratio				0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.7	0.0	13.5	8.7	8.3	0.0	0.0	8.4	8.4
Incr Delay (d2), s/veh				1.3	0.0	1.2	0.2	0.2	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.0	0.0	2.7	0.4	0.3	0.0	0.0	0.5	0.5
LnGrp Delay(d),s/veh				15.1	0.0	14.7	9.0	8.5	0.0	0.0	8.7	8.7
LnGrp LOS				B		B	A	A			A	A
Approach Vol, veh/h					461			83			117	
Approach Delay, s/veh					14.9			8.8			8.7	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		23.0		22.0				22.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		19.0		18.0				18.0
Max Q Clear Time (g_c+I1), s		7.9		3.8				3.1
Green Ext Time (p_c), s		2.2		0.3				0.5

Intersection Summary		
HCM 2010 Ctrl Delay		13.0
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	138	6	22	8	40	1	38	18	30	26	5
Future Vol, veh/h	3	138	6	22	8	40	1	38	18	30	26	5
Conflicting Peds, #/hr	30	0	66	66	0	30	22	0	113	113	0	22
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	4	4	4	4	4	4	0	0	0	0	0	0
Mvmt Flow	3	138	6	22	8	40	1	38	18	30	26	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	210	0	0	323	335	320	390	318	80
Stage 1	-	-	-	-	-	-	213	213	-	102	102	-
Stage 2	-	-	-	-	-	-	110	122	-	288	216	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1508	-	-	1349	-	-	634	589	725	573	602	986
Stage 1	-	-	-	-	-	-	794	730	-	909	815	-
Stage 2	-	-	-	-	-	-	900	799	-	724	728	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1465	-	-	1264	-	-	549	525	606	449	537	938
Mov Cap-2 Maneuver	-	-	-	-	-	-	549	525	-	449	537	-
Stage 1	-	-	-	-	-	-	742	683	-	881	778	-
Stage 2	-	-	-	-	-	-	832	762	-	591	681	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2.5	12.3	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	549	1465	-	-	1264	-	-	506
HCM Lane V/C Ratio	0.104	0.002	-	-	0.017	-	-	0.121
HCM Control Delay (s)	12.3	7.5	0	-	7.9	0	-	13.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	311	26	28	154	9	106	27	62	2	10	2
Future Vol, veh/h	8	311	26	28	154	9	106	27	62	2	10	2
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
Heavy Vehicles, %	1	1	1	8	8	8	2	2	2	0	0	0
Mvmt Flow	8	311	26	28	154	9	106	27	62	2	10	2
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.4	9.9	10.2	8.6
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	2%	15%	14%
Vol Thru, %	14%	90%	81%	71%
Vol Right, %	32%	8%	5%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	195	345	191	14
LT Vol	106	8	28	2
Through Vol	27	311	154	10
RT Vol	62	26	9	2
Lane Flow Rate	195	345	191	14
Geometry Grp	1	1	1	1
Degree of Util (X)	0.277	0.446	0.264	0.021
Departure Headway (Hd)	5.114	4.653	4.981	5.5
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	696	769	716	655
Service Time	3.188	2.712	3.05	3.5
HCM Lane V/C Ratio	0.28	0.449	0.267	0.021
HCM Control Delay	10.2	11.4	9.9	8.6
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.1	2.3	1.1	0.1

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↑			↑	
Traffic Vol, veh/h	7	172	5	6	54	26	2	10	9	33	11	15
Future Vol, veh/h	7	172	5	6	54	26	2	10	9	33	11	15
Conflicting Peds, #/hr	42	0	49	49	0	42	84	0	42	42	0	84
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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, %	3	3	3	2	2	2	10	10	10	2	2	2
Mvmt Flow	7	172	5	6	54	26	2	10	9	33	11	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	226	0	0	414	372	266	361	361	193
Stage 1	-	-	-	-	-	-	238	238	-	121	121	-
Stage 2	-	-	-	-	-	-	176	134	-	240	240	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.2	6.6	6.3	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.59	4.09	3.39	3.518	4.018	3.318
Pot Cap-1 Maneuver	1459	-	-	1342	-	-	535	546	754	595	566	849
Stage 1	-	-	-	-	-	-	748	694	-	883	796	-
Stage 2	-	-	-	-	-	-	807	770	-	763	707	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1279	-	-	448	494	690	528	512	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	494	-	528	512	-
Stage 1	-	-	-	-	-	-	709	657	-	842	760	-
Stage 2	-	-	-	-	-	-	713	735	-	708	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	11.5	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	571	1401	-	-	1279	-	-	627
HCM Lane V/C Ratio	0.033	0.005	-	-	0.005	-	-	0.041
HCM Control Delay (s)	11.5	7.6	0	-	7.8	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	328	15	9	146	21	17	82	17	32	63	48
Future Vol, veh/h	63	328	15	9	146	21	17	82	17	32	63	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
Heavy Vehicles, %	1	1	1	5	5	5	2	2	2	1	1	1
Mvmt Flow	63	328	15	9	146	21	17	82	17	32	63	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14	10	9.9	10
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	16%	5%	22%
Vol Thru, %	71%	81%	83%	44%
Vol Right, %	15%	4%	12%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	406	176	143
LT Vol	17	63	9	32
Through Vol	82	328	146	63
RT Vol	17	15	21	48
Lane Flow Rate	116	406	176	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.181	0.558	0.255	0.217
Departure Headway (Hd)	5.617	4.945	5.226	5.454
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	638	735	686	658
Service Time	3.658	2.945	3.259	3.493
HCM Lane V/C Ratio	0.182	0.552	0.257	0.217
HCM Control Delay	9.9	14	10	10
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.7	3.5	1	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1159	80	0	0	0	0	132	134	64	92	0
Future Volume (veh/h)	5	1159	80	0	0	0	0	132	134	64	92	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.95	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900				0	1881	1881	1900	1845	0
Adj Flow Rate, veh/h	5	1159	80				0	132	134	64	92	0
Adj No. of Lanes	0	3	0				0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	5	0				0	1	1	3	3	0
Cap, veh/h	10	2517	180				0	703	567	248	333	0
Arrive On Green	0.17	0.17	0.17				0.00	0.37	0.37	0.13	0.12	0.00
Sat Flow, veh/h	20	4833	346				0	1881	1518	514	892	0
Grp Volume(v), veh/h	460	381	404				0	132	134	156	0	0
Grp Sat Flow(s),veh/h/ln	1809	1647	1743				0	1881	1518	1406	0	0
Q Serve(g_s), s	20.7	18.7	18.7				0.0	4.3	5.5	5.2	0.0	0.0
Cycle Q Clear(g_c), s	20.7	18.7	18.7				0.0	4.3	5.5	9.5	0.0	0.0
Prop In Lane	0.01		0.20				0.00		1.00	0.41		0.00
Lane Grp Cap(c), veh/h	942	858	908				0	703	567	597	0	0
V/C Ratio(X)	0.49	0.44	0.44				0.00	0.19	0.24	0.26	0.00	0.00
Avail Cap(c_a), veh/h	942	858	908				0	1020	823	838	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	0.94	0.94	0.94				0.00	1.00	1.00	0.99	0.00	0.00
Uniform Delay (d), s/veh	26.4	25.6	25.6				0.0	19.0	19.4	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.6	1.5				0.0	0.0	0.1	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
%ile BackOfQ(50%),veh/ln	10.8	8.9	9.4				0.0	2.2	2.3	3.5	0.0	0.0
LnGrp Delay(d),s/veh	28.1	27.2	27.1				0.0	19.0	19.4	28.8	0.0	0.0
LnGrp LOS	C	C	C					B	B	C		
Approach Vol, veh/h		1244						266			156	
Approach Delay, s/veh		27.5						19.2			28.8	
Approach LOS		C						B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		38.6		51.4		38.6		
Change Period (Y+Rc), s		5.0		4.5		5.0		
Max Green Setting (Gmax), s		48.8		31.7		48.8		
Max Q Clear Time (g_c+I1), s		7.5		22.7		11.5		
Green Ext Time (p_c), s		0.8		3.9		0.7		

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	38	89	35	53	96	0	0	118	19
Future Volume (veh/h)	0	0	0	38	89	35	53	96	0	0	118	19
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	0.97		1.00	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
Adj Sat Flow, veh/h/ln				1710	1710	1710	1710	1693	0	0	1693	1710
Adj Flow Rate, veh/h				38	89	35	53	96	0	0	118	19
Adj No. of Lanes				0	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				0	0	0	1	1	0	0	1	1
Cap, veh/h				305	730	294	293	501	0	0	727	117
Arrive On Green				0.40	0.41	0.41	1.00	1.00	0.00	0.00	0.52	0.52
Sat Flow, veh/h				742	1775	716	462	969	0	0	1408	227
Grp Volume(v), veh/h				86	0	76	149	0	0	0	0	137
Grp Sat Flow(s),veh/h/ln				1673	0	1560	1431	0	0	0	0	1635
Q Serve(g_s), s				2.9	0.0	2.7	0.1	0.0	0.0	0.0	0.0	4.0
Cycle Q Clear(g_c), s				2.9	0.0	2.7	4.1	0.0	0.0	0.0	0.0	4.0
Prop In Lane				0.44		0.46	0.36		0.00	0.00		0.14
Lane Grp Cap(c), veh/h				688	0	641	786	0	0	0	0	845
V/C Ratio(X)				0.12	0.00	0.12	0.19	0.00	0.00	0.00	0.00	0.16
Avail Cap(c_a), veh/h				688	0	641	786	0	0	0	0	845
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				16.6	0.0	16.4	0.0	0.0	0.0	0.0	0.0	11.5
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.5	0.0	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				1.4	0.0	1.2	0.1	0.0	0.0	0.0	0.0	1.9
LnGrp Delay(d),s/veh				17.0	0.0	16.8	0.5	0.0	0.0	0.0	0.0	11.9
LnGrp LOS				B		B	A					B
Approach Vol, veh/h					162			149			137	
Approach Delay, s/veh					16.9			0.5			11.9	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		40.0		50.0		
Change Period (Y+Rc), s		3.5		3.0		3.5		
Max Green Setting (Gmax), s		46.5		37.0		46.5		
Max Q Clear Time (g_c+I1), s		6.1		4.9		6.0		
Green Ext Time (p_c), s		1.0		0.9		0.9		

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑						↱			↰↑	
Traffic Volume (veh/h)	48	1569	87	0	0	0	0	79	52	31	47	0
Future Volume (veh/h)	48	1569	87	0	0	0	0	79	52	31	47	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710				0	1676	1710	1710	1693	0
Adj Flow Rate, veh/h	48	1569	87				0	79	52	31	47	0
Adj No. of Lanes	0	4	0				0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	2	0				0	2	2	1	1	0
Cap, veh/h	68	2390	136				0	350	230	285	378	0
Arrive On Green	0.14	0.14	0.14				0.00	0.38	0.38	0.37	0.38	0.00
Sat Flow, veh/h	162	5661	322				0	926	610	458	1000	0
Grp Volume(v), veh/h	495	779	430				0	0	131	78	0	0
Grp Sat Flow(s),veh/h/ln	1668	1442	1593				0	0	1536	1458	0	0
Q Serve(g_s), s	12.7	11.5	11.5				0.0	0.0	2.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.7	11.5	11.5				0.0	0.0	2.6	1.4	0.0	0.0
Prop In Lane	0.10		0.20				0.00		0.40	0.40		0.00
Lane Grp Cap(c), veh/h	704	1217	673				0	0	580	646	0	0
V/C Ratio(X)	0.70	0.64	0.64				0.00	0.00	0.23	0.12	0.00	0.00
Avail Cap(c_a), veh/h	704	1217	673				0	0	580	646	0	0
HCM Platoon Ratio	0.33	0.33	0.33				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	16.1	16.1				0.0	0.0	9.5	9.2	0.0	0.0
Incr Delay (d2), s/veh	5.8	2.6	4.6				0.0	0.0	0.9	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
%ile BackOfQ(50%),veh/ln	7.0	5.0	5.9				0.0	0.0	1.2	0.7	0.0	0.0
LnGrp Delay(d),s/veh	22.5	18.7	20.8				0.0	0.0	10.4	9.6	0.0	0.0
LnGrp LOS	C	B	C						B	A		
Approach Vol, veh/h		1704						131			78	
Approach Delay, s/veh		20.3						10.4			9.6	
Approach LOS		C						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.5		23.5		21.5		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		17.0		19.0		7.0		
Max Q Clear Time (g_c+I1), s		4.6		14.7		3.4		
Green Ext Time (p_c), s		0.5		3.5		0.1		

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	37	361	30	63	68	0	0	41	37
Future Volume (veh/h)	0	0	0	37	361	30	63	68	0	0	41	37
Number				7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.84	0.89		1.00	1.00		0.86
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1676	1676	1710	1710	1693	0	0	1710	1710
Adj Flow Rate, veh/h				37	361	30	63	68	0	0	41	37
Adj No. of Lanes				1	2	0	0	1	0	0	1	0
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				2	2	2	1	1	0	0	0	0
Cap, veh/h				603	1108	91	396	385	0	0	374	337
Arrive On Green				0.38	0.38	0.38	0.47	0.49	0.00	0.00	0.49	0.49
Sat Flow, veh/h				1597	2933	241	568	787	0	0	764	690
Grp Volume(v), veh/h				37	194	197	131	0	0	0	0	78
Grp Sat Flow(s),veh/h/ln				1597	1593	1581	1355	0	0	0	0	1454
Q Serve(g_s), s				0.7	3.9	4.0	0.0	0.0	0.0	0.0	0.0	1.3
Cycle Q Clear(g_c), s				0.7	3.9	4.0	2.0	0.0	0.0	0.0	0.0	1.3
Prop In Lane				1.00		0.15	0.48		0.00	0.00		0.47
Lane Grp Cap(c), veh/h				603	602	597	751	0	0	0	0	711
V/C Ratio(X)				0.06	0.32	0.33	0.17	0.00	0.00	0.00	0.00	0.11
Avail Cap(c_a), veh/h				603	602	597	751	0	0	0	0	711
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				8.9	9.9	9.9	6.5	0.0	0.0	0.0	0.0	6.2
Incr Delay (d2), s/veh				0.2	1.4	1.5	0.5	0.0	0.0	0.0	0.0	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.3	1.9	1.9	1.0	0.0	0.0	0.0	0.0	0.6
LnGrp Delay(d),s/veh				9.1	11.3	11.4	7.0	0.0	0.0	0.0	0.0	6.5
LnGrp LOS				A	B	B	A					A
Approach Vol, veh/h					428			131			78	
Approach Delay, s/veh					11.2			7.0			6.5	
Approach LOS					B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.0		20.0		25.0		
Change Period (Y+Rc), s		3.0		3.0		3.0		
Max Green Setting (Gmax), s		22.0		17.0		22.0		
Max Q Clear Time (g_c+I1), s		4.0		6.0		3.3		
Green Ext Time (p_c), s		0.7		1.9		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	149	29	12	37	69	6	45	8	46	48	41
Future Vol, veh/h	24	149	29	12	37	69	6	45	8	46	48	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
Heavy Vehicles, %	1	1	1	7	7	7	2	2	2	6	6	6
Mvmt Flow	24	149	29	12	37	69	6	45	8	46	48	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	8.2	8.2	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	12%	10%	34%
Vol Thru, %	76%	74%	31%	36%
Vol Right, %	14%	14%	58%	30%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	202	118	135
LT Vol	6	24	12	46
Through Vol	45	149	37	48
RT Vol	8	29	69	41
Lane Flow Rate	59	202	118	135
Geometry Grp	1	1	1	1
Degree of Util (X)	0.078	0.25	0.144	0.176
Departure Headway (Hd)	4.762	4.45	4.381	4.68
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	750	806	818	765
Service Time	2.803	2.48	2.415	2.716
HCM Lane V/C Ratio	0.079	0.251	0.144	0.176
HCM Control Delay	8.2	9	8.2	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1	0.5	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	189	29	10	105	103	21	181	22	37	134	50
Future Volume (veh/h)	173	189	29	10	105	103	21	181	22	37	134	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.92	0.97		0.92	0.92		0.87	0.93		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1863	1863	1900	1900	1759	1759	1900	1776	1776
Adj Flow Rate, veh/h	173	189	29	10	105	103	21	181	22	37	134	50
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	8	8	8	7	7	7
Cap, veh/h	430	592	91	447	311	305	106	786	644	193	653	650
Arrive On Green	0.38	0.38	0.38	0.39	0.38	0.38	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1139	1573	241	1119	827	811	98	1595	1307	263	1325	1320
Grp Volume(v), veh/h	173	0	218	10	0	208	202	0	22	171	0	50
Grp Sat Flow(s),veh/h/ln	1139	0	1814	1119	0	1637	1692	0	1307	1588	0	1320
Q Serve(g_s), s	8.8	0.0	5.9	0.4	0.0	6.3	0.0	0.0	0.6	0.0	0.0	1.4
Cycle Q Clear(g_c), s	15.1	0.0	5.9	6.3	0.0	6.3	4.5	0.0	0.6	3.7	0.0	1.4
Prop In Lane	1.00		0.13	1.00		0.50	0.10		1.00	0.22		1.00
Lane Grp Cap(c), veh/h	430	0	683	447	0	617	892	0	644	846	0	650
V/C Ratio(X)	0.40	0.00	0.32	0.02	0.00	0.34	0.23	0.00	0.03	0.20	0.00	0.08
Avail Cap(c_a), veh/h	530	0	842	545	0	759	892	0	644	846	0	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	15.2	16.8	0.0	15.4	10.0	0.0	9.0	9.8	0.0	9.2
Incr Delay (d2), s/veh	0.6	0.0	0.3	0.0	0.0	0.3	0.6	0.0	0.1	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(50%),veh/ln	2.8	0.0	3.0	0.1	0.0	2.9	2.3	0.0	0.2	1.8	0.0	0.5
LnGrp Delay(d),s/veh	21.3	0.0	15.5	16.8	0.0	15.7	10.6	0.0	9.1	9.9	0.0	9.3
LnGrp LOS	C		B	B		B	B		A	A		A
Approach Vol, veh/h		391			218			224			221	
Approach Delay, s/veh		18.1			15.7			10.5			9.8	
Approach LOS		B			B			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.0		31.0		38.0		31.0
Change Period (Y+Rc), s		4.0		5.0		4.0		5.0
Max Green Setting (Gmax), s		34.0		32.0		34.0		32.0
Max Q Clear Time (g_c+I1), s		6.5		17.1		5.7		8.3
Green Ext Time (p_c), s		1.1		1.8		0.8		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B



Movement	EBL2	EBL	EBT	EBR	NBT	NBR	NBR2	SBL2	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	859	458	34	188	341	93	365	164	245
Future Volume (vph)	3	859	458	34	188	341	93	365	164	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)		6.0	6.0		3.5	3.5		4.5	4.5	4.5
Lane Util. Factor		0.91	0.91		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.83		1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.85		1.00	1.00	1.00
Flt Protected		0.95	0.98		1.00	1.00		0.95	0.95	1.00
Satd. Flow (prot)		1642	3358		1773	1244		1620	1685	1773
Flt Permitted		0.95	0.98		1.00	1.00		0.95	0.95	1.00
Satd. Flow (perm)		1642	3358		1773	1244		1620	1685	1773
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	859	458	34	188	341	93	365	164	245
RTOR Reduction (vph)	0	0	3	0	0	60	0	0	0	0
Lane Group Flow (vph)	0	432	919	0	188	374	0	365	164	245
Confl. Peds. (#/hr)				4		70	80	70	80	
Confl. Bikes (#/hr)						3				
Heavy Vehicles (%)	6%	0%	0%	0%	0%	0%	5%	4%	0%	0%
Turn Type	Perm	Split	NA		NA	Perm		Prot	Prot	NA
Protected Phases		4	4		2			1	1	6
Permitted Phases	4					2				
Actuated Green, G (s)		23.0	23.0		30.9	30.9		22.1	22.1	56.5
Effective Green, g (s)		23.0	23.0		30.9	30.9		22.1	22.1	56.5
Actuated g/C Ratio		0.26	0.26		0.34	0.34		0.25	0.25	0.63
Clearance Time (s)		6.0	6.0		3.5	3.5		4.5	4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)		419	858		608	427		397	413	1113
v/s Ratio Prot			c0.27		0.11			c0.23	0.10	0.14
v/s Ratio Perm		0.26				c0.30				
v/c Ratio		1.03	1.07		0.31	0.88		0.92	0.40	0.22
Uniform Delay, d1		33.5	33.5		21.7	27.8		33.1	28.4	7.2
Progression Factor		0.80	0.79		1.00	1.00		0.84	0.81	0.62
Incremental Delay, d2		51.4	51.1		1.3	21.6		27.8	2.7	0.4
Delay (s)		78.3	77.6		23.0	49.3		55.6	25.6	4.9
Level of Service		E	E		C	D		E	C	A
Approach Delay (s)			77.9		41.4					33.2
Approach LOS			E		D					C

Intersection Summary			
HCM 2000 Control Delay	57.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	237	142	498	0	191	0	0	524	23
Future Volume (veh/h)	0	0	0	237	142	498	0	191	0	0	524	23
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.91
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1693	1693	1710	0	1598	0	0	1629	1629
Adj Flow Rate, veh/h				237	142	0	0	191	0	0	524	23
Adj No. of Lanes				1	2	0	0	1	0	0	2	1
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				1	1	1	0	7	0	0	5	5
Cap, veh/h				699	1394	0	0	764	0	0	1478	601
Arrive On Green				0.43	0.43	0.00	0.00	0.96	0.00	0.00	0.48	0.48
Sat Flow, veh/h				1612	3301	0	0	1598	0	0	3176	1259
Grp Volume(v), veh/h				237	142	0	0	191	0	0	524	23
Grp Sat Flow(s),veh/h/ln				1612	1608	0	0	1598	0	0	1547	1259
Q Serve(g_s), s				8.8	2.4	0.0	0.0	0.6	0.0	0.0	9.6	0.9
Cycle Q Clear(g_c), s				8.8	2.4	0.0	0.0	0.6	0.0	0.0	9.6	0.9
Prop In Lane				1.00		0.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				699	1394	0	0	764	0	0	1478	601
V/C Ratio(X)				0.34	0.10	0.00	0.00	0.25	0.00	0.00	0.35	0.04
Avail Cap(c_a), veh/h				699	1394	0	0	764	0	0	1478	601
HCM Platoon Ratio				1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	0.00	0.96	0.00	0.00	0.74	0.74
Uniform Delay (d), s/veh				16.9	15.1	0.0	0.0	1.1	0.0	0.0	14.8	12.5
Incr Delay (d2), s/veh				1.3	0.1	0.0	0.0	0.8	0.0	0.0	0.5	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	1.1	0.0	0.0	0.4	0.0	0.0	4.2	0.3
LnGrp Delay(d),s/veh				18.3	15.3	0.0	0.0	1.8	0.0	0.0	15.3	12.6
LnGrp LOS				B	B			A			B	B
Approach Vol, veh/h					379			191			547	
Approach Delay, s/veh					17.1			1.8			15.2	
Approach LOS					B			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		47.0				47.0		43.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		43.0				28.0		39.0
Max Q Clear Time (g_c+I1), s		2.6				11.6		10.8
Green Ext Time (p_c), s		0.8				2.2		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1503	79	0	0	0	0	341	338	183	471	0
Future Volume (veh/h)	70	1503	79	0	0	0	0	341	338	183	471	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1660	1710				0	1644	1644	1598	1598	0
Adj Flow Rate, veh/h	70	1503	79				0	341	338	183	471	0
Adj No. of Lanes	0	4	0				0	1	2	1	1	0
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	3	0				0	4	4	7	7	0
Cap, veh/h	86	1980	107				0	595	802	394	884	0
Arrive On Green	0.35	0.36	0.36				0.00	0.36	0.36	0.14	0.55	0.00
Sat Flow, veh/h	241	5558	299				0	1644	2217	1522	1598	0
Grp Volume(v), veh/h	478	753	421				0	341	338	183	471	0
Grp Sat Flow(s),veh/h/ln	1648	1428	1595				0	1644	1108	1522	1598	0
Q Serve(g_s), s	27.6	24.2	24.2				0.0	17.5	12.1	0.0	19.6	0.0
Cycle Q Clear(g_c), s	27.6	24.2	24.2				0.0	17.5	12.1	0.0	19.6	0.0
Prop In Lane	0.15		0.19				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	587	1017	568				0	595	802	394	884	0
V/C Ratio(X)	0.81	0.74	0.74				0.00	0.57	0.42	0.46	0.53	0.00
Avail Cap(c_a), veh/h	730	1265	706				0	595	802	394	884	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.61	0.61	0.61				0.00	0.97	0.97	0.81	0.81	0.00
Uniform Delay (d), s/veh	30.7	29.6	29.6				0.0	27.0	25.2	33.2	14.9	0.0
Incr Delay (d2), s/veh	2.9	0.8	1.4				0.0	3.9	1.6	0.3	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	9.6	10.9				0.0	8.6	3.8	4.6	9.1	0.0
LnGrp Delay(d),s/veh	33.6	30.3	31.0				0.0	30.8	26.8	33.4	16.7	0.0
LnGrp LOS	C	C	C					C	C	C	B	
Approach Vol, veh/h		1652						679			654	
Approach Delay, s/veh		31.4						28.8			21.4	
Approach LOS		C						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	20.1	43.0		41.9		63.1		
Change Period (Y+Rc), s	5.0	* 5		4.5		5.0		
Max Green Setting (Gmax), s	6.5	* 38		46.5		44.0		
Max Q Clear Time (g_c+I1), s	12.0	19.5		29.6		21.6		
Green Ext Time (p_c), s	0.1	2.3		7.8		2.1		

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	94	337	111	34	377	0	0	565	60
Future Volume (veh/h)	0	0	0	94	337	111	34	377	0	0	565	60
Number				3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.90	0.99		1.00	1.00		0.83
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1644	1644	1644	1583	1583	0	0	1583	1583
Adj Flow Rate, veh/h				94	337	111	34	377	0	0	565	60
Adj No. of Lanes				1	2	1	1	1	0	0	1	1
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %				4	4	4	8	8	0	0	8	8
Cap, veh/h				378	754	303	388	986	0	0	986	700
Arrive On Green				0.24	0.24	0.24	0.64	0.62	0.00	0.00	0.62	0.62
Sat Flow, veh/h				1566	3124	1256	667	1583	0	0	1583	1124
Grp Volume(v), veh/h				94	337	111	34	377	0	0	565	60
Grp Sat Flow(s),veh/h/ln				1566	1562	1256	667	1583	0	0	1583	1124
Q Serve(g_s), s				3.4	6.4	5.2	2.1	8.2	0.0	0.0	14.6	1.5
Cycle Q Clear(g_c), s				3.4	6.4	5.2	16.8	8.2	0.0	0.0	14.6	1.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				378	754	303	388	986	0	0	986	700
V/C Ratio(X)				0.25	0.45	0.37	0.09	0.38	0.00	0.00	0.57	0.09
Avail Cap(c_a), veh/h				570	1138	457	388	986	0	0	986	700
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.98	0.98	0.98	0.81	0.81	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.4	22.6	22.1	12.1	6.5	0.0	0.0	7.7	5.3
Incr Delay (d2), s/veh				0.1	0.2	0.3	0.4	0.9	0.0	0.0	2.4	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	2.8	1.8	0.4	3.8	0.0	0.0	6.9	0.5
LnGrp Delay(d),s/veh				21.6	22.7	22.4	12.4	7.4	0.0	0.0	10.1	5.5
LnGrp LOS				C	C	C	B	A			B	A
Approach Vol, veh/h					542			411			625	
Approach Delay, s/veh					22.5			7.8			9.7	
Approach LOS					C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		48.6				48.6		21.4
Change Period (Y+Rc), s		5.0				5.0		4.5
Max Green Setting (Gmax), s		35.0				35.0		25.5
Max Q Clear Time (g_c+I1), s		16.6				18.8		8.4
Green Ext Time (p_c), s		2.3				1.7		1.2

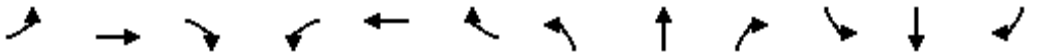
Intersection Summary		
HCM 2010 Ctrl Delay		13.6
HCM 2010 LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1875	9	0	0	0	0	39	36	0	0	0
Future Volume (veh/h)	117	1875	9	0	0	0	0	39	36	0	0	0
Number	7	4	14				5	2	12			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.93				1.00		0.83			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1660	1660				0	1693	1710			
Adj Flow Rate, veh/h	117	1875	9				0	39	36			
Adj No. of Lanes	0	2	1				0	2	0			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	3	3	3				0	1	1			
Cap, veh/h	167	2300	1039				0	191	134			
Arrive On Green	0.80	0.80	0.80				0.00	0.12	0.12			
Sat Flow, veh/h	154	2891	1307				0	1737	1158			
Grp Volume(v), veh/h	1070	922	9				0	38	37			
Grp Sat Flow(s),veh/h/ln	1610	1435	1307				0	1608	1202			
Q Serve(g_s), s	27.4	33.1	0.1				0.0	1.9	2.6			
Cycle Q Clear(g_c), s	36.1	33.1	0.1				0.0	1.9	2.6			
Prop In Lane	0.11		1.00				0.00		0.96			
Lane Grp Cap(c), veh/h	1325	1142	1039				0	186	139			
V/C Ratio(X)	0.81	0.81	0.01				0.00	0.20	0.27			
Avail Cap(c_a), veh/h	1325	1142	1039				0	268	200			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.68	0.68	0.68				0.00	1.00	1.00			
Uniform Delay (d), s/veh	5.5	5.3	1.9				0.0	36.0	36.3			
Incr Delay (d2), s/veh	3.7	4.3	0.0				0.0	0.2	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.8	13.9	0.0				0.0	0.9	0.9			
LnGrp Delay(d),s/veh	9.2	9.6	1.9				0.0	36.2	36.7			
LnGrp LOS	A	A	A					D	D			
Approach Vol, veh/h		2001						75				
Approach Delay, s/veh		9.4						36.5				
Approach LOS		A						D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		14.4		75.6				
Change Period (Y+Rc), s		4.0		4.0				
Max Green Setting (Gmax), s		15.0		67.0				
Max Q Clear Time (g_c+I1), s		4.6		38.1				
Green Ext Time (p_c), s		0.2		15.1				

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	484	192	50	121	0	0	0	0
Future Volume (vph)	0	0	0	0	484	192	50	121	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.91	1.00		0.86				
Frpb, ped/bikes					1.00	0.93		1.00				
Flpb, ped/bikes					1.00	1.00		0.98				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					4532	1310		5128				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					4532	1310		5128				
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	0	0	0	484	192	50	121	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	102	0	46	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	484	90	0	125	0	0	0	0
Confl. Peds. (#/hr)	90		88	88		90	67		191	191		67
Confl. Bikes (#/hr)						7			2			
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	3%	3%	3%	0%	0%	0%
Turn Type					NA	Perm	Perm	NA				
Protected Phases					2			1				
Permitted Phases						2	1					
Actuated Green, G (s)					42.0	42.0		22.2				
Effective Green, g (s)					42.0	42.0		22.2				
Actuated g/C Ratio					0.47	0.47		0.25				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					0.2	0.2		0.2				
Lane Grp Cap (vph)					2114	611		1264				
v/s Ratio Prot					c0.11							
v/s Ratio Perm						0.07		0.02				
v/c Ratio					0.23	0.15		0.10				
Uniform Delay, d1					14.3	13.7		26.2				
Progression Factor					0.39	0.01		0.96				
Incremental Delay, d2					0.0	0.0		0.1				
Delay (s)					5.6	0.2		25.4				
Level of Service					A	A		C				
Approach Delay (s)		0.0			4.1			25.4			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

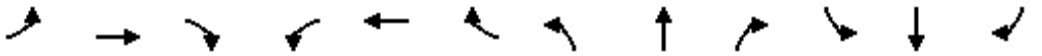
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	815	128	0	0	0	0	0	0	150	919	0
Future Volume (veh/h)	0	815	128	0	0	0	0	0	0	150	919	0
Number	7	4	14							1	6	16
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1660	1660							1710	1710	0
Adj Flow Rate, veh/h	0	815	128							150	919	0
Adj No. of Lanes	0	2	1							0	3	0
Peak Hour Factor	1.00	1.00	1.00							1.00	1.00	1.00
Percent Heavy Veh, %	0	3	3							0	0	0
Cap, veh/h	0	1072	480							302	1667	0
Arrive On Green	0.00	0.11	0.11							0.14	0.14	0.00
Sat Flow, veh/h	0	3237	1411							561	3939	0
Grp Volume(v), veh/h	0	815	128							384	685	0
Grp Sat Flow(s),veh/h/ln	0	1577	1411							1528	1416	0
Q Serve(g_s), s	0.0	22.6	7.5							19.0	20.2	0.0
Cycle Q Clear(g_c), s	0.0	22.6	7.5							21.0	20.2	0.0
Prop In Lane	0.00		1.00							0.39		0.00
Lane Grp Cap(c), veh/h	0	1072	480							718	1243	0
V/C Ratio(X)	0.00	0.76	0.27							0.54	0.55	0.00
Avail Cap(c_a), veh/h	0	1455	651							718	1243	0
HCM Platoon Ratio	1.00	0.33	0.33							0.33	0.33	1.00
Upstream Filter(I)	0.00	0.57	0.57							0.96	0.96	0.00
Uniform Delay (d), s/veh	0.0	36.4	29.7							30.5	30.2	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.2							2.7	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.0	2.9							9.6	8.2	0.0
LnGrp Delay(d),s/veh	0.0	37.3	29.9							33.2	31.9	0.0
LnGrp LOS		D	C							C	C	
Approach Vol, veh/h		943									1069	
Approach Delay, s/veh		36.3									32.4	
Approach LOS		D									C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		
Phs Duration (G+Y+Rc), s				35.1		44.0		
Change Period (Y+Rc), s				4.5		4.5		
Max Green Setting (Gmax), s				41.5		39.5		
Max Q Clear Time (g_c+I1), s				24.6		23.0		
Green Ext Time (p_c), s				6.0		6.9		

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	354	451	0	0	0	0	0	698	225
Future Volume (vph)	0	0	0	354	451	0	0	0	0	0	698	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)				4.0	4.0						4.0	4.0
Lane Util. Factor				0.91	0.91						0.86	0.86
Frpb, ped/bikes				1.00	1.00						1.00	0.93
Flpb, ped/bikes				0.77	0.94						1.00	1.00
Frt				1.00	1.00						1.00	0.85
Flt Protected				0.95	0.99						1.00	1.00
Satd. Flow (prot)				1104	2792						4048	1076
Flt Permitted				0.95	0.99						1.00	1.00
Satd. Flow (perm)				1104	2792						4048	1076
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	0	0	354	451	0	0	0	0	0	698	225
RTOR Reduction (vph)	0	0	0	136	41	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	48	580	0	0	0	0	0	721	202
Confl. Peds. (#/hr)	82		202	202		82	122		193	193		122
Confl. Bikes (#/hr)						9						5
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	0%	0%	0%	1%	1%	1%
Turn Type				Perm	NA						NA	Perm
Protected Phases					8						6	
Permitted Phases				8								6
Actuated Green, G (s)				23.6	23.6						58.4	58.4
Effective Green, g (s)				23.6	23.6						58.4	58.4
Actuated g/C Ratio				0.26	0.26						0.65	0.65
Clearance Time (s)				4.0	4.0						4.0	4.0
Vehicle Extension (s)				3.0	3.0						3.0	3.0
Lane Grp Cap (vph)				289	732						2626	698
v/s Ratio Prot											0.18	
v/s Ratio Perm				0.04	0.21							c0.19
v/c Ratio				0.17	0.79						0.27	0.29
Uniform Delay, d1				25.6	30.9						6.8	6.8
Progression Factor				0.09	0.50						1.00	1.00
Incremental Delay, d2				0.3	5.4						0.3	1.0
Delay (s)				2.6	21.0						7.0	7.9
Level of Service				A	C						A	A
Approach Delay (s)		0.0			16.8			0.0			7.2	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	839	0	0	0	0	0	936	1294	0	0	0
Future Volume (veh/h)	126	839	0	0	0	0	0	936	1294	0	0	0
Number	5	2	12				7	4	14			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1710	1644	0				0	1693	1693			
Adj Flow Rate, veh/h	126	839	0				0	936	1294			
Adj No. of Lanes	0	2	0				0	2	2			
Peak Hour Factor	1.00	1.00	1.00				1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0				0	1	1			
Cap, veh/h	165	842	0				0	1866	1492			
Arrive On Green	0.34	0.32	0.00				0.00	0.55	0.55			
Sat Flow, veh/h	355	2670	0				0	3386	2707			
Grp Volume(v), veh/h	506	459	0				0	936	1294			
Grp Sat Flow(s),veh/h/ln	1529	1421	0				0	1693	1353			
Q Serve(g_s), s	27.4	29.0	0.0				0.0	15.4	37.0			
Cycle Q Clear(g_c), s	29.3	29.0	0.0				0.0	15.4	37.0			
Prop In Lane	0.25		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	573	461	0				0	1866	1492			
V/C Ratio(X)	0.88	1.00	0.00				0.00	0.50	0.87			
Avail Cap(c_a), veh/h	573	461	0				0	1866	1492			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	30.2	30.3	0.0				0.0	12.5	17.4			
Incr Delay (d2), s/veh	17.7	40.9	0.0				0.0	1.0	7.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	14.8	16.6	0.0				0.0	7.4	15.1			
LnGrp Delay(d),s/veh	47.8	71.3	0.0				0.0	13.5	24.4			
LnGrp LOS	D	E						B	C			
Approach Vol, veh/h		965						2230				
Approach Delay, s/veh		59.0						19.8				
Approach LOS		E						B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		34.8		55.2				
Change Period (Y+Rc), s		5.6		5.6				
Max Green Setting (Gmax), s		29.2		49.6				
Max Q Clear Time (g_c+I1), s		31.3		39.0				
Green Ext Time (p_c), s		0.0		2.0				

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	532	131	273	790	0	0	0	0
Future Volume (veh/h)	0	0	0	0	532	131	273	790	0	0	0	0
Number				5	2	12	7	4	14			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.87	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0	1676	1676	1676	1676	0			
Adj Flow Rate, veh/h				0	532	131	266	800	0			
Adj No. of Lanes				0	2	1	1	3	0			
Peak Hour Factor				1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %				0	2	2	2	2	0			
Cap, veh/h				0	1203	466	940	2710	0			
Arrive On Green				0.00	0.38	0.38	0.18	0.18	0.00			
Sat Flow, veh/h				0	3269	1234	1597	5029	0			
Grp Volume(v), veh/h				0	532	131	266	800	0			
Grp Sat Flow(s),veh/h/ln				0	1593	1234	1597	1676	0			
Q Serve(g_s), s				0.0	11.2	6.7	13.0	12.4	0.0			
Cycle Q Clear(g_c), s				0.0	11.2	6.7	13.0	12.4	0.0			
Prop In Lane				0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h				0	1203	466	940	2710	0			
V/C Ratio(X)				0.00	0.44	0.28	0.28	0.30	0.00			
Avail Cap(c_a), veh/h				0	1203	466	940	2710	0			
HCM Platoon Ratio				1.00	1.00	1.00	0.33	0.33	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.62	0.62	0.00			
Uniform Delay (d), s/veh				0.0	20.9	19.5	22.4	22.2	0.0			
Incr Delay (d2), s/veh				0.0	1.2	1.5	0.5	0.2	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	5.1	2.5	5.9	5.8	0.0			
LnGrp Delay(d),s/veh				0.0	22.1	21.0	22.9	22.3	0.0			
LnGrp LOS					C	C	C	C				
Approach Vol, veh/h					663			1066				
Approach Delay, s/veh					21.9			22.5				
Approach LOS					C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				
Phs Duration (G+Y+Rc), s		38.0		52.0				
Change Period (Y+Rc), s		4.0		3.5				
Max Green Setting (Gmax), s		34.0		48.5				
Max Q Clear Time (g_c+I1), s		13.2		15.0				
Green Ext Time (p_c), s		0.6		1.2				

Intersection Summary		
HCM 2010 Ctrl Delay		22.2
HCM 2010 LOS		C

Notes

FEHR PEERS

Appendix D:

Embarcadero West Train Times and Gate Downtimes

Embarcadero West Train Times and Gate Downtimes

Train Network Entry (PM)[1]	Gate Downtime Length (min.)[2]	Train Type
3:00	1.0	Passenger
3:28	1.0	Passenger
3:54	1.0	Passenger
4:15	1.0	Passenger
4:18	2.6	Freight
4:41	1.0	Passenger
4:49	1.0	Passenger
4:54	1.0	Passenger
5:20	1.0	Passenger
5:25	1.0	Passenger
5:46	3.0	Freight
5:59	1.0	Passenger
6:09	1.0	Passenger
6:12	1.0	Passenger
6:30	1.0	Passenger
6:39	1.0	Passenger
6:56	1.0	Passenger
7:17	1.0	Passenger
7:27	5.3	Freight
7:39	1.0	Passenger

Notes:

1. Train Network Entry is when the train enters the microsimulation network. The gate downtime start time for each crossing depend on when the train crosses the gate.
2. Passenger train gate downtimes are the average of all passenger trains; freight train gate downtimes are based on specific freight trains from one day.

Source: Fehr & Peers, 2019; Data collected in January 2018.

FEHR PEERS

Appendix E:

Peak Period Intersection Volumes

Existing Peak Period Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	**NB/SB St**	**WB/EB St**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**
3:00 PM - 4:00 PM														
A	Union St	5th St	37	243	578	0	52	14	38	87	57	105	75	19
B	Adeline St	3rd St	18	142	146	54	102	22	23	77	9	72	74	70
C	Adeline St	5th St	68	54	115	72	44	13	21	585	59	78	118	34
E	Market St	3rd St	32	36	20	22	45	51	44	253	54	18	157	22
F	Market St	4th St	0	99	3	20	95	0	0	0	0	23	0	24
G	Market St	5th St	0	76	47	61	85	0	13	566	30	0	0	0
H	Market St	6th St	19	70	0	0	91	21	0	0	0	55	190	226
I	Market St	7th St	87	171	38	59	52	35	78	590	45	15	284	23
J	Brush St	5th St	0	0	33	372	126	0	0	666	8	0	0	0
K	Brush St	6th St	0	0	0	0	479	10	0	0	0	19	35	0
L	Brush St	7th St	0	0	0	296	469	187	0	672	15	5	135	0
O	Castro St	5th St	0	153	18	0	0	0	76	988	7	0	0	0
P	Castro St	7th St	11	311	19	0	0	0	236	732	0	0	129	7
T	MLK Jr Way	2nd St	2	61	3	18	88	3	5	21	7	3	37	40
U	MLK Jr Way	3rd St	56	44	6	20	30	11	21	121	76	3	97	36
V	MLK Jr Way	4th St	1	96	4	9	56	2	1	25	4	1	39	31
W	MLK Jr Way	5th St	0	94	34	29	27	0	22	944	40	0	0	0
AA	Jefferson St	4th St	8	0	6	0	0	0	0	31	7	7	63	0
BB	Clay St	4th St	14	0	9	0	0	0	0	31	6	13	56	0
CC	Washington St	4th St	9	89	12	15	81	11	15	22	3	16	49	23
DD	Washington St	5th St	0	70	57	30	63	0	16	978	44	0	0	0
EE	Broadway	5th St	0	178	275	197	214	0	787	231	47	0	0	0
FF	Broadway	6th St	39	150	0	0	533	22	0	0	0	162	92	517
D	Market St	Embarcadero West	4	32	5	37	42	38	37	16	1	2	2	19
S	MLK Jr Way	Embarcadero West	13	45	2	38	45	15	21	16	22	0	0	0
X	MLK Jr Way	6th St	38	78	0	0	44	8	0	0	0	12	120	19
Y	MLK Jr Way	7th St	0	83	14	55	47	0	13	733	5	0	0	0
Z	MLK Jr Way	8th St	39	57	0	0	91	28	0	0	0	123	214	25
Q	Castro St	11th St	0 (64*)	931	20 (37*)	0	0	0	110	343	0	0	0	0
R	Castro St	12th St	893	212	0	0	0	0	0	0	0	0	160	452
N	Brush St	12th St	0	0	0	0 (952*)	333	26 (35*)	0	0	0	72	131	0
M	Brush St	11th St	0	0	0	478	852	27	0	139	39	0	0	0

Existing Peak Period Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
4:00 PM - 5:00 PM														
A	Union St	5th St	56	510	686	0	57	20	38	94	81	114	95	21
B	Adeline St	3rd St	31	236	244	64	105	17	27	123	13	95	87	92
C	Adeline St	5th St	83	78	184	84	50	13	36	674	73	71	134	40
E	Market St	3rd St	28	36	12	41	24	54	68	388	62	10	220	32
F	Market St	4th St	0	134	2	42	109	0	0	0	0	10	0	17
G	Market St	5th St	0	115	36	67	113	0	32	715	38	0	0	0
H	Market St	6th St	35	112	0	0	118	15	0	0	0	62	195	254
I	Market St	7th St	96	183	46	65	80	45	91	1,006	36	17	297	37
J	Brush St	5th St	0	0	62	352	127	0	0	798	20	0	0	0
K	Brush St	6th St	0	0	0	0	468	7	0	0	0	11	34	0
L	Brush St	7th St	0	0	0	361	441	192	0	1,089	28	6	159	0
O	Castro St	5th St	0	148	21	0	0	0	102	1,098	12	0	0	0
P	Castro St	7th St	14	354	24	0	0	0	308	1,142	0	0	151	6
T	MLK Jr Way	2nd St	4	82	5	17	131	8	2	19	3	5	34	45
U	MLK Jr Way	3rd St	54	64	11	19	50	13	34	193	104	2	143	38
V	MLK Jr Way	4th St	3	130	3	19	71	5	3	35	9	2	35	40
W	MLK Jr Way	5th St	0	123	50	15	44	0	26	1,042	51	0	0	0
AA	Jefferson St	4th St	11	0	7	0	0	0	0	53	4	5	66	0
BB	Clay St	4th St	14	0	23	0	0	0	0	58	2	9	57	0
CC	Washington St	4th St	5	140	8	32	112	12	38	40	3	14	49	9
DD	Washington St	5th St	0	94	93	57	85	0	9	983	71	0	0	0
EE	Broadway	5th St	0	197	353	148	226	0	787	306	40	0	0	0
FF	Broadway	6th St	41	166	0	0	520	22	0	0	0	155	88	494
D	Market St	Embarcadero West	5	26	6	35	40	21	32	31	3	0	2	18
S	MLK Jr Way	Embarcadero West	14	78	12	36	91	12	13	34	29	0	0	0
X	MLK Jr Way	6th St	63	86	0	0	47	9	0	0	0	12	115	19
Y	MLK Jr Way	7th St	0	94	11	67	47	0	14	1,143	9	0	0	0
Z	MLK Jr Way	8th St	47	61	0	0	103	28	0	0	0	143	230	24
Q	Castro St	11th St	0 (82*)	1,027	36 (36*)	0	0	0	136	434	0	0	0	0
R	Castro St	12th St	999	246	0	0	0	0	0	0	0	0	166	572
N	Brush St	12th St	0	0	0	0 (1153*)	342	27 (33*)	0	0	2	68	131	0
M	Brush St	11th St	0	0	0	536	997	32	0	213	48	0	0	0

Existing Peak Period Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
5:00 PM - 6:00 PM														
A	Union St	5th St	65	526	734	0	88	25	90	127	66	100	102	21
B	Adeline St	3rd St	22	165	128	81	116	14	26	134	22	104	117	84
C	Adeline St	5th St	69	93	106	84	72	10	35	743	90	62	144	38
E	Market St	3rd St	20	23	18	53	15	51	45	417	23	4	226	49
F	Market St	4th St	0	115	2	47	109	0	0	0	0	10	0	26
G	Market St	5th St	0	110	31	56	84	0	15	661	72	0	0	0
H	Market St	6th St	31	94	0	0	94	19	0	0	0	46	194	269
I	Market St	7th St	89	205	34	81	64	67	127	1,191	33	16	388	28
J	Brush St	5th St	0	0	39	428	159	0	0	740	8	0	0	0
K	Brush St	6th St	0	0	0	0	577	15	0	0	0	10	20	0
L	Brush St	7th St	0	0	0	389	563	262	0	1,280	26	3	170	0
O	Castro St	5th St	0	213	17	0	0	0	75	1,111	21	0	0	0
P	Castro St	7th St	16	415	35	0	0	0	413	1,256	0	0	157	7
T	MLK Jr Way	2nd St	3	62	4	38	111	3	5	27	7	9	42	74
U	MLK Jr Way	3rd St	45	91	5	44	58	10	39	264	87	7	198	74
V	MLK Jr Way	4th St	5	185	14	76	105	6	13	129	5	2	32	33
W	MLK Jr Way	5th St	0	200	31	27	41	0	43	939	146	0	0	0
AA	Jefferson St	4th St	17	0	9	0	0	0	0	214	5	4	50	0
BB	Clay St	4th St	15	0	35	0	0	0	0	220	3	8	39	0
CC	Washington St	4th St	8	151	20	42	121	13	121	123	11	9	26	9
DD	Washington St	5th St	0	120	161	65	94	0	5	936	82	0	0	0
EE	Broadway	5th St	0	202	406	149	238	0	854	269	39	0	0	0
FF	Broadway	6th St	42	164	0	0	603	25	0	0	0	179	102	571
D	Market St	Embarcadero West	3	33	2	18	12	12	19	20	2	2	1	9
S	MLK Jr Way	Embarcadero West	8	61	10	75	44	8	8	30	9	0	0	0
X	MLK Jr Way	6th St	93	150	0	0	58	6	0	0	0	10	109	9
Y	MLK Jr Way	7th St	0	114	45	65	50	0	11	1,266	14	0	0	0
Z	MLK Jr Way	8th St	61	64	0	0	102	48	0	0	0	136	258	27
Q	Castro St	11th St	0 (93*)	1,205	72 (44*)	0	0	0	148	581	0	0	0	0
R	Castro St	12th St	1,140	306	0	0	0	0	0	0	0	0	147	619
N	Brush St	12th St	0	0	0	0 (1233*)	437	31 (49*)	0	0	7	63	119	0
M	Brush St	11th St	0	0	0	612	1,095	33	0	242	45	0	0	0

Existing Peak Period Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	**NB/SB St**	**WB/EB St**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**
6:00 PM - 7:00 PM														
A	Union St	5th St	50	316	589	0	41	14	79	119	52	89	86	25
B	Adeline St	3rd St	7	78	66	50	77	12	16	91	9	46	76	86
C	Adeline St	5th St	68	63	64	72	47	11	20	643	47	46	121	50
E	Market St	3rd St	25	7	9	40	20	20	24	216	23	4	153	26
F	Market St	4th St	0	53	4	39	77	0	0	0	0	3	0	24
G	Market St	5th St	0	69	8	60	81	0	27	580	35	0	0	0
H	Market St	6th St	27	69	0	0	90	10	0	0	0	51	180	229
I	Market St	7th St	84	161	15	35	61	54	82	801	30	10	280	22
J	Brush St	5th St	0	0	16	317	97	0	0	640	8	0	0	0
K	Brush St	6th St	0	0	0	0	397	9	0	0	0	17	29	0
L	Brush St	7th St	0	0	0	283	381	199	0	830	21	4	113	0
O	Castro St	5th St	0	137	11	0	0	0	64	895	14	0	0	0
P	Castro St	7th St	7	286	10	0	0	0	331	782	0	0	110	11
T	MLK Jr Way	2nd St	2	37	4	21	86	1	2	19	11	12	41	52
U	MLK Jr Way	3rd St	40	48	3	31	53	13	12	192	50	5	139	31
V	MLK Jr Way	4th St	1	87	3	25	91	4	1	45	3	3	28	23
W	MLK Jr Way	5th St	0	95	16	19	50	0	16	820	70	0	0	0
AA	Jefferson St	4th St	10	0	7	0	0	0	0	70	3	3	44	0
BB	Clay St	4th St	18	0	25	0	0	0	0	71	6	5	29	0
CC	Washington St	4th St	4	170	16	33	115	8	51	35	10	16	22	12
DD	Washington St	5th St	0	127	106	39	90	0	12	877	66	0	0	0
EE	Broadway	5th St	0	192	307	129	295	0	812	165	45	0	0	0
FF	Broadway	6th St	40	163	0	0	566	24	0	0	0	169	96	539
D	Market St	Embarcadero West	0	19	4	23	14	10	14	12	0	0	1	8
S	MLK Jr Way	Embarcadero West	2	34	4	64	41	4	9	29	6	0	0	0
X	MLK Jr Way	6th St	56	55	0	0	50	9	0	0	0	19	83	19
Y	MLK Jr Way	7th St	0	64	10	37	48	0	11	770	11	0	0	0
Z	MLK Jr Way	8th St	46	29	0	0	80	18	0	0	0	109	171	9
Q	Castro St	11th St	0 (71*)	974	38 (27*)	0	0	0	124	414	0	0	0	0
R	Castro St	12th St	929	240	0	0	0	0	0	0	0	0	97	399
N	Brush St	12th St	0	0	0	0 (953*)	308	25 (40*)	0	0	0	43	92	0
M	Brush St	11th St	0	0	0	479	802	23	0	169	33	0	0	0

Existing Peak Period Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	**NB/SB St**	**WB/EB St**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**
7:00 PM - 8:00 PM														
A	Union St	5th St	35	77	451	0	50	11	39	130	47	80	64	16
B	Adeline St	3rd St	13	73	66	38	69	7	18	52	10	50	46	61
C	Adeline St	5th St	46	39	76	71	23	15	11	534	41	59	99	38
E	Market St	3rd St	8	17	1	66	18	30	22	137	24	0	143	24
F	Market St	4th St	0	61	2	28	111	0	0	0	0	3	0	8
G	Market St	5th St	0	51	18	57	116	0	8	451	23	0	0	0
H	Market St	6th St	17	42	0	0	78	12	0	0	0	95	167	204
I	Market St	7th St	57	135	16	20	48	39	60	398	29	13	206	27
J	Brush St	5th St	0	0	16	258	102	0	0	512	14	0	0	0
K	Brush St	6th St	0	0	0	0	344	8	0	0	0	16	30	0
L	Brush St	7th St	0	0	0	160	335	149	0	417	15	2	97	0
O	Castro St	5th St	0	111	5	0	0	0	35	746	5	0	0	0
P	Castro St	7th St	7	235	4	0	0	0	249	328	0	0	92	3
T	MLK Jr Way	2nd St	3	51	0	17	84	2	2	16	14	12	31	36
U	MLK Jr Way	3rd St	38	51	0	12	46	4	9	96	50	7	114	27
V	MLK Jr Way	4th St	2	84	1	5	59	4	2	16	0	3	26	8
W	MLK Jr Way	5th St	0	72	22	19	28	0	7	704	40	0	0	0
AA	Jefferson St	4th St	1	0	3	0	0	0	0	19	3	1	36	0
BB	Clay St	4th St	8	0	12	0	0	0	0	20	2	5	29	0
CC	Washington St	4th St	6	91	16	1	94	6	18	9	5	10	22	13
DD	Washington St	5th St	0	57	65	34	50	0	8	697	51	0	0	0
EE	Broadway	5th St	0	169	209	141	200	0	588	160	48	0	0	0
FF	Broadway	6th St	36	146	0	0	443	19	0	0	0	132	76	421
D	Market St	Embarcadero West	0	13	4	20	13	9	10	12	0	0	1	3
S	MLK Jr Way	Embarcadero West	2	41	4	64	36	10	13	29	6	0	0	0
X	MLK Jr Way	6th St	43	36	0	0	35	8	0	0	0	12	95	2
Y	MLK Jr Way	7th St	0	32	6	22	25	0	3	311	18	0	0	0
Z	MLK Jr Way	8th St	15	20	0	0	41	12	0	0	0	91	146	12
Q	Castro St	11th St	0 (73*)	692	19 (30*)	0	0	0	89	230	0	0	0	0
R	Castro St	12th St	699	155	0	0	0	0	0	0	0	0	77	280
N	Brush St	12th St	0	0	0	0 (654*)	214	14 (42*)	0	0	1	51	69	0
M	Brush St	11th St	0	0	0	309	590	21	0	110	41	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Midday Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
3:00 PM - 4:00 PM														
A	Union St	5th St	37	264	682	0	52	14	38	94	57	399	75	19
B	Adeline St	3rd St	18	193	53	59	165	22	23	66	9	42	63	347
C	Adeline St	5th St	321	54	190	74	44	13	0	681	95	110	159	34
E	Market St	3rd St	308	1,312	0	0	366	51	0	216	36	0	117	0
F	Market St	4th St	0	1,300	12	0	390	0	0	0	0	27	0	46
G	Market St	5th St	0	895	451	85	348	0	22	654	42	0	0	0
H	Market St	6th St	60	857	0	0	337	21	0	0	0	96	222	226
I	Market St	7th St	87	617	379	59	129	35	78	634	45	184	339	23
J	Brush St	5th St	0	0	33	567	122	0	0	1,140	50	0	0	0
K	Brush St	6th St	0	0	0	0	666	10	0	0	0	23	35	0
L	Brush St	7th St	0	0	0	347	585	315	0	1,021	51	40	231	0
O	Castro St	5th St	0	257	134	0	0	0	250	1,468	22	0	0	0
P	Castro St	7th St	59	568	26	0	0	505	505	863	0	0	212	7
T	MLK Jr Way	2nd St	0	593	0	0	658	0	0	33	0	0	39	25
U	MLK Jr Way	3rd St	0	618	0	0	658	0	0	110	0	0	106	33
V	MLK Jr Way	4th St	0	651	0	0	658	0	0	37	0	0	210	0
W	MLK Jr Way	5th St	0	472	179	36	543	0	56	1,431	115	0	0	0
AA	Jefferson St	4th St	8	0	6	0	0	0	0	31	6	7	202	0
BB	Clay St	4th St	14	0	9	0	0	0	0	31	6	13	195	0
CC	Washington St	4th St	9	90	12	15	111	150	15	22	3	16	49	23
DD	Washington St	5th St	0	70	58	30	63	0	16	1,446	213	0	0	0
EE	Broadway	5th St	0	194	275	481	236	11	797	690	47	0	0	0
FF	Broadway	6th St	39	166	0	0	555	22	0	0	0	162	145	517
D	Market St	Embarcadero West	0	516	0	0	312	90	1,104	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	658	593	0	0	0	0	0
X	MLK Jr Way	6th St	72	456	0	0	512	12	0	0	0	67	120	19
Y	MLK Jr Way	7th St	0	424	51	55	468	0	13	820	56	0	0	0
Z	MLK Jr Way	8th St	39	398	0	0	491	41	0	0	0	207	230	25
Q	Castro St	11th St	0 (64*)	1,475	20 (37*)	0	0	0	168	444	0	0	0	0
R	Castro St	12th St	1,440	267	0	0	0	0	0	0	0	0	407	682
N	Brush St	12th St	0	0	0	0 (1194*)	386	26 (35*)	0	0	0	269	181	0
M	Brush St	11th St	0	0	0	675	1,147	27	0	298	184	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Midday Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
4:00 PM - 5:00 PM														
A	Union St	5th St	56	546	798	0	57	20	49	102	81	454	95	21
B	Adeline St	3rd St	31	323	82	76	177	17	27	103	13	68	77	372
C	Adeline St	5th St	339	78	295	89	50	13	0	781	119	109	218	40
E	Market St	3rd St	311	1,485	0	0	446	54	0	312	36	0	180	0
F	Market St	4th St	0	1,472	13	0	487	0	0	0	0	13	0	49
G	Market St	5th St	0	1,085	436	123	435	0	76	812	52	0	0	0
H	Market St	6th St	119	1,042	0	0	427	15	0	0	0	131	233	213
I	Market St	7th St	96	727	432	65	176	45	91	1,058	36	230	356	37
J	Brush St	5th St	0	0	62	613	146	0	0	1,268	103	0	0	0
K	Brush St	6th St	0	0	0	0	724	7	0	0	0	35	34	0
L	Brush St	7th St	0	0	0	421	600	354	0	1,478	77	54	269	0
O	Castro St	5th St	0	291	160	0	0	0	206	1,715	22	0	0	0
P	Castro St	7th St	71	572	34	0	0	611	611	1,288	0	0	252	6
T	MLK Jr Way	2nd St	0	739	0	0	778	0	0	27	0	0	34	28
U	MLK Jr Way	3rd St	0	767	0	0	778	0	0	194	0	0	158	35
V	MLK Jr Way	4th St	0	802	0	0	778	0	4	57	0	0	268	0
W	MLK Jr Way	5th St	0	589	217	20	634	0	70	1,661	144	0	0	0
AA	Jefferson St	4th St	11	0	7	0	0	0	0	53	4	5	257	0
BB	Clay St	4th St	14	0	23	0	0	0	0	58	2	9	248	0
CC	Washington St	4th St	5	140	8	32	140	203	38	40	3	14	49	9
DD	Washington St	5th St	0	94	93	57	85	0	9	1,549	290	0	0	0
EE	Broadway	5th St	0	206	353	449	237	10	799	860	40	0	0	0
FF	Broadway	6th St	41	175	0	0	531	22	0	0	0	155	160	494
D	Market St	Embarcadero West	0	654	0	0	389	93	1,142	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	778	739	0	0	0	0	0
X	MLK Jr Way	6th St	101	558	0	0	572	32	0	0	0	82	116	19
Y	MLK Jr Way	7th St	0	523	54	67	534	0	14	1,238	70	0	0	0
Z	MLK Jr Way	8th St	47	490	0	0	564	45	0	0	0	246	246	24
Q	Castro St	11th St	0 (82*)	1,565	36 (36*)	0	0	0	225	548	0	0	0	0
R	Castro St	12th St	1,372	500	0	0	0	0	0	0	0	0	420	766
N	Brush St	12th St	0	0	0	0 (1464*)	412	27 (33*)	0	0	2	270	183	0
M	Brush St	11th St	0	0	357	1791	0	416	591	4	0	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Midday Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
5:00 PM - 6:00 PM														
A	Union St	5th St	65	561	859	0	88	25	90	146	66	325	102	21
B	Adeline St	3rd St	22	222	48	98	167	14	29	119	22	83	105	257
C	Adeline St	5th St	242	93	169	91	72	10	0	874	131	89	196	38
E	Market St	3rd St	182	831	0	0	493	51	0	363	40	0	200	0
F	Market St	4th St	0	825	6	0	532	0	0	0	0	12	0	74
G	Market St	5th St	0	585	314	101	468	0	38	804	64	0	0	0
H	Market St	6th St	83	540	0	0	437	19	0	0	0	132	221	234
I	Market St	7th St	89	521	164	78	170	67	127	1,212	33	253	406	28
J	Brush St	5th St	0	0	39	575	175	0	0	1,111	108	0	0	0
K	Brush St	6th St	0	0	0	0	723	15	0	0	0	27	20	0
L	Brush St	7th St	0	0	0	452	673	443	0	1,410	44	21	244	0
O	Castro St	5th St	0	265	118	0	0	0	180	1,456	89	0	0	0
P	Castro St	7th St	30	561	39	0	0	497	497	1,365	0	0	235	7
T	MLK Jr Way	2nd St	0	400	0	0	509	0	2	42	0	0	44	55
U	MLK Jr Way	3rd St	0	457	0	0	509	0	0	254	0	0	216	74
V	MLK Jr Way	4th St	0	531	0	0	509	0	0	219	0	0	137	0
W	MLK Jr Way	5th St	0	451	80	32	351	0	99	1,317	158	0	0	0
AA	Jefferson St	4th St	17	0	9	0	0	0	0	214	5	4	120	0
BB	Clay St	4th St	15	0	35	0	0	0	0	220	3	8	109	0
CC	Washington St	4th St	8	151	20	42	188	83	121	123	11	9	26	9
DD	Washington St	5th St	0	120	161	65	94	0	5	1,222	219	0	0	0
EE	Broadway	5th St	0	211	406	544	250	4	862	547	39	0	0	0
FF	Broadway	6th St	42	173	0	0	615	25	0	0	0	179	184	571
D	Market St	Embarcadero West	0	777	0	0	431	102	236	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	509	400	0	0	0	0	0
X	MLK Jr Way	6th St	100	450	0	0	291	23	0	0	0	92	109	9
Y	MLK Jr Way	7th St	0	384	75	65	237	0	11	1,316	77	0	0	0
Z	MLK Jr Way	8th St	61	334	0	0	260	67	0	0	0	212	260	27
Q	Castro St	11th St	0 (93*)	1,422	72 (44*)	0	0	0	162	648	0	0	0	0
R	Castro St	12th St	1,344	333	0	0	0	0	0	0	0	0	177	696
N	Brush St	12th St	0	0	0	0 (1544*)	480	31 (49*)	0	0	7	87	125	0
M	Brush St	11th St	0	0	0	636	1,449	33	0	323	62	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Midday Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
6:00 PM - 7:00 PM														
A	Union St	5th St	50	336	728	0	41	14	79	132	52	212	86	25
B	Adeline St	3rd St	7	122	8	70	127	12	16	78	9	29	72	126
C	Adeline St	5th St	114	63	102	77	47	11	0	768	92	71	198	50
E	Market St	3rd St	64	525	0	0	464	20	0	176	36	0	133	0
F	Market St	4th St	0	516	9	0	481	0	0	0	0	3	0	49
G	Market St	5th St	0	410	155	114	428	0	51	683	53	0	0	0
H	Market St	6th St	104	357	0	0	416	10	0	0	0	126	205	191
I	Market St	7th St	84	286	178	35	161	54	82	805	30	235	284	22
J	Brush St	5th St	0	0	16	391	95	0	0	868	84	0	0	0
K	Brush St	6th St	0	0	0	0	469	9	0	0	0	17	29	0
L	Brush St	7th St	0	0	0	345	453	371	0	997	21	4	170	0
O	Castro St	5th St	0	137	43	0	0	0	89	1,137	49	0	0	0
P	Castro St	7th St	7	311	10	0	0	468	468	874	0	0	167	11
T	MLK Jr Way	2nd St	0	210	0	0	417	0	0	26	0	0	41	31
U	MLK Jr Way	3rd St	0	241	0	0	417	0	0	191	0	0	158	34
V	MLK Jr Way	4th St	0	275	0	0	417	1	0	73	0	0	54	0
W	MLK Jr Way	5th St	0	232	43	39	265	0	47	980	153	0	0	0
AA	Jefferson St	4th St	10	0	7	0	0	0	0	70	3	3	44	0
BB	Clay St	4th St	18	0	25	0	0	0	0	71	6	5	29	0
CC	Washington St	4th St	4	170	16	33	160	8	51	35	10	16	22	12
DD	Washington St	5th St	0	127	106	39	90	0	12	1,033	111	0	0	0
EE	Broadway	5th St	0	201	307	440	307	11	817	316	45	0	0	0
FF	Broadway	6th St	40	172	0	0	578	24	0	0	0	169	161	539
D	Market St	Embarcadero West	0	524	0	0	410	90	65	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	417	210	0	0	0	0	0
X	MLK Jr Way	6th St	56	223	0	0	217	9	0	0	0	87	83	19
Y	MLK Jr Way	7th St	0	215	27	37	153	0	11	800	73	0	0	0
Z	MLK Jr Way	8th St	46	180	0	0	157	38	0	0	0	167	171	9
Q	Castro St	11th St	0 (71*)	1,125	38 (27*)	0	0	0	124	453	0	0	0	0
R	Castro St	12th St	1,080	240	0	0	0	0	0	0	0	0	97	490
N	Brush St	12th St	0	0	0	0 (1233*)	334	25 (40*)	0	0	0	43	92	0
M	Brush St	11th St	0	0	0	479	1,108	23	0	208	33	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Midday Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:00 PM - 8:00 PM														
A	Union St	5th St	35	88	570	0	50	11	39	149	47	182	64	16
B	Adeline St	3rd St	13	110	5	56	117	7	21	39	10	24	43	100
C	Adeline St	5th St	89	39	112	71	23	15	0	636	83	83	158	38
E	Market St	3rd St	43	403	0	0	356	30	0	96	29	0	116	0
F	Market St	4th St	0	401	2	0	383	0	0	0	0	3	0	32
G	Market St	5th St	0	306	127	140	336	0	29	525	47	0	0	0
H	Market St	6th St	76	259	0	0	327	12	0	0	0	149	191	166
I	Market St	7th St	57	229	139	20	125	39	60	399	29	185	210	27
J	Brush St	5th St	0	0	16	314	104	0	0	687	105	0	0	0
K	Brush St	6th St	0	0	0	0	400	8	0	0	0	18	30	0
L	Brush St	7th St	0	0	0	203	391	280	0	543	15	2	142	0
O	Castro St	5th St	0	111	21	0	0	0	54	950	13	0	0	0
P	Castro St	7th St	7	254	4	0	0	352	352	394	0	0	137	3
T	MLK Jr Way	2nd St	0	159	0	0	319	0	2	22	0	0	31	25
U	MLK Jr Way	3rd St	0	186	0	0	319	0	0	95	0	0	127	27
V	MLK Jr Way	4th St	0	213	0	0	319	0	0	22	0	0	37	0
W	MLK Jr Way	5th St	0	177	36	19	203	0	20	835	116	0	0	0
AA	Jefferson St	4th St	1	0	3	0	0	0	0	19	3	1	36	0
BB	Clay St	4th St	8	0	12	0	0	0	0	20	2	5	29	0
CC	Washington St	4th St	6	91	16	1	117	6	18	9	5	10	22	13
DD	Washington St	5th St	0	57	65	34	50	0	8	814	74	0	0	0
EE	Broadway	5th St	0	178	209	375	212	13	592	273	48	0	0	0
FF	Broadway	6th St	36	155	0	0	455	19	0	0	0	132	131	421
D	Market St	Embarcadero West	0	394	0	0	315	70	52	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	319	159	0	0	0	0	0
X	MLK Jr Way	6th St	43	154	0	0	155	10	0	0	0	67	95	2
Y	MLK Jr Way	7th St	0	138	18	22	105	0	3	335	60	0	0	0
Z	MLK Jr Way	8th St	15	126	0	0	100	28	0	0	0	137	146	12
Q	Castro St	11th St	0 (73*)	806	19 (30*)	0	0	0	89	259	0	0	0	0
R	Castro St	12th St	813	155	0	0	0	0	0	0	0	0	77	340
N	Brush St	12th St	0	0	0	0 (864*)	234	14 (42*)	0	0	1	51	69	0
M	Brush St	11th St	0	0	0	309	820	21	0	139	41	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Night Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
3:00 PM - 4:00 PM														
A	Union St	5th St	37	264	682	0	52	14	38	94	57	250	75	19
B	Adeline St	3rd St	18	193	53	53	165	22	23	66	9	42	63	53
C	Adeline St	5th St	63	54	154	74	44	13	0	687	89	110	268	34
E	Market St	3rd St	0	707	0	0	487	51	0	216	30	0	131	0
F	Market St	4th St	0	681	26	0	511	0	0	0	0	27	0	46
G	Market St	5th St	0	537	190	85	427	0	22	618	84	0	0	0
H	Market St	6th St	169	390	0	0	390	21	0	0	0	122	222	226
I	Market St	7th St	102	301	213	59	162	35	78	598	57	192	291	23
J	Brush St	5th St	0	0	33	394	122	0	0	843	50	0	0	0
K	Brush St	6th St	0	0	0	0	493	10	0	0	0	23	35	0
L	Brush St	7th St	0	0	0	336	483	315	0	855	15	5	191	0
O	Castro St	5th St	0	153	99	0	0	0	120	1,128	22	0	0	0
P	Castro St	7th St	11	355	19	0	0	376	376	815	0	0	185	7
T	MLK Jr Way	2nd St	0	235	0	0	202	0	0	33	0	0	39	25
U	MLK Jr Way	3rd St	0	260	0	0	202	0	0	110	0	0	106	33
V	MLK Jr Way	4th St	0	293	0	0	202	0	0	37	0	0	71	0
W	MLK Jr Way	5th St	0	248	45	36	156	0	56	1,125	46	0	0	0
AA	Jefferson St	4th St	8	0	6	0	0	0	0	31	6	7	63	0
BB	Clay St	4th St	14	0	9	0	0	0	0	31	6	13	56	0
CC	Washington St	4th St	9	90	12	15	111	11	15	22	3	16	49	23
DD	Washington St	5th St	0	70	58	30	63	0	16	1,145	74	0	0	0
EE	Broadway	5th St	0	194	275	481	236	11	798	388	47	0	0	0
FF	Broadway	6th St	39	166	0	0	555	22	0	0	0	162	119	517
D	Market St	Embarcadero West	0	589	0	0	416	101	118	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	202	235	0	0	0	0	0
X	MLK Jr Way	6th St	38	266	0	0	151	12	0	0	0	41	120	19
Y	MLK Jr Way	7th St	0	249	36	55	118	0	26	763	45	0	0	0
Z	MLK Jr Way	8th St	39	236	0	0(140*)	150	41	0	0	0	171	214	25
Q	Castro St	11th St	0 (64*)	1,115	20 (37*)	0	0	0	110	388	0	0	0	0
R	Castro St	12th St	1,077	212	0	0	0	0	0	0	0	0	160	547
N	Brush St	12th St	0	0	0	0 (1114*)	353	26 (80*)	0	0	0	72	131	0
M	Brush St	11th St	0	0	0	478	1,034	27	0	184	39	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Night Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
4:00 PM - 5:00 PM														
A	Union St	5th St	56	546	858	0	57	20	49	102	81	301	95	21
B	Adeline St	3rd St	31	323	82	107	177	17	27	104	13	68	77	73
C	Adeline St	5th St	77	78	258	89	50	13	0	810	150	109	327	40
E	Market St	3rd St	0	898	0	0	910	54	0	312	68	0	192	0
F	Market St	4th St	0	873	25	0	951	0	0	0	0	13	0	49
G	Market St	5th St	0	676	246	136	847	0	76	789	104	0	0	0
H	Market St	6th St	228	524	0	0	678	15	0	0	0	305	233	213
I	Market St	7th St	115	348	274	74	280	45	91	1,012	51	362	300	37
J	Brush St	5th St	0	0	62	408	146	0	0	1,068	103	0	0	0
K	Brush St	6th St	0	0	0	0	519	7	0	0	0	35	34	0
L	Brush St	7th St	0	0	0	422	492	443	0	1,332	28	6	256	0
O	Castro St	5th St	0	219	112	0	0	0	158	1,358	22	0	0	0
P	Castro St	7th St	14	460	45	0	0	491	491	1,263	0	0	248	6
T	MLK Jr Way	2nd St	0	437	0	0	391	0	0	27	0	0	34	28
U	MLK Jr Way	3rd St	0	465	0	0	391	0	0	194	0	0	158	35
V	MLK Jr Way	4th St	0	500	0	0	391	0	4	57	0	0	148	0
W	MLK Jr Way	5th St	0	445	59	21	299	0	70	1,308	92	0	0	0
AA	Jefferson St	4th St	11	0	7	0	0	0	0	53	4	5	137	0
BB	Clay St	4th St	14	0	23	0	0	0	0	58	2	9	128	0
CC	Washington St	4th St	5	140	8	32	140	83	38	40	3	14	49	9
DD	Washington St	5th St	0	94	93	57	128	0	9	1,202	127	0	0	0
EE	Broadway	5th St	0	206	353	449	237	10	801	511	40	0	0	0
FF	Broadway	6th St	41	175	0	0	531	22	0	0	0	155	201	494
D	Market St	Embarcadero West	0	744	0	0	518	460	154	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	391	437	0	0	0	0	0
X	MLK Jr Way	6th St	63	452	0	0	229	32	0	0	0	91	116	52
Y	MLK Jr Way	7th St	0	466	38	67	183	0	30	1,200	78	0	0	0
Z	MLK Jr Way	8th St	47	449	0	0(157*)	223	54	0	0	0	223	230	24
Q	Castro St	11th St	0 (82*)	1,267	36 (184*)	0	0	0	136	576	0	0	0	0
R	Castro St	12th St	1,239	246	0	0	0	0	0	0	0	0	166	682
N	Brush St	12th St	0	0	0	0 (1490*)	436	27 (129*)	0	0	2	68	131	0
M	Brush St	11th St	0	0	0	604	1,360	32	0	287	48	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Night Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
5:00 PM - 6:00 PM														
A	Union St	5th St	65	561	934	0	88	25	90	146	66	307	102	21
B	Adeline St	3rd St	22	222	48	137	167	14	29	120	22	83	105	79
C	Adeline St	5th St	73	93	160	91	72	10	0	910	170	89	347	38
E	Market St	3rd St	0	914	0	0	1,049	51	0	363	80	0	204	0
F	Market St	4th St	0	904	10	0	1,088	0	0	0	0	12	0	74
G	Market St	5th St	0	724	254	117	967	0	38	783	121	0	0	0
H	Market St	6th St	234	528	0	0	741	19	0	0	0	343	221	234
I	Market St	7th St	109	517	136	89	294	67	127	1,198	50	416	392	28
J	Brush St	5th St	0	0	39	493	175	0	0	1,046	108	0	0	0
K	Brush St	6th St	0	0	0	0	641	15	0	0	0	27	20	0
L	Brush St	7th St	0	0	0	454	627	553	0	1,397	26	3	283	0
O	Castro St	5th St	0	300	100	0	0	0	134	1,355	89	0	0	0
P	Castro St	7th St	16	535	61	0	0	468	468	1,383	0	0	270	7
T	MLK Jr Way	2nd St	0	492	0	0	455	0	2	42	0	0	44	55
U	MLK Jr Way	3rd St	0	549	0	0	455	0	0	254	0	0	216	74
V	MLK Jr Way	4th St	0	623	0	0	455	0	0	219	0	0	154	0
W	MLK Jr Way	5th St	0	558	65	33	348	0	99	1,249	107	0	0	0
AA	Jefferson St	4th St	17	0	9	0	0	0	0	214	5	4	137	0
BB	Clay St	4th St	15	0	35	0	0	0	0	220	3	8	126	0
CC	Washington St	4th St	8	151	20	42	188	100	121	123	11	9	26	9
DD	Washington St	5th St	0	120	161	65	146	0	5	1,175	184	0	0	0
EE	Broadway	5th St	0	211	406	544	250	4	869	493	39	0	0	0
FF	Broadway	6th St	42	173	0	0	615	25	0	0	0	179	241	571
D	Market St	Embarcadero West	0	791	0	0	574	555	123	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	455	492	0	0	0	0	0
X	MLK Jr Way	6th St	93	564	0	0	273	23	0	0	0	108	109	50
Y	MLK Jr Way	7th St	0	540	74	65	206	0	28	1,326	90	0	0	0
Z	MLK Jr Way	8th St	61	507	0	0(164*)	241	77	0	0	0	225	258	27
Q	Castro St	11th St	0 (93*)	1,319	72 (227*)	0	0	0	207	747	0	0	0	0
R	Castro St	12th St	1,313	306	0	0	0	0	0	0	0	0	147	673
N	Brush St	12th St	0	0	0	0 (1620*)	554	31 (161*)	0	0	7	63	119	0
M	Brush St	11th St	0	0	0	696	1,515	33	0	383	45	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Night Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
6:00 PM - 7:00 PM														
A	Union St	5th St	50	336	877	0	41	14	79	132	52	212	86	25
B	Adeline St	3rd St	7	122	8	159	127	12	16	80	9	29	72	72
C	Adeline St	5th St	60	63	102	77	47	11	0	828	181	71	252	50
E	Market St	3rd St	0	597	0	0	1,406	20	0	176	127	0	143	0
F	Market St	4th St	0	578	19	0	1,423	0	0	0	0	3	0	49
G	Market St	5th St	0	457	170	146	1,316	0	51	689	107	0	0	0
H	Market St	6th St	158	350	0	0	949	10	0	0	0	513	205	191
I	Market St	7th St	97	273	171	57	362	54	82	813	46	551	284	22
J	Brush St	5th St	0	0	16	417	95	0	0	921	84	0	0	0
K	Brush St	6th St	0	0	0	0	495	9	0	0	0	17	29	0
L	Brush St	7th St	0	0	0	366	479	592	0	1,020	21	4	265	0
O	Castro St	5th St	0	314	43	0	0	0	102	1,203	49	0	0	0
P	Castro St	7th St	7	448	63	0	0	457	457	929	0	0	262	11
T	MLK Jr Way	2nd St	0	555	0	0	619	0	0	26	0	0	41	31
U	MLK Jr Way	3rd St	0	586	0	0	619	0	0	191	0	0	158	34
V	MLK Jr Way	4th St	0	620	0	0	619	1	0	73	0	0	231	0
W	MLK Jr Way	5th St	0	575	45	41	472	0	47	1,051	148	0	0	0
AA	Jefferson St	4th St	10	0	7	0	0	0	0	70	3	3	221	0
BB	Clay St	4th St	18	0	25	0	0	0	0	71	6	5	206	0
CC	Washington St	4th St	4	170	16	33	160	185	51	35	10	16	22	12
DD	Washington St	5th St	0	127	106	39	196	0	12	1,037	182	0	0	0
EE	Broadway	5th St	0	201	307	440	307	11	821	316	45	0	0	0
FF	Broadway	6th St	40	172	0	0	578	24	0	0	0	169	314	539
D	Market St	Embarcadero West	0	509	0	0	547	986	88	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	619	555	0	0	0	0	0
X	MLK Jr Way	6th St	56	566	0	0	354	9	0	0	0	159	83	101
Y	MLK Jr Way	7th St	0	638	29	37	248	0	22	855	115	0	0	0
Z	MLK Jr Way	8th St	46	614	0	0(121*)	263	59	0	0	0	230	171	9
Q	Castro St	11th St	0 (71*)	1,138	38 (396*)	0	0	0	124	665	0	0	0	0
R	Castro St	12th St	1,093	240	0	0	0	0	0	0	0	0	97	477
N	Brush St	12th St	0	0	0	0 (1498*)	506	25 (201*)	0	0	0	43	92	0
M	Brush St	11th St	0	0	0	648	1,376	23	0	251	33	0	0	0

Existing Plus Full Buildout Non-Ballpark Plus Night Game Volumes

Intersection ID # and Name			Northbound (Northeast*)			Southbound (Southwest*)			Eastbound			Westbound		
ID	NB/SB St	WB/EB St	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:00 PM - 8:00 PM														
A	Union St	5th St	35	88	626	0	50	11	39	149	47	182	64	16
B	Adeline St	3rd St	13	110	5	86	117	7	21	40	10	24	43	60
C	Adeline St	5th St	49	39	112	71	23	15	0	662	113	83	198	38
E	Market St	3rd St	0	452	0	0	769	30	0	96	60	0	119	0
F	Market St	4th St	0	447	5	0	796	0	0	0	0	3	0	32
G	Market St	5th St	0	340	139	152	707	0	29	509	89	0	0	0
H	Market St	6th St	116	253	0	0	552	12	0	0	0	307	191	166
I	Market St	7th St	67	218	134	28	217	39	60	402	41	306	210	27
J	Brush St	5th St	0	0	16	307	104	0	0	695	105	0	0	0
K	Brush St	6th St	0	0	0	0	393	8	0	0	0	18	30	0
L	Brush St	7th St	0	0	0	205	384	362	0	549	15	2	181	0
O	Castro St	5th St	0	178	21	0	0	0	64	941	13	0	0	0
P	Castro St	7th St	7	311	24	0	0	344	344	410	0	0	176	3
T	MLK Jr Way	2nd St	0	284	0	0	333	0	2	22	0	0	31	25
U	MLK Jr Way	3rd St	0	311	0	0	333	0	0	95	0	0	127	27
V	MLK Jr Way	4th St	0	338	0	0	333	0	0	22	0	0	104	0
W	MLK Jr Way	5th St	0	301	37	20	255	0	20	864	78	0	0	0
AA	Jefferson St	4th St	1	0	3	0	0	0	0	19	3	1	103	0
BB	Clay St	4th St	8	0	12	0	0	0	0	20	2	5	96	0
CC	Washington St	4th St	6	91	16	1	117	73	18	9	5	10	22	13
DD	Washington St	5th St	0	57	65	34	90	0	8	818	101	0	0	0
EE	Broadway	5th St	0	178	209	375	212	13	595	274	48	0	0	0
FF	Broadway	6th St	36	155	0	0	455	19	0	0	0	132	175	421
D	Market St	Embarcadero West	0	383	0	0	419	410	69	0	0	0	0	0
S	MLK Jr Way	Embarcadero West	0	0	0	0	0	333	284	0	0	0	0	0
X	MLK Jr Way	6th St	43	278	0	0	195	10	0	0	0	80	95	33
Y	MLK Jr Way	7th St	0	290	21	22	135	0	11	353	70	0	0	0
Z	MLK Jr Way	8th St	15	286	0	0(95*)	139	36	0	0	0	159	146	12
Q	Castro St	11th St	0 (73*)	816	19 (168*)	0	0	0	89	338	0	0	0	0
R	Castro St	12th St	823	155	0	0	0	0	0	0	0	0	77	331
N	Brush St	12th St	0	0	0	0 (960*)	278	14 (125*)	0	0	1	51	69	0
M	Brush St	11th St	0	0	0	372	897	21	0	155	41	0	0	0

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Appendix F:

Existing Conditions Results

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	38	101.9%	37.4	4.6	D
	Through	243	236	97.1%	13.4	0.8	B
	Right Turn	578	580	100.4%	12.1	1.1	B
	Subtotal	858	854	99.5%	13.6	1.0	B
SB	Left Turn						
	Through	52	48	91.7%	14.7	2.9	B
	Right Turn	14	14	99.3%	9.4	2.2	A
	Subtotal	66	62	93.3%	13.5	2.2	B
EB	Left Turn	38	38	101.1%	33.7	2.7	C
	Through	89	86	96.3%	27.1	1.6	C
	Right Turn	57	56	97.9%	0.7	0.2	A
	Subtotal	184	180	97.8%	20.3	1.1	C
WB	Left Turn	105	102	97.0%	33.7	4.1	C
	Through	75	76	100.9%	25.5	4.2	C
	Right Turn	19	19	101.1%	12.1	3.7	B
	Subtotal	199	197	98.8%	28.5	3.3	C
Total		1,307	1,292	98.9%	16.7	0.8	B

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	17	93.3%	4.7	1.3	A
	Through	142	142	100.1%	4.6	0.8	A
	Right Turn	146	146	99.8%	5.6	0.5	A
	Subtotal	306	305	99.6%	5.1	0.4	A
SB	Left Turn	54	54	99.6%	6.3	0.9	A
	Through	102	97	95.0%	2.7	0.5	A
	Right Turn	22	21	96.8%	2.4	0.8	A
	Subtotal	178	172	96.6%	3.8	0.4	A
EB	Left Turn	23	25	108.3%	4.2	1.0	A
	Through	77	72	93.9%	4.9	0.5	A
	Right Turn	9	9	98.9%	3.0	1.1	A
	Subtotal	109	106	97.3%	4.6	0.5	A
WB	Left Turn	72	65	90.0%	14.0	2.8	B
	Through	74	70	95.1%	10.6	2.3	B
	Right Turn	70	69	97.9%	10.0	2.7	B
	Subtotal	216	204	94.3%	11.5	2.1	B
Total		809	787	97.2%	6.4	0.6	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	68	65	96.0%	22.4	2.1	C
	Through	54	56	103.0%	23.2	3.2	C
	Right Turn	115	116	100.7%	10.2	0.8	B
	Subtotal	237	237	99.9%	16.7	0.9	B
SB	Left Turn	72	73	101.0%	27.2	2.2	C
	Through	44	42	94.3%	25.7	4.0	C
	Right Turn	13	14	105.4%	8.1	2.3	A
	Subtotal	129	128	99.1%	24.6	2.1	C
EB	Left Turn	21	23	108.1%	31.8	2.9	C
	Through	587	589	100.3%	17.8	0.9	B
	Right Turn	59	57	95.8%	16.3	1.9	B
	Subtotal	667	668	100.1%	18.1	0.8	B
WB	Left Turn	78	80	102.3%	29.0	4.2	C
	Through	118	118	100.0%	9.5	1.2	A
	Right Turn	34	33	97.6%	6.8	2.0	A
	Subtotal	230	231	100.4%	15.9	2.4	B
Total		1,263	1,263	100.0%	18.1	0.8	B

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	32	27	84.7%	13.5	2.3	B
	Through	36	33	91.7%	12.5	1.5	B
	Right Turn	20	20	100.5%	8.3	0.8	A
	Subtotal	88	80	91.1%	11.8	1.3	B
SB	Left Turn	22	22	99.1%	9.8	0.7	A
	Through	45	44	98.4%	12.3	0.8	B
	Right Turn	51	51	99.8%	9.0	0.7	A
	Subtotal	118	117	99.2%	10.4	0.5	B
EB	Left Turn	44	41	92.0%	2.0	0.3	A
	Through	253	248	98.1%	1.1	0.2	A
	Right Turn	54	55	101.7%	1.1	0.3	A
	Subtotal	351	344	97.9%	1.2	0.1	A
WB	Left Turn	18	15	81.1%	2.0	0.6	A
	Through	157	146	93.0%	0.4	0.2	A
	Right Turn	22	22	98.2%	0.6	0.1	A
	Subtotal	197	182	92.5%	0.5	0.2	A
Total		754	723	95.9%	3.7	0.3	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	99	93	94.0%	0.1	0.1	A
	Right Turn	3	2	63.3%	0.4	0.1	A
	Subtotal	102	95	93.1%	0.1	0.1	A
SB	Left Turn	20	21	107.0%	0.8	0.2	A
	Through	95	97	101.7%	0.3	0.1	A
	Right Turn						
	Subtotal	115	118	102.6%	0.4	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	23	21	90.0%	8.5	0.6	A
	Through						
	Right Turn	24	23	96.7%	6.6	0.3	A
	Subtotal	47	44	93.4%	7.5	0.2	A
Total		264	257	97.3%	1.5	0.2	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	76	71	93.4%	28.6	2.3	C
	Right Turn	47	45	95.7%	10.4	2.0	B
	Subtotal	123	116	94.3%	21.6	2.6	C
SB	Left Turn	61	61	99.8%	31.1	3.9	C
	Through	85	86	101.1%	20.2	2.8	C
	Right Turn						
	Subtotal	146	147	100.5%	24.7	2.5	C
EB	Left Turn	13	14	109.2%	5.1	1.7	A
	Through	568	564	99.3%	5.1	0.5	A
	Right Turn	30	32	107.0%	4.8	0.7	A
	Subtotal	611	610	99.9%	5.1	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		880	873	99.2%	10.6	0.9	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	19	19	102.1%	2.0	1.1	A
	Through	70	66	94.0%	2.7	1.0	A
	Right Turn						
	Subtotal	89	85	95.7%	2.5	0.9	A
SB	Left Turn						
	Through	91	92	100.5%	3.7	0.4	A
	Right Turn	21	21	98.6%	2.3	0.5	A
	Subtotal	112	112	100.2%	3.4	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	55	55	100.4%	32.7	3.5	C
	Through	190	190	100.1%	30.0	0.8	C
	Right Turn	271	220	81.0%	8.3	1.8	A
	Subtotal	516	465	90.1%	20.0	1.2	C
Total		717	662	92.4%	15.0	0.8	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	87	77	88.6%	29.3	2.1	C
	Through	171	166	97.3%	30.8	1.8	C
	Right Turn	38	41	108.2%	6.6	0.8	A
	Subtotal	296	285	96.1%	26.9	1.4	C
SB	Left Turn	59	58	98.5%	37.5	3.2	D
	Through	52	52	99.4%	27.5	2.6	C
	Right Turn	35	33	92.9%	4.4	0.5	A
	Subtotal	146	142	97.5%	26.4	2.3	C
EB	Left Turn	78	75	95.8%	7.6	1.1	A
	Through	594	593	99.9%	5.8	0.8	A
	Right Turn	45	45	100.7%	5.4	1.0	A
	Subtotal	717	713	99.5%	6.0	0.7	A
WB	Left Turn	15	15	100.0%	11.5	3.4	B
	Through	288	277	96.0%	4.5	0.3	A
	Right Turn	23	24	103.0%	3.7	0.9	A
	Subtotal	326	315	96.7%	4.8	0.4	A
Total		1,485	1,455	98.0%	11.8	0.6	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	33	28	86.1%	3.3	0.4	A
	Subtotal	33	28	86.1%	3.3	0.4	A
SB	Left Turn	372	373	100.2%	20.4	1.2	C
	Through	126	127	101.0%	20.6	1.3	C
	Right Turn						
	Subtotal	498	500	100.4%	20.5	1.0	C
EB	Left Turn						
	Through	668	660	98.7%	13.6	1.0	B
	Right Turn	8	8	95.0%	8.1	3.7	A
	Subtotal	676	667	98.7%	13.5	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,207	1,196	99.1%	16.2	0.8	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	479	470	98.1%	19.4	0.6	B
	Right Turn	10	9	91.0%	11.9	5.4	B
	Subtotal	489	479	98.0%	19.3	0.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	19	16	81.6%	13.8	4.0	B
	Through	35	33	95.4%	13.8	2.5	B
	Right Turn						
	Subtotal	54	49	90.6%	13.8	2.6	B
Total		543	528	97.2%	18.8	0.8	B

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	296	290	98.0%	34.2	1.3	C
	Through	469	458	97.6%	29.9	1.1	C
	Right Turn	187	187	99.9%	17.4	2.2	B
	Subtotal	952	935	98.2%	28.7	0.8	C
EB	Left Turn						
	Through	676	681	100.7%	7.3	0.6	A
	Right Turn	15	14	96.0%	7.2	2.8	A
	Subtotal	691	695	100.6%	7.3	0.6	A
WB	Left Turn	5	5	96.0%	8.2	7.0	A
	Through	139	128	91.9%	5.3	0.8	A
	Right Turn						
	Subtotal	144	133	92.1%	5.4	0.7	A
Total		1,787	1,763	98.6%	18.5	0.5	B

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	153	145	95.0%	31.9	3.3	D
	Right Turn	18	20	112.2%	31.2	5.6	D
	Subtotal	171	166	96.8%	31.9	3.4	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	76	73	95.8%	0.8	0.1	A
	Through	990	978	98.8%	0.4	0.0	A
	Right Turn	7	8	111.4%	0.8	0.2	A
	Subtotal	1,073	1,059	98.6%	0.4	0.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,244	1,224	98.4%	4.7	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	11	98.2%	20.7	7.2	C
	Through	311	299	96.1%	22.2	1.1	C
	Right Turn	19	17	90.5%	24.7	4.5	C
	Subtotal	341	327	95.9%	22.3	1.1	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	236	233	98.8%	30.2	2.1	C
	Through	736	741	100.7%	7.6	0.2	A
	Right Turn						
	Subtotal	972	974	100.2%	13.0	0.5	B
WB	Left Turn						
	Through	133	121	91.1%	17.9	1.3	B
	Right Turn	7	7	100.0%	4.4	1.3	A
	Subtotal	140	128	91.6%	17.2	1.2	B
Total		1,453	1,429	98.4%	15.5	0.4	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	2	80.0%	0.6	0.6	A
	Through	61	59	97.4%	0.2	0.1	A
	Right Turn	3	2	70.0%	0.5	0.7	A
	Subtotal	66	63	95.6%	0.3	0.1	A
SB	Left Turn	18	17	96.1%	0.7	0.3	A
	Through	88	89	101.0%	0.2	0.1	A
	Right Turn	3	2	73.3%	0.6	0.5	A
	Subtotal	109	108	99.4%	0.3	0.1	A
EB	Left Turn	5	4	74.0%	6.9	0.7	A
	Through	21	18	84.8%	9.0	0.4	A
	Right Turn	7	7	105.7%	6.5	0.6	A
	Subtotal	33	29	87.6%	8.2	0.3	A
WB	Left Turn	3	3	100.0%	6.4	1.0	A
	Through	37	36	95.9%	7.9	0.6	A
	Right Turn	40	42	105.0%	5.6	0.4	A
	Subtotal	80	81	100.6%	6.6	0.5	A
Total		288	281	97.5%	2.9	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	53	95.0%	0.9	0.2	A
	Through	44	45	103.0%	0.3	0.1	A
	Right Turn	6	6	106.7%	0.5	0.1	A
	Subtotal	106	105	99.0%	0.6	0.1	A
SB	Left Turn	20	19	93.0%	0.6	0.2	A
	Through	30	31	101.7%	0.2	0.1	A
	Right Turn	11	11	101.8%	0.5	0.0	A
	Subtotal	61	60	98.9%	0.4	0.1	A
EB	Left Turn	21	22	104.3%	12.2	1.2	B
	Through	121	117	96.9%	12.9	1.4	B
	Right Turn	76	76	99.9%	11.2	1.2	B
	Subtotal	218	215	98.6%	12.2	1.2	B
WB	Left Turn	3	2	70.0%	6.0	1.5	A
	Through	97	94	96.4%	8.9	0.3	A
	Right Turn	36	38	106.1%	6.2	0.5	A
	Subtotal	136	134	98.4%	8.1	0.3	A
Total		521	514	98.7%	7.4	0.5	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1	2	180.0%	1.3	1.5	A
	Through	96	99	103.2%	0.1	0.0	A
	Right Turn	4	4	107.5%	0.5	0.0	A
	Subtotal	101	105	104.2%	0.1	0.0	A
SB	Left Turn	9	9	95.6%	0.8	0.5	A
	Through	56	57	101.4%	0.1	0.0	A
	Right Turn	2	2	90.0%	0.4	0.2	A
	Subtotal	67	67	100.3%	0.2	0.1	A
EB	Left Turn	1	1	120.0%	8.1	5.6	A
	Through	25	23	93.2%	12.8	0.3	B
	Right Turn	4	3	62.5%	10.5	0.4	B
	Subtotal	30	27	90.0%	12.5	0.2	B
WB	Left Turn	1	1	90.0%	4.3	3.4	A
	Through	39	33	84.1%	7.5	0.4	A
	Right Turn	31	31	100.6%	5.9	0.3	A
	Subtotal	71	65	91.4%	6.7	0.3	A
Total		269	264	98.3%	3.0	0.1	A

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	94	100	106.0%	27.3	2.8	C
	Right Turn	34	34	100.0%	10.7	3.7	B
	Subtotal	128	134	104.4%	23.1	2.4	C
SB	Left Turn	29	28	96.9%	24.8	3.4	C
	Through	27	27	100.7%	22.0	4.6	C
	Right Turn						
	Subtotal	56	55	98.8%	23.4	2.9	C
EB	Left Turn	22	20	91.4%	5.2	1.4	A
	Through	946	928	98.1%	4.4	0.4	A
	Right Turn	40	40	100.3%	3.1	0.7	A
	Subtotal	1,008	988	98.0%	4.4	0.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,192	1,177	98.8%	7.4	0.5	A

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	8	6	77.5%	10.3	0.5	B
	Through						
	Right Turn	6	3	45.0%	9.4	0.6	A
	Subtotal	14	9	63.6%	10.0	0.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	29	94.2%	0.1	0.1	A
	Right Turn	7	7	101.4%	0.8	0.1	A
	Subtotal	38	36	95.5%	0.2	0.1	A
WB	Left Turn	7	7	95.7%	0.7	0.1	A
	Through	63	58	92.7%	0.0	0.0	A
	Right Turn						
	Subtotal	70	65	93.0%	0.1	0.0	A
Total		122	110	90.4%	0.9	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	14	13	93.6%	5.7	0.4	A
	Through						
	Right Turn	9	9	102.2%	4.9	0.2	A
	Subtotal	23	22	97.0%	5.4	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	27	85.5%	0.0	0.0	A
	Right Turn	6	5	86.7%	0.4	0.1	A
	Subtotal	37	32	85.7%	0.1	0.0	A
WB	Left Turn	13	13	96.2%	0.6	0.3	A
	Through	56	52	92.5%	0.1	0.0	A
	Right Turn						
	Subtotal	69	64	93.2%	0.2	0.1	A
Total		129	118	91.7%	1.1	0.2	A

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	9	9	100.0%	1.8	0.9	A
	Through	89	87	98.0%	0.6	0.1	A
	Right Turn	12	10	84.2%	1.0	0.3	A
	Subtotal	110	106	96.6%	0.7	0.1	A
SB	Left Turn	15	12	80.0%	1.4	0.5	A
	Through	81	75	92.2%	0.4	0.1	A
	Right Turn	11	12	104.5%	1.0	0.3	A
	Subtotal	107	98	91.8%	0.6	0.2	A
EB	Left Turn	15	16	107.3%	6.8	0.9	A
	Through	22	17	78.2%	8.1	0.7	A
	Right Turn	3	2	80.0%	4.6	2.2	A
	Subtotal	40	36	89.3%	7.3	0.4	A
WB	Left Turn	16	15	96.3%	8.8	1.1	A
	Through	49	44	89.4%	10.7	0.5	B
	Right Turn	23	23	99.1%	8.0	0.5	A
	Subtotal	88	82	93.2%	9.6	0.4	A
Total		345	322	93.4%	3.7	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	178	182	102.2%	38.2	2.3	D
	Right Turn	275	274	99.5%	38.1	2.9	D
	Subtotal	453	456	100.6%	38.1	2.0	D
SB	Left Turn	197	483	245.0%	37.1	0.9	D
	Through	214	222	103.8%	16.0	1.2	B
	Right Turn						
	Subtotal	411	705	171.5%	30.4	0.8	C
EB	Left Turn	787	772	98.1%	46.6	4.6	D
	Through	231	224	97.0%	24.3	1.1	C
	Right Turn	47	55	117.9%	12.9	2.5	B
	Subtotal	1,065	1,052	98.7%	40.1	3.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,929	2,212	114.7%	36.6	2.2	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	40	101.8%	26.0	1.2	C
	Through	150	152	101.6%	10.2	1.2	B
	Right Turn						
	Subtotal	189	192	101.6%	13.5	1.0	B
SB	Left Turn						
	Through	533	542	101.7%	28.5	2.6	C
	Right Turn	22	20	91.4%	26.4	5.0	C
	Subtotal	555	562	101.2%	28.4	2.5	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	162	161	99.3%	25.8	2.2	C
	Through	92	92	100.4%	17.1	1.8	B
	Right Turn	517	512	99.1%	3.9	0.1	A
	Subtotal	771	765	99.3%	10.1	0.6	B
Total		1,515	1,519	100.3%	17.3	1.2	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	3	82.5%	6.0	2.9	A
	Through	32	29	90.9%	9.2	2.0	A
	Right Turn	5	4	76.0%	6.1	0.6	A
	Subtotal	41	36	88.3%	8.6	1.7	A
SB	Left Turn	37	37	98.6%	10.0	1.1	B
	Through	42	41	96.7%	10.6	1.2	B
	Right Turn	38	37	98.4%	9.3	1.1	A
	Subtotal	117	115	97.9%	10.0	0.8	A
EB	Left Turn	37	36	95.9%	9.0	1.4	A
	Through	16	15	95.0%	8.0	1.0	A
	Right Turn	1	0	40.0%	3.6	6.7	A
	Subtotal	54	51	94.6%	8.7	1.2	A
WB	Left Turn	2	2	90.0%	10.3	1.3	B
	Through	2	3	135.0%	9.0	3.4	A
	Right Turn	19	16	82.6%	8.5	3.1	A
	Subtotal	23	20	87.8%	8.8	2.9	A
Total		235	222	94.5%	9.3	0.6	A

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	13	12	90.0%	10.6	3.4	B
	Through	45	43	94.4%	11.4	1.1	B
	Right Turn	2	1	65.0%	4.6	3.2	A
	Subtotal	60	56	92.5%	11.1	1.0	B
SB	Left Turn	38	41	107.6%	9.8	2.5	A
	Through	45	43	95.6%	10.9	1.2	B
	Right Turn	15	15	100.7%	8.5	0.5	A
	Subtotal	98	99	101.0%	10.0	0.9	B
EB	Left Turn	21	20	97.1%	10.2	2.0	B
	Through	16	15	92.5%	9.8	2.0	A
	Right Turn	22	21	96.8%	8.5	0.4	A
	Subtotal	59	57	95.8%	9.5	1.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		217	211	97.2%	10.2	0.7	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	38	35	92.9%	7.1	0.9	A
	Through	78	85	108.3%	5.8	0.6	A
	Right Turn						
	Subtotal	116	120	103.3%	6.2	0.5	A
SB	Left Turn						
	Through	44	43	97.0%	10.0	1.5	B
	Right Turn	8	9	115.0%	9.6	2.8	A
	Subtotal	52	52	99.8%	10.0	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	12	12	96.7%	0.2	0.1	A
	Through	120	116	96.9%	8.4	0.8	A
	Right Turn	19	21	108.4%	4.0	0.6	A
	Subtotal	151	149	98.3%	7.2	0.8	A
Total		319	320	100.4%	7.3	0.6	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	83	90	108.0%	7.0	0.8	A
	Right Turn	14	14	98.6%	5.7	1.1	A
	Subtotal	97	103	106.6%	6.8	0.6	A
SB	Left Turn	55	58	104.9%	14.8	2.2	B
	Through	47	46	98.3%	10.9	1.9	B
	Right Turn						
	Subtotal	102	104	101.9%	13.0	1.7	B
EB	Left Turn	13	13	99.2%	6.9	1.5	A
	Through	733	733	100.0%	7.0	0.3	A
	Right Turn	5	6	116.0%	8.4	3.9	A
	Subtotal	751	751	100.1%	7.0	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		950	959	100.9%	7.7	0.3	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	40	103.1%	5.1	1.3	A
	Through	57	62	109.5%	2.3	0.6	A
	Right Turn						
	Subtotal	96	103	106.9%	3.4	0.7	A
SB	Left Turn						
	Through	91	90	99.2%	8.7	0.6	A
	Right Turn	28	27	95.4%	7.6	1.4	A
	Subtotal	119	117	98.3%	8.5	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	123	117	95.2%	8.8	0.5	A
	Through	214	219	102.1%	8.3	0.8	A
	Right Turn	25	26	102.4%	5.0	1.0	A
	Subtotal	362	361	99.8%	8.2	0.5	A
Total		577	581	100.7%	7.4	0.3	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	931	914	98.2%	36.1	1.6	D
	Right Turn	20	17	84.0%	34.6	5.0	C
	Subtotal	951	931	97.9%	36.1	1.6	D
NE	Left Turn	64	62	97.5%	37.6	2.7	D
	Through						
	Right Turn	37	36	96.2%	36.3	4.6	D
	Subtotal	101	98	97.0%	37.1	2.6	D
EB	Left Turn	110	108	98.4%	15.3	1.1	B
	Through	343	343	99.9%	15.9	1.2	B
	Right Turn						
	Subtotal	453	451	99.6%	15.8	0.9	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,505	1,480	98.3%	30.0	0.9	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	893	887	99.3%	4.5	0.5	A
	Through	212	204	96.2%	4.4	0.7	A
	Right Turn						
	Subtotal	1,105	1,091	98.7%	4.5	0.6	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	160	159	99.4%	32.1	1.8	C
	Right Turn	452	445	98.3%	34.7	1.3	C
	Subtotal	612	604	98.6%	34.0	1.1	C
Total		1,717	1,694	98.7%	15.0	0.4	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	952	948	99.6%	0.6	0.0	A
	Through						
	Right Turn	35	33	93.7%	1.5	0.1	A
	Subtotal	987	981	99.4%	0.6	0.0	A
SB	Left Turn						
	Through	333	328	98.3%	0.2	0.0	A
	Right Turn	26	27	105.4%	4.9	0.4	A
	Subtotal	359	355	98.9%	0.5	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	69	95.3%	7.2	0.9	A
	Through	131	132	100.4%	61.0	2.9	E
	Right Turn						
	Subtotal	203	200	98.6%	42.5	2.7	D
Total		1,549	1,536	99.2%	6.1	0.5	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	478	479	100.1%	3.0	0.4	A
	Through	852	844	99.0%	3.3	0.3	A
	Right Turn	27	25	92.2%	3.1	1.3	A
	Subtotal	1,357	1,347	99.3%	3.2	0.3	A
EB	Left Turn						
	Through	139	136	98.0%	34.2	1.7	C
	Right Turn	39	38	96.2%	22.6	2.0	C
	Subtotal	178	174	97.6%	31.7	1.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,535	1,521	99.1%	6.5	0.2	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	70	72	102.9%	24.5	2.0	C
	Right Turn	57	55	97.2%	10.9	1.8	B
	Subtotal	127	127	100.3%	18.5	2.1	B
SB	Left Turn	30	33	111.0%	28.4	3.9	C
	Through	63	55	87.8%	25.2	1.8	C
	Right Turn						
	Subtotal	93	89	95.3%	26.4	2.2	C
EB	Left Turn	16	15	93.1%	15.0	6.2	B
	Through	978	961	98.3%	13.7	3.9	B
	Right Turn	44	43	98.0%	6.8	2.4	A
	Subtotal	1,038	1,019	98.2%	13.4	3.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,258	1,235	98.2%	14.9	3.0	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	54	95.9%	36.5	3.3	D
	Through	510	500	98.0%	17.0	1.9	B
	Right Turn	686	692	100.8%	18.7	1.8	B
	Subtotal	1,252	1,245	99.4%	18.8	1.7	B
SB	Left Turn						
	Through	57	53	93.7%	16.2	3.2	B
	Right Turn	20	20	98.0%	8.7	1.3	A
	Subtotal	77	73	94.8%	14.2	2.5	B
EB	Left Turn	38	46	121.3%	36.6	3.6	D
	Through	94	90	95.7%	29.1	2.8	C
	Right Turn	81	77	95.1%	0.6	0.2	A
	Subtotal	213	213	100.0%	20.4	1.9	C
WB	Left Turn	114	105	91.8%	37.3	2.5	D
	Through	95	94	99.4%	29.9	2.2	C
	Right Turn	21	21	101.4%	17.5	3.6	B
	Subtotal	230	220	95.8%	32.2	1.7	C
Total		1,772	1,751	98.8%	20.5	1.3	C

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	31	29	92.9%	11.4	3.4	B
	Through	236	230	97.5%	9.7	1.4	A
	Right Turn	244	242	99.1%	12.8	1.8	B
	Subtotal	511	501	98.0%	11.4	1.4	B
SB	Left Turn	64	60	93.0%	9.5	1.8	A
	Through	105	98	93.4%	3.7	0.6	A
	Right Turn	17	17	97.1%	2.2	0.5	A
	Subtotal	186	174	93.6%	5.5	0.8	A
EB	Left Turn	27	25	93.3%	7.6	3.1	A
	Through	123	122	99.3%	8.8	1.7	A
	Right Turn	13	11	86.2%	4.7	2.8	A
	Subtotal	163	159	97.3%	8.3	1.8	A
WB	Left Turn	95	95	99.7%	43.6	9.9	E
	Through	87	84	96.9%	42.0	9.8	E
	Right Turn	92	89	97.1%	38.9	8.7	E
	Subtotal	274	268	97.9%	41.6	9.0	E
Total		1,134	1,102	97.2%	17.4	2.8	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	83	78	94.0%	24.0	2.7	C
	Through	78	73	93.1%	22.6	2.0	C
	Right Turn	184	182	98.8%	12.7	0.9	B
	Subtotal	345	332	96.3%	17.5	1.1	B
SB	Left Turn	84	82	97.6%	30.8	3.1	C
	Through	50	49	97.8%	25.6	2.5	C
	Right Turn	13	12	90.0%	9.7	3.8	A
	Subtotal	147	143	97.0%	27.2	2.1	C
EB	Left Turn	36	36	100.8%	33.7	4.6	C
	Through	674	672	99.7%	19.7	1.7	B
	Right Turn	73	69	95.1%	20.1	2.0	C
	Subtotal	783	778	99.4%	20.4	1.7	C
WB	Left Turn	71	66	92.4%	30.6	3.2	C
	Through	134	131	97.5%	10.9	1.9	B
	Right Turn	40	37	92.0%	7.0	2.6	A
	Subtotal	245	233	95.1%	15.9	2.1	B
Total		1,520	1,486	97.8%	19.7	1.3	B

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	28	25	87.9%	15.6	2.7	C
	Through	36	30	83.6%	14.0	1.2	B
	Right Turn	12	12	98.3%	10.3	2.4	B
	Subtotal	76	67	87.5%	13.9	1.4	B
SB	Left Turn	41	40	97.1%	13.0	1.6	B
	Through	24	27	113.8%	14.8	1.6	B
	Right Turn	54	53	97.2%	10.5	1.0	B
	Subtotal	119	120	100.5%	12.3	1.1	B
EB	Left Turn	68	66	97.4%	3.6	1.0	A
	Through	388	380	97.8%	1.8	0.3	A
	Right Turn	62	62	100.5%	2.1	0.7	A
	Subtotal	518	508	98.1%	2.1	0.4	A
WB	Left Turn	10	11	112.0%	2.8	1.1	A
	Through	220	233	105.8%	0.6	0.1	A
	Right Turn	32	28	87.5%	0.8	0.3	A
	Subtotal	262	272	103.8%	0.7	0.1	A
Total		975	966	99.1%	3.8	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	134	124	92.2%	0.1	0.0	A
	Right Turn	2	1	50.0%	0.3	0.5	A
	Subtotal	136	125	91.6%	0.1	0.0	A
SB	Left Turn	42	40	94.3%	1.1	0.4	A
	Through	109	111	101.6%	0.4	0.3	A
	Right Turn						
	Subtotal	151	150	99.5%	0.6	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	10	10	95.0%	8.3	1.0	A
	Through						
	Right Turn	17	18	107.6%	5.9	0.2	A
	Subtotal	27	28	103.0%	6.7	0.2	A
Total		314	303	96.4%	0.9	0.2	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	115	108	93.7%	33.3	2.2	C
	Right Turn	36	33	91.9%	16.5	3.7	B
	Subtotal	151	141	93.3%	29.4	2.1	C
SB	Left Turn	67	67	99.6%	29.4	4.2	C
	Through	113	111	97.8%	22.4	2.6	C
	Right Turn						
	Subtotal	180	177	98.4%	25.0	2.4	C
EB	Left Turn	32	30	92.2%	4.8	1.7	A
	Through	715	708	99.0%	5.1	0.5	A
	Right Turn	38	40	105.0%	4.3	1.1	A
	Subtotal	785	777	99.0%	5.0	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,116	1,095	98.1%	11.4	0.4	B

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	33	93.4%	2.2	1.0	A
	Through	112	105	93.5%	2.7	0.8	A
	Right Turn						
	Subtotal	147	137	93.5%	2.6	0.8	A
SB	Left Turn						
	Through	118	112	95.0%	4.2	0.6	A
	Right Turn	15	15	98.0%	2.0	1.1	A
	Subtotal	133	127	95.3%	4.0	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	62	65	104.2%	38.8	3.6	D
	Through	195	183	94.1%	36.1	1.6	D
	Right Turn	254	215	84.5%	8.2	1.0	A
	Subtotal	511	463	90.5%	23.6	1.1	C
Total		791	727	91.9%	16.2	0.6	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	96	93	96.6%	28.7	2.2	C
	Through	183	185	101.3%	27.1	2.1	C
	Right Turn	46	43	94.1%	6.8	1.2	A
	Subtotal	325	321	98.9%	24.9	1.8	C
SB	Left Turn	65	65	100.2%	34.9	2.3	C
	Through	80	77	95.6%	24.5	3.5	C
	Right Turn	45	46	102.2%	4.5	0.6	A
	Subtotal	190	188	98.7%	23.2	1.2	C
EB	Left Turn	91	93	102.3%	10.8	1.7	B
	Through	1,006	991	98.5%	8.0	0.7	A
	Right Turn	36	35	96.7%	6.7	1.6	A
	Subtotal	1,133	1,119	98.8%	8.2	0.7	A
WB	Left Turn	17	16	92.4%	19.0	4.5	B
	Through	297	299	100.5%	7.2	0.8	A
	Right Turn	37	38	101.4%	5.4	1.2	A
	Subtotal	351	352	100.2%	7.5	0.9	A
Total		1,999	1,980	99.0%	12.2	0.4	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn	62	63	101.3%	3.5	0.3	A
	Subtotal	62	63	101.3%	3.5	0.3	A
SB	Left Turn	352	346	98.4%	14.4	0.9	B
	Through	127	120	94.4%	15.1	1.5	B
	Right Turn						
	Subtotal	479	466	97.3%	14.6	0.8	B
EB	Left Turn						
	Through	798	793	99.4%	11.5	1.0	B
	Right Turn	20	19	97.0%	5.1	2.4	A
	Subtotal	818	812	99.3%	11.3	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,359	1,341	98.7%	12.1	0.6	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	468	456	97.5%	8.8	0.6	A
	Right Turn	7	7	95.7%	6.8	4.4	A
	Subtotal	475	463	97.5%	8.8	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	11	10	94.5%	16.7	3.8	B
	Through	34	31	92.1%	16.3	2.3	B
	Right Turn						
	Subtotal	45	42	92.7%	16.2	1.7	B
Total		520	505	97.1%	9.4	0.5	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	361	358	99.1%	35.7	0.6	D
	Through	441	432	97.9%	29.9	0.9	C
	Right Turn	192	194	101.0%	16.3	1.8	B
	Subtotal	994	984	99.0%	29.4	0.5	C
EB	Left Turn						
	Through	1,089	1,078	99.0%	8.2	0.6	A
	Right Turn	28	25	88.6%	7.2	1.8	A
	Subtotal	1,117	1,103	98.7%	8.2	0.7	A
WB	Left Turn	6	6	105.0%	11.2	7.9	B
	Through	159	160	100.8%	5.4	0.6	A
	Right Turn						
	Subtotal	165	167	101.0%	5.7	0.6	A
Total		2,276	2,253	99.0%	17.2	0.4	B

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	148	145	97.8%	46.6	8.3	E
	Right Turn	21	21	97.6%	46.3	10.0	E
	Subtotal	169	165	97.8%	46.6	8.3	E
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	102	96	94.3%	0.8	0.1	A
	Through	1,098	1,095	99.7%	0.5	0.0	A
	Right Turn	12	12	96.7%	0.9	0.2	A
	Subtotal	1,212	1,203	99.2%	0.5	0.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,381	1,368	99.0%	6.0	0.9	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	94.3%	19.2	6.1	B
	Through	354	343	97.0%	21.7	1.1	C
	Right Turn	24	27	110.8%	24.6	3.4	C
	Subtotal	392	383	97.8%	21.8	1.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	308	301	97.8%	38.1	1.6	D
	Through	1,142	1,132	99.1%	8.6	0.5	A
	Right Turn						
	Subtotal	1,450	1,433	98.9%	14.8	0.6	B
WB	Left Turn						
	Through	151	153	101.5%	17.8	1.2	B
	Right Turn	6	6	91.7%	5.8	3.3	A
	Subtotal	157	159	101.1%	17.4	1.3	B
Total		1,999	1,975	98.8%	16.4	0.4	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	4	97.5%	1.6	1.4	A
	Through	82	83	101.5%	0.3	0.0	A
	Right Turn	5	4	82.0%	0.8	0.6	A
	Subtotal	91	91	100.2%	0.3	0.1	A
SB	Left Turn	17	16	96.5%	0.7	0.4	A
	Through	131	126	96.4%	0.4	0.4	A
	Right Turn	8	8	105.0%	0.6	0.2	A
	Subtotal	156	151	96.9%	0.4	0.3	A
EB	Left Turn	2	2	105.0%	7.6	3.4	A
	Through	19	17	88.4%	9.0	0.4	A
	Right Turn	3	2	70.0%	6.3	2.7	A
	Subtotal	24	21	87.5%	8.8	0.6	A
WB	Left Turn	5	4	86.0%	5.9	0.6	A
	Through	34	34	99.4%	8.2	0.8	A
	Right Turn	45	46	101.6%	5.7	0.4	A
	Subtotal	84	84	99.8%	6.8	0.4	A
Total		355	347	97.8%	2.5	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	54	55	101.7%	1.2	0.2	A
	Through	64	65	101.6%	0.1	0.0	A
	Right Turn	11	11	100.9%	0.5	0.1	A
	Subtotal	129	131	101.6%	0.6	0.1	A
SB	Left Turn	19	16	84.7%	0.7	0.4	A
	Through	50	49	98.0%	0.1	0.1	A
	Right Turn	13	14	110.8%	0.6	0.1	A
	Subtotal	82	80	97.0%	0.3	0.1	A
EB	Left Turn	34	34	100.3%	24.4	5.9	C
	Through	193	182	94.3%	26.0	6.5	D
	Right Turn	104	99	95.6%	22.6	6.5	C
	Subtotal	331	316	95.3%	24.7	6.3	C
WB	Left Turn	2	3	140.0%	8.0	1.8	A
	Through	143	164	114.4%	12.7	0.6	B
	Right Turn	38	37	96.3%	8.5	0.8	A
	Subtotal	183	203	110.9%	11.9	0.4	B
Total		725	729	100.6%	14.2	2.9	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	86.7%	0.8	0.7	A
	Through	130	130	100.0%	0.2	0.1	A
	Right Turn	3	3	103.3%	0.9	0.9	A
	Subtotal	136	136	99.8%	0.2	0.1	A
SB	Left Turn	19	19	100.5%	1.1	0.3	A
	Through	71	69	97.3%	0.1	0.0	A
	Right Turn	5	4	88.0%	0.5	0.2	A
	Subtotal	95	93	97.5%	0.4	0.1	A
EB	Left Turn	3	4	123.3%	12.3	0.9	B
	Through	35	31	87.7%	13.2	0.3	B
	Right Turn	9	9	104.4%	11.0	0.8	B
	Subtotal	47	44	93.2%	12.7	0.3	B
WB	Left Turn	2	1	50.0%	3.9	3.8	A
	Through	35	31	87.1%	7.4	0.3	A
	Right Turn	40	38	93.8%	5.6	0.4	A
	Subtotal	77	69	89.6%	6.4	0.3	A
Total		355	341	96.1%	3.1	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	123	122	99.1%	26.3	2.2	C
	Right Turn	50	49	97.4%	10.2	1.9	B
	Subtotal	173	171	98.6%	21.7	1.8	C
SB	Left Turn	15	18	119.3%	35.5	5.0	D
	Through	44	39	88.0%	29.9	3.5	C
	Right Turn						
	Subtotal	59	57	95.9%	31.5	2.8	C
EB	Left Turn	26	27	103.5%	6.4	1.5	A
	Through	1,042	1,042	100.0%	5.6	0.3	A
	Right Turn	51	54	105.7%	4.6	0.6	A
	Subtotal	1,119	1,122	100.3%	5.6	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,351	1,350	99.9%	8.7	0.3	A

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	11	97.3%	10.9	0.8	B
	Through						
	Right Turn	7	6	90.0%	9.6	0.7	A
	Subtotal	18	17	94.4%	10.4	0.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	53	48	90.6%	0.1	0.0	A
	Right Turn	4	5	117.5%	0.9	0.3	A
	Subtotal	57	53	92.5%	0.1	0.1	A
WB	Left Turn	5	5	96.0%	1.0	0.8	A
	Through	66	58	88.0%	0.0	0.0	A
	Right Turn						
	Subtotal	71	63	88.6%	0.1	0.0	A
Total		146	133	90.8%	1.4	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	14	13	90.7%	6.0	0.5	A
	Through						
	Right Turn	23	20	88.7%	5.1	0.2	A
	Subtotal	37	33	89.5%	5.4	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	58	52	89.7%	0.0	0.0	A
	Right Turn	2	3	125.0%	0.3	0.2	A
	Subtotal	60	55	90.8%	0.0	0.1	A
WB	Left Turn	9	11	126.7%	0.8	0.4	A
	Through	57	50	88.4%	0.1	0.0	A
	Right Turn						
	Subtotal	66	62	93.6%	0.2	0.1	A
Total		163	149	91.7%	1.3	0.3	A

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	5	5	98.0%	1.8	1.0	A
	Through	140	135	96.4%	0.5	0.1	A
	Right Turn	8	9	107.5%	1.2	0.9	A
	Subtotal	153	149	97.1%	0.6	0.1	A
SB	Left Turn	32	27	85.6%	2.1	0.5	A
	Through	112	109	97.6%	0.5	0.1	A
	Right Turn	12	10	85.8%	1.3	0.9	A
	Subtotal	156	147	94.2%	0.9	0.1	A
EB	Left Turn	38	33	87.6%	7.7	0.7	A
	Through	40	35	88.3%	9.1	0.8	A
	Right Turn	3	3	110.0%	5.3	1.3	A
	Subtotal	81	72	88.8%	8.3	0.7	A
WB	Left Turn	14	11	80.7%	10.0	1.6	B
	Through	49	47	95.1%	11.1	0.8	B
	Right Turn	9	8	88.9%	8.1	1.3	A
	Subtotal	72	66	91.5%	10.6	0.7	B
Total		462	433	93.8%	3.5	0.2	A

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	197	195	99.1%	46.5	6.8	D
	Right Turn	353	346	97.9%	54.0	9.5	D
	Subtotal	550	541	98.3%	51.3	8.6	D
SB	Left Turn	148	445	300.9%	48.5	0.8	D
	Through	226	219	96.9%	24.9	1.1	C
	Right Turn						
	Subtotal	374	664	177.6%	40.7	0.7	D
EB	Left Turn	787	785	99.7%	49.6	12.4	D
	Through	306	291	95.0%	30.7	10.9	C
	Right Turn	40	44	110.0%	14.6	5.9	B
	Subtotal	1,133	1,119	98.8%	43.3	11.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,057	2,324	113.0%	44.4	5.9	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	41	40	97.8%	39.8	3.3	D
	Through	166	163	98.4%	36.0	1.0	D
	Right Turn						
	Subtotal	207	204	98.3%	36.8	1.0	D
SB	Left Turn						
	Through	520	512	98.5%	37.7	1.5	D
	Right Turn	22	23	104.5%	40.7	6.2	D
	Subtotal	542	535	98.8%	37.9	1.5	D
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	155	155	99.9%	28.0	2.0	C
	Through	88	88	99.7%	17.7	1.3	B
	Right Turn	494	489	99.0%	3.6	0.2	A
	Subtotal	737	732	99.3%	10.4	0.6	B
Total		1,486	1,471	99.0%	24.1	0.6	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	4	80.0%	7.0	3.9	A
	Through	26	24	93.8%	14.8	4.5	B
	Right Turn	6	6	91.7%	6.7	3.1	A
	Subtotal	37	34	91.6%	12.6	3.0	B
SB	Left Turn	35	36	102.3%	13.6	3.5	B
	Through	40	42	106.0%	15.9	4.9	C
	Right Turn	21	22	102.4%	13.0	5.4	B
	Subtotal	96	100	103.9%	14.5	3.6	B
EB	Left Turn	32	28	85.9%	13.4	7.0	B
	Through	31	33	105.5%	9.3	2.2	A
	Right Turn	3	4	116.7%	6.2	4.2	A
	Subtotal	66	64	96.5%	10.8	3.8	B
WB	Left Turn						
	Through	2	2	80.0%	8.9	5.2	A
	Right Turn	18	14	80.0%	10.3	3.9	B
	Subtotal	20	16	80.0%	10.4	3.4	B
Total		219	213	97.4%	12.8	2.2	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	11	77.1%	14.9	4.3	B
	Through	78	78	100.4%	14.9	2.7	B
	Right Turn	12	12	100.8%	8.4	2.3	A
	Subtotal	104	101	97.3%	14.1	2.2	B
SB	Left Turn	36	38	104.4%	11.3	2.6	B
	Through	91	84	92.1%	14.8	2.1	B
	Right Turn	12	11	93.3%	13.4	5.4	B
	Subtotal	139	133	95.4%	13.7	1.8	B
EB	Left Turn	13	13	99.2%	13.4	6.2	B
	Through	34	32	92.9%	10.2	2.1	B
	Right Turn	29	28	97.6%	9.1	1.3	A
	Subtotal	76	73	95.8%	10.4	2.6	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		319	307	96.1%	13.0	0.9	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	63	63	100.5%	9.0	1.2	A
	Through	86	85	99.1%	9.2	0.5	A
	Right Turn						
	Subtotal	149	149	99.7%	9.1	0.5	A
SB	Left Turn						
	Through	47	45	96.4%	9.7	1.7	A
	Right Turn	9	10	106.7%	9.4	2.3	A
	Subtotal	56	55	98.0%	9.6	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	12	11	94.2%	0.3	0.0	A
	Through	115	115	100.2%	7.6	0.6	A
	Right Turn	19	18	95.8%	4.1	1.2	A
	Subtotal	146	145	99.1%	6.6	0.5	A
Total		351	348	99.2%	8.1	0.4	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	94	92	98.1%	10.0	0.5	B
	Right Turn	11	11	97.3%	9.7	1.6	A
	Subtotal	105	103	98.0%	10.0	0.5	A
SB	Left Turn	67	66	97.9%	15.8	1.0	B
	Through	47	46	98.3%	11.6	1.7	B
	Right Turn						
	Subtotal	114	112	98.1%	14.1	0.9	B
EB	Left Turn	14	15	106.4%	7.2	1.7	A
	Through	1,143	1,131	99.0%	7.2	0.4	A
	Right Turn	9	9	95.6%	6.2	3.2	A
	Subtotal	1,166	1,155	99.0%	7.2	0.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,385	1,370	98.9%	7.9	0.3	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	47	45	96.2%	5.6	1.5	A
	Through	61	62	101.0%	2.7	0.6	A
	Right Turn						
	Subtotal	108	107	98.9%	3.9	0.9	A
SB	Left Turn						
	Through	103	102	98.7%	8.8	0.7	A
	Right Turn	33	32	97.3%	7.8	1.0	A
	Subtotal	136	134	98.4%	8.6	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	143	140	97.6%	8.9	0.7	A
	Through	230	229	99.7%	8.7	0.6	A
	Right Turn	24	23	95.8%	5.4	1.4	A
	Subtotal	397	392	98.7%	8.6	0.4	A
Total		641	632	98.7%	7.8	0.3	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,027	1,000	97.3%	35.4	1.4	D
	Right Turn	36	36	98.6%	32.4	2.6	C
	Subtotal	1,063	1,035	97.4%	35.3	1.4	D
NE	Left Turn	82	78	95.4%	40.1	1.5	D
	Through						
	Right Turn	36	37	101.4%	41.8	3.7	D
	Subtotal	118	115	97.2%	40.6	1.3	D
EB	Left Turn	136	131	96.3%	18.0	1.8	B
	Through	434	426	98.0%	18.4	1.0	B
	Right Turn						
	Subtotal	570	557	97.6%	18.3	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,751	1,706	97.4%	30.1	0.7	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	999	970	97.1%	5.4	0.9	A
	Through	246	237	96.3%	5.1	0.9	A
	Right Turn						
	Subtotal	1,245	1,207	96.9%	5.3	0.9	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	166	171	103.0%	29.8	1.9	C
	Right Turn	572	570	99.6%	33.9	0.7	C
	Subtotal	738	741	100.4%	33.0	0.6	C
Total		1,983	1,948	98.2%	15.9	0.5	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,153	1,148	99.5%	0.6	0.1	A
	Through						
	Right Turn	33	34	102.1%	1.5	0.3	A
	Subtotal	1,186	1,181	99.6%	0.6	0.1	A
SB	Left Turn						
	Through	342	339	99.0%	0.2	0.0	A
	Right Turn	27	27	100.7%	4.7	0.3	A
	Subtotal	369	366	99.1%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn	2	0	0.0%	0.0	0.0	A
	Subtotal	2	0	0.0%	0.0	0.0	A
WB	Left Turn	68	69	100.9%	7.2	0.4	A
	Through	131	133	101.8%	62.9	2.1	E
	Right Turn						
	Subtotal	199	202	101.5%	44.0	2.2	D
Total		1,756	1,749	99.6%	5.6	0.4	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	536	527	98.3%	4.1	0.4	A
	Through	997	994	99.7%	4.5	0.2	A
	Right Turn	32	32	98.8%	3.9	0.6	A
	Subtotal	1,565	1,552	99.2%	4.3	0.2	A
EB	Left Turn						
	Through	213	209	98.1%	32.8	2.0	C
	Right Turn	48	51	106.0%	27.5	3.3	C
	Subtotal	261	260	99.6%	31.8	2.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,826	1,812	99.2%	8.3	0.3	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	94	87	92.0%	20.0	3.5	C
	Right Turn	93	89	95.6%	13.5	4.9	B
	Subtotal	187	175	93.8%	16.7	3.8	B
SB	Left Turn	57	63	110.9%	37.7	24.2	D
	Through	85	75	88.7%	31.7	22.3	C
	Right Turn						
	Subtotal	142	139	97.6%	34.4	22.8	C
EB	Left Turn	9	9	97.8%	38.3	24.1	D
	Through	983	969	98.6%	35.0	14.0	D
	Right Turn	71	72	101.1%	19.6	6.4	B
	Subtotal	1,063	1,050	98.8%	34.1	13.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,392	1,364	98.0%	31.8	11.0	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	65	62	95.4%	62.3	4.4	E
	Through	526	511	97.1%	42.5	2.8	D
	Right Turn	734	747	101.8%	60.5	4.2	E
	Subtotal	1,325	1,320	99.6%	53.7	3.6	D
SB	Left Turn						
	Through	88	82	93.4%	14.8	3.8	B
	Right Turn	25	27	109.6%	10.0	3.4	A
	Subtotal	113	110	97.0%	13.7	3.9	B
EB	Left Turn	90	87	96.7%	35.0	6.3	D
	Through	122	119	97.5%	29.0	5.0	C
	Right Turn	66	67	100.9%	0.6	0.2	A
	Subtotal	278	273	98.1%	25.1	1.9	C
WB	Left Turn	100	106	105.6%	40.7	7.1	D
	Through	102	104	102.2%	37.0	5.7	D
	Right Turn	21	20	96.2%	23.5	8.1	C
	Subtotal	223	230	103.1%	36.9	2.2	D
Total		1,939	1,932	99.6%	45.3	2.2	D

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	22	22	101.8%	17.6	10.9	C
	Through	165	175	105.8%	22.7	18.4	C
	Right Turn	128	131	102.2%	22.3	22.0	C
	Subtotal	315	328	104.1%	22.2	19.0	C
SB	Left Turn	81	76	93.6%	18.3	14.5	C
	Through	116	118	102.1%	14.0	6.6	B
	Right Turn	14	11	81.4%	7.0	2.0	A
	Subtotal	211	206	97.4%	15.0	8.9	C
EB	Left Turn	26	25	96.9%	23.1	26.6	C
	Through	134	134	99.7%	22.2	23.7	C
	Right Turn	22	19	86.4%	17.5	24.3	C
	Subtotal	182	178	97.7%	22.0	24.0	C
WB	Left Turn	104	100	96.5%	74.5	34.9	F
	Through	117	115	98.6%	73.4	34.7	F
	Right Turn	84	87	103.3%	68.6	30.5	F
	Subtotal	305	303	99.2%	72.1	33.4	F
Total		1,013	1,014	100.1%	36.1	18.8	E

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	69	77	111.3%	27.9	4.3	C
	Through	93	101	108.6%	26.5	2.7	C
	Right Turn	106	101	95.5%	13.0	1.4	B
	Subtotal	268	279	104.1%	20.9	1.1	C
SB	Left Turn	84	87	103.3%	28.0	4.3	C
	Through	72	69	96.4%	27.1	4.6	C
	Right Turn	10	8	78.0%	10.8	10.0	B
	Subtotal	166	164	98.8%	27.1	2.7	C
EB	Left Turn	35	34	96.6%	29.9	7.4	C
	Through	738	747	101.2%	22.6	1.6	C
	Right Turn	90	89	98.7%	23.7	5.8	C
	Subtotal	863	870	100.8%	23.1	2.2	C
WB	Left Turn						
	Through	144	148	102.8%			
	Right Turn						
	Subtotal						
Total		1,297	1,313	101.2%	23.1	1.6	C

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	14	70.0%	18.5	5.7	C
	Through	23	21	93.0%	16.2	6.5	C
	Right Turn	18	17	96.7%	8.4	3.3	A
	Subtotal	61	53	86.6%	14.5	3.0	B
SB	Left Turn	53	48	89.8%	11.0	4.4	B
	Through	15	17	112.0%	9.8	3.0	A
	Right Turn	51	56	109.4%	7.8	1.1	A
	Subtotal	119	120	101.0%	9.3	1.8	A
EB	Left Turn	45	42	93.3%	5.0	5.2	A
	Through	417	413	99.0%	1.3	0.8	A
	Right Turn	23	26	113.0%	2.1	2.5	A
	Subtotal	485	481	99.1%	1.7	1.3	A
WB	Left Turn	4	5	120.0%	0.4	0.7	A
	Through	226	226	100.1%	0.6	0.1	A
	Right Turn	49	51	104.1%	1.4	0.6	A
	Subtotal	279	282	101.1%	0.8	0.1	A
Total		944	936	99.1%	3.1	0.6	A

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	115	112	97.7%	0.1	0.1	A
	Right Turn	2	3	130.0%	0.2	0.3	A
	Subtotal	117	115	98.3%	0.1	0.1	A
SB	Left Turn	47	47	99.6%	1.4	0.7	A
	Through	109	109	100.2%	0.2	0.2	A
	Right Turn						
	Subtotal	156	156	100.0%	0.5	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	10	11	106.0%	6.9	0.5	A
	Through						
	Right Turn	26	26	100.0%	5.4	0.5	A
	Subtotal	36	37	101.7%	6.1	0.1	A
Total		309	308	99.5%	0.9	0.2	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	110	112	101.8%	35.6	1.5	D
	Right Turn	31	28	89.0%	16.4	5.5	B
	Subtotal	141	140	99.0%	31.5	1.6	C
SB	Left Turn	56	56	100.4%	37.0	11.7	D
	Through	84	88	104.5%	32.7	5.5	C
	Right Turn						
	Subtotal	140	144	102.9%	34.7	6.2	C
EB	Left Turn	15	16	108.0%	2.9	2.7	A
	Through	656	664	101.2%	5.1	0.9	A
	Right Turn	72	68	94.4%	4.2	1.1	A
	Subtotal	743	748	100.7%	5.0	0.9	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,024	1,032	100.7%	12.3	0.4	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	31	30	95.5%	2.1	1.8	A
	Through	94	99	105.1%	3.4	2.9	A
	Right Turn						
	Subtotal	125	128	102.7%	3.4	2.3	A
SB	Left Turn						
	Through	94	95	101.3%	5.2	2.1	A
	Right Turn	19	17	87.4%	2.5	1.1	A
	Subtotal	113	112	98.9%	4.9	1.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	46	48	104.8%	41.0	3.5	D
	Through	194	192	98.8%	38.5	4.5	D
	Right Turn	234	233	99.4%	11.5	6.0	B
	Subtotal	474	472	99.7%	25.2	3.4	C
Total		712	713	100.1%	18.1	3.3	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	89	94	105.6%	23.3	3.7	C
	Through	205	203	99.1%	25.0	5.4	C
	Right Turn	34	34	101.2%	23.4	10.6	C
	Subtotal	328	332	101.1%	23.8	3.6	C
SB	Left Turn	81	78	96.0%	44.6	21.5	D
	Through	64	66	103.1%	22.2	8.2	C
	Right Turn	67	64	94.9%	4.6	1.2	A
	Subtotal	212	207	97.8%	26.5	9.9	C
EB	Left Turn	127	133	104.7%	25.1	17.5	C
	Through	1,187	1,184	99.7%	58.4	60.4	E
	Right Turn	33	31	92.7%	45.9	50.7	D
	Subtotal	1,347	1,347	100.0%	55.0	56.2	E
WB	Left Turn	16	15	93.8%	35.4	20.0	D
	Through	385	394	102.4%	7.2	1.6	A
	Right Turn	28	26	91.4%	8.5	5.1	A
	Subtotal	429	435	101.4%	8.8	2.5	A
Total		2,316	2,321	100.2%	38.7	33.0	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn	39	34	87.2%	3.7	1.0	A
	Subtotal	39	34	87.2%	3.7	1.0	A
SB	Left Turn	428	416	97.1%	16.4	2.7	B
	Through	159	153	96.0%	14.0	3.8	B
	Right Turn						
	Subtotal	587	568	96.8%	15.8	2.5	B
EB	Left Turn						
	Through	735	738	100.5%	12.0	2.7	B
	Right Turn	8	9	110.0%	3.4	2.4	A
	Subtotal	743	747	100.6%	11.9	2.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,369	1,349	98.6%	13.3	1.4	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	577	565	98.0%	19.1	0.4	B
	Right Turn	15	16	106.7%	11.0	10.2	B
	Subtotal	592	581	98.2%	18.9	0.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	10	8	76.0%	18.5	16.0	B
	Through	20	21	104.0%	18.2	4.1	B
	Right Turn						
	Subtotal	30	28	94.7%	18.3	4.2	B
Total		622	610	98.0%	18.9	0.3	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	389	396	101.7%	33.3	1.7	C
	Through	563	558	99.1%	28.2	2.4	C
	Right Turn	262	261	99.7%	19.3	5.2	B
	Subtotal	1,214	1,215	100.1%	28.2	1.7	C
EB	Left Turn						
	Through	1,276	1,256	98.5%	70.5	16.5	E
	Right Turn	26	26	101.5%	55.3	11.8	E
	Subtotal	1,302	1,283	98.5%	70.3	16.3	E
WB	Left Turn	3	3	93.3%	7.1	10.1	A
	Through	167	173	103.4%	5.3	1.3	A
	Right Turn						
	Subtotal	170	175	103.2%	5.5	1.3	A
Total		2,686	2,673	99.5%	47.0	8.6	D

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	213	209	98.1%	130.2	12.9	F
	Right Turn	17	16	94.1%	122.4	16.2	F
	Subtotal	230	225	97.8%	129.5	12.6	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	75	70	93.6%	0.8	0.2	A
	Through	1,106	1,099	99.4%	0.5	0.1	A
	Right Turn	21	19	89.5%	1.1	0.8	A
	Subtotal	1,202	1,188	98.9%	0.5	0.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,432	1,413	98.7%	18.9	0.2	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	17	103.8%	16.3	10.5	B
	Through	415	407	98.1%	22.0	1.6	C
	Right Turn	35	35	101.1%	27.8	3.8	C
	Subtotal	466	459	98.5%	22.3	1.6	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	413	399	96.5%	43.0	3.3	D
	Through	1,252	1,258	100.5%	39.1	2.2	D
	Right Turn						
	Subtotal	1,665	1,657	99.5%	40.1	2.0	D
WB	Left Turn						
	Through	157	152	97.0%			
	Right Turn						
	Subtotal						
Total		2,131	2,116	99.3%	36.2	1.8	D

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	2	73.3%	0.3	0.5	A
	Through	62	59	94.5%	0.2	0.1	A
	Right Turn	4	6	140.0%	0.9	1.2	A
	Subtotal	69	66	96.2%	0.3	0.1	A
SB	Left Turn	38	38	99.5%	0.9	0.4	A
	Through	111	112	100.7%	0.3	0.2	A
	Right Turn	3	3	100.0%	0.2	0.3	A
	Subtotal	152	153	100.4%	0.4	0.1	A
EB	Left Turn	5	3	64.0%	5.2	5.0	A
	Through	27	25	94.1%	10.8	2.1	B
	Right Turn	7	5	74.3%	6.6	1.5	A
	Subtotal	39	34	86.7%	10.0	1.8	B
WB	Left Turn	9	9	100.0%	7.2	2.7	A
	Through	42	40	94.8%	9.1	1.3	A
	Right Turn	74	63	85.7%	5.9	0.6	A
	Subtotal	125	112	89.8%	7.1	0.5	A
Total		385	365	94.8%	3.5	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	45	41	91.6%	1.7	1.6	A
	Through	91	80	87.7%	0.5	0.2	A
	Right Turn	5	5	96.0%	0.5	0.4	A
	Subtotal	141	126	89.2%	0.8	0.4	A
SB	Left Turn	44	42	95.9%	0.9	0.3	A
	Through	58	52	89.7%	0.3	0.3	A
	Right Turn	10	8	80.0%	0.5	0.4	A
	Subtotal	112	102	91.3%	0.6	0.2	A
EB	Left Turn	39	36	92.8%	56.6	25.4	F
	Through	264	258	97.7%	59.0	26.0	F
	Right Turn	87	88	101.1%	56.1	24.0	F
	Subtotal	390	382	97.9%	58.0	25.4	F
WB	Left Turn	7	13	180.0%	19.2	6.1	C
	Through	198	208	105.1%	16.0	3.2	C
	Right Turn	74	73	99.2%	11.9	2.5	B
	Subtotal	279	294	105.4%	15.0	2.7	B
Total		922	904	98.0%	29.8	11.4	D

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	4	88.0%	1.7	2.0	A
	Through	185	174	93.8%	0.1	0.1	A
	Right Turn	14	11	78.6%	0.6	0.4	A
	Subtotal	204	189	92.6%	0.2	0.1	A
SB	Left Turn	76	74	97.1%	2.0	0.5	A
	Through	105	97	92.0%	0.2	0.2	A
	Right Turn	6	7	120.0%	0.4	0.2	A
	Subtotal	187	178	95.0%	1.0	0.3	A
EB	Left Turn	13	12	92.3%	16.8	5.3	C
	Through	129	125	96.7%	15.5	1.6	C
	Right Turn	5	5	96.0%	10.0	0.8	A
	Subtotal	147	142	96.3%	15.3	1.5	C
WB	Left Turn	2	1	70.0%	3.3	4.6	A
	Through	32	36	111.9%	8.9	1.1	A
	Right Turn	33	32	97.0%	5.6	0.3	A
	Subtotal	67	69	103.3%	7.3	0.6	A
Total		605	577	95.4%	5.1	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	200	184	92.2%	27.7	2.6	C
	Right Turn	31	32	103.9%	11.4	6.5	B
	Subtotal	231	217	93.8%	26.0	2.8	C
SB	Left Turn	27	26	96.3%	25.6	12.6	C
	Through	41	38	91.7%	18.7	6.8	B
	Right Turn						
	Subtotal	68	64	93.5%	22.4	4.3	C
EB	Left Turn	43	39	89.8%	11.1	10.5	B
	Through	934	938	100.5%	12.2	15.2	B
	Right Turn	146	141	96.6%	7.0	7.9	A
	Subtotal	1,123	1,118	99.6%	11.5	14.1	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,422	1,398	98.3%	14.2	11.3	B

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	17	16	94.1%	11.9	1.0	B
	Through						
	Right Turn	9	8	88.9%	9.4	1.2	A
	Subtotal	26	24	92.3%	11.3	0.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	214	206	96.2%	0.2	0.1	A
	Right Turn	5	3	68.0%	0.5	0.5	A
	Subtotal	219	209	95.5%	0.2	0.0	A
WB	Left Turn	4	2	40.0%	1.0	1.8	A
	Through	50	53	106.8%	0.1	0.1	A
	Right Turn						
	Subtotal	54	55	101.9%	0.1	0.2	A
Total		299	288	96.4%	1.0	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	101.3%	7.7	4.0	A
	Through						
	Right Turn	35	37	105.1%	9.6	7.2	A
	Subtotal	50	52	104.0%	8.9	5.9	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	220	211	95.7%	8.2	17.9	A
	Right Turn	3	3	100.0%	10.8	23.9	B
	Subtotal	223	214	95.8%	8.3	17.9	A
WB	Left Turn	8	8	103.8%	1.6	1.2	A
	Through	39	37	95.9%	0.1	0.0	A
	Right Turn						
	Subtotal	47	46	97.2%	0.3	0.2	A
Total		320	311	97.3%	7.1	12.9	A

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	9	113.8%	3.7	2.5	A
	Through	151	147	97.5%	6.8	9.8	A
	Right Turn	20	19	94.5%	4.4	5.7	A
	Subtotal	179	175	97.9%	6.5	9.1	A
SB	Left Turn	42	38	89.8%	2.9	0.9	A
	Through	121	111	91.6%	0.8	0.2	A
	Right Turn	13	11	85.4%	1.5	1.0	A
	Subtotal	176	160	90.7%	1.3	0.3	A
EB	Left Turn	121	119	98.1%	30.7	27.9	D
	Through	123	118	95.6%	29.8	21.0	D
	Right Turn	11	11	96.4%	23.8	26.7	C
	Subtotal	255	247	96.8%	30.1	24.4	D
WB	Left Turn	9	9	98.9%	14.3	6.9	B
	Through	26	25	97.7%	12.8	1.5	B
	Right Turn	9	9	98.9%	15.9	15.8	C
	Subtotal	44	43	98.2%	13.9	5.4	B
Total		654	625	95.6%	14.9	12.1	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	202	204	101.1%	65.5	4.8	E
	Right Turn	406	405	99.6%	114.2	16.8	F
	Subtotal	608	609	100.1%	97.9	12.9	F
SB	Left Turn	149	545	366.0%	49.2	1.3	D
	Through	238	237	99.7%	25.8	0.7	C
	Right Turn						
	Subtotal	387	783	202.2%	42.1	0.8	D
EB	Left Turn	854	832	97.4%	75.1	6.9	E
	Through	269	245	90.9%	47.6	6.1	D
	Right Turn	39	39	99.0%	28.0	5.4	C
	Subtotal	1,162	1,115	96.0%	67.4	6.3	E
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,157	2,506	116.2%	66.9	4.9	E

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	42	38	90.5%	45.4	8.3	D
	Through	164	167	102.0%	36.3	1.5	D
	Right Turn						
	Subtotal	206	205	99.7%	38.0	1.5	D
SB	Left Turn						
	Through	603	592	98.1%	61.0	9.7	E
	Right Turn	25	24	95.6%	65.5	17.2	E
	Subtotal	628	616	98.0%	61.2	9.6	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	179	179	99.8%	35.1	4.9	D
	Through	102	102	99.6%	19.9	1.6	B
	Right Turn	571	566	99.1%	4.7	0.2	A
	Subtotal	852	846	99.3%	12.9	1.1	B
Total		1,686	1,667	98.9%	33.8	3.8	C

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	4	116.7%	8.6	9.0	A
	Through	33	30	90.9%	12.0	4.0	B
	Right Turn	2	2	75.0%	3.7	2.0	A
	Subtotal	38	35	92.1%	11.3	3.2	B
SB	Left Turn	18	19	105.6%	10.9	2.8	B
	Through	12	12	103.3%	10.0	1.7	A
	Right Turn	12	12	100.8%	11.3	5.7	B
	Subtotal	42	44	103.6%	10.9	1.7	B
EB	Left Turn	19	17	89.5%	10.9	5.6	B
	Through	20	17	87.0%	9.3	4.2	A
	Right Turn	2	3	135.0%	5.9	4.5	A
	Subtotal	41	37	90.5%	9.7	4.4	A
WB	Left Turn	2	1	65.0%	6.9	2.5	A
	Through	1	1	80.0%	5.6	4.4	A
	Right Turn	9	7	77.8%	9.9	7.8	A
	Subtotal	12	9	75.8%	9.6	6.6	A
Total		133	125	93.8%	10.7	2.1	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	7	87.5%	14.3	6.7	B
	Through	61	59	96.6%	14.0	2.7	B
	Right Turn	10	10	104.0%	6.8	0.6	A
	Subtotal	79	76	96.6%	13.1	2.3	B
SB	Left Turn	75	74	98.9%	14.4	3.1	B
	Through	44	47	105.7%	14.2	3.6	B
	Right Turn	8	7	83.8%	9.9	4.0	A
	Subtotal	127	127	100.3%	14.2	1.6	B
EB	Left Turn	8	7	88.8%	12.1	6.9	B
	Through	30	29	95.7%	9.5	1.6	A
	Right Turn	9	8	84.4%	7.6	0.5	A
	Subtotal	47	43	92.3%	9.5	1.9	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		253	247	97.7%	13.0	0.5	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	93	87	93.8%	12.2	1.4	B
	Through	150	139	92.7%	10.1	0.8	B
	Right Turn						
	Subtotal	243	226	93.1%	10.9	1.0	B
SB	Left Turn						
	Through	58	55	94.8%	9.6	1.4	A
	Right Turn	6	5	75.0%	11.7	4.1	B
	Subtotal	64	60	93.0%	9.8	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	10	9	94.0%	0.2	0.1	A
	Through	109	108	99.2%	8.3	1.3	A
	Right Turn	9	10	108.9%	3.7	0.9	A
	Subtotal	128	127	99.5%	7.3	1.0	A
Total		435	413	95.0%	9.7	0.6	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	114	109	95.6%	6.4	0.4	A
	Right Turn	45	42	93.1%	6.0	0.7	A
	Subtotal	159	151	94.9%	6.3	0.2	A
SB	Left Turn	65	67	103.5%	15.9	0.8	B
	Through	50	47	94.6%	11.1	1.9	B
	Right Turn						
	Subtotal	115	115	99.7%	14.0	0.7	B
EB	Left Turn	11	11	102.7%	6.6	2.5	A
	Through	1,266	1,255	99.2%	7.2	0.3	A
	Right Turn	14	12	87.1%	7.0	3.0	A
	Subtotal	1,291	1,279	99.1%	7.2	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,565	1,544	98.7%	7.6	0.2	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	61	62	101.5%	4.3	0.6	A
	Through	64	59	91.6%	2.0	0.5	A
	Right Turn						
	Subtotal	125	121	96.4%	3.2	0.4	A
SB	Left Turn						
	Through	102	103	101.2%	9.0	0.9	A
	Right Turn	48	44	91.5%	8.3	1.2	A
	Subtotal	150	147	98.1%	8.8	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	136	127	93.5%	8.8	0.9	A
	Through	258	257	99.5%	8.2	0.6	A
	Right Turn	27	29	107.4%	5.0	0.8	A
	Subtotal	421	413	98.1%	8.2	0.5	A
Total		696	681	97.8%	7.4	0.3	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,205	1,188	98.5%	31.8	1.2	C
	Right Turn	72	73	101.3%	25.7	2.9	C
	Subtotal	1,277	1,260	98.7%	31.5	1.2	C
NE	Left Turn	93	93	100.3%	38.7	2.1	D
	Through						
	Right Turn	44	45	101.8%	38.1	3.5	D
	Subtotal	137	138	100.8%	38.5	1.9	D
EB	Left Turn	148	145	98.0%	21.2	1.2	C
	Through	581	583	100.4%	21.4	0.8	C
	Right Turn						
	Subtotal	729	728	99.9%	21.3	0.8	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,143	2,127	99.2%	28.5	0.7	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,140	1,114	97.7%	7.2	0.9	A
	Through	306	303	99.1%	6.6	0.8	A
	Right Turn						
	Subtotal	1,446	1,417	98.0%	7.1	0.9	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	147	150	101.7%	28.7	1.1	C
	Right Turn	619	613	99.0%	32.6	1.3	C
	Subtotal	766	762	99.5%	31.8	1.2	C
Total		2,212	2,180	98.5%	15.7	0.8	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,233	1,223	99.2%	1.0	0.1	A
	Through						
	Right Turn	49	48	98.8%	1.7	0.2	A
	Subtotal	1,282	1,272	99.2%	1.0	0.1	A
SB	Left Turn						
	Through	437	436	99.8%	0.3	0.1	A
	Right Turn	31	29	93.2%	4.8	0.2	A
	Subtotal	468	465	99.3%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn	7	4	57.1%	5.2	0.5	A
	Subtotal	7	4	57.1%	5.2	0.5	A
WB	Left Turn	63	67	105.9%	7.0	0.5	A
	Through	119	120	101.1%	62.3	1.6	E
	Right Turn						
	Subtotal	182	187	102.7%	42.5	2.0	D
Total		1,939	1,928	99.4%	5.0	0.5	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	612	617	100.8%	4.6	0.4	A
	Through	1,095	1,087	99.3%	4.9	0.2	A
	Right Turn	33	34	103.9%	4.6	0.8	A
	Subtotal	1,740	1,739	99.9%	4.8	0.2	A
EB	Left Turn						
	Through	242	240	99.2%	34.1	1.7	C
	Right Turn	45	44	97.8%	28.8	3.6	C
	Subtotal	287	284	99.0%	33.3	1.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,027	2,023	99.8%	8.8	0.3	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	120	116	96.6%	42.0	23.0	D
	Right Turn	161	157	97.6%	32.7	15.8	C
	Subtotal	281	273	97.2%	36.7	18.8	D
SB	Left Turn	65	65	100.0%	99.6	86.4	F
	Through	94	78	83.2%	83.0	77.8	F
	Right Turn						
	Subtotal	159	143	90.1%	90.6	81.6	F
EB	Left Turn	5	4	70.0%	117.4	57.9	F
	Through	936	908	97.0%	161.6	37.7	F
	Right Turn	82	78	95.2%	90.2	25.7	F
	Subtotal	1,023	990	96.7%	155.9	36.7	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,463	1,406	96.1%	124.9	25.6	F

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	51	102.4%	35.2	5.5	D
	Through	316	316	100.1%	14.5	1.0	B
	Right Turn	589	600	101.9%	14.7	1.6	B
	Subtotal	955	968	101.3%	15.7	1.2	B
SB	Left Turn						
	Through	41	38	92.7%	16.5	3.4	B
	Right Turn	14	14	102.1%	8.9	2.0	A
	Subtotal	55	52	95.1%	14.6	2.7	B
EB	Left Turn	79	80	100.6%	33.6	3.1	C
	Through	119	112	93.8%	25.8	1.7	C
	Right Turn	52	53	101.0%	0.5	0.2	A
	Subtotal	250	244	97.4%	22.8	1.8	C
WB	Left Turn	89	92	103.3%	36.9	3.3	D
	Through	86	85	98.5%	27.2	3.5	C
	Right Turn	25	25	101.2%	14.1	3.9	B
	Subtotal	200	202	101.0%	30.0	2.0	C
Total		1,460	1,465	100.4%	18.8	0.8	B

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	6	84.3%	4.0	2.8	A
	Through	78	76	97.4%	3.1	0.8	A
	Right Turn	66	69	103.9%	3.0	0.4	A
	Subtotal	151	151	99.7%	3.1	0.5	A
SB	Left Turn	50	50	99.4%	4.2	0.7	A
	Through	77	74	95.5%	3.0	0.6	A
	Right Turn	12	12	98.3%	1.9	0.7	A
	Subtotal	139	135	97.1%	3.3	0.4	A
EB	Left Turn	16	16	98.1%	4.4	1.6	A
	Through	91	89	98.2%	3.4	0.4	A
	Right Turn	9	9	101.1%	2.1	0.4	A
	Subtotal	116	114	98.4%	3.4	0.5	A
WB	Left Turn	46	43	92.6%	9.5	0.9	A
	Through	76	73	95.5%	7.7	1.9	A
	Right Turn	86	85	99.2%	5.6	0.8	A
	Subtotal	208	201	96.4%	7.2	0.8	A
Total		614	600	97.8%	4.6	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	68	67	98.5%	21.8	2.5	C
	Through	63	60	95.7%	21.0	2.5	C
	Right Turn	64	64	100.2%	11.0	1.7	B
	Subtotal	195	191	98.2%	18.0	1.3	B
SB	Left Turn	72	68	94.6%	22.2	1.9	C
	Through	47	46	97.9%	23.8	2.7	C
	Right Turn	11	14	122.7%	8.5	3.4	A
	Subtotal	130	128	98.2%	21.4	1.5	C
EB	Left Turn	20	18	91.0%	24.4	6.3	C
	Through	643	648	100.8%	15.4	1.2	B
	Right Turn	47	46	97.9%	16.0	2.7	B
	Subtotal	710	712	100.3%	15.6	1.2	B
WB	Left Turn	46	43	93.3%	28.0	2.2	C
	Through	121	121	100.2%	9.1	1.3	A
	Right Turn	50	50	99.6%	5.6	0.9	A
	Subtotal	217	214	98.6%	12.1	0.9	B
Total		1,252	1,245	99.4%	16.0	1.0	B

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	25	20	80.8%	9.3	1.0	A
	Through	7	6	90.0%	10.0	1.3	B
	Right Turn	9	7	78.9%	6.8	1.0	A
	Subtotal	41	34	82.0%	8.9	0.7	A
SB	Left Turn	40	39	97.3%	9.3	0.8	A
	Through	20	19	95.5%	9.6	1.1	A
	Right Turn	20	18	92.0%	6.9	0.6	A
	Subtotal	80	76	95.5%	8.9	0.5	A
EB	Left Turn	24	25	103.8%	1.9	0.5	A
	Through	216	214	99.0%	0.7	0.1	A
	Right Turn	23	25	107.8%	0.8	0.3	A
	Subtotal	263	264	100.2%	0.8	0.1	A
WB	Left Turn	4	4	95.0%	2.4	1.7	A
	Through	153	153	100.0%	0.4	0.1	A
	Right Turn	26	28	108.5%	1.0	0.2	A
	Subtotal	183	185	101.1%	0.5	0.1	A
Total		567	559	98.5%	2.3	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	53	55	104.2%	0.0	0.0	A
	Right Turn	4	4	107.5%	0.4	0.2	A
	Subtotal	57	60	104.4%	0.1	0.0	A
SB	Left Turn	39	39	99.7%	0.9	0.3	A
	Through	77	74	95.8%	0.3	0.2	A
	Right Turn						
	Subtotal	116	113	97.2%	0.5	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	2	80.0%	6.7	2.6	A
	Through						
	Right Turn	24	23	95.8%	5.8	0.2	A
	Subtotal	27	25	94.1%	5.9	0.2	A
Total		200	198	98.8%	1.1	0.1	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	69	71	103.5%	37.7	2.2	D
	Right Turn	8	8	95.0%	17.9	8.4	B
	Subtotal	77	79	102.6%	35.6	2.5	D
SB	Left Turn	60	58	96.5%	32.8	2.4	C
	Through	81	80	99.1%	25.0	2.5	C
	Right Turn						
	Subtotal	141	138	98.0%	28.2	1.9	C
EB	Left Turn	27	27	99.3%	2.7	1.2	A
	Through	580	585	100.9%	3.2	0.4	A
	Right Turn	35	32	92.6%	3.3	0.6	A
	Subtotal	642	644	100.3%	3.2	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		860	861	100.2%	10.2	0.6	B

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	27	28	102.2%	1.8	0.7	A
	Through	69	71	102.2%	1.7	0.5	A
	Right Turn						
	Subtotal	96	98	102.2%	1.7	0.5	A
SB	Left Turn						
	Through	90	86	95.4%	3.3	0.9	A
	Right Turn	10	8	81.0%	1.5	1.2	A
	Subtotal	100	94	94.0%	3.2	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	51	52	101.6%	38.0	2.1	D
	Through	180	178	98.8%	38.2	2.2	D
	Right Turn	229	189	82.6%	6.9	0.6	A
	Subtotal	460	419	91.0%	24.1	1.4	C
Total		656	611	93.1%	17.3	1.0	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	83	99.0%	28.2	2.3	C
	Through	161	161	99.7%	26.3	2.6	C
	Right Turn	15	14	93.3%	9.2	2.8	A
	Subtotal	260	258	99.1%	26.0	1.4	C
SB	Left Turn	35	37	104.6%	32.6	5.8	C
	Through	61	57	93.1%	25.9	3.1	C
	Right Turn	54	54	99.6%	4.7	0.4	A
	Subtotal	150	147	98.1%	19.9	2.6	B
EB	Left Turn	82	80	97.4%	9.3	1.2	A
	Through	801	813	101.5%	7.0	0.5	A
	Right Turn	30	27	91.0%	6.0	1.4	A
	Subtotal	913	920	100.8%	7.1	0.5	A
WB	Left Turn	10	10	101.0%	14.6	4.5	B
	Through	280	286	102.0%	5.9	0.6	A
	Right Turn	22	20	89.5%	4.9	2.2	A
	Subtotal	312	315	101.1%	6.1	0.6	A
Total		1,635	1,640	100.3%	11.1	0.5	B

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn	16	18	112.5%	3.3	0.5	A
	Subtotal	16	18	112.5%	3.3	0.5	A
SB	Left Turn	317	319	100.7%	15.4	0.9	B
	Through	97	92	95.2%	14.7	1.8	B
	Right Turn						
	Subtotal	414	411	99.4%	15.3	0.8	B
EB	Left Turn						
	Through	640	642	100.4%	11.6	0.8	B
	Right Turn	8	8	102.5%	6.1	2.5	A
	Subtotal	648	651	100.4%	11.5	0.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,078	1,080	100.2%	12.8	0.4	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	397	391	98.4%	9.0	0.7	A
	Right Turn	9	10	110.0%	4.9	2.2	A
	Subtotal	406	401	98.7%	8.9	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	17	15	90.6%	13.0	2.7	B
	Through	29	28	97.2%	12.7	4.2	B
	Right Turn						
	Subtotal	46	44	94.8%	12.5	2.3	B
Total		452	444	98.3%	9.2	0.7	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	283	279	98.7%	36.4	1.7	D
	Through	381	375	98.3%	31.7	1.3	C
	Right Turn	199	198	99.3%	17.9	2.0	B
	Subtotal	863	852	98.7%	30.1	1.2	C
EB	Left Turn						
	Through	830	848	102.2%	5.1	0.7	A
	Right Turn	21	21	99.5%	5.5	1.6	A
	Subtotal	851	869	102.2%	5.1	0.7	A
WB	Left Turn	4	4	100.0%	7.3	7.4	A
	Through	113	117	103.2%	4.8	1.2	A
	Right Turn						
	Subtotal	117	121	103.1%	4.9	1.2	A
Total		1,831	1,841	100.6%	16.6	0.6	B

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	137	147	107.2%	49.9	27.1	E
	Right Turn	11	12	112.7%	47.6	29.2	E
	Subtotal	148	159	107.6%	49.7	27.1	E
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	64	66	103.6%	0.7	0.1	A
	Through	895	901	100.6%	0.5	0.5	A
	Right Turn	14	13	95.7%	0.7	0.1	A
	Subtotal	973	980	100.7%	0.5	0.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,121	1,140	101.7%	7.6	4.7	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	6	87.1%	21.2	7.0	C
	Through	286	296	103.3%	21.0	0.7	C
	Right Turn	10	12	122.0%	24.8	6.1	C
	Subtotal	303	314	103.6%	21.2	0.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	331	336	101.6%	35.5	1.7	D
	Through	782	801	102.4%	7.4	0.4	A
	Right Turn						
	Subtotal	1,113	1,137	102.2%	15.7	0.7	B
WB	Left Turn						
	Through	110	114	103.8%	16.6	0.8	B
	Right Turn	11	10	90.9%	4.3	1.0	A
	Subtotal	121	124	102.6%	15.6	0.9	B
Total		1,537	1,575	102.5%	16.8	0.4	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	3	125.0%	0.9	1.1	A
	Through	37	34	92.7%	0.1	0.0	A
	Right Turn	4	3	85.0%	1.1	0.8	A
	Subtotal	43	40	93.5%	0.3	0.1	A
SB	Left Turn	21	21	98.6%	0.4	0.2	A
	Through	86	86	99.5%	0.1	0.1	A
	Right Turn	1	1	120.0%	0.5	0.4	A
	Subtotal	108	108	99.5%	0.2	0.1	A
EB	Left Turn	2	1	65.0%	5.8	4.5	A
	Through	19	19	100.0%	8.9	0.4	A
	Right Turn	11	10	90.0%	6.4	0.2	A
	Subtotal	32	30	94.4%	8.0	0.4	A
WB	Left Turn	12	12	99.2%	6.9	1.4	A
	Through	41	42	101.2%	8.3	0.7	A
	Right Turn	52	49	93.7%	6.0	0.6	A
	Subtotal	105	102	97.2%	7.0	0.4	A
Total		288	280	97.2%	3.5	0.3	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	36	90.8%	1.0	0.2	A
	Through	48	44	92.5%	0.4	0.1	A
	Right Turn	3	3	110.0%	0.7	0.4	A
	Subtotal	91	84	92.3%	0.7	0.1	A
SB	Left Turn	31	30	95.2%	0.7	0.1	A
	Through	53	55	103.0%	0.3	0.1	A
	Right Turn	13	14	106.2%	0.6	0.1	A
	Subtotal	97	98	100.9%	0.4	0.1	A
EB	Left Turn	12	11	93.3%	14.5	3.6	B
	Through	192	192	99.9%	15.1	1.7	C
	Right Turn	50	47	94.8%	12.9	1.6	B
	Subtotal	254	251	98.6%	14.7	1.7	B
WB	Left Turn	5	5	108.0%	8.9	2.2	A
	Through	139	145	104.5%	10.6	0.9	B
	Right Turn	31	43	140.0%	9.5	0.8	A
	Subtotal	175	194	110.9%	10.3	0.8	B
Total		617	627	101.5%	9.2	0.7	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1	1	120.0%	0.4	0.5	A
	Through	87	96	110.1%	0.1	0.1	A
	Right Turn	3	2	66.7%	0.4	0.2	A
	Subtotal	91	99	108.8%	0.1	0.1	A
SB	Left Turn	25	25	100.8%	1.0	0.3	A
	Through	91	92	101.0%	0.1	0.1	A
	Right Turn	4	4	90.0%	0.6	0.4	A
	Subtotal	120	121	100.6%	0.3	0.1	A
EB	Left Turn	1	1	80.0%	6.9	6.0	A
	Through	45	44	96.7%	13.3	0.4	B
	Right Turn	3	3	93.3%	10.7	0.9	B
	Subtotal	49	47	96.1%	13.2	0.4	B
WB	Left Turn	3	3	100.0%	5.6	2.2	A
	Through	28	26	92.5%	7.6	0.4	A
	Right Turn	23	23	99.6%	5.6	0.4	A
	Subtotal	54	52	95.9%	6.6	0.2	A
Total		314	319	101.5%	3.2	0.3	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	95	93	97.5%	25.6	2.3	C
	Right Turn	16	27	166.3%	16.9	9.3	B
	Subtotal	111	119	107.4%	23.7	2.7	C
SB	Left Turn	19	19	100.0%	34.4	15.4	C
	Through	50	52	103.0%	25.8	2.7	C
	Right Turn						
	Subtotal	69	71	102.2%	27.9	5.8	C
EB	Left Turn	16	16	99.4%	9.2	12.8	A
	Through	820	831	101.3%	12.3	16.1	B
	Right Turn	70	69	99.0%	7.1	9.4	A
	Subtotal	906	916	101.1%	11.9	15.5	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,086	1,106	101.8%	14.2	13.4	B

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	98.0%	10.6	0.8	B
	Through						
	Right Turn	7	6	87.1%	9.3	0.5	A
	Subtotal	17	16	93.5%	10.2	0.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	70	68	97.1%	0.1	0.0	A
	Right Turn	3	3	93.3%	0.8	0.1	A
	Subtotal	73	71	97.0%	0.1	0.0	A
WB	Left Turn	3	3	100.0%	0.9	0.4	A
	Through	44	42	94.8%	0.0	0.0	A
	Right Turn						
	Subtotal	47	45	95.1%	0.1	0.1	A
Total		137	131	95.9%	1.3	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	18	101.7%	6.5	0.3	A
	Through						
	Right Turn	25	25	101.2%	5.5	0.4	A
	Subtotal	43	44	101.4%	6.0	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	71	69	96.9%	0.0	0.0	A
	Right Turn	6	6	98.3%	0.4	0.2	A
	Subtotal	77	75	97.0%	0.1	0.0	A
WB	Left Turn	5	5	98.0%	0.9	0.9	A
	Through	29	26	91.0%	0.1	0.0	A
	Right Turn						
	Subtotal	34	31	92.1%	0.2	0.2	A
Total		154	150	97.1%	1.8	0.3	A

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	4	95.0%	2.7	4.3	A
	Through	170	166	97.5%	2.7	4.2	A
	Right Turn	16	18	110.0%	3.9	5.3	A
	Subtotal	190	187	98.5%	2.8	4.3	A
SB	Left Turn	33	36	108.2%	2.8	0.8	A
	Through	115	115	99.7%	0.8	0.3	A
	Right Turn	8	7	92.5%	1.0	0.6	A
	Subtotal	156	158	101.2%	1.3	0.2	A
EB	Left Turn	51	52	101.4%	14.6	14.1	B
	Through	35	34	98.0%	16.2	13.0	C
	Right Turn	10	10	97.0%	8.7	8.7	A
	Subtotal	96	96	99.7%	14.6	13.1	B
WB	Left Turn	16	17	103.1%	9.5	0.9	A
	Through	22	20	90.0%	11.8	0.6	B
	Right Turn	12	11	95.0%	9.3	3.1	A
	Subtotal	50	48	95.4%	10.4	1.2	B
Total		492	488	99.3%	5.3	4.1	A

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	192	185	96.4%	48.0	6.1	D
	Right Turn	307	316	103.0%	62.9	14.3	E
	Subtotal	499	501	100.5%	57.5	11.4	E
SB	Left Turn	129	453	351.4%	47.1	1.0	D
	Through	295	282	95.5%	22.9	0.7	C
	Right Turn						
	Subtotal	424	735	173.3%	37.8	0.9	D
EB	Left Turn	812	842	103.7%	69.5	11.6	E
	Through	165	172	104.4%	44.2	11.5	D
	Right Turn	45	45	100.9%	27.0	6.9	C
	Subtotal	1,022	1,060	103.7%	63.6	11.3	E
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,945	2,296	118.0%	54.0	5.9	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	38	95.5%	33.6	3.6	C
	Through	163	158	96.9%	36.6	1.6	D
	Right Turn						
	Subtotal	203	196	96.6%	36.0	1.6	D
SB	Left Turn						
	Through	566	558	98.6%	67.9	9.0	E
	Right Turn	24	23	97.1%	99.4	23.1	F
	Subtotal	590	582	98.6%	69.2	9.3	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	169	169	99.8%	33.8	16.5	C
	Through	96	97	101.5%	18.7	3.0	B
	Right Turn	539	536	99.5%	3.8	0.2	A
	Subtotal	804	802	99.8%	11.9	3.7	B
Total		1,597	1,580	98.9%	36.0	4.1	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	19	16	82.6%	9.4	2.2	A
	Right Turn	4	4	107.5%	5.3	1.6	A
	Subtotal	23	20	87.0%	8.4	1.3	A
SB	Left Turn	23	21	91.3%	9.6	2.0	A
	Through	14	15	110.0%	10.6	1.5	B
	Right Turn	10	11	106.0%	11.4	2.7	B
	Subtotal	47	47	100.0%	10.4	1.2	B
EB	Left Turn	14	12	82.1%	9.2	2.7	A
	Through	12	12	98.3%	6.8	0.3	A
	Right Turn						
	Subtotal	26	23	89.6%	8.0	1.5	A
WB	Left Turn						
	Through	1	1	80.0%	4.7	4.0	A
	Right Turn	8	6	76.3%	8.9	3.4	A
	Subtotal	9	7	76.7%	8.7	3.0	A
Total		105	97	92.6%	9.3	0.8	A

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	3	165.0%	15.5	22.7	C
	Through	34	31	90.0%	11.5	2.5	B
	Right Turn	4	4	97.5%	6.6	0.3	A
	Subtotal	40	38	94.5%	11.0	2.6	B
SB	Left Turn	64	63	98.9%	9.3	1.2	A
	Through	41	40	97.6%	11.2	1.6	B
	Right Turn	4	4	92.5%	11.0	5.3	B
	Subtotal	109	107	98.2%	10.1	1.0	B
EB	Left Turn	9	9	104.4%	10.5	3.6	B
	Through	29	27	92.8%	8.5	0.6	A
	Right Turn	6	6	93.3%	7.7	1.4	A
	Subtotal	44	42	95.2%	8.8	1.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		193	187	96.7%	10.0	1.0	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	54	96.8%	5.4	0.9	A
	Through	55	54	98.9%	5.5	0.7	A
	Right Turn						
	Subtotal	111	109	97.8%	5.4	0.4	A
SB	Left Turn						
	Through	50	52	104.0%	9.1	1.3	A
	Right Turn	9	9	95.6%	9.6	2.5	A
	Subtotal	59	61	102.7%	9.1	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	19	20	104.2%	0.3	0.1	A
	Through	83	83	100.4%	7.7	1.2	A
	Right Turn	19	17	89.5%	3.7	0.8	A
	Subtotal	121	120	99.3%	5.9	0.8	A
Total		291	289	99.4%	6.4	0.5	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	64	60	94.4%	9.2	1.1	A
	Right Turn	10	11	111.0%	8.6	2.7	A
	Subtotal	74	72	96.6%	9.0	0.9	A
SB	Left Turn	37	35	94.1%	15.3	1.4	B
	Through	48	48	99.4%	11.0	1.2	B
	Right Turn						
	Subtotal	85	83	97.1%	12.8	0.9	B
EB	Left Turn	11	11	98.2%	8.6	2.5	A
	Through	770	784	101.8%	7.2	0.3	A
	Right Turn	11	13	115.5%	7.7	2.0	A
	Subtotal	792	808	102.0%	7.2	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		951	962	101.1%	7.8	0.2	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	46	41	89.1%	5.2	1.0	A
	Through	29	30	103.8%	2.9	1.0	A
	Right Turn						
	Subtotal	75	71	94.8%	4.2	0.5	A
SB	Left Turn						
	Through	80	77	96.3%	8.6	1.0	A
	Right Turn	18	18	101.1%	7.2	1.9	A
	Subtotal	98	95	97.1%	8.3	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	109	108	99.0%	8.5	1.0	A
	Through	171	168	98.1%	8.2	0.6	A
	Right Turn	9	8	90.0%	4.3	1.7	A
	Subtotal	289	284	98.2%	8.2	0.7	A
Total		462	450	97.4%	7.6	0.6	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	974	976	100.2%	34.2	1.6	C
	Right Turn	38	40	104.7%	28.7	5.4	C
	Subtotal	1,012	1,015	100.3%	34.0	1.5	C
NE	Left Turn	71	67	94.6%	39.5	1.8	D
	Through						
	Right Turn	27	30	109.6%	36.5	4.6	D
	Subtotal	98	97	98.8%	38.6	1.9	D
EB	Left Turn	124	129	104.0%	17.1	1.2	B
	Through	414	424	102.3%	17.3	1.0	B
	Right Turn						
	Subtotal	538	553	102.7%	17.2	0.9	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,648	1,665	101.0%	28.7	0.8	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	929	939	101.1%	4.9	0.3	A
	Through	240	242	101.0%	4.6	0.4	A
	Right Turn						
	Subtotal	1,169	1,182	101.1%	4.9	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	97	99	102.0%	32.2	2.0	C
	Right Turn	399	397	99.4%	35.3	0.9	D
	Subtotal	496	495	99.9%	34.7	0.8	C
Total		1,665	1,677	100.7%	13.7	0.3	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	953	953	99.9%	0.5	0.0	A
	Through						
	Right Turn	40	40	99.8%	1.3	0.1	A
	Subtotal	993	992	99.9%	0.5	0.0	A
SB	Left Turn						
	Through	308	308	99.9%	0.1	0.0	A
	Right Turn	25	24	95.6%	4.7	0.2	A
	Subtotal	333	332	99.6%	0.5	0.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	43	42	97.2%	6.3	0.3	A
	Through	92	96	104.0%	59.9	2.2	E
	Right Turn						
	Subtotal	135	138	101.9%	43.6	2.1	D
Total		1,461	1,462	100.0%	4.5	0.4	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	479	487	101.8%	3.4	0.2	A
	Through	802	793	98.8%	3.5	0.3	A
	Right Turn	23	23	101.3%	3.5	1.1	A
	Subtotal	1,304	1,303	99.9%	3.5	0.2	A
EB	Left Turn						
	Through	169	169	99.8%	34.3	1.7	C
	Right Turn	33	32	97.3%	26.2	3.5	C
	Subtotal	202	201	99.4%	33.1	1.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,506	1,504	99.9%	7.4	0.3	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	127	125	98.5%	27.5	13.9	C
	Right Turn	106	105	99.1%	20.2	10.8	C
	Subtotal	233	230	98.8%	24.2	12.5	C
SB	Left Turn	39	45	115.9%	55.1	59.4	E
	Through	90	86	95.1%	42.1	42.7	D
	Right Turn						
	Subtotal	129	131	101.4%	46.7	48.6	D
EB	Left Turn	12	10	85.8%	124.0	20.4	F
	Through	877	903	103.0%	129.4	10.5	F
	Right Turn	66	70	106.5%	73.1	12.5	E
	Subtotal	955	984	103.0%	125.4	10.7	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,317	1,345	102.1%	100.4	10.4	F

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	39	110.0%	31.8	3.1	C
	Through	77	80	103.2%	13.5	2.1	B
	Right Turn	451	453	100.4%	8.8	0.7	A
	Subtotal	563	571	101.4%	11.0	0.7	B
SB	Left Turn						
	Through	50	46	91.0%	18.3	3.1	B
	Right Turn	11	11	103.6%	7.9	1.9	A
	Subtotal	61	57	93.3%	16.2	2.5	B
EB	Left Turn	39	39	100.5%	30.9	3.5	C
	Through	130	126	96.5%	18.9	2.0	B
	Right Turn	47	45	95.3%	0.5	0.1	A
	Subtotal	216	210	97.0%	17.2	0.9	B
WB	Left Turn	80	73	90.9%	29.9	3.5	C
	Through	64	61	94.5%	19.2	3.6	B
	Right Turn	16	15	90.6%	10.2	3.9	B
	Subtotal	160	148	92.3%	23.5	2.6	C
Total		1,000	985	98.5%	14.5	0.5	B

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	13	13	98.5%	3.9	2.0	A
	Through	73	71	97.4%	3.0	0.6	A
	Right Turn	66	69	103.8%	2.8	0.5	A
	Subtotal	152	152	100.3%	3.0	0.5	A
SB	Left Turn	38	38	99.5%	3.3	0.9	A
	Through	69	65	94.5%	2.5	0.5	A
	Right Turn	7	7	97.1%	1.6	1.1	A
	Subtotal	114	110	96.3%	2.7	0.5	A
EB	Left Turn	18	15	83.9%	3.3	1.0	A
	Through	52	52	100.4%	3.3	0.9	A
	Right Turn	10	10	95.0%	1.8	0.7	A
	Subtotal	80	77	96.0%	3.1	0.7	A
WB	Left Turn	50	52	104.8%	6.5	1.0	A
	Through	46	46	98.9%	5.6	1.8	A
	Right Turn	61	58	95.6%	4.6	0.7	A
	Subtotal	157	156	99.5%	5.6	0.9	A
Total		503	495	98.4%	3.7	0.5	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	46	40	86.3%	20.0	3.2	B
	Through	39	38	97.4%	18.3	2.1	B
	Right Turn	76	75	98.7%	9.3	0.7	A
	Subtotal	161	153	94.8%	14.3	1.2	B
SB	Left Turn	71	70	98.5%	18.7	2.1	B
	Through	23	21	93.0%	19.5	3.8	B
	Right Turn	15	13	89.3%	5.5	1.4	A
	Subtotal	109	105	96.1%	17.2	2.0	B
EB	Left Turn	11	11	98.2%	20.9	2.5	C
	Through	534	530	99.2%	13.4	1.0	B
	Right Turn	41	39	95.4%	10.6	2.5	B
	Subtotal	586	579	98.9%	13.3	1.0	B
WB	Left Turn	59	60	102.0%	22.6	3.4	C
	Through	99	94	94.9%	7.2	1.9	A
	Right Turn	38	35	91.8%	4.1	1.2	A
	Subtotal	196	189	96.5%	11.5	2.1	B
Total		1,052	1,026	97.5%	13.5	0.8	B

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	5	65.0%	10.1	2.1	B
	Through	17	12	68.8%	8.8	1.0	A
	Right Turn	1	1	100.0%	5.0	4.4	A
	Subtotal	26	18	68.8%	9.2	0.6	A
SB	Left Turn	66	62	94.4%	9.8	1.1	A
	Through	18	18	102.2%	9.5	1.1	A
	Right Turn	30	32	107.7%	6.9	0.6	A
	Subtotal	114	113	99.1%	8.9	0.7	A
EB	Left Turn	22	22	101.8%	1.8	0.7	A
	Through	137	137	100.1%	0.6	0.2	A
	Right Turn	24	24	101.3%	1.3	1.0	A
	Subtotal	183	184	100.4%	0.8	0.4	A
WB	Left Turn						
	Through	143	146	102.2%	0.4	0.1	A
	Right Turn	24	23	96.3%	0.6	0.2	A
	Subtotal	167	169	101.4%	0.4	0.1	A
Total		490	484	98.8%	2.9	0.3	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	61	55	90.3%	0.0	0.0	A
	Right Turn	2	2	105.0%	0.4	0.2	A
	Subtotal	63	57	90.8%	0.0	0.0	A
SB	Left Turn	28	30	105.4%	0.7	0.2	A
	Through	111	109	98.3%	0.4	0.1	A
	Right Turn						
	Subtotal	139	139	99.7%	0.4	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	4	126.7%	6.6	0.7	A
	Through						
	Right Turn	8	7	82.5%	5.7	0.5	A
	Subtotal	11	10	94.5%	6.0	0.3	A
Total		213	206	96.8%	0.6	0.1	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	51	46	89.6%	26.3	3.6	C
	Right Turn	18	16	87.2%	9.5	4.3	A
	Subtotal	69	61	89.0%	22.0	3.8	C
SB	Left Turn	57	56	98.8%	20.9	3.9	C
	Through	116	119	102.2%	18.1	1.7	B
	Right Turn						
	Subtotal	173	175	101.0%	19.0	2.1	B
EB	Left Turn	8	9	106.3%	2.9	1.8	A
	Through	451	448	99.4%	4.0	0.6	A
	Right Turn	23	20	87.4%	3.4	0.9	A
	Subtotal	482	477	98.9%	4.0	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		724	713	98.5%	9.2	0.4	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	17	15	90.0%	1.8	0.6	A
	Through	42	39	92.9%	1.6	1.1	A
	Right Turn						
	Subtotal	59	54	92.0%	1.7	0.9	A
SB	Left Turn						
	Through	78	79	101.5%	3.1	0.8	A
	Right Turn	12	12	99.2%	2.0	0.7	A
	Subtotal	90	91	101.2%	3.0	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	95	96	101.3%	32.7	2.2	C
	Through	167	164	98.0%	30.8	1.6	C
	Right Turn	204	169	82.8%	6.5	0.9	A
	Subtotal	466	429	92.0%	21.7	1.3	C
Total		615	574	93.3%	16.8	1.0	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	57	58	101.1%	29.5	3.4	C
	Through	135	135	100.2%	28.2	2.2	C
	Right Turn	16	16	101.3%	7.9	1.7	A
	Subtotal	208	209	100.5%	26.9	1.9	C
SB	Left Turn	20	19	93.0%	37.3	4.7	D
	Through	48	48	99.0%	25.5	2.5	C
	Right Turn	39	40	101.5%	4.2	0.4	A
	Subtotal	107	106	98.8%	19.6	1.6	B
EB	Left Turn	60	58	96.8%	7.0	1.6	A
	Through	398	396	99.6%	4.6	0.6	A
	Right Turn	29	32	111.4%	3.5	1.1	A
	Subtotal	487	487	100.0%	4.8	0.4	A
WB	Left Turn	13	12	90.0%	10.0	6.5	A
	Through	206	203	98.6%	5.3	0.6	A
	Right Turn	27	25	93.0%	4.0	1.7	A
	Subtotal	246	240	97.6%	5.4	0.6	A
Total		1,048	1,042	99.4%	10.9	0.5	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	16	16	96.9%	3.3	0.6	A
	Subtotal	16	16	96.9%	3.3	0.6	A
SB	Left Turn	258	269	104.4%	17.8	1.4	B
	Through	102	98	95.7%	17.2	1.7	B
	Right Turn						
	Subtotal	360	367	101.9%	17.7	1.0	B
EB	Left Turn						
	Through	512	506	98.8%	12.8	0.8	B
	Right Turn	14	14	96.4%	6.4	2.2	A
	Subtotal	526	519	98.7%	12.7	0.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		902	902	100.0%	14.5	0.5	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	344	350	101.7%	14.6	1.0	B
	Right Turn	8	9	108.8%	6.9	3.6	A
	Subtotal	352	358	101.8%	14.4	1.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	16	18	111.9%	13.2	3.7	B
	Through	30	28	94.7%	13.1	4.2	B
	Right Turn						
	Subtotal	46	46	100.7%	13.2	3.4	B
Total		398	405	101.7%	14.3	1.1	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	160	157	98.3%	26.0	1.1	C
	Through	335	339	101.1%	23.1	1.4	C
	Right Turn	149	144	96.6%	9.5	1.6	A
	Subtotal	644	640	99.4%	20.8	1.2	C
EB	Left Turn						
	Through	417	418	100.2%	6.0	0.5	A
	Right Turn	15	14	95.3%	6.8	1.8	A
	Subtotal	432	432	100.0%	6.0	0.5	A
WB	Left Turn	2	2	95.0%	11.4	11.1	B
	Through	97	97	99.6%	5.7	1.0	A
	Right Turn						
	Subtotal	99	99	99.5%	5.9	0.9	A
Total		1,175	1,171	99.6%	14.1	0.7	B

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	111	107	96.6%	19.4	1.0	C
	Right Turn	5	4	88.0%	18.2	4.7	C
	Subtotal	116	112	96.2%	19.4	1.0	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	35	32	92.0%	0.6	0.2	A
	Through	746	752	100.8%	0.3	0.0	A
	Right Turn	5	5	108.0%	0.8	0.2	A
	Subtotal	786	790	100.4%	0.3	0.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		902	901	99.9%	2.7	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	6	84.3%	22.5	5.0	C
	Through	235	232	98.9%	19.0	1.1	B
	Right Turn	4	4	87.5%	24.4	13.7	C
	Subtotal	246	242	98.3%	19.2	0.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	249	246	98.6%	23.1	1.2	C
	Through	328	330	100.6%	9.3	0.8	A
	Right Turn						
	Subtotal	577	576	99.8%	15.2	0.7	B
WB	Left Turn						
	Through	92	93	100.7%	16.2	1.9	B
	Right Turn	3	3	100.0%	4.0	2.5	A
	Subtotal	95	96	100.6%	15.8	1.8	B
Total		918	913	99.4%	16.3	0.6	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	90.0%	0.6	0.4	A
	Through	51	46	90.8%	0.1	0.0	A
	Right Turn						
	Subtotal	54	49	90.7%	0.1	0.0	A
SB	Left Turn	17	15	90.6%	0.5	0.2	A
	Through	84	82	97.7%	0.1	0.0	A
	Right Turn	2	3	125.0%	0.5	0.1	A
	Subtotal	103	100	97.1%	0.2	0.1	A
EB	Left Turn	2	2	95.0%	6.1	3.4	A
	Through	16	16	98.8%	9.0	0.4	A
	Right Turn	14	11	80.7%	6.3	0.4	A
	Subtotal	32	29	90.6%	7.9	0.4	A
WB	Left Turn	12	10	86.7%	6.2	0.7	A
	Through	31	32	102.9%	7.3	0.3	A
	Right Turn	36	35	95.8%	5.4	0.5	A
	Subtotal	79	77	97.2%	6.3	0.3	A
Total		268	255	95.1%	2.9	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	38	32	85.3%	0.9	0.3	A
	Through	51	50	98.2%	0.3	0.1	A
	Right Turn						
	Subtotal	89	83	92.7%	0.5	0.2	A
SB	Left Turn	12	12	99.2%	0.5	0.2	A
	Through	46	46	99.6%	0.2	0.1	A
	Right Turn	4	3	70.0%	0.5	0.1	A
	Subtotal	62	61	97.6%	0.3	0.1	A
EB	Left Turn	9	9	94.4%	9.9	3.1	A
	Through	96	88	91.1%	10.0	0.9	A
	Right Turn	50	49	98.0%	8.5	1.1	A
	Subtotal	155	145	93.5%	9.5	1.1	A
WB	Left Turn	7	5	75.7%	7.6	1.6	A
	Through	114	128	111.9%	9.2	0.5	A
	Right Turn	27	25	93.7%	6.5	0.6	A
	Subtotal	148	158	106.9%	8.7	0.5	A
Total		454	446	98.3%	6.3	0.3	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	2	80.0%	0.7	1.4	A
	Through	84	82	97.3%	0.0	0.0	A
	Right Turn	1	1	60.0%	0.2	0.2	A
	Subtotal	87	84	96.4%	0.0	0.0	A
SB	Left Turn	5	6	112.0%	0.8	0.4	A
	Through	59	58	98.6%	0.1	0.0	A
	Right Turn	4	6	142.5%	0.5	0.1	A
	Subtotal	68	70	102.2%	0.2	0.0	A
EB	Left Turn	2	2	120.0%	9.9	3.5	A
	Through	16	14	86.9%	12.6	0.4	B
	Right Turn						
	Subtotal	18	16	90.6%	12.4	0.4	B
WB	Left Turn	3	3	86.7%	6.3	1.1	A
	Through	26	26	100.8%	7.1	0.5	A
	Right Turn	8	9	117.5%	5.7	0.6	A
	Subtotal	37	38	103.2%	6.7	0.4	A
Total		210	208	99.0%	2.3	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	72	74	103.2%	27.1	2.5	C
	Right Turn	22	21	95.5%	6.8	1.5	A
	Subtotal	94	95	101.4%	22.6	2.4	C
SB	Left Turn	19	19	99.5%	28.0	4.6	C
	Through	28	30	105.4%	28.2	3.8	C
	Right Turn						
	Subtotal	47	48	103.0%	28.0	2.9	C
EB	Left Turn	7	7	92.9%	4.5	3.4	A
	Through	704	708	100.5%	3.8	0.5	A
	Right Turn	40	40	100.0%	2.3	0.5	A
	Subtotal	751	754	100.4%	3.8	0.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		892	898	100.7%	7.1	0.6	A

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1	2	150.0%	8.2	4.5	A
	Through						
	Right Turn	3	3	90.0%	8.5	3.1	A
	Subtotal	4	4	105.0%	9.8	0.7	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	19	18	92.1%	0.0	0.0	A
	Right Turn	3	3	93.3%	0.7	0.4	A
	Subtotal	22	20	92.3%	0.1	0.1	A
WB	Left Turn	1	1	140.0%	0.7	0.7	A
	Through	36	37	102.2%	0.1	0.1	A
	Right Turn						
	Subtotal	37	38	103.2%	0.1	0.1	A
Total		63	63	99.5%	0.8	0.2	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	9	110.0%	5.7	0.5	A
	Through						
	Right Turn	12	13	111.7%	5.0	0.3	A
	Subtotal	20	22	111.0%	5.2	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	20	19	93.0%	0.0	0.0	A
	Right Turn	2	2	80.0%	0.3	0.2	A
	Subtotal	22	20	91.8%	0.0	0.0	A
WB	Left Turn	5	5	92.0%	0.4	0.3	A
	Through	29	30	102.1%	0.1	0.0	A
	Right Turn						
	Subtotal	34	34	100.6%	0.1	0.1	A
Total		76	77	100.8%	1.6	0.2	A

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	6	6	105.0%	1.3	0.5	A
	Through	91	85	93.5%	0.5	0.0	A
	Right Turn	16	18	115.0%	1.0	0.2	A
	Subtotal	113	110	97.2%	0.6	0.1	A
SB	Left Turn	1	1	80.0%	0.2	0.3	A
	Through	94	98	104.0%	0.3	0.1	A
	Right Turn	6	7	123.3%	0.7	0.2	A
	Subtotal	101	106	105.0%	0.3	0.1	A
EB	Left Turn	18	19	106.7%	6.4	0.4	A
	Through	9	9	104.4%	8.2	1.4	A
	Right Turn	5	4	70.0%	4.7	2.0	A
	Subtotal	32	32	100.3%	6.8	0.6	A
WB	Left Turn	10	9	86.0%	7.4	0.5	A
	Through	22	21	93.2%	10.2	0.9	B
	Right Turn	13	15	116.2%	7.1	0.5	A
	Subtotal	45	44	98.2%	8.6	0.5	A
Total		291	292	100.4%	2.4	0.1	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	169	162	95.6%	21.4	1.2	C
	Right Turn	209	216	103.2%	19.2	2.1	B
	Subtotal	378	377	99.8%	20.2	1.1	C
SB	Left Turn	141	383	271.8%	39.7	1.3	D
	Through	200	198	99.2%	15.2	0.7	B
	Right Turn						
	Subtotal	341	582	170.6%	31.4	1.2	C
EB	Left Turn	588	643	109.3%	58.6	17.7	E
	Through	160	158	98.4%	27.6	8.5	C
	Right Turn	48	49	101.0%	12.1	3.2	B
	Subtotal	796	849	106.6%	50.3	15.5	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,515	1,808	119.3%	38.0	7.3	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	36	36	99.7%	21.1	4.2	C
	Through	146	143	98.0%	21.8	1.2	C
	Right Turn						
	Subtotal	182	179	98.4%	21.7	1.4	C
SB	Left Turn						
	Through	443	450	101.6%	21.5	0.9	C
	Right Turn	19	20	104.2%	25.5	4.6	C
	Subtotal	462	470	101.7%	21.7	0.9	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	132	139	105.5%	21.7	5.2	C
	Through	76	79	103.9%	15.0	2.4	B
	Right Turn	421	408	97.0%	3.4	0.1	A
	Subtotal	629	627	99.6%	9.0	1.6	A
Total		1,273	1,276	100.2%	15.4	0.8	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	13	10	76.9%	8.3	2.4	A
	Right Turn	4	3	82.5%	4.4	1.7	A
	Subtotal	17	13	78.2%	7.5	2.3	A
SB	Left Turn	20	21	105.0%	9.2	1.6	A
	Through	13	14	104.6%	10.3	2.3	B
	Right Turn	9	8	93.3%	9.9	1.7	A
	Subtotal	42	43	102.4%	9.7	1.2	A
EB	Left Turn	10	8	79.0%	8.0	3.5	A
	Through	12	11	94.2%	7.0	0.5	A
	Right Turn						
	Subtotal	22	19	87.3%	7.4	1.6	A
WB	Left Turn						
	Through	1	0	0.0%	0.0	0.0	A
	Right Turn	3	0	3.3%	4.3	13.7	A
	Subtotal	4	0	2.5%	4.3	13.7	A
Total		85	76	88.9%	8.4	0.8	A

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	2	90.0%	10.5	4.9	B
	Through	41	38	91.5%	9.6	0.7	A
	Right Turn	4	3	72.5%	6.7	0.7	A
	Subtotal	47	42	89.8%	9.4	0.9	A
SB	Left Turn	64	62	97.3%	8.8	1.5	A
	Through	36	33	92.2%	10.5	1.6	B
	Right Turn	10	9	87.0%	10.0	3.0	B
	Subtotal	110	104	94.7%	9.4	0.9	A
EB	Left Turn	13	11	87.7%	10.3	3.8	B
	Through	29	28	96.2%	8.3	0.6	A
	Right Turn	6	6	93.3%	7.8	0.5	A
	Subtotal	48	45	93.5%	8.8	1.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		205	191	93.3%	9.3	0.6	A

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing Conditions**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	43	44	101.9%	13.1	1.9	B
	Through	36	37	101.7%	11.6	1.7	B
	Right Turn						
	Subtotal	79	80	101.8%	12.4	1.4	B
SB	Left Turn						
	Through	35	33	93.7%	8.0	1.0	A
	Right Turn	8	9	113.8%	5.2	2.7	A
	Subtotal	43	42	97.4%	7.4	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	12	14	116.7%	0.3	0.1	A
	Through	95	92	96.6%	8.5	0.5	A
	Right Turn	2	2	115.0%	2.6	2.0	A
	Subtotal	109	108	99.2%	7.4	0.4	A
Total		231	230	99.7%	9.1	0.6	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	32	33	101.9%	8.0	1.0	A
	Right Turn	6	6	96.7%	7.5	1.7	A
	Subtotal	38	38	101.1%	7.9	0.9	A
SB	Left Turn	22	22	99.5%	11.3	1.9	B
	Through	25	24	96.0%	10.1	2.2	B
	Right Turn						
	Subtotal	47	46	97.7%	10.6	1.5	B
EB	Left Turn	3	3	110.0%	7.2	4.4	A
	Through	311	311	100.0%	6.9	0.4	A
	Right Turn	18	18	99.4%	6.4	1.8	A
	Subtotal	332	332	100.0%	6.9	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		417	416	99.9%	7.4	0.5	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	17	111.3%	2.8	1.6	A
	Through	20	19	96.0%	2.0	1.4	A
	Right Turn						
	Subtotal	35	36	102.6%	2.4	0.9	A
SB	Left Turn						
	Through	41	41	99.0%	8.8	1.2	A
	Right Turn	12	10	86.7%	7.7	2.0	A
	Subtotal	53	51	96.2%	8.6	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	91	86	94.4%	8.5	0.7	A
	Through	146	146	100.2%	8.0	0.6	A
	Right Turn	12	13	105.0%	4.9	1.1	A
	Subtotal	249	245	98.3%	8.0	0.4	A
Total		337	332	98.4%	7.5	0.3	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	692	695	100.4%	7.8	0.5	A
	Right Turn	19	19	101.6%	5.4	1.5	A
	Subtotal	711	714	100.4%	7.7	0.5	A
NE	Left Turn	73	72	98.4%	14.7	0.7	B
	Through						
	Right Turn	30	28	93.3%	12.7	2.6	B
	Subtotal	103	100	96.9%	14.2	1.0	B
EB	Left Turn	89	89	99.9%	12.2	1.0	B
	Through	230	228	99.2%	12.5	0.6	B
	Right Turn						
	Subtotal	319	317	99.4%	12.4	0.6	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,133	1,131	99.8%	9.6	0.4	A

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	699	697	99.7%	6.0	0.4	A
	Through	155	158	102.1%	5.6	0.5	A
	Right Turn						
	Subtotal	854	855	100.2%	5.9	0.4	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	77	81	104.7%	10.1	1.2	B
	Right Turn	280	283	101.1%	10.2	0.7	B
	Subtotal	357	364	101.8%	10.2	0.7	B
Total		1,211	1,219	100.7%	7.2	0.3	A

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	654	652	99.7%	0.3	0.0	A
	Through						
	Right Turn	42	42	101.0%	1.3	0.1	A
	Subtotal	696	694	99.7%	0.4	0.0	A
SB	Left Turn						
	Through	214	214	100.1%	0.1	0.0	A
	Right Turn	14	14	97.1%	4.1	0.7	A
	Subtotal	228	228	99.9%	0.3	0.1	A
EB	Left Turn						
	Through						
	Right Turn	1	0	0.0%	0.0	0.0	A
	Subtotal	1	0	0.0%	0.0	0.0	A
WB	Left Turn	51	49	96.7%	5.3	0.5	A
	Through	69	75	108.0%	11.7	1.1	B
	Right Turn						
	Subtotal	120	124	103.2%	9.1	0.6	A
Total		1,045	1,046	100.1%	1.4	0.1	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	309	310	100.5%	3.5	0.3	A
	Through	590	585	99.2%	3.9	0.4	A
	Right Turn	21	21	98.1%	3.5	0.7	A
	Subtotal	920	916	99.6%	3.8	0.3	A
EB	Left Turn						
	Through	110	109	99.5%	11.8	0.8	B
	Right Turn	41	40	97.8%	9.5	0.9	A
	Subtotal	151	150	99.0%	11.2	0.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,071	1,066	99.5%	4.8	0.2	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	57	54	95.4%	24.2	1.9	C
	Right Turn	65	66	101.5%	10.0	2.6	A
	Subtotal	122	120	98.7%	16.4	2.2	B
SB	Left Turn	34	32	93.5%	28.3	4.5	C
	Through	50	51	102.4%	25.1	3.0	C
	Right Turn						
	Subtotal	84	83	98.8%	26.4	2.7	C
EB	Left Turn	8	9	110.0%	44.7	27.6	D
	Through	697	731	104.9%	53.4	35.3	D
	Right Turn	51	55	107.3%	15.9	14.4	B
	Subtotal	756	795	105.1%	50.7	33.5	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		962	998	103.7%	44.6	26.7	D

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	11	1	99	13	NO
	Through	1,000	86	5	561	28	NO
	Right Turn	1,000	86	5	561	28	NO
SB	Left Turn						
	Through	185	4	0	60	7	NO
	Right Turn	185	4	0	62	7	NO
EB	Left Turn	800	12	0	108	9	NO
	Through	800	15	1	128	11	NO
	Right Turn	800	0	0	23	9	NO
WB	Left Turn	580	21	1	126	12	NO
	Through	580	17	1	161	19	NO
	Right Turn	580	14	1	162	19	NO

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	19	3	171	15	NO
	Through	1,000	20	3	171	15	NO
	Right Turn	1,000	21	3	172	15	NO
SB	Left Turn	500	7	0	123	13	NO
	Through	500	6	0	122	13	NO
	Right Turn	500	5	0	122	13	NO
EB	Left Turn	1,000	6	1	104	21	NO
	Through	1,000	6	1	104	21	NO
	Right Turn	1,000	6	1	104	21	NO
WB	Left Turn	1,000	104	59	393	98	NO
	Through	1,000	104	59	393	98	NO
	Right Turn	1,000	104	59	393	98	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	1	133	17	NO
	Through	510	12	1	138	13	NO
	Right Turn						
SB	Left Turn	180	15	1	118	12	NO
	Through	200	15	1	119	12	NO
	Right Turn	200	20	1	130	12	NO
EB	Left Turn	200	5	1	65	9	NO
	Through	600	76	4	363	25	NO
	Right Turn	600	75	5	365	25	NO
WB	Left Turn	400	19	2	213	26	NO
	Through	1,000	6	1	140	20	NO
	Right Turn	400	5	0	140	20	NO

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	500	5	1	110	14	NO
	Through	500	5	1	111	14	NO
	Right Turn	500	5	1	111	14	NO
SB	Left Turn	142	3	0	93	17	NO
	Through	190	4	1	134	9	NO
	Right Turn	190	4	1	134	9	NO
EB	Left Turn	1,000	2	2	123	56	NO
	Through	1,000	2	2	123	56	NO
	Right Turn	1,000	2	2	123	56	NO
WB	Left Turn	200	0	0	60	20	NO
	Through	200	0	0	58	21	NO
	Right Turn	200	0	0	58	21	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	0	0	0	0	NO
	Right Turn	210	0	0	0	0	NO
SB	Left Turn	110	0	0	24	9	NO
	Through	220	0	0	26	18	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	1	0	54	9	NO
	Through						
	Right Turn	220	1	0	54	9	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	18	1	131	10	NO
	Right Turn	210	19	1	134	10	NO
SB	Left Turn	100	11	1	122	12	MAX
	Through	150	12	1	132	18	NO
	Right Turn						
EB	Left Turn	1,000	8	1	126	17	NO
	Through	1,000	8	1	126	17	NO
	Right Turn	1,000	7	1	128	17	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	0	0	53	6	NO
	Through	170	0	0	53	6	NO
	Right Turn						
SB	Left Turn						
	Through	140	1	0	60	12	NO
	Right Turn	140	0	0	30	13	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	50	2	242	22	MAX
	Through	800	50	2	242	22	NO
	Right Turn	200	6	1	104	11	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	15	1	192	22	MAX
	Through	145	33	1	225	16	MAX
	Right Turn	145	1	0	48	11	NO
SB	Left Turn	80	9	1	89	13	MAX
	Through	240	8	1	68	6	NO
	Right Turn	80	1	0	50	4	NO
EB	Left Turn	160	3	0	82	17	NO
	Through	500	17	1	174	14	NO
	Right Turn	500	18	1	178	14	NO
WB	Left Turn	190	1	0	48	12	NO
	Through	400	7	0	128	10	NO
	Right Turn	400	5	0	128	10	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	39	8	NO
SB	Left Turn	180	22	1	188	17	MAX
	Through	180	22	1	189	17	MAX
	Right Turn						
EB	Left Turn						
	Through	270	27	1	196	23	NO
	Right Turn	270	24	2	201	22	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	16	1	178	11	NO
	Right Turn	200	14	1	179	11	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	0	55	8	NO
	Through	310	2	0	52	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	93	2	348	20	NO
	Through	1,000	94	2	349	20	NO
	Right Turn	1,000	93	2	350	20	NO
EB	Left Turn						
	Through	390	20	1	244	21	NO
	Right Turn	390	20	1	244	21	NO
WB	Left Turn	130	0	0	17	4	NO
	Through	380	3	0	65	9	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	75	9	231	14	MAX
	Right Turn	220	75	9	231	14	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	0	0	34	32	NO
	Through	315	0	0	34	32	NO
	Right Turn	315	0	0	34	32	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	20	1	127	10	NO
	Through	200	20	1	127	10	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	210	45	2	204	29	NO
	Through	370	22	1	264	30	NO
	Right Turn						
WB	Left Turn						
	Through	240	4	1	75	8	NO
	Right Turn	240	3	0	73	9	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	17	13	NO
	Through	200	0	0	17	13	NO
	Right Turn	200	0	0	17	13	NO
SB	Left Turn	200	0	0	27	11	NO
	Through	200	0	0	27	11	NO
	Right Turn	200	0	0	26	12	NO
EB	Left Turn	300	1	0	41	4	NO
	Through	300	1	0	41	4	NO
	Right Turn	300	1	0	41	4	NO
WB	Left Turn	300	2	0	69	9	NO
	Through	300	2	0	69	9	NO
	Right Turn	300	2	0	69	9	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	210	0	0	49	18	NO
	Through	210	0	0	23	24	NO
	Right Turn	210	0	0	18	26	NO
SB	Left Turn	200	0	0	14	6	NO
	Through	200	0	0	15	7	NO
	Right Turn	200	0	0	15	7	NO
EB	Left Turn	300	77	20	318	32	MAX
	Through	300	73	20	311	32	MAX
	Right Turn	300	74	20	312	32	MAX
WB	Left Turn	300	13	2	152	26	NO
	Through	300	13	2	152	26	NO
	Right Turn	300	13	2	152	26	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	17	15	NO
	Through	200	0	0	17	15	NO
	Right Turn	200	0	0	17	15	NO
SB	Left Turn	200	0	0	25	8	NO
	Through	200	0	0	17	12	NO
	Right Turn	200	0	0	17	12	NO
EB	Left Turn	300	2	0	50	15	NO
	Through	300	2	0	51	15	NO
	Right Turn	300	2	0	54	15	NO
WB	Left Turn	300	2	0	57	8	NO
	Through	300	2	0	57	8	NO
	Right Turn	300	2	0	57	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	16	1	130	10	NO
	Right Turn	200	17	1	131	10	NO
SB	Left Turn	210	8	1	73	10	NO
	Through	210	8	1	73	10	NO
	Right Turn						
EB	Left Turn	300	17	7	189	48	NO
	Through	300	17	7	189	48	NO
	Right Turn	300	17	7	191	48	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	29	3	NO
	Through						
	Right Turn	200	0	0	29	3	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	1	2	11	27	NO
	Right Turn	310	1	2	11	27	NO
WB	Left Turn	300	0	0	6	7	NO
	Through	300	0	0	6	7	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	71	8	NO
	Through						
	Right Turn	200	2	0	75	8	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	2	5	22	43	NO
	Right Turn	300	2	5	22	43	NO
WB	Left Turn	290	0	0	11	5	NO
	Through	290	0	0	0	0	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	2	67	41	NO
	Through	200	2	2	67	41	NO
	Right Turn	200	2	2	67	41	NO
SB	Left Turn	200	0	0	58	32	NO
	Through	200	0	0	58	32	NO
	Right Turn	200	0	0	58	32	NO
EB	Left Turn	290	14	12	131	44	NO
	Through	290	14	12	132	44	NO
	Right Turn	290	14	12	133	44	NO
WB	Left Turn	300	2	0	64	8	NO
	Through	300	2	0	61	8	NO
	Right Turn	300	2	0	63	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	143	11	542	29	MAX
	Right Turn	200	143	11	542	29	MAX
SB	Left Turn	200	97	3	305	9	MAX
	Through	200	74	4	301	10	MAX
	Right Turn						
EB	Left Turn	300	194	14	416	4	MAX
	Through	300	194	14	416	4	MAX
	Right Turn	140	194	14	416	4	AVG
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	9	1	110	11	NO
	Through	200	23	1	162	21	NO
	Right Turn						
SB	Left Turn						
	Through	200	96	7	406	30	MAX
	Right Turn	200	96	7	406	30	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	23	2	206	43	NO
	Through	1,000	8	0	80	6	NO
	Right Turn	150	1	0	156	47	MAX

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	30	14	NO
	Through	200	2	0	80	10	NO
	Right Turn	200	0	0	30	14	NO
SB	Left Turn	500	0	0	72	19	NO
	Through	500	0	0	99	9	NO
	Right Turn	500	0	0	99	9	NO
EB	Left Turn	1,000	2	1	77	12	NO
	Through	1,000	0	0	29	15	NO
	Right Turn	1,000	0	0	29	15	NO
WB	Left Turn	800	0	0	9	11	NO
	Through	800	0	0	9	11	NO
	Right Turn	800	1	0	64	4	NO

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	38	19	NO
	Through	200	5	1	86	16	NO
	Right Turn	200	1	0	38	19	NO
SB	Left Turn	450	9	1	129	22	NO
	Through	450	9	1	129	22	NO
	Right Turn	450	9	1	129	22	NO
EB	Left Turn	600	3	1	94	11	NO
	Through	600	7	1	149	11	NO
	Right Turn	600	0	0	65	18	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	200	5	0	91	12	NO
	Through	200	5	0	91	12	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	56	5	NO
	Right Turn	200	2	0	56	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	0	0	46	8	NO
	Through	200	4	0	80	8	NO
	Right Turn	220	4	0	82	8	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn						
	Through	210	3	0	87	7	NO
	Right Turn	210	3	0	87	7	NO
SB	Left Turn	170	6	0	73	8	NO
	Through	170	6	0	73	8	NO
	Right Turn						
EB	Left Turn	180	30	1	287	20	MAX
	Through	180	30	1	287	20	MAX
	Right Turn	180	30	1	287	20	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	1	0	45	6	NO
	Through	180	1	0	45	6	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	0	64	8	NO
	Right Turn	200	4	0	64	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	0	77	12	NO
	Through	300	6	0	77	11	NO
	Right Turn	300	6	0	79	11	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	76	2	272	18	MAX
	Right Turn	180	100	2	305	18	MAX
NE	Left Turn	670	17	1	91	12	NO
	Through						
	Right Turn	670	17	1	91	12	NO
EB	Left Turn	380	22	1	128	11	NO
	Through	380	22	1	128	11	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	21	1	244	15	MAX
	Through	190	21	1	244	15	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	63	1	229	15	NO
	Right Turn	250	63	1	229	15	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	37	29	NO
	Through						
	Right Turn	1,000	0	0	10	13	NO
SB	Left Turn						
	Through	1,000	0	0	93	7	NO
	Right Turn	1,000	1	0	50	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	93	9	NO
	Through	350	19	2	81	6	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **3 PM to 4 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	12	1	160	9	NO
	Through	200	12	1	160	9	NO
	Right Turn	200	12	1	165	9	NO
EB	Left Turn						
	Through	500	28	1	134	21	NO
	Right Turn	500	33	1	142	21	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	27	8	195	18	NO
	Right Turn	200	27	8	196	18	NO
SB	Left Turn	200	43	20	170	27	NO
	Through	200	43	20	170	27	NO
	Right Turn						
EB	Left Turn	800	316	57	651	43	NO
	Through	800	316	57	651	43	NO
	Right Turn	800	316	57	652	43	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	11	1	99	12	NO
	Through	1,000	85	7	546	66	NO
	Right Turn	1,000	85	7	546	66	NO
SB	Left Turn						
	Through	185	4	0	59	5	NO
	Right Turn	185	4	0	61	5	NO
EB	Left Turn	800	12	1	104	10	NO
	Through	800	15	1	128	12	NO
	Right Turn	800	0	0	21	4	NO
WB	Left Turn	580	21	1	129	7	NO
	Through	580	17	1	157	16	NO
	Right Turn	580	13	1	158	16	NO

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	18	2	164	23	NO
	Through	1,000	19	2	163	23	NO
	Right Turn	1,000	20	2	164	23	NO
SB	Left Turn	500	7	1	127	14	NO
	Through	500	6	1	126	13	NO
	Right Turn	500	5	1	126	13	NO
EB	Left Turn	1,000	6	1	102	14	NO
	Through	1,000	6	1	102	14	NO
	Right Turn	1,000	6	1	103	14	NO
WB	Left Turn	1,000	104	69	373	102	NO
	Through	1,000	104	69	373	102	NO
	Right Turn	1,000	104	69	373	102	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	1	135	22	NO
	Through	510	12	1	145	17	NO
	Right Turn						
SB	Left Turn	180	15	1	119	14	NO
	Through	200	15	1	120	14	NO
	Right Turn	200	20	1	131	14	NO
EB	Left Turn	200	4	1	63	9	NO
	Through	600	77	4	363	20	NO
	Right Turn	600	76	4	365	20	NO
WB	Left Turn	400	19	1	230	33	NO
	Through	1,000	7	1	134	10	NO
	Right Turn	1,000	5	1	134	10	NO

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	500	5	1	108	17	NO
	Through	500	5	1	109	17	NO
	Right Turn	500	5	1	109	17	NO
SB	Left Turn	142	3	0	95	15	NO
	Through	190	4	1	128	13	NO
	Right Turn	190	4	1	129	13	NO
EB	Left Turn	1,000	3	6	117	75	NO
	Through	1,000	3	6	118	75	NO
	Right Turn	1,000	3	6	117	75	NO
WB	Left Turn	200	0	1	71	29	NO
	Through	200	0	1	71	29	NO
	Right Turn	200	0	1	70	29	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	0	0	0	0	NO
	Right Turn	210	0	0	2	5	NO
SB	Left Turn	110	0	0	26	10	NO
	Through	220	0	0	13	17	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	1	0	57	11	NO
	Through						
	Right Turn	220	1	0	57	11	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	18	1	139	13	NO
	Right Turn	210	19	1	142	13	NO
SB	Left Turn	100	11	1	122	12	MAX
	Through	150	12	1	135	18	NO
	Right Turn						
EB	Left Turn	1,000	8	0	130	17	NO
	Through	1,000	8	0	130	17	NO
	Right Turn	1,000	7	0	132	17	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	0	0	55	7	NO
	Through	170	0	0	55	7	NO
	Right Turn						
SB	Left Turn						
	Through	140	1	0	62	9	NO
	Right Turn	140	0	0	28	14	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	50	2	242	22	MAX
	Through	800	50	2	242	22	NO
	Right Turn	200	6	1	109	12	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	15	1	197	11	MAX
	Through	145	32	2	228	13	MAX
	Right Turn	145	1	0	42	10	NO
SB	Left Turn	80	9	1	88	12	MAX
	Through	240	8	1	69	7	NO
	Right Turn	80	1	0	50	4	NO
EB	Left Turn	160	3	0	80	15	NO
	Through	500	17	1	176	14	NO
	Right Turn	500	18	1	179	14	NO
WB	Left Turn	190	1	0	49	14	NO
	Through	400	7	0	124	5	NO
	Right Turn	400	5	0	124	6	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	41	8	NO
SB	Left Turn	180	22	1	185	11	MAX
	Through	180	22	1	186	11	MAX
	Right Turn						
EB	Left Turn						
	Through	270	26	1	194	13	NO
	Right Turn	270	24	1	200	13	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	16	1	170	17	NO
	Right Turn	200	14	1	171	17	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	0	52	5	NO
	Through	310	2	0	53	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	93	2	349	21	NO
	Through	1,000	94	2	349	21	NO
	Right Turn	1,000	93	2	350	21	NO
EB	Left Turn						
	Through	390	20	1	245	25	NO
	Right Turn	390	20	1	245	25	NO
WB	Left Turn	130	0	0	17	6	NO
	Through	380	3	0	69	11	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	80	18	233	17	MAX
	Right Turn	220	80	18	233	17	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	1	2	42	35	NO
	Through	315	1	2	42	35	NO
	Right Turn	315	1	2	42	35	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	20	1	124	12	NO
	Through	200	20	1	124	12	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	210	45	2	203	20	NO
	Through	370	22	1	268	20	NO
	Right Turn						
WB	Left Turn						
	Through	240	4	1	75	8	NO
	Right Turn	240	3	0	74	9	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	10	11	NO
	Through	200	0	0	10	11	NO
	Right Turn	200	0	0	10	11	NO
SB	Left Turn	200	0	0	21	15	NO
	Through	200	0	0	22	15	NO
	Right Turn	200	0	0	21	15	NO
EB	Left Turn	300	1	0	41	4	NO
	Through	300	1	0	41	4	NO
	Right Turn	300	1	0	41	4	NO
WB	Left Turn	300	2	0	73	8	NO
	Through	300	2	0	73	8	NO
	Right Turn	300	2	0	73	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	210	0	0	47	18	NO
	Through	210	0	0	22	21	NO
	Right Turn	210	0	0	14	23	NO
SB	Left Turn	200	0	0	20	6	NO
	Through	200	0	0	21	6	NO
	Right Turn	200	0	0	20	6	NO
EB	Left Turn	300	77	18	314	21	MAX
	Through	300	73	18	307	21	MAX
	Right Turn	300	74	18	309	21	MAX
WB	Left Turn	300	13	2	145	11	NO
	Through	300	13	2	145	11	NO
	Right Turn	300	13	2	145	11	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	19	16	NO
	Through	200	0	0	19	16	NO
	Right Turn	200	0	0	19	16	NO
SB	Left Turn	200	0	0	25	6	NO
	Through	200	0	0	19	12	NO
	Right Turn	200	0	0	18	12	NO
EB	Left Turn	300	2	0	46	7	NO
	Through	300	2	0	47	7	NO
	Right Turn	300	2	0	50	7	NO
WB	Left Turn	300	2	0	55	7	NO
	Through	300	2	0	55	7	NO
	Right Turn	300	2	0	55	7	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	17	1	129	9	NO
	Right Turn	200	17	1	131	9	NO
SB	Left Turn	210	8	1	77	12	NO
	Through	210	8	1	77	12	NO
	Right Turn						
EB	Left Turn	300	23	14	203	53	NO
	Through	300	23	14	203	53	NO
	Right Turn	300	23	14	204	53	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	29	3	NO
	Through						
	Right Turn	200	0	0	29	3	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	1	2	NO
	Right Turn	310	0	0	1	2	NO
WB	Left Turn	300	0	0	8	4	NO
	Through	300	0	0	8	4	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	51	13	NO
	Through						
	Right Turn	200	1	0	54	13	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	0	0	0	0	NO
	Right Turn	300	0	0	0	0	NO
WB	Left Turn	290	0	0	14	10	NO
	Through	290	0	0	0	0	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	29	14	NO
	Through	200	0	0	29	14	NO
	Right Turn	200	0	0	28	14	NO
SB	Left Turn	200	0	0	52	19	NO
	Through	200	0	0	52	19	NO
	Right Turn	200	0	0	51	19	NO
EB	Left Turn	290	2	0	60	11	NO
	Through	290	2	0	61	11	NO
	Right Turn	290	2	0	63	11	NO
WB	Left Turn	300	3	0	76	7	NO
	Through	300	2	0	73	7	NO
	Right Turn	300	3	0	75	7	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	116	23	505	98	MAX
	Right Turn	200	116	23	505	98	MAX
SB	Left Turn	200	94	4	305	19	MAX
	Through	200	70	8	305	19	MAX
	Right Turn						
EB	Left Turn	300	150	43	398	29	MAX
	Through	300	150	43	398	29	MAX
	Right Turn	140	150	43	398	29	AVG
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	2	100	22	NO
	Through	200	28	2	153	16	NO
	Right Turn						
SB	Left Turn						
	Through	200	67	5	304	51	MAX
	Right Turn	200	67	5	304	51	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	21	3	168	34	NO
	Through	1,000	7	1	83	17	NO
	Right Turn	150	1	0	123	44	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	38	29	NO
	Through	200	3	1	85	16	NO
	Right Turn	200	0	0	38	29	NO
SB	Left Turn	500	0	0	88	39	NO
	Through	500	0	0	142	55	NO
	Right Turn	500	0	0	142	55	NO
EB	Left Turn	1,000	4	2	91	23	NO
	Through	1,000	1	1	43	36	NO
	Right Turn	1,000	1	1	43	36	NO
WB	Left Turn						
	Through	800	0	0	34	46	NO
	Right Turn	800	1	1	80	23	NO

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	88	42	NO
	Through	200	8	2	125	36	NO
	Right Turn	200	2	1	88	42	NO
SB	Left Turn	450	12	2	156	26	NO
	Through	450	12	2	156	26	NO
	Right Turn	450	12	2	156	26	NO
EB	Left Turn	600	5	2	118	29	NO
	Through	600	11	3	173	29	NO
	Right Turn	600	1	1	97	29	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	200	5	0	113	15	NO
	Through	200	5	0	113	15	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	50	8	NO
	Right Turn	200	2	0	50	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	0	0	35	24	NO
	Through	200	4	0	85	24	NO
	Right Turn	220	4	0	88	24	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn						
	Through	210	4	0	94	12	NO
	Right Turn	210	4	0	94	12	NO
SB	Left Turn	170	7	1	68	18	NO
	Through	170	7	1	68	18	NO
	Right Turn						
EB	Left Turn	180	36	2	320	10	MAX
	Through	180	36	2	320	10	MAX
	Right Turn	180	36	2	320	10	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	1	0	54	23	NO
	Through	180	1	0	54	23	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	1	79	28	NO
	Right Turn	200	4	1	79	28	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	1	63	12	NO
	Through	300	6	1	79	10	NO
	Right Turn	300	7	1	81	10	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	77	3	258	26	MAX
	Right Turn	180	101	3	291	26	MAX
NE	Left Turn	670	19	1	91	17	NO
	Through						
	Right Turn	670	19	1	91	17	NO
EB	Left Turn	380	21	1	120	12	NO
	Through	380	21	1	120	12	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	20	3	228	47	MAX
	Through	190	20	3	228	47	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	69	2	267	23	MAX
	Right Turn	250	69	2	267	23	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	60	52	NO
	Through						
	Right Turn	1,000	0	0	7	16	NO
SB	Left Turn						
	Through	1,000	0	0	95	9	NO
	Right Turn	1,000	1	0	53	3	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	4	0	98	16	NO
	Through	350	22	2	86	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **4 PM to 5 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	13	1	180	18	NO
	Through	200	13	1	180	18	NO
	Right Turn	200	14	1	184	18	NO
EB	Left Turn						
	Through	500	31	2	148	31	NO
	Right Turn	500	36	3	156	31	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	15	5	154	30	NO
	Right Turn	200	14	5	155	30	NO
SB	Left Turn	200	29	23	193	33	NO
	Through	200	29	23	193	33	NO
	Right Turn						
EB	Left Turn	800	122	64	501	172	NO
	Through	800	122	64	501	172	NO
	Right Turn	800	121	64	503	172	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	8	2	65	8	NO
	Through	1,000	62	11	345	67	NO
	Right Turn	1,000	62	11	345	67	NO
SB	Left Turn						
	Through	185	3	0	41	8	NO
	Right Turn	185	3	0	43	7	NO
EB	Left Turn	800	7	1	50	9	NO
	Through	800	13	1	89	16	NO
	Right Turn	800	0	0	6	6	NO
WB	Left Turn	580	25	4	141	16	NO
	Through	580	12	2	107	24	NO
	Right Turn	580	9	1	102	16	NO

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	29	2	209	26	NO
	Through	1,000	30	2	208	26	NO
	Right Turn	1,000	30	2	209	26	NO
SB	Left Turn	500	13	1	160	26	NO
	Through	500	12	2	159	26	NO
	Right Turn	500	12	2	159	26	NO
EB	Left Turn	1,000	5	1	98	6	NO
	Through	1,000	5	1	98	6	NO
	Right Turn	1,000	5	1	99	6	NO
WB	Left Turn	1,000	32	9	267	69	NO
	Through	1,000	32	9	267	69	NO
	Right Turn	1,000	32	9	267	69	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	13	1	108	20	NO
	Through	510	12	3	159	24	NO
	Right Turn						
SB	Left Turn	180	15	2	93	14	NO
	Through	200	15	2	94	14	NO
	Right Turn	200	20	2	105	14	NO
EB	Left Turn	200	4	1	59	21	NO
	Through	600	72	6	304	15	NO
	Right Turn	600	71	6	306	15	NO
WB	Left Turn	400	19	3	217	48	NO
	Through	1,000	8	2	142	24	NO
	Right Turn	1,000	6	2	143	23	NO

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	500	7	1	123	20	NO
	Through	500	7	1	123	20	NO
	Right Turn	500	7	1	123	20	NO
SB	Left Turn	142	1	0	73	8	NO
	Through	190	6	1	141	14	NO
	Right Turn	190	6	1	143	14	NO
EB	Left Turn	1,000	1	1	61	31	NO
	Through	1,000	1	1	58	28	NO
	Right Turn	1,000	1	1	43	35	NO
WB	Left Turn	200	0	0	28	27	NO
	Through	200	0	0	28	27	NO
	Right Turn	200	0	0	28	27	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	0	0	0	0	NO
	Right Turn	210	0	0	0	0	NO
SB	Left Turn	110	0	0	7	9	NO
	Through	220	0	0	9	13	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	2	0	75	8	NO
	Through						
	Right Turn	220	2	0	75	8	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	13	2	105	11	NO
	Right Turn	210	15	2	109	11	NO
SB	Left Turn	100	10	4	84	26	NO
	Through	150	11	4	111	30	NO
	Right Turn						
EB	Left Turn	1,000	6	1	108	9	NO
	Through	1,000	6	1	108	9	NO
	Right Turn	1,000	6	1	109	8	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	1	0	41	19	NO
	Through	170	1	0	41	19	NO
	Right Turn						
SB	Left Turn						
	Through	140	2	0	55	21	NO
	Right Turn	140	0	0	26	10	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	51	4	255	32	MAX
	Through	800	51	4	255	32	NO
	Right Turn	200	8	2	132	43	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	16	3	171	39	MAX
	Through	145	41	5	226	28	MAX
	Right Turn	145	34	3	223	21	MAX
SB	Left Turn	80	9	2	71	19	NO
	Through	240	6	0	77	23	NO
	Right Turn	80	1	0	33	7	NO
EB	Left Turn	160	2	0	43	8	NO
	Through	500	9	1	107	10	NO
	Right Turn	500	9	1	110	10	NO
WB	Left Turn	190	1	0	31	26	NO
	Through	400	6	1	99	5	NO
	Right Turn	400	3	1	96	4	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	29	10	NO
SB	Left Turn	180	31	3	202	12	MAX
	Through	180	30	3	202	12	MAX
	Right Turn						
EB	Left Turn						
	Through	270	26	1	156	8	NO
	Right Turn	270	23	2	162	8	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	25	2	167	13	NO
	Right Turn	200	24	2	168	13	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	1	43	19	NO
	Through	310	2	1	46	12	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	85	4	306	31	NO
	Through	1,000	86	4	306	31	NO
	Right Turn	1,000	85	3	307	31	NO
EB	Left Turn						
	Through	390	15	2	178	38	NO
	Right Turn	390	15	2	178	38	NO
WB	Left Turn	130	0	0	4	4	NO
	Through	380	3	1	55	14	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	28	7	177	18	NO
	Right Turn	220	28	7	177	18	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	0	0	19	19	NO
	Through	315	0	0	19	19	NO
	Right Turn	315	0	0	19	19	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	19	4	96	16	NO
	Through	200	19	4	96	16	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	210	28	2	127	12	NO
	Through	370	53	3	290	51	NO
	Right Turn						
WB	Left Turn						
	Through	240	5	1	79	8	NO
	Right Turn	240	3	1	79	8	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	3	4	NO
	Through	200	0	0	3	4	NO
	Right Turn	200	0	0	3	4	NO
SB	Left Turn	200	0	0	29	24	NO
	Through	200	0	0	30	24	NO
	Right Turn	200	0	0	29	24	NO
EB	Left Turn	300	1	0	28	3	NO
	Through	300	1	0	28	3	NO
	Right Turn	300	1	0	27	3	NO
WB	Left Turn	300	2	0	51	13	NO
	Through	300	2	0	51	13	NO
	Right Turn	300	2	0	51	13	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	210	0	0	25	21	NO
	Through	210	0	0	13	18	NO
	Right Turn	210	0	0	15	20	NO
SB	Left Turn	200	0	0	5	5	NO
	Through	200	0	0	5	6	NO
	Right Turn	200	0	0	5	6	NO
EB	Left Turn	300	23	4	209	23	NO
	Through	300	21	3	202	23	NO
	Right Turn	300	21	3	203	23	NO
WB	Left Turn	300	4	0	81	1	NO
	Through	300	4	0	81	1	NO
	Right Turn	300	4	0	81	1	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	1	3	NO
	Through	200	0	0	1	3	NO
	Right Turn	200	0	0	1	3	NO
SB	Left Turn	200	0	0	4	4	NO
	Through	200	0	0	0	0	NO
	Right Turn	200	0	0	0	0	NO
EB	Left Turn	300	1	0	27	3	NO
	Through	300	1	0	28	3	NO
	Right Turn	300	1	0	31	3	NO
WB	Left Turn	300	2	0	54	21	NO
	Through	300	2	0	54	21	NO
	Right Turn	300	2	0	54	21	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	15	3	104	20	NO
	Right Turn	200	15	3	105	21	NO
SB	Left Turn	210	6	1	53	9	NO
	Through	210	6	1	53	9	NO
	Right Turn						
EB	Left Turn	300	13	1	158	13	NO
	Through	300	13	1	158	13	NO
	Right Turn	300	13	1	160	13	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	24	1	NO
	Through						
	Right Turn	200	0	0	24	1	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	0	0	NO
	Right Turn	310	0	0	0	0	NO
WB	Left Turn	300	0	0	1	3	NO
	Through	300	0	0	1	3	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	71	8	NO
	Through						
	Right Turn	200	2	0	75	8	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	2	5	22	43	NO
	Right Turn	300	2	5	22	43	NO
WB	Left Turn	290	0	0	11	5	NO
	Through	290	0	0	0	0	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	2	67	41	NO
	Through	200	2	2	67	41	NO
	Right Turn	200	2	2	67	41	NO
SB	Left Turn	200	0	0	58	32	NO
	Through	200	0	0	58	32	NO
	Right Turn	200	0	0	58	32	NO
EB	Left Turn	290	14	12	131	44	NO
	Through	290	14	12	132	44	NO
	Right Turn	290	14	12	133	44	NO
WB	Left Turn	300	2	0	64	8	NO
	Through	300	2	0	61	8	NO
	Right Turn	300	2	0	63	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	143	11	542	29	MAX
	Right Turn	200	143	11	542	29	MAX
SB	Left Turn	200	97	3	305	9	MAX
	Through	200	74	4	301	10	MAX
	Right Turn						
EB	Left Turn	300	194	14	416	4	MAX
	Through	300	194	14	416	4	MAX
	Right Turn	140	194	14	416	4	AVG
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	9	1	110	11	NO
	Through	200	23	1	162	21	NO
	Right Turn						
SB	Left Turn						
	Through	200	96	7	406	30	MAX
	Right Turn	200	96	7	406	30	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	23	2	206	43	NO
	Through	1,000	8	0	80	6	NO
	Right Turn	150	1	0	156	47	MAX

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	30	14	NO
	Through	200	2	0	80	10	NO
	Right Turn	200	0	0	30	14	NO
SB	Left Turn	500	0	0	72	19	NO
	Through	500	0	0	99	9	NO
	Right Turn	500	0	0	99	9	NO
EB	Left Turn	1,000	2	1	77	12	NO
	Through	1,000	0	0	29	15	NO
	Right Turn	1,000	0	0	29	15	NO
WB	Left Turn	800	0	0	9	11	NO
	Through	800	0	0	9	11	NO
	Right Turn	800	1	0	64	4	NO

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
	Left Turn	200	1	0	38	19	NO
	Through	200	5	1	86	16	NO
	Right Turn	200	1	0	38	19	NO
SB	Left Turn	450	9	1	129	22	NO
	Through	450	9	1	129	22	NO
	Right Turn	450	9	1	129	22	NO
EB	Left Turn	600	3	1	94	11	NO
	Through	600	7	1	149	11	NO
	Right Turn	600	0	0	65	18	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	200	5	0	91	12	NO
	Through	200	5	0	91	12	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	56	5	NO
	Right Turn	200	2	0	56	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	0	0	46	8	NO
	Through	200	4	0	80	8	NO
	Right Turn	220	4	0	82	8	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn						
	Through	210	3	0	87	7	NO
	Right Turn	210	3	0	87	7	NO
SB	Left Turn	170	6	0	73	8	NO
	Through	170	6	0	73	8	NO
	Right Turn						
EB	Left Turn	180	30	1	287	20	MAX
	Through	180	30	1	287	20	MAX
	Right Turn	180	30	1	287	20	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	1	0	45	6	NO
	Through	180	1	0	45	6	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	0	64	8	NO
	Right Turn	200	4	0	64	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	0	77	12	NO
	Through	300	6	0	77	11	NO
	Right Turn	300	6	0	79	11	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	76	2	272	18	MAX
	Right Turn	180	100	2	305	18	MAX
NE	Left Turn	670	17	1	91	12	NO
	Through						
	Right Turn	670	17	1	91	12	NO
EB	Left Turn	380	22	1	128	11	NO
	Through	380	22	1	128	11	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	21	1	244	15	MAX
	Through	190	21	1	244	15	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	63	1	229	15	NO
	Right Turn	250	63	1	229	15	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	37	29	NO
	Through						
	Right Turn	1,000	0	0	10	13	NO
SB	Left Turn						
	Through	1,000	0	0	93	7	NO
	Right Turn	1,000	1	0	50	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	93	9	NO
	Through	350	19	2	81	6	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **5 PM to 6 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	12	1	160	9	NO
	Through	200	12	1	160	9	NO
	Right Turn	200	12	1	165	9	NO
EB	Left Turn						
	Through	500	28	1	134	21	NO
	Right Turn	500	33	1	142	21	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	27	8	195	18	NO
	Right Turn	200	27	8	196	18	NO
SB	Left Turn	200	43	20	170	27	NO
	Through	200	43	20	170	27	NO
	Right Turn						
EB	Left Turn	800	316	57	651	43	NO
	Through	800	316	57	651	43	NO
	Right Turn	800	316	57	652	43	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	11	1	99	12	NO
	Through	1,000	85	7	546	66	NO
	Right Turn	1,000	85	7	546	66	NO
SB	Left Turn						
	Through	185	4	0	59	5	NO
	Right Turn	185	4	0	61	5	NO
EB	Left Turn	800	12	1	104	10	NO
	Through	800	15	1	128	12	NO
	Right Turn	800	0	0	21	4	NO
WB	Left Turn	580	21	1	129	7	NO
	Through	580	17	1	157	16	NO
	Right Turn	580	13	1	158	16	NO

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	18	2	164	23	NO
	Through	1,000	19	2	163	23	NO
	Right Turn	1,000	20	2	164	23	NO
SB	Left Turn	500	7	1	127	14	NO
	Through	500	6	1	126	13	NO
	Right Turn	500	5	1	126	13	NO
EB	Left Turn	1,000	6	1	102	14	NO
	Through	1,000	6	1	102	14	NO
	Right Turn	1,000	6	1	103	14	NO
WB	Left Turn	1,000	104	69	373	102	NO
	Through	1,000	104	69	373	102	NO
	Right Turn	1,000	104	69	373	102	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	1	135	22	NO
	Through	510	12	1	145	17	NO
	Right Turn						
SB	Left Turn	180	15	1	119	14	NO
	Through	200	15	1	120	14	NO
	Right Turn	200	20	1	131	14	NO
EB	Left Turn	200	4	1	63	9	NO
	Through	600	77	4	363	20	NO
	Right Turn	600	76	4	365	20	NO
WB	Left Turn	400	19	1	230	33	NO
	Through	1,000	7	1	134	10	NO
	Right Turn	1,000	5	1	134	10	NO

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	500	5	1	108	17	NO
	Through	500	5	1	109	17	NO
	Right Turn	500	5	1	109	17	NO
SB	Left Turn	142	3	0	95	15	NO
	Through	190	4	1	128	13	NO
	Right Turn	190	4	1	129	13	NO
EB	Left Turn	1,000	3	6	117	75	NO
	Through	1,000	3	6	118	75	NO
	Right Turn	1,000	3	6	117	75	NO
WB	Left Turn	200	0	1	71	29	NO
	Through	200	0	1	71	29	NO
	Right Turn	200	0	1	70	29	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	0	0	0	0	NO
	Right Turn	210	0	0	2	5	NO
SB	Left Turn	110	0	0	26	10	NO
	Through	220	0	0	13	17	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	1	0	57	11	NO
	Through						
	Right Turn	220	1	0	57	11	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	18	1	139	13	NO
	Right Turn	210	19	1	142	13	NO
SB	Left Turn	100	11	1	122	12	MAX
	Through	150	12	1	135	18	NO
	Right Turn						
Vissim Post-	Left Turn	1,000	8	0	130	17	NO
	Through	1,000	8	0	130	17	NO
	Right Turn	1,000	7	0	132	17	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	0	0	55	7	NO
	Through	170	0	0	55	7	NO
	Right Turn						
SB	Left Turn						
	Through	140	1	0	62	9	NO
	Right Turn	140	0	0	28	14	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	50	2	242	22	MAX
	Through	800	50	2	242	22	NO
	Right Turn	200	6	1	109	12	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	15	1	197	11	MAX
	Through	145	32	2	228	13	MAX
	Right Turn	145	1	0	42	10	NO
SB	Left Turn	80	9	1	88	12	MAX
	Through	240	8	1	69	7	NO
	Right Turn	80	1	0	50	4	NO
EB	Left Turn	160	3	0	80	15	NO
	Through	500	17	1	176	14	NO
	Right Turn	500	18	1	179	14	NO
WB	Left Turn	190	1	0	49	14	NO
	Through	400	7	0	124	5	NO
	Right Turn	400	5	0	124	6	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	41	8	NO
SB	Left Turn	180	22	1	185	11	MAX
	Through	180	22	1	186	11	MAX
	Right Turn						
EB	Left Turn						
	Through	270	26	1	194	13	NO
	Right Turn	270	24	1	200	13	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	16	1	170	17	NO
	Right Turn	200	14	1	171	17	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	0	52	5	NO
	Through	310	2	0	53	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	93	2	349	21	NO
	Through	1,000	94	2	349	21	NO
	Right Turn	1,000	93	2	350	21	NO
EB	Left Turn						
	Through	390	20	1	245	25	NO
	Right Turn	390	20	1	245	25	NO
WB	Left Turn	130	0	0	17	6	NO
	Through	380	3	0	69	11	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	80	18	233	17	MAX
	Right Turn	220	80	18	233	17	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	1	2	42	35	NO
	Through	315	1	2	42	35	NO
	Right Turn	315	1	2	42	35	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	20	1	124	12	NO
	Through	200	20	1	124	12	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	210	45	2	203	20	NO
	Through	370	22	1	268	20	NO
	Right Turn						
WB	Left Turn						
	Through	240	4	1	75	8	NO
	Right Turn	240	3	0	74	9	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	10	11	NO
	Through	200	0	0	10	11	NO
	Right Turn	200	0	0	10	11	NO
SB	Left Turn	200	0	0	21	15	NO
	Through	200	0	0	22	15	NO
	Right Turn	200	0	0	21	15	NO
EB	Left Turn	300	1	0	41	4	NO
	Through	300	1	0	41	4	NO
	Right Turn	300	1	0	41	4	NO
WB	Left Turn	300	2	0	73	8	NO
	Through	300	2	0	73	8	NO
	Right Turn	300	2	0	73	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	210	0	0	47	18	NO
	Through	210	0	0	22	21	NO
	Right Turn	210	0	0	14	23	NO
SB	Left Turn	200	0	0	20	6	NO
	Through	200	0	0	21	6	NO
	Right Turn	200	0	0	20	6	NO
EB	Left Turn	300	77	18	314	21	MAX
	Through	300	73	18	307	21	MAX
	Right Turn	300	74	18	309	21	MAX
WB	Left Turn	300	13	2	145	11	NO
	Through	300	13	2	145	11	NO
	Right Turn	300	13	2	145	11	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	19	16	NO
	Through	200	0	0	19	16	NO
	Right Turn	200	0	0	19	16	NO
SB	Left Turn	200	0	0	25	6	NO
	Through	200	0	0	19	12	NO
	Right Turn	200	0	0	18	12	NO
EB	Left Turn	300	2	0	46	7	NO
	Through	300	2	0	47	7	NO
	Right Turn	300	2	0	50	7	NO
WB	Left Turn	300	2	0	55	7	NO
	Through	300	2	0	55	7	NO
	Right Turn	300	2	0	55	7	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	17	1	129	9	NO
	Right Turn	200	17	1	131	9	NO
SB	Left Turn	210	8	1	77	12	NO
	Through	210	8	1	77	12	NO
	Right Turn						
EB	Left Turn	300	23	14	203	53	NO
	Through	300	23	14	203	53	NO
	Right Turn	300	23	14	204	53	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	29	3	NO
	Through						
	Right Turn	200	0	0	29	3	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	1	2	NO
	Right Turn	310	0	0	1	2	NO
WB	Left Turn	300	0	0	8	4	NO
	Through	300	0	0	8	4	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	71	9	NO
	Through						
	Right Turn	200	2	0	75	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	0	0	0	0	NO
	Right Turn	300	0	0	0	0	NO
WB	Left Turn	290	0	0	13	6	NO
	Through	290	0	0	0	0	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	1	64	31	NO
	Through	200	1	1	64	31	NO
	Right Turn	200	1	1	64	31	NO
SB	Left Turn	200	0	0	67	34	NO
	Through	200	0	0	67	34	NO
	Right Turn	200	0	0	66	34	NO
EB	Left Turn	290	8	3	111	26	NO
	Through	290	8	3	112	26	NO
	Right Turn	290	9	3	113	26	NO
WB	Left Turn	300	2	0	63	10	NO
	Through	300	2	0	60	10	NO
	Right Turn	300	2	0	62	10	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	149	21	538	54	MAX
	Right Turn	200	149	21	538	54	MAX
SB	Left Turn	200	97	4	303	9	MAX
	Through	200	75	4	299	11	MAX
	Right Turn						
EB	Left Turn	300	193	12	420	8	MAX
	Through	300	193	12	420	8	MAX
	Right Turn	140	193	12	420	8	AVG
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	9	1	106	12	NO
	Through	200	23	1	163	12	NO
	Right Turn						
SB	Left Turn						
	Through	200	96	8	399	34	MAX
	Right Turn	200	96	8	399	34	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	25	5	218	57	NO
	Through	1,000	8	0	82	7	NO
	Right Turn	150	1	0	128	33	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	2	0	80	10	NO
	Right Turn	200	0	0	30	14	NO
SB	Left Turn	500	0	0	79	18	NO
	Through	500	0	0	93	15	NO
	Right Turn	500	0	0	93	15	NO
EB	Left Turn	1,000	2	1	77	12	NO
	Through	1,000	0	0	29	15	NO
	Right Turn						
WB	Left Turn						
	Through	800	0	0	9	11	NO
	Right Turn	800	1	0	64	4	NO

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	40	19	NO
	Through	200	5	1	88	15	NO
	Right Turn	200	1	0	40	19	NO
SB	Left Turn	450	8	1	125	21	NO
	Through	450	8	1	125	21	NO
	Right Turn	450	8	1	125	21	NO
EB	Left Turn	600	3	1	95	12	NO
	Through	600	7	1	150	12	NO
	Right Turn	600	0	0	67	19	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn	200	5	0	100	15	NO
	Through	200	5	0	100	15	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	57	5	NO
	Right Turn	200	2	0	57	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	0	0	43	9	NO
	Through	200	4	0	80	10	NO
	Right Turn	220	4	0	83	10	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn						
	Through	210	3	0	85	8	NO
	Right Turn	210	3	0	85	8	NO
SB	Left Turn	170	6	0	73	8	NO
	Through	170	6	0	73	8	NO
	Right Turn						
EB	Left Turn	180	30	1	296	18	MAX
	Through	180	30	1	296	18	MAX
	Right Turn	180	30	1	296	18	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	1	0	53	11	NO
	Through	180	1	0	53	11	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	0	64	8	NO
	Right Turn	200	4	0	64	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	0	77	12	NO
	Through	300	6	0	77	11	NO
	Right Turn	300	6	0	79	11	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	76	2	271	11	MAX
	Right Turn	180	100	2	304	11	MAX
NE	Left Turn	670	17	1	90	9	NO
	Through						
	Right Turn	670	17	1	90	9	NO
EB	Left Turn	380	22	1	132	13	NO
	Through	380	22	1	132	13	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	21	2	242	21	MAX
	Through	190	21	2	242	21	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	63	1	232	14	NO
	Right Turn	250	63	1	232	14	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	42	24	NO
	Through						
	Right Turn	1,000	0	0	9	13	NO
SB	Left Turn						
	Through	1,000	0	0	94	7	NO
	Right Turn	1,000	1	0	50	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	96	9	NO
	Through	350	19	1	84	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **6 PM to 7 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	12	1	167	8	NO
	Through	200	12	1	167	8	NO
	Right Turn	200	12	1	171	8	NO
EB	Left Turn						
	Through	500	28	1	135	21	NO
	Right Turn	500	33	1	142	21	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	25	8	195	20	NO
	Right Turn	200	25	8	197	20	NO
SB	Left Turn	200	36	21	167	24	NO
	Through	200	36	21	167	24	NO
	Right Turn						
EB	Left Turn	800	330	72	663	53	NO
	Through	800	330	72	663	53	NO
	Right Turn	800	330	72	665	53	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	11	1	99	12	NO
	Through	1,000	85	7	546	66	NO
	Right Turn	1,000	85	7	546	66	NO
SB	Left Turn						
	Through	185	4	0	59	5	NO
	Right Turn	185	4	0	61	5	NO
EB	Left Turn	800	12	1	104	10	NO
	Through	800	15	1	128	12	NO
	Right Turn	800	0	0	21	4	NO
WB	Left Turn	580	21	1	129	7	NO
	Through	580	17	1	157	16	NO
	Right Turn	580	13	1	158	16	NO

Intersection 2 **Adeline St/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	18	2	164	23	NO
	Through	1,000	19	2	163	23	NO
	Right Turn	1,000	20	2	164	23	NO
SB	Left Turn	500	7	1	127	14	NO
	Through	500	6	1	126	13	NO
	Right Turn	500	5	1	126	13	NO
EB	Left Turn	1,000	6	1	102	14	NO
	Through	1,000	6	1	102	14	NO
	Right Turn	1,000	6	1	103	14	NO
WB	Left Turn	1,000	104	69	373	102	NO
	Through	1,000	104	69	373	102	NO
	Right Turn	1,000	104	69	373	102	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	1	135	22	NO
	Through	510	12	1	145	17	NO
	Right Turn						
SB	Left Turn	180	15	1	119	14	NO
	Through	200	15	1	120	14	NO
	Right Turn	200	20	1	131	14	NO
EB	Left Turn	200	4	1	63	9	NO
	Through	600	77	4	363	20	NO
	Right Turn	600	76	4	365	20	NO
WB	Left Turn	400	19	1	230	33	NO
	Through	1,000	7	1	134	10	NO
	Right Turn	1,000	5	1	134	10	NO

Intersection 4 **Market St/3rd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	500	5	1	108	17	NO
	Through	500	5	1	109	17	NO
	Right Turn	500	5	1	109	17	NO
SB	Left Turn	142	3	0	95	15	NO
	Through	190	4	1	128	13	NO
	Right Turn	190	4	1	129	13	NO
EB	Left Turn	1,000	3	6	117	75	NO
	Through	1,000	3	6	118	75	NO
	Right Turn	1,000	3	6	117	75	NO
WB	Left Turn						
	Through	200	0	1	71	29	NO
	Right Turn	200	0	1	70	29	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	0	0	0	0	NO
	Right Turn	210	0	0	2	5	NO
SB	Left Turn	110	0	0	26	10	NO
	Through	220	0	0	13	17	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	1	0	57	11	NO
	Through						
	Right Turn	220	1	0	57	11	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	18	1	139	13	NO
	Right Turn	210	19	1	142	13	NO
SB	Left Turn	100	11	1	122	12	MAX
	Through	150	12	1	135	18	NO
	Right Turn						
EB	Left Turn	1,000	8	0	130	17	NO
	Through	1,000	8	0	130	17	NO
	Right Turn	1,000	7	0	132	17	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	0	0	55	7	NO
	Through	170	0	0	55	7	NO
	Right Turn						
SB	Left Turn						
	Through	140	1	0	62	9	NO
	Right Turn	140	0	0	28	14	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	50	2	242	22	MAX
	Through	800	50	2	242	22	NO
	Right Turn	200	6	1	109	12	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	15	1	197	11	MAX
	Through	145	32	2	228	13	MAX
	Right Turn	145	1	0	42	10	NO
SB	Left Turn	80	9	1	88	12	MAX
	Through	240	8	1	69	7	NO
	Right Turn	80	1	0	50	4	NO
EB	Left Turn	160	3	0	80	15	NO
	Through	500	17	1	176	14	NO
	Right Turn	500	18	1	179	14	NO
WB	Left Turn	190	1	0	49	14	NO
	Through	400	7	0	124	5	NO
	Right Turn	400	5	0	124	6	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	41	8	NO
SB	Left Turn	180	22	1	185	11	MAX
	Through	180	22	1	186	11	MAX
	Right Turn						
EB	Left Turn						
	Through	270	26	1	194	13	NO
	Right Turn	270	24	1	200	13	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	16	1	170	17	NO
	Right Turn	200	14	1	171	17	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	0	52	5	NO
	Through	310	2	0	53	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	93	2	349	21	NO
	Through	1,000	94	2	349	21	NO
	Right Turn	1,000	93	2	350	21	NO
EB	Left Turn						
	Through	390	20	1	245	25	NO
	Right Turn	390	20	1	245	25	NO
WB	Left Turn	130	0	0	17	6	NO
	Through	380	3	0	69	11	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	80	18	233	17	MAX
	Right Turn	220	80	18	233	17	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	1	2	42	35	NO
	Through	315	1	2	42	35	NO
	Right Turn	315	1	2	42	35	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	20	1	124	12	NO
	Through	200	20	1	124	12	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	210	45	2	203	20	NO
	Through	370	22	1	268	20	NO
	Right Turn						
WB	Left Turn						
	Through	240	4	1	75	8	NO
	Right Turn	240	3	0	74	9	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	10	11	NO
	Through	200	0	0	10	11	NO
	Right Turn						
SB	Left Turn	200	0	0	21	15	NO
	Through	200	0	0	22	15	NO
	Right Turn	200	0	0	21	15	NO
EB	Left Turn	300	1	0	41	4	NO
	Through	300	1	0	41	4	NO
	Right Turn	300	1	0	41	4	NO
WB	Left Turn	300	2	0	73	8	NO
	Through	300	2	0	73	8	NO
	Right Turn	300	2	0	73	8	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	210	0	0	47	18	NO
	Through	210	0	0	22	21	NO
	Right Turn						
SB	Left Turn	200	0	0	20	6	NO
	Through	200	0	0	21	6	NO
	Right Turn	200	0	0	20	6	NO
EB	Left Turn	300	77	18	314	21	MAX
	Through	300	73	18	307	21	MAX
	Right Turn	300	74	18	309	21	MAX
WB	Left Turn	300	13	2	145	11	NO
	Through	300	13	2	145	11	NO
	Right Turn	300	13	2	145	11	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	19	16	NO
	Through	200	0	0	19	16	NO
	Right Turn	200	0	0	19	16	NO
SB	Left Turn	200	0	0	25	6	NO
	Through	200	0	0	19	12	NO
	Right Turn	200	0	0	18	12	NO
EB	Left Turn	300	2	0	46	7	NO
	Through	300	2	0	47	7	NO
	Right Turn						
WB	Left Turn	300	2	0	55	7	NO
	Through	300	2	0	55	7	NO
	Right Turn	300	2	0	55	7	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	17	1	129	9	NO
	Right Turn	200	17	1	131	9	NO
SB	Left Turn	210	8	1	77	12	NO
	Through	210	8	1	77	12	NO
	Right Turn						
EB	Left Turn	300	23	14	203	53	NO
	Through	300	23	14	203	53	NO
	Right Turn	300	23	14	204	53	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	29	3	NO
	Through						
	Right Turn	200	0	0	29	3	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	1	2	NO
	Right Turn	310	0	0	1	2	NO
WB	Left Turn	300	0	0	8	4	NO
	Through	300	0	0	8	4	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 19 **Clay St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	71	9	NO
	Through						
	Right Turn	200	2	0	75	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	0	0	0	0	NO
	Right Turn	300	0	0	0	0	NO
WB	Left Turn	290	0	0	13	6	NO
	Through	290	0	0	0	0	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	1	64	31	NO
	Through	200	1	1	64	31	NO
	Right Turn	200	1	1	64	31	NO
SB	Left Turn	200	0	0	67	34	NO
	Through	200	0	0	67	34	NO
	Right Turn	200	0	0	66	34	NO
EB	Left Turn	290	8	3	111	26	NO
	Through	290	8	3	112	26	NO
	Right Turn	290	9	3	113	26	NO
WB	Left Turn	300	2	0	63	10	NO
	Through	300	2	0	60	10	NO
	Right Turn	300	2	0	62	10	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	149	21	538	54	MAX
	Right Turn	200	149	21	538	54	MAX
SB	Left Turn	200	97	4	303	9	MAX
	Through	200	75	4	299	11	MAX
	Right Turn						
EB	Left Turn	300	193	12	420	8	MAX
	Through	300	193	12	420	8	MAX
	Right Turn	140	193	12	420	8	AVG
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	9	1	106	12	NO
	Through	200	23	1	163	12	NO
	Right Turn						
SB	Left Turn						
	Through	200	96	8	399	34	MAX
	Right Turn	200	96	8	399	34	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	25	5	218	57	NO
	Through	1,000	8	0	82	7	NO
	Right Turn	150	1	0	128	33	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 23 **Market St/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	2	0	80	10	NO
	Right Turn	200	0	0	30	14	NO
SB	Left Turn	500	0	0	79	18	NO
	Through	500	0	0	93	15	NO
	Right Turn	500	0	0	93	15	NO
EB	Left Turn	1,000	2	1	77	12	NO
	Through	1,000	0	0	29	15	NO
	Right Turn						
WB	Left Turn						
	Through	800	0	0	9	11	NO
	Right Turn	800	1	0	64	4	NO

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **All-way Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	40	19	NO
	Through	200	5	1	88	15	NO
	Right Turn	200	1	0	40	19	NO
SB	Left Turn	450	8	1	125	21	NO
	Through	450	8	1	125	21	NO
	Right Turn	450	8	1	125	21	NO
EB	Left Turn	600	3	1	95	12	NO
	Through	600	7	1	150	12	NO
	Right Turn	600	0	0	67	19	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	5	0	100	15	NO
	Through	200	5	0	100	15	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	57	5	NO
	Right Turn	200	2	0	57	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	0	0	43	9	NO
	Through	200	4	0	80	10	NO
	Right Turn	220	4	0	83	10	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	3	0	85	8	NO
	Right Turn	210	3	0	85	8	NO
SB	Left Turn	170	6	0	73	8	NO
	Through	170	6	0	73	8	NO
	Right Turn						
EB	Left Turn	180	30	1	296	18	MAX
	Through	180	30	1	296	18	MAX
	Right Turn	180	30	1	296	18	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	1	0	53	11	NO
	Through	180	1	0	53	11	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	0	64	8	NO
	Right Turn	200	4	0	64	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	0	77	12	NO
	Through	300	6	0	77	11	NO
	Right Turn	300	6	0	79	11	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	76	2	271	11	MAX
	Right Turn	180	100	2	304	11	MAX
NE	Left Turn	670	17	1	90	9	NO
	Through						
	Right Turn	670	17	1	90	9	NO
EB	Left Turn	380	22	1	132	13	NO
	Through	380	22	1	132	13	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

Queue Length **7 PM to 8 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	21	2	242	21	MAX
	Through	190	21	2	242	21	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	63	1	232	14	NO
	Right Turn	250	63	1	232	14	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	42	24	NO
	Through						
	Right Turn	1,000	0	0	9	13	NO
SB	Left Turn						
	Through	1,000	0	0	94	7	NO
	Right Turn	1,000	1	0	50	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	96	9	NO
	Through	350	19	1	84	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing Conditions**

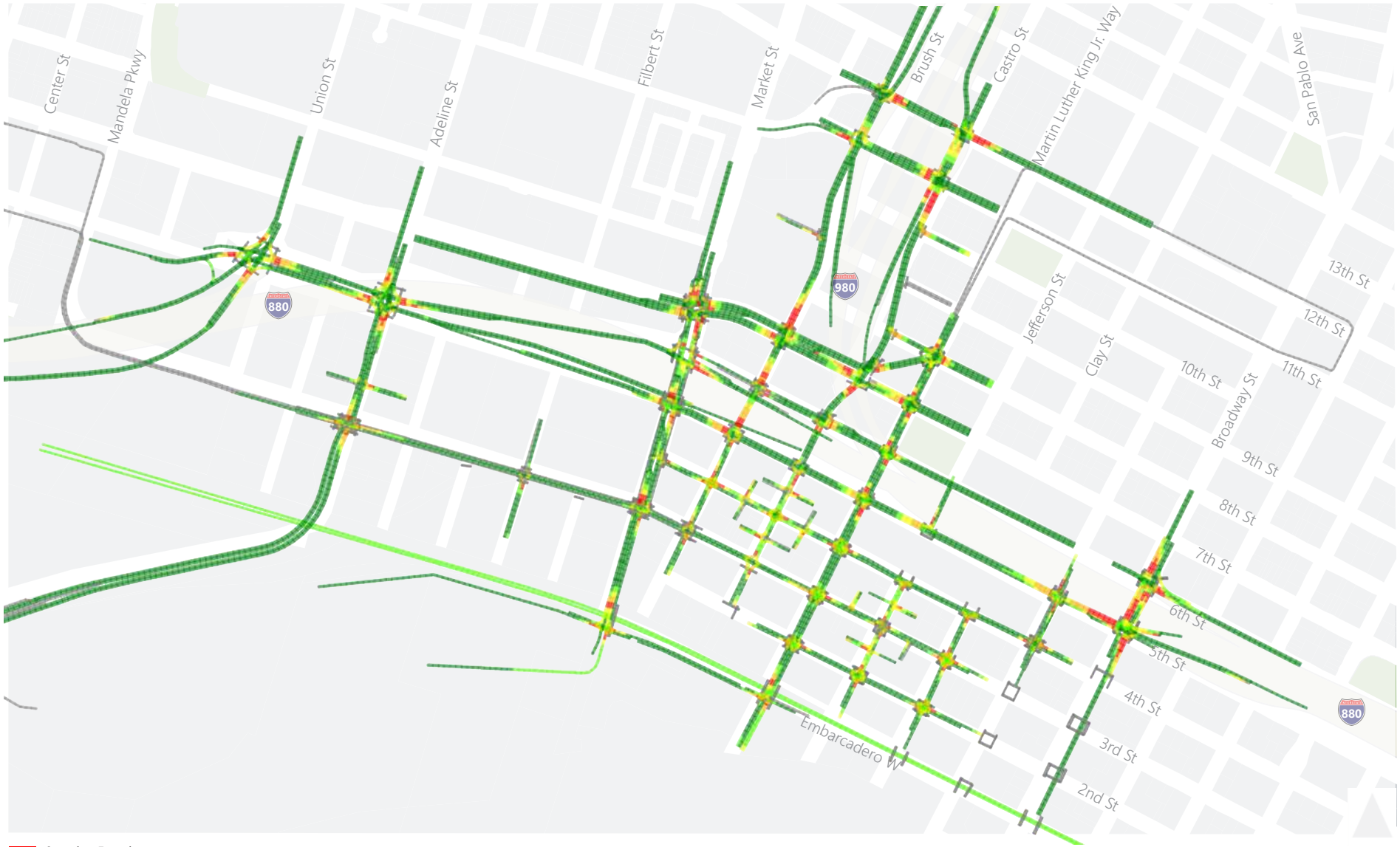
Queue Length **7 PM to 8 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	12	1	167	8	NO
	Through	200	12	1	167	8	NO
	Right Turn	200	12	1	171	8	NO
EB	Left Turn						
	Through	500	28	1	135	21	NO
	Right Turn	500	33	1	142	21	NO
WB	Left Turn						
	Through						
	Right Turn						

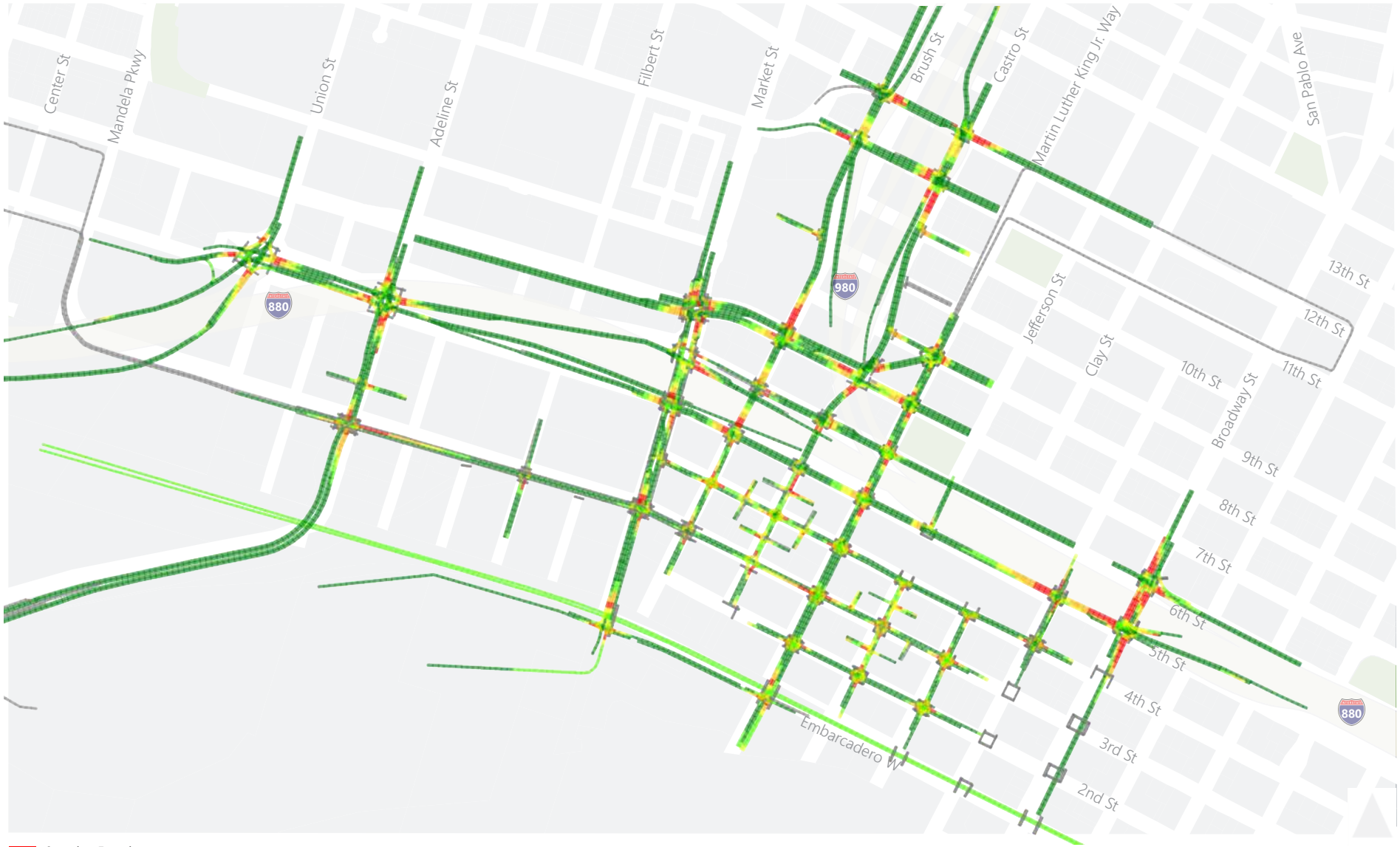
Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	25	8	195	20	NO
	Right Turn	200	25	8	197	20	NO
SB	Left Turn	200	36	21	167	24	NO
	Through	200	36	21	167	24	NO
	Right Turn						
EB	Left Turn	800	330	72	663	53	NO
	Through	800	330	72	663	53	NO
	Right Turn	800	330	72	665	53	NO
WB	Left Turn						
	Through						
	Right Turn						



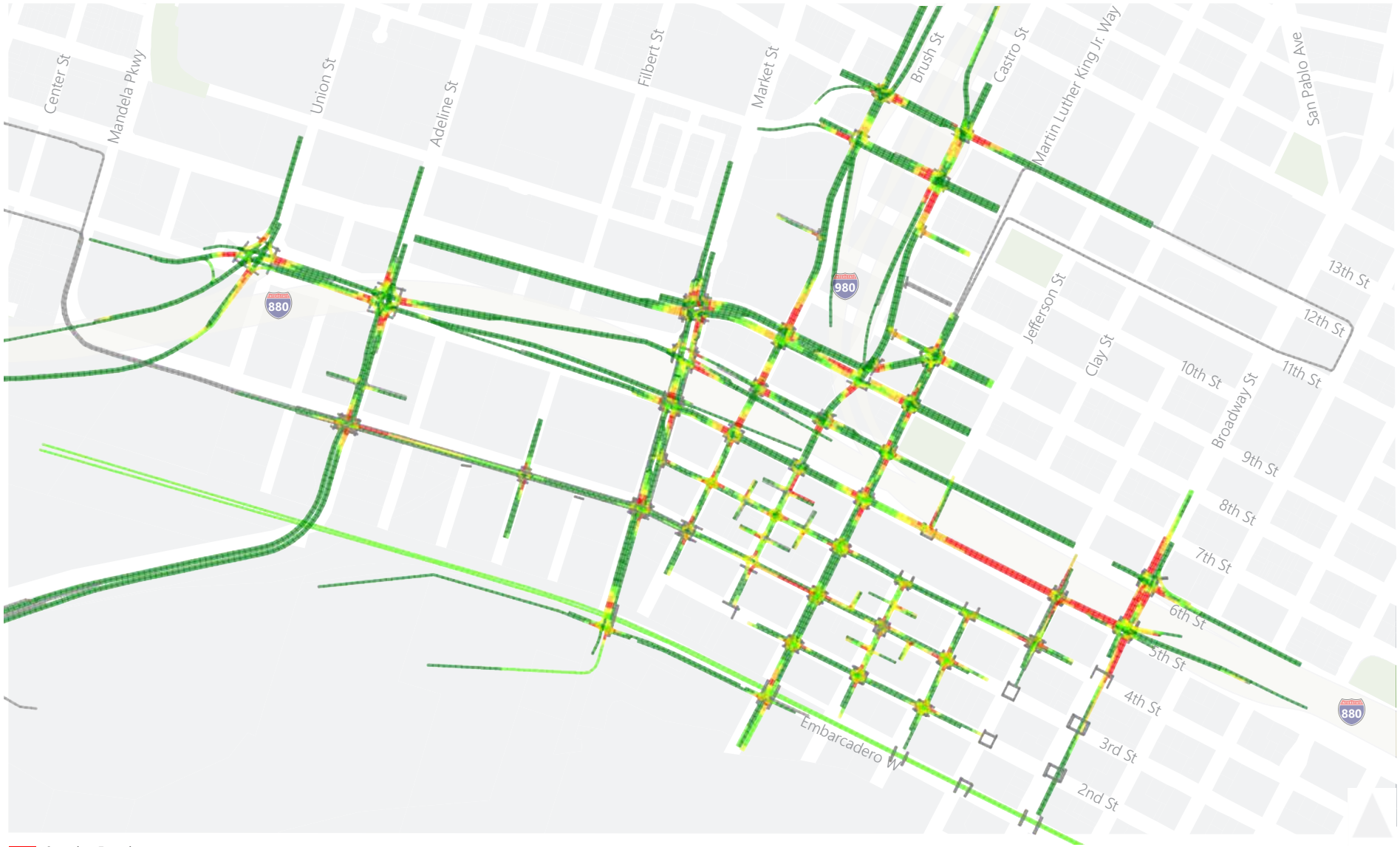
Existing Conditions - Average Motor Vehicle Speeds
3PM - 4PM

Figure F-1



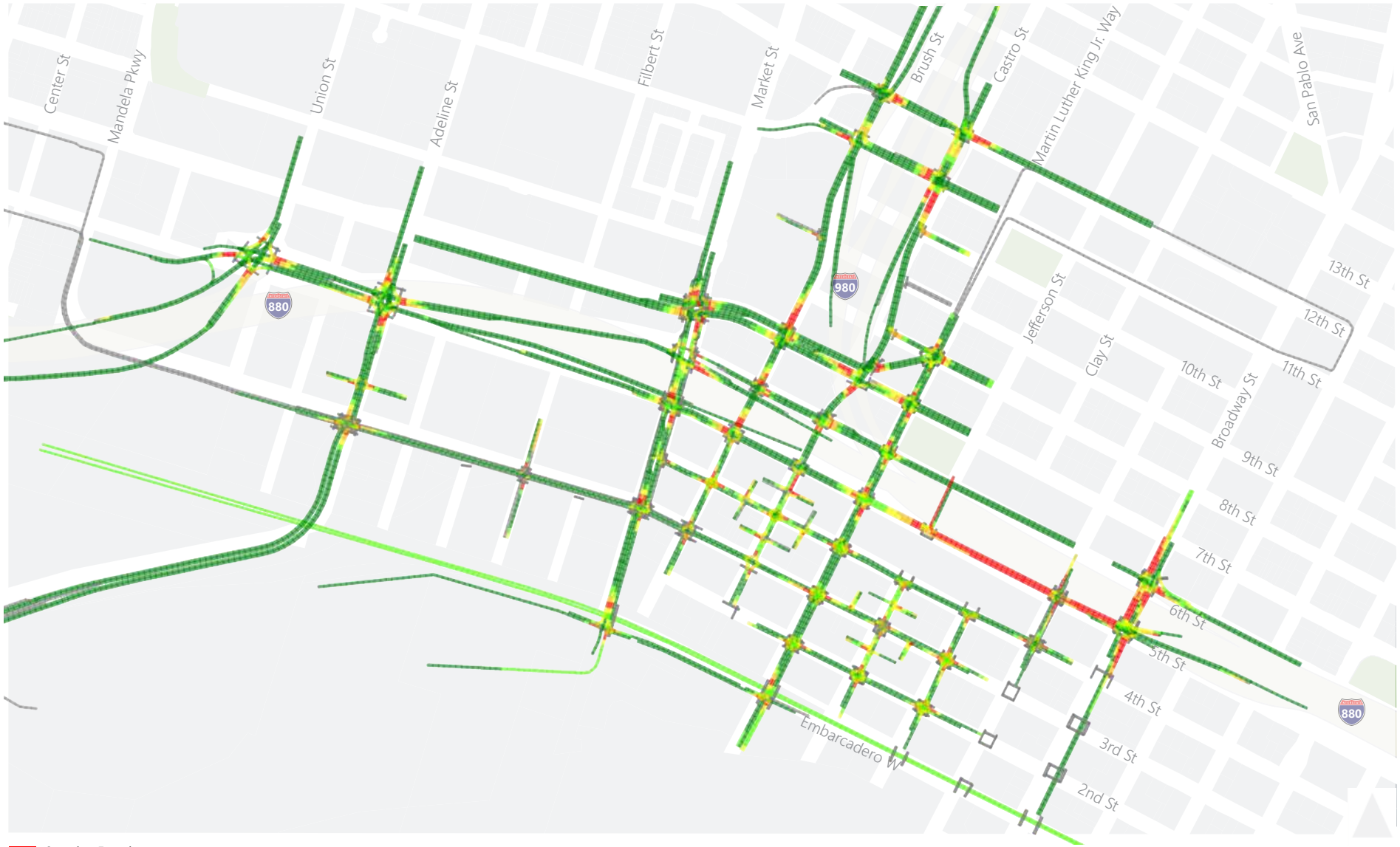
Existing Conditions - Average Motor Vehicle Speeds
4PM - 5PM

Figure F-2



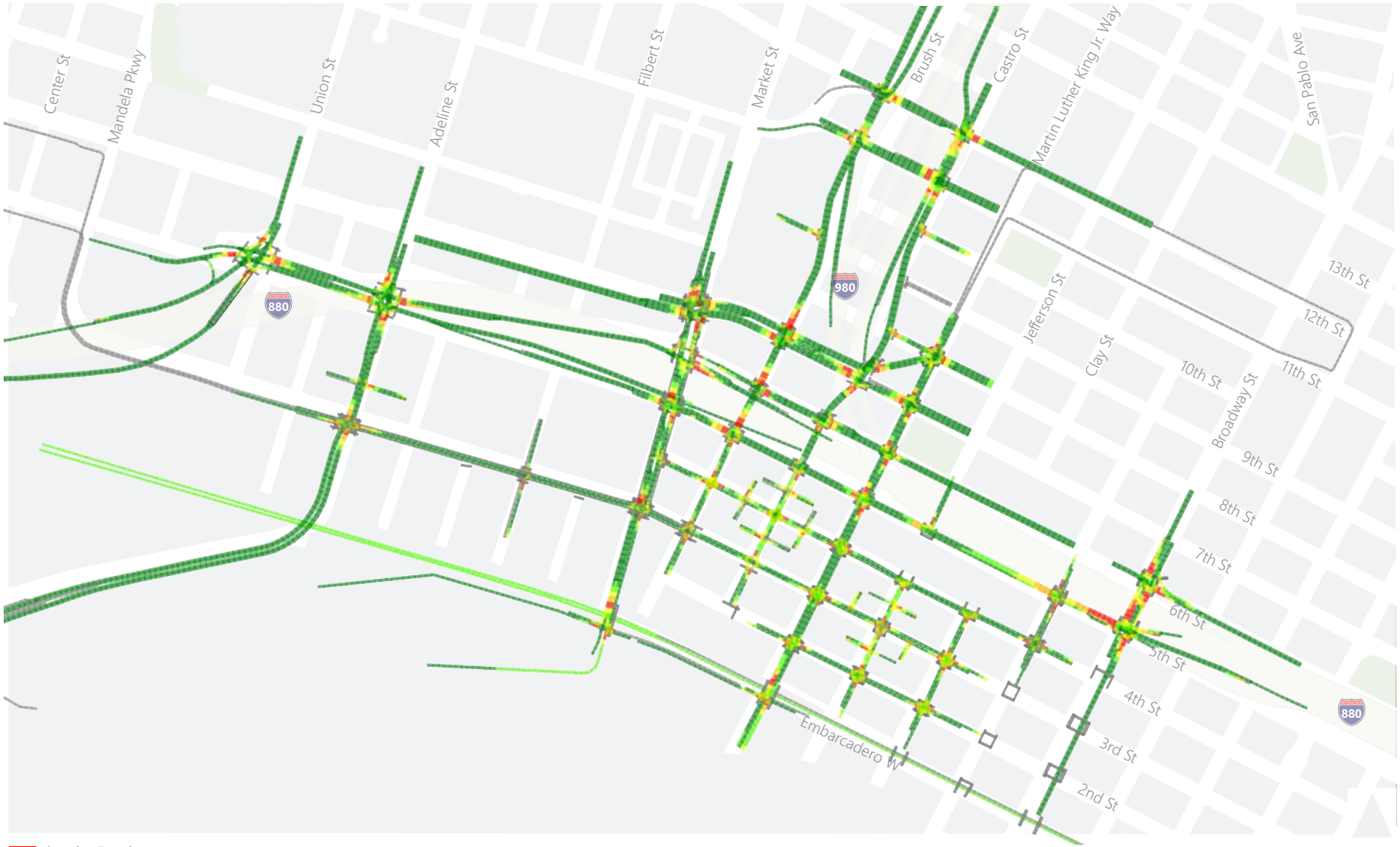
Existing Conditions - Average Motor Vehicle Speeds
5PM - 6PM

Figure F-3



Existing Conditions - Average Motor Vehicle Speeds
6PM - 7PM

Figure F-4



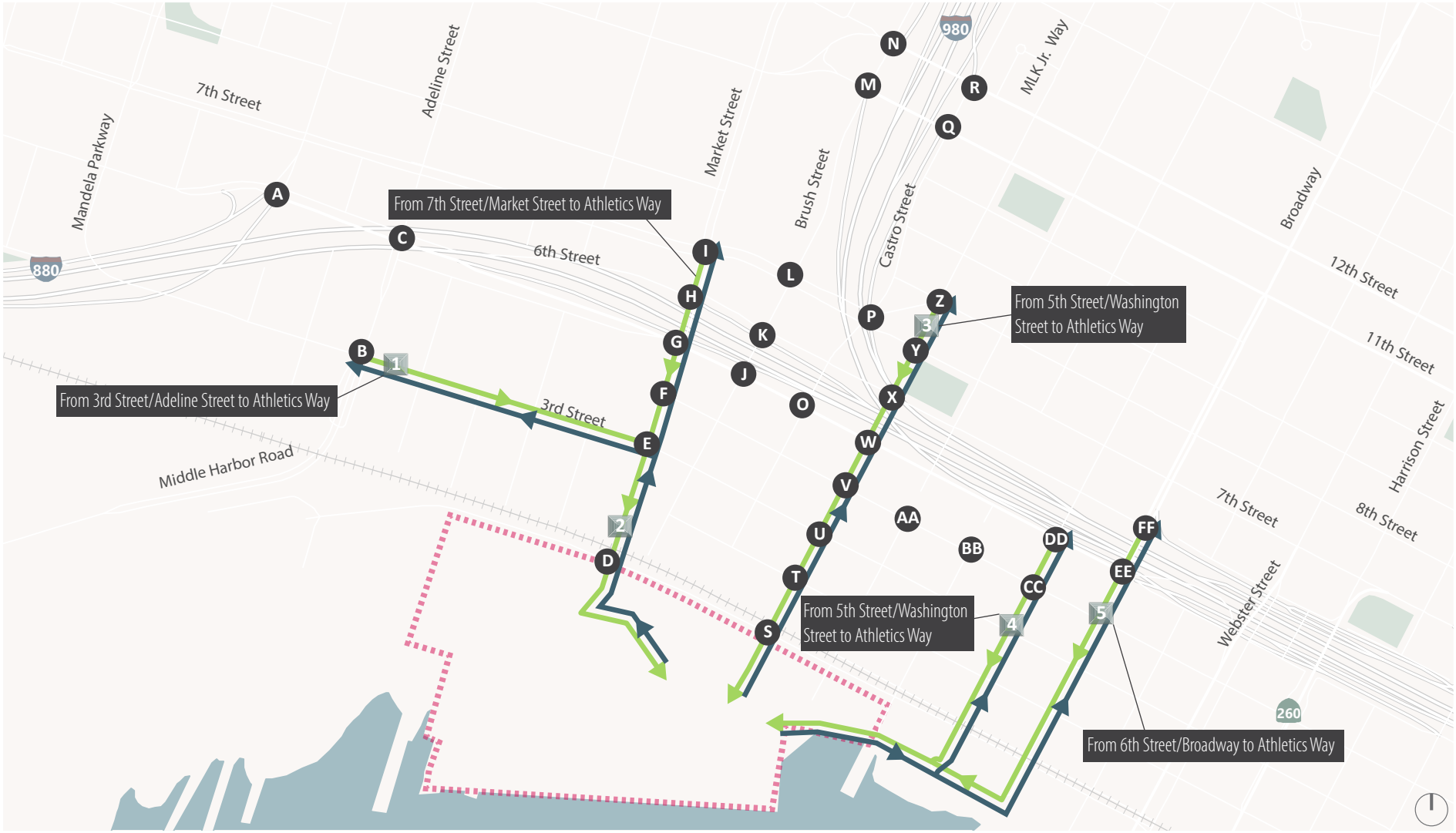
Existing Conditions - Average Motor Vehicle Speeds
7PM - 8PM

Figure F-5

FEHR PEERS

Appendix G:

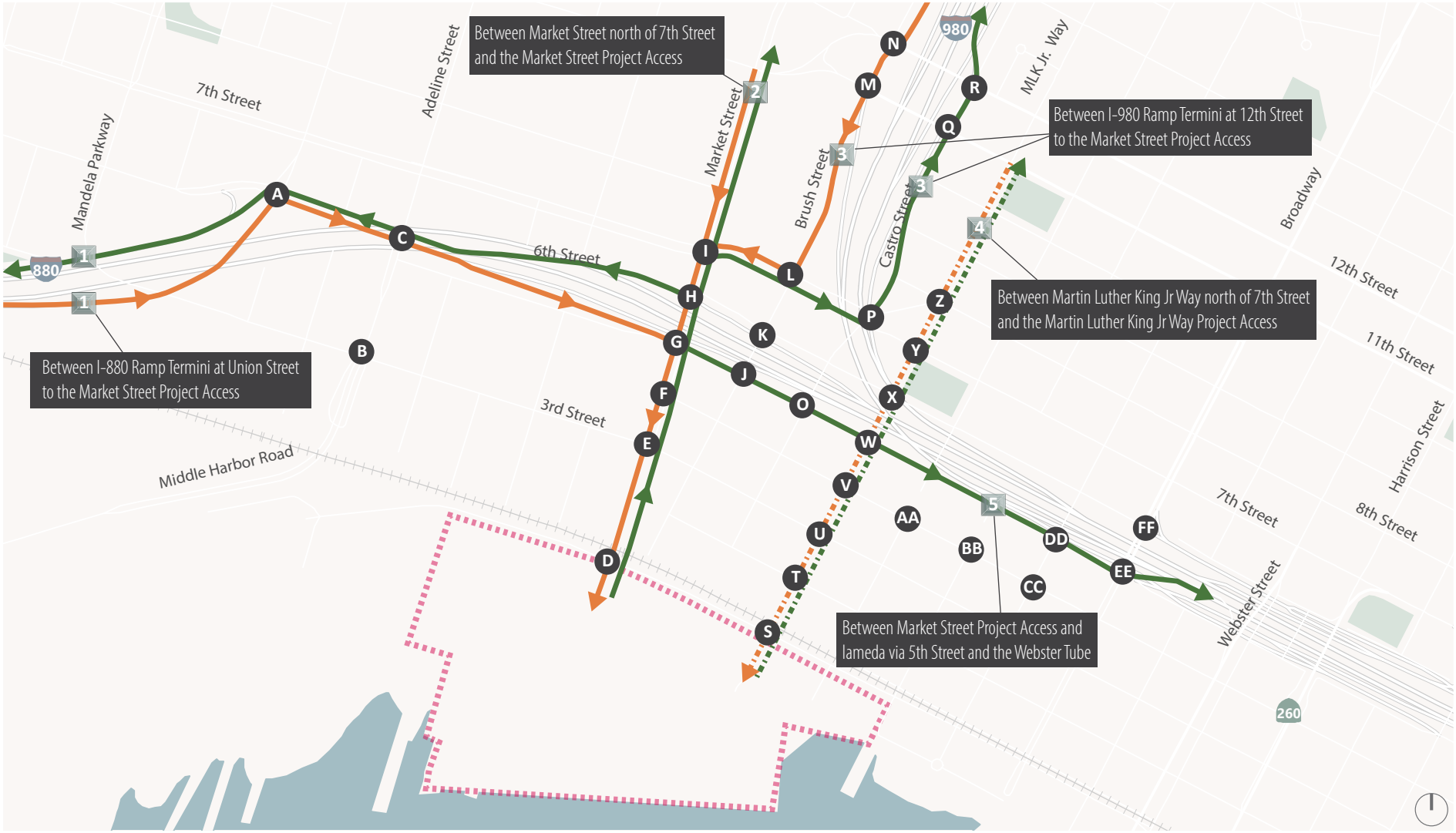
Motor Vehicle and Pedestrian Travel Time Routes



Pedestrian Travel Time Routes

\Graphics\ADOBE\OK16-0125.05_PedFlows

Figure H-1



Motor Vehicle Travel Time Routes

\Graphics\ADOBE\OK16-0125.05_VehicleFlows

Figure H-2

FEHR PEERS

Appendix H:

Existing Plus Full Buildout Non-Ballpark Development Plus Midday Game Results

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Pedestrian Peak Interval Operations Summary **3-4 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	1740	4	20	100	B	50	4.5	64	C
Market east side from Embarcadero to 3rd (middle)	Platooned	1721	4	19	100	B	46	4.7	69	C
Market east side from Embarcadero to 3rd (north)	Platooned	1701	4	18	100	B	44	4.9	74	C
Market/3rd Northeast corner	Platooned	619	1	3	167	B	21	4.5	64	C
Market/3rd Southeast corner	Platooned	2156	1	15	50	C	42	2.4	18	E
Market/6th Southwest corner	Platooned	492	2	2	100	B	14	3.5	38	D
MLK east side from Embarcadero to 2nd (north)	Platooned	2006	4	9	100	B	32	4.9	77	C
MLK/2nd Southeast corner	Platooned	2010	2	7	100	B	30	3.9	49	C
MLK/2nd Northeast corner	Platooned	1492	4	3	100	B	21	3.8	45	C
MLK east side from 2rd to 3th (south)	Platooned	1389	4	6	100	B	29	4.4	61	C
MLK east side from 2rd to 3th (middle)	Platooned	1368	4	6	100	B	28	4.6	67	C
MLK east side from 2rd to 3th (north)	Platooned	1360	4	6	100	B	27	4.7	70	C
MLK/3rd Southeast corner	Platooned	1723	2	6	100	B	28	4.5	63	C
MLK/3rd Northeast corner	Platooned	1105	3	3	100	B	20	3.5	37	D
MLK east side from 3rd to 4th (south)	Platooned	1067	3	5	100	B	27	4.2	56	C
MLK east side from 3rd to 4th (middle)	Platooned	1054	4	5	100	B	22	4.6	67	C
MLK east side from 3rd to 4th (north)	Platooned	1053	4	5	100	B	19	4.8	74	C
MLK/4th Southeast corner	Platooned	1158	2	5	100	B	23	4.6	66	C
MLK east side from 4th to 5th (south)	Platooned	931	3	5	100	B	27	4.2	56	C
MLK east side from 4th to 5th (middle)	Platooned	920	4	4	100	B	20	4.8	73	C
MLK east side from 4th to 5th (north)	Platooned	920	4	4	100	B	18	5.1	81	C
MLK/5th Southeast corner	Platooned	1063	1	7	50	C	28	2.5	20	E
MLK/5th Southwest corner	Platooned	570	1	3	100	B	18	3.8	45	C
MLK/5th Northeast corner	Platooned	909	3	4	333	B	32	3.7	42	C
MLK east side from 5th to 6th (south)	Platooned	905	3	3	100	B	25	3.8	44	C
MLK east side from 5th to 6th (middle)	Platooned	895	4	5	100	B	28	4.8	71	C
MLK east side from 5th to 6th (north)	Platooned	883	4	4	100	B	18	5.1	81	C
MLK west side from 5th to 6th (south)	Platooned	456	4	1	100	B	16	3.5	38	D
MLK west side from 5th to 6th (middle)	Platooned	450	4	2	100	B	17	4.1	53	C
MLK west side from 5th to 6th (north)	Platooned	442	4	2	167	B	13	4.3	57	C
MLK/6th Southeast corner	Platooned	929	2	3	83	C	23	1.8	10	F
MLK/6th Southwest corner	Platooned	442	2	1	125	B	15	3.6	40	D
MLK east side from 6th to 7th (south)	Platooned	883	4	6	100	B	30	5.2	83	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Pedestrian Peak Interval Operations Summary **3-4 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
MLK/7th Southeast corner	Platooned	861	1	7	50	C	34	1.8	10	F
MLK east side from 7th to 8th (south)	Platooned	838	4	4	100	B	26	4.7	69	C
MLK east side from 7th to 8th (middle)	Platooned	833	4	4	100	B	23	5.0	80	C
MLK east side from 7th to 8th (north)	Platooned	832	4	4	100	B	20	5.3	88	C
MLK west side from 7th to 8th (south)	Platooned	425	4	2	500	B	16	3.9	48	C
MLK west side from 7th to 8th (middle)	Platooned	418	4	1	125	B	13	4.3	59	C
MLK west side from 7th to 8th (north)	Platooned	416	4	1	200	B	12	4.5	64	C
MLK/8th Southwest corner	Platooned	416	3	1	125	B	12	3.3	34	D
Clay/Embarcadero Southeast corner	Platooned	857	3	2	125	B	17	3.0	29	D
Clay/2nd Southwest corner	Platooned	515	2	2	100	B	9	3.9	47	C
Washington/Embarcadero corner	Platooned	1583	3	3	100	B	18	4.4	62	C
Washington west side from Embarcadero to 2nd (south)	Platooned	1212	4	6	100	B	37	4.3	59	C
Washington west side from Embarcadero to 2nd (middle	Platooned	1199	4	5	100	B	32	4.7	68	C
Washington west side from Embarcadero to 2nd (north)	Platooned	1198	4	5	100	B	30	4.9	74	C
Washington/2nd Northwest corner	Platooned	1145	3	2	500	B	11	5.2	85	C
Washington west side from 2nd to 3rd (south)	Platooned	983	4	4	100	B	20	3.4	36	D
Washington west side from 2nd to 3rd (middle)	Platooned	971	4	4	100	B	18	3.5	38	D
Washington west side from 2nd to 3rd (north)	Platooned	970	4	4	100	B	16	3.7	43	C
Washington/3rd Southwest corner	Platooned	1220	2	6	100	B	19	3.1	30	D
Washington/3rd Northwest corner	Platooned	1150	3	2	100	B	11	5.2	85	C
Washington/4th Northwest corner	Platooned	929	3	2	333	B	22	3.9	48	C
Washington west side from 4th to 5th (south)	Platooned	888	4	4	200	B	27	5.0	77	C
Washington/5th Southeast corner	Platooned	1436	1	11	100	B	34	3.1	31	D
Washington/5th Southwest corner	Platooned	1227	1	6	100	B	22	3.5	38	D
Broadway west side from 2nd to 3rd (south)	Platooned	1466	4	6	100	B	25	4.2	56	C
Broadway west side from 2nd to 3rd (middle)	Platooned	1451	4	6	100	B	22	4.4	62	C
Broadway west side from 2nd to 3rd (north)	Platooned	1450	4	6	100	B	20	4.7	71	C
Broadway west side from 4th to 5th (south)	Platooned	1760	4	6	100	B	27	4.6	66	C
Broadway west side from 4th to 5th (middle)	Platooned	1744	4	7	100	B	27	4.9	75	C
Broadway west side from 4th to 5th (north)	Platooned	1741	4	7	100	B	27	4.9	75	C
Broadway/5th Southwest corner	Platooned	1769	1	15	50	C	52	4.0	50	C
Broadway west side from 5th to 6th (south)	Platooned	1700	4	9	100	B	61	3.6	42	C
Broadway west side from 5th to 6th (middle)	Platooned	1701	4	9	100	B	56	4.1	52	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Pedestrian Peak Interval Operations Summary **3-4 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Broadway west side from 5th to 6th (north)	Platooned	1697	4	7	100	B	40	4.1	53	C
3rd/Adeline Southwest corner	Platooned	659	3	1	100	B	9	3.0	27	D
3rd south side from Filbert to Market (middle5)	Platooned	667	4	4	100	B	24	5.3	90	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Pedestrian Peak Interval Operations Summary **4-5 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	2031	4	24	50	C	113	3.0	28	D
Market east side from Embarcadero to 3rd (middle)	Platooned	2030	4	23	100	B	95	3.3	34	D
Market east side from Embarcadero to 3rd (north)	Platooned	2044	4	23	53	C	85	3.5	38	D
Market/3rd Northeast corner	Platooned	781	1	4	100	B	27	4.0	49	C
Market/3rd Southwest corner	Platooned	1627	2	5	100	B	32	4.9	77	C
Market/3rd Southeast corner	Platooned	2627	1	21	33	D	77	1.8	10	F
Market west side from 5th to 6th (south)	Platooned	627	4	3	100	B	19	5.1	82	C
Market/6th Southwest corner	Platooned	642	2	3	100	B	17	3.2	33	D
MLK east side from Embarcadero to 2nd (south)	Platooned	2269	4	22	100	B	113	3.7	42	C
MLK east side from Embarcadero to 2nd (north)	Platooned	2269	4	11	100	B	60	3.6	41	C
MLK/2nd Southeast corner	Platooned	2289	2	8	100	B	65	2.7	23	E
MLK/2nd Northeast corner	Platooned	1693	3	4	100	B	26	3.3	35	D
MLK east side from 2rd to 3th (south)	Platooned	1586	4	7	100	B	40	3.8	44	C
MLK east side from 2rd to 3th (middle)	Platooned	1584	4	7	100	B	37	4.0	50	C
MLK east side from 2rd to 3th (north)	Platooned	1584	4	7	100	B	36	4.1	52	C
MLK/3rd Southeast corner	Platooned	1984	2	7	100	B	32	4.2	55	C
MLK/3rd Northeast corner	Platooned	1287	3	3	100	B	22	3.3	33	D
MLK east side from 3rd to 4th (south)	Platooned	1243	3	6	50	C	33	3.8	46	C
MLK east side from 3rd to 4th (middle)	Platooned	1243	4	6	100	B	27	4.1	54	C
MLK east side from 3rd to 4th (north)	Platooned	1243	4	6	100	B	25	4.3	57	C
MLK/4th Southeast corner	Platooned	1353	2	5	100	B	23	4.5	64	C
MLK/4th Northwest corner	Platooned	587	4	1	500	B	11	4.7	70	C
MLK east side from 4th to 5th (south)	Platooned	1101	3	6	50	C	30	4.1	52	C
MLK east side from 4th to 5th (middle)	Platooned	1102	4	5	100	B	24	4.5	63	C
MLK east side from 4th to 5th (north)	Platooned	1102	4	5	100	B	22	4.5	64	C
MLK/5th Southeast corner	Platooned	1247	1	8	48	C	36	2.2	15	E
MLK/5th Southwest corner	Platooned	678	1	3	100	B	21	3.5	39	D
MLK/5th Northeast corner	Platooned	1106	3	4	100	B	35	3.5	38	D
MLK/5th Northwest corner	Platooned	579	3	2	111	B	24	4.7	70	C
MLK east side from 5th to 6th (south)	Platooned	1097	3	4	77	C	28	3.5	40	D
MLK east side from 5th to 6th (middle)	Platooned	1103	3	7	100	B	31	4.5	64	C
MLK east side from 5th to 6th (north)	Platooned	1103	4	5	100	B	20	4.9	74	C
MLK west side from 5th to 6th (south)	Platooned	577	4	2	100	B	18	3.3	33	D

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Pedestrian Peak Interval Operations Summary **4-5 PM**

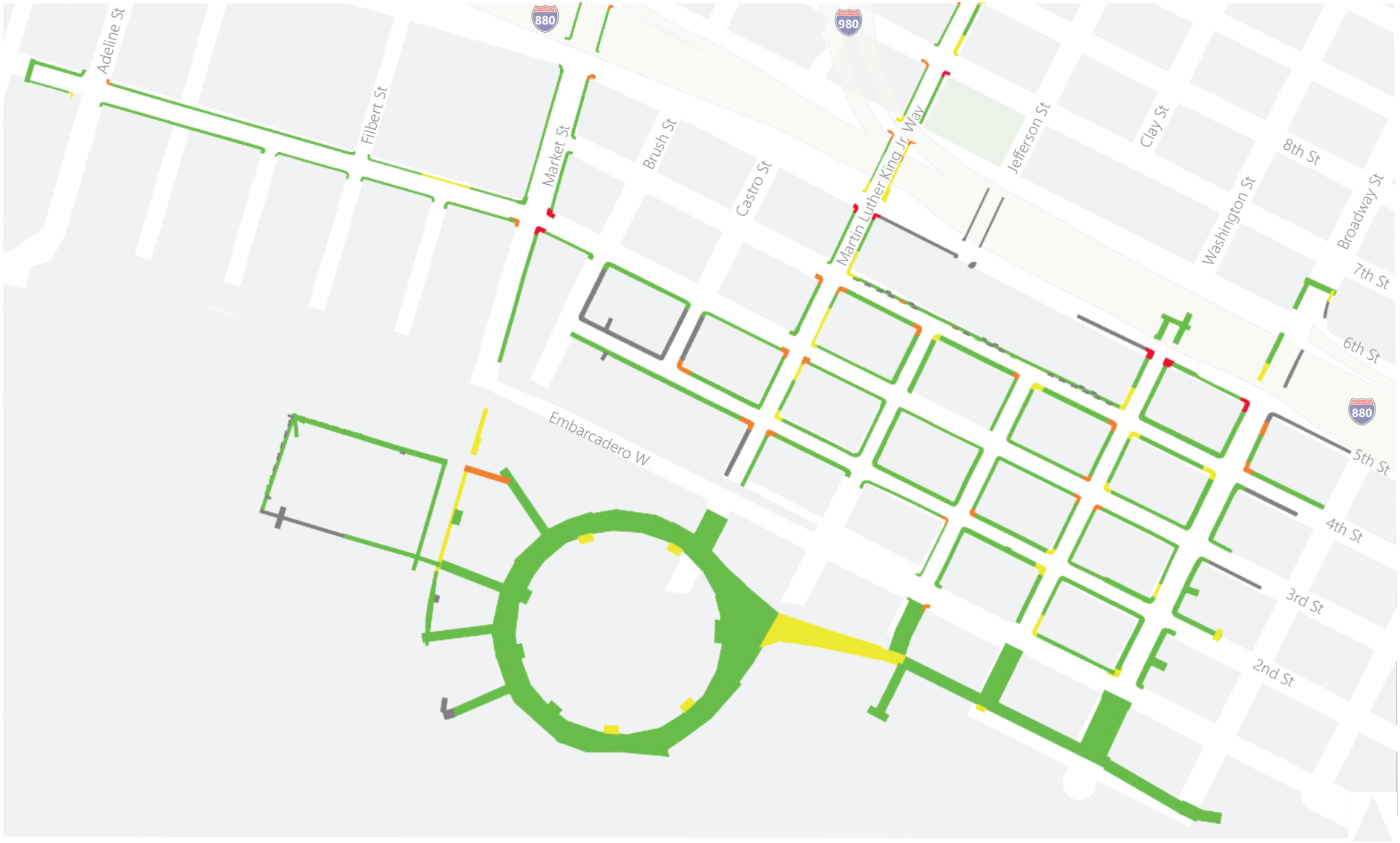
Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
MLK west side from 5th to 6th (middle)	Platooned	581	4	3	100	B	18	4.0	50	C
MLK west side from 5th to 6th (north)	Platooned	581	4	2	100	B	14	4.2	55	C
MLK/6th Southeast corner	Platooned	1142	2	3	63	C	23	1.8	10	F
MLK/6th Southwest corner	Platooned	581	2	2	100	B	15	3.6	40	D
MLK east side from 6th to 7th (south)	Platooned	1102	4	8	100	B	31	5.1	81	C
MLK/7th Southeast corner	Platooned	1110	1	10	33	D	39	1.7	9	F
MLK east side from 7th to 8th (south)	Platooned	1102	4	5	100	B	29	4.5	64	C
MLK east side from 7th to 8th (middle)	Platooned	1103	4	5	100	B	25	4.8	73	C
MLK east side from 7th to 8th (north)	Platooned	1103	4	5	100	B	22	5.1	82	C
MLK west side from 7th to 8th (south)	Platooned	580	4	2	100	B	18	3.7	43	C
MLK west side from 7th to 8th (middle)	Platooned	581	4	2	100	B	15	4.1	54	C
MLK west side from 7th to 8th (north)	Platooned	581	4	2	100	B	12	4.4	62	C
MLK/8th Southwest corner	Platooned	582	3	1	100	B	11	3.5	38	D
Clay/Embarcadero Southeast corner	Platooned	1053	2	3	100	B	32	2.2	15	E
Clay/2nd Southwest corner	Platooned	610	2	2	100	B	11	3.6	40	D
Washington/Embarcadero corner	Platooned	1846	3	3	100	B	19	4.4	61	C
Washington east side from Embarcadero to 2nd (south)	Platooned	1819	4	9	100	B	33	5.3	90	C
Washington west side from Embarcadero to 2nd (south)	Platooned	1412	4	7	100	B	51	3.7	43	C
Washington west side from Embarcadero to 2nd (middle	Platooned	1411	4	6	100	B	43	4.0	51	C
Washington west side from Embarcadero to 2nd (north)	Platooned	1413	4	6	100	B	40	4.2	54	C
Washington/2nd Southwest corner	Platooned	2068	3	6	100	B	27	4.5	63	C
Washington/2nd Northwest corner	Platooned	1401	3	2	100	B	16	4.3	57	C
Washington west side from 2nd to 3rd (south)	Platooned	1206	4	6	100	B	33	2.6	21	E
Washington west side from 2nd to 3rd (middle)	Platooned	1200	4	5	100	B	31	2.7	23	E
Washington west side from 2nd to 3rd (north)	Platooned	1200	4	5	100	B	27	2.9	26	D
Washington/3rd Southwest corner	Platooned	1503	2	7	67	C	24	2.8	24	D
Washington/3rd Northeast corner	Platooned	2012	4	4	100	B	17	5.2	86	C
Washington/3rd Northwest corner	Platooned	1413	3	3	100	B	16	4.3	59	C
Washington west side from 3rd to 4th (south)	Platooned	1160	4	5	100	B	29	4.6	67	C
Washington west side from 3rd to 4th (middle)	Platooned	1158	4	5	100	B	26	4.9	74	C
Washington west side from 3rd to 4th (north)	Platooned	1158	4	5	100	B	25	4.9	75	C
Washington/4th Southwest corner	Platooned	1209	1	8	100	B	32	4.7	70	C
Washington/4th Northwest corner	Platooned	1157	3	3	100	B	28	3.4	37	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Pedestrian Peak Interval Operations Summary **4-5 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Washington west side from 4th to 5th (south)	Platooned	1107	3	5	100	B	36	4.3	58	C
Washington/5th Southeast corner	Platooned	1998	1	19	34	D	58	2.4	18	E
Washington/5th Southwest corner	Platooned	1766	1	12	71	C	48	2.3	17	E
Broadway west side from Embarcadero to 2nd (south)	Platooned	1541	4	6	100	B	39	4.7	70	C
Broadway west side from Embarcadero to 2nd (middle)	Platooned	1539	4	7	100	B	39	5.2	86	C
Broadway west side from 2nd to 3rd (south)	Platooned	1819	4	8	91	B	42	3.3	34	D
Broadway west side from 2nd to 3rd (middle)	Platooned	1816	4	7	100	B	34	3.6	41	C
Broadway west side from 2nd to 3rd (north)	Platooned	1814	4	7	100	B	31	3.8	46	C
Broadway/3rd Northwest corner	Platooned	2067	4	5	100	B	29	5.1	82	C
Broadway west side from 4th to 5th (south)	Platooned	2222	4	8	100	B	33	4.1	54	C
Broadway west side from 4th to 5th (middle)	Platooned	2222	4	9	100	B	34	4.3	59	C
Broadway west side from 4th to 5th (north)	Platooned	2222	4	9	100	B	38	4.2	55	C
Broadway/5th Southwest corner	Platooned	2275	1	20	33	D	61	3.7	43	C
Broadway west side from 5th to 6th (south)	Platooned	2199	3	11	100	B	68	3.5	37	D
Broadway west side from 5th to 6th (middle)	Platooned	2203	4	12	100	B	63	3.8	46	C
Broadway west side from 5th to 6th (north)	Platooned	2227	4	9	100	B	45	3.9	47	C
3rd/Adeline Southwest corner	Platooned	971	3	1	100	B	10	2.8	25	D
3rd south side from Filbert to Market (middle4)	Platooned	835	4	4	100	B	22	5.3	89	C
3rd south side from Filbert to Market (middle5)	Platooned	842	4	5	100	B	27	5.0	79	C

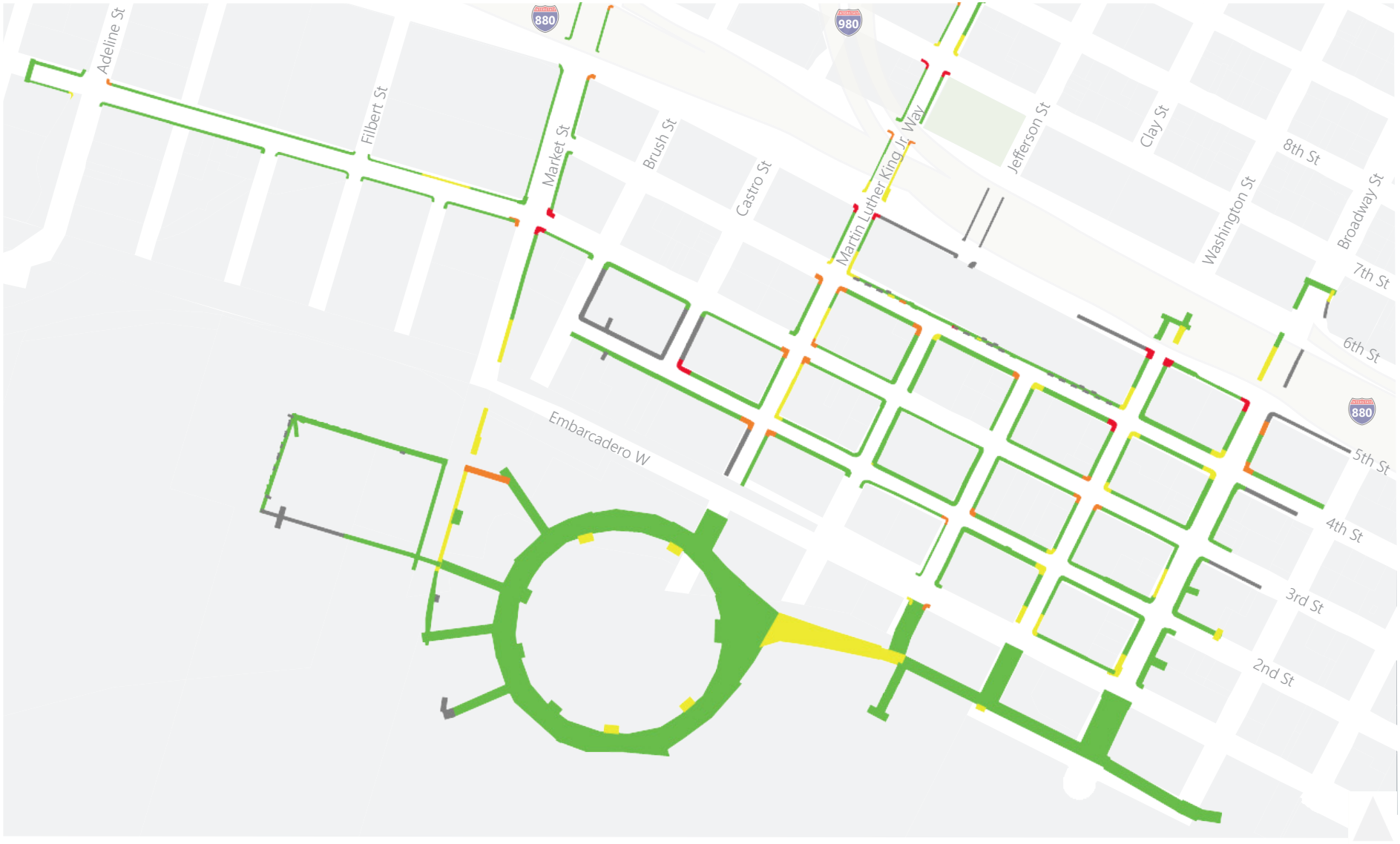
Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Pedestrian Peak Interval Operations Summary **5-6 PM**

Location	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	784	4	8	111	B	43	4.9	75	C
Market east side from Embarcadero to 3rd (middle)	Platooned	815	4	8	333	B	38	5.2	84	C
Market east side from Embarcadero to 3rd (north)	Platooned	828	4	9	100	B	37	5.3	87	C
Market/3rd Southeast corner	Platooned	1165	1	5	100	B	43	2.4	18	E
Market/6th Southwest corner	Platooned	319	2	1	500	B	15	3.4	36	D
MLK/5th Southeast corner	Platooned	365	1	2	333	B	25	2.6	21	E
MLK/6th Southeast corner	Platooned	397	2	1	111	B	17	2.0	13	E
MLK/7th Southeast corner	Platooned	395	1	3	100	B	32	1.8	11	F
Washington/3rd Southwest corner	Platooned	560	1	5	100	B	19	3.1	30	D
Washington/5th Southeast corner	Platooned	771	1	6	100	B	51	2.6	21	E
Washington/5th Southwest corner	Platooned	735	1	4	167	B	33	2.8	25	D
Broadway west side from 2nd to 3rd (south)	Platooned	932	4	4	100	B	28	4.0	50	C
Broadway west side from 2nd to 3rd (middle)	Platooned	933	4	3	100	B	25	4.2	56	C
Broadway west side from 2nd to 3rd (north)	Platooned	933	4	4	100	B	22	4.5	65	C
Broadway west side from 4th to 5th (south)	Platooned	1277	4	4	100	B	27	4.6	65	C
Broadway west side from 4th to 5th (middle)	Platooned	1280	4	5	100	B	30	4.6	66	C
Broadway west side from 4th to 5th (north)	Platooned	1285	4	5	100	B	29	4.8	71	C
Broadway/5th Southwest corner	Platooned	1306	2	10	100	B	51	4.1	52	C
Broadway west side from 5th to 6th (south)	Platooned	1349	4	7	100	B	61	3.6	42	C
Broadway west side from 5th to 6th (middle)	Platooned	1323	4	7	100	B	55	4.1	53	C
Broadway west side from 5th to 6th (north)	Platooned	1314	4	5	100	B	41	4.0	51	C
3rd/Adeline Southwest corner	Platooned	537	3	1	100	B	9	3.0	28	D



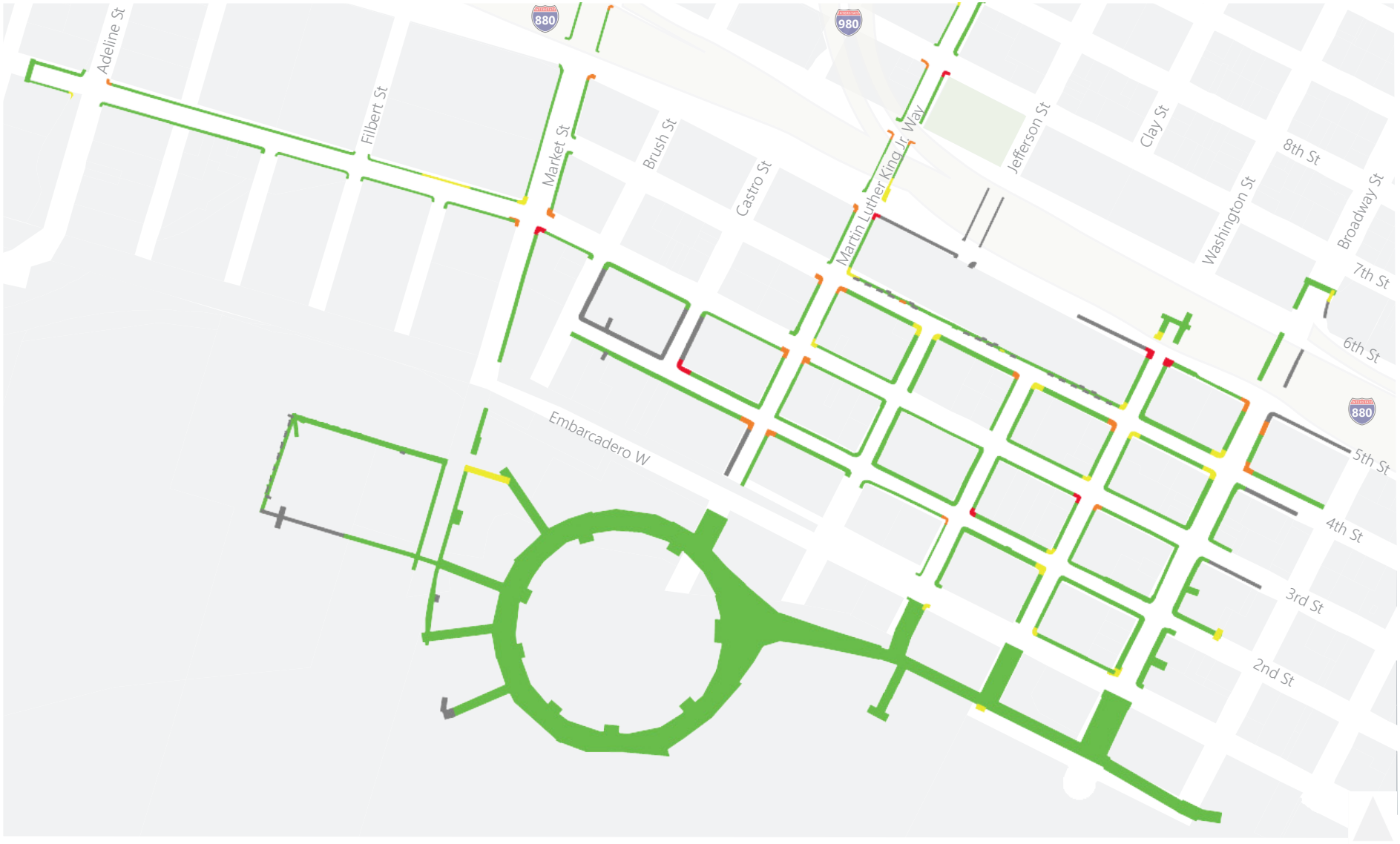
Full Build Out, Midday Ballgame - Average Pedestrian Speeds
3PM - 4PM

Figure I-1



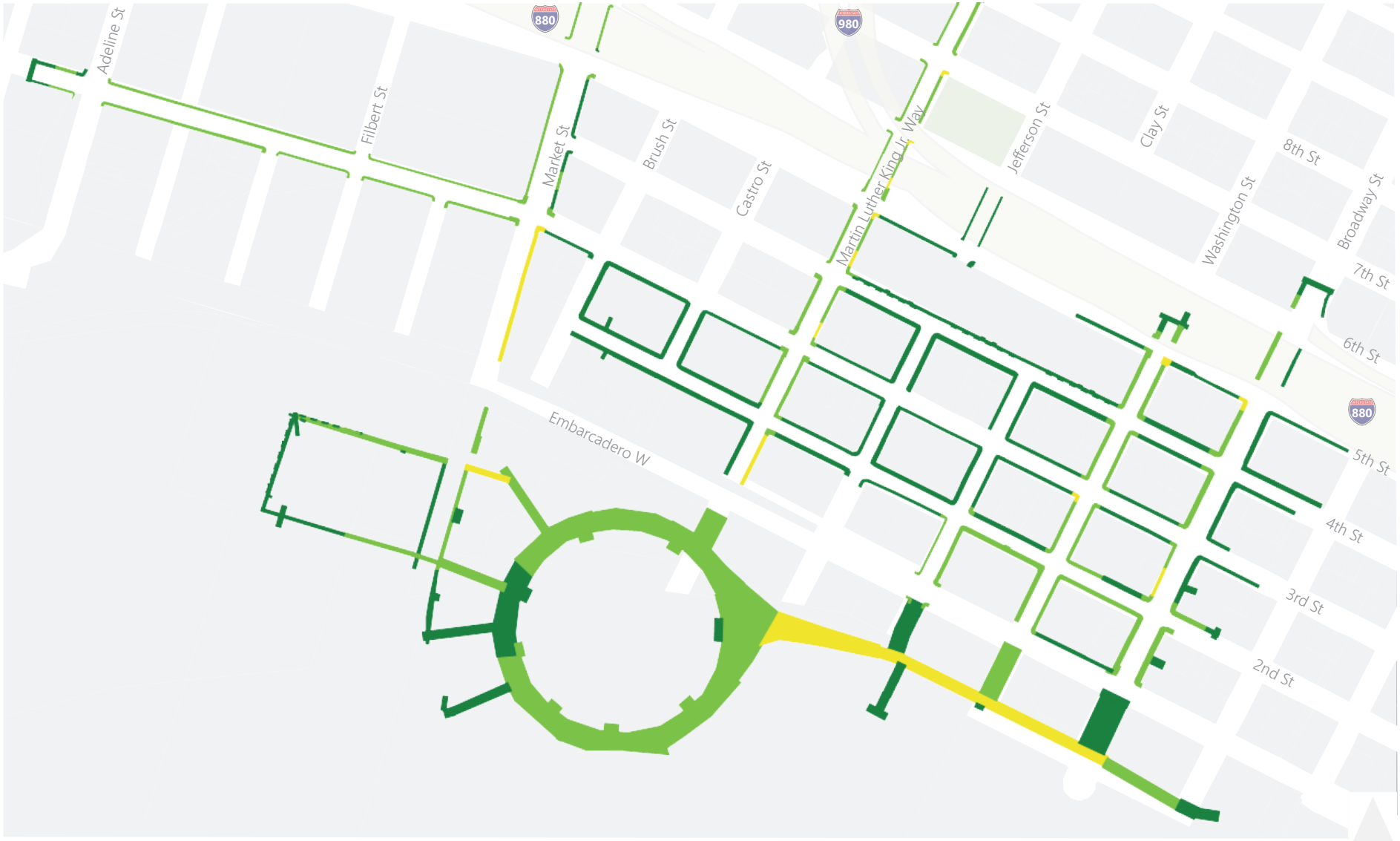
Full Build Out, Midday Ballgame - Average Pedestrian Speeds
4PM - 5PM

Figure I-2



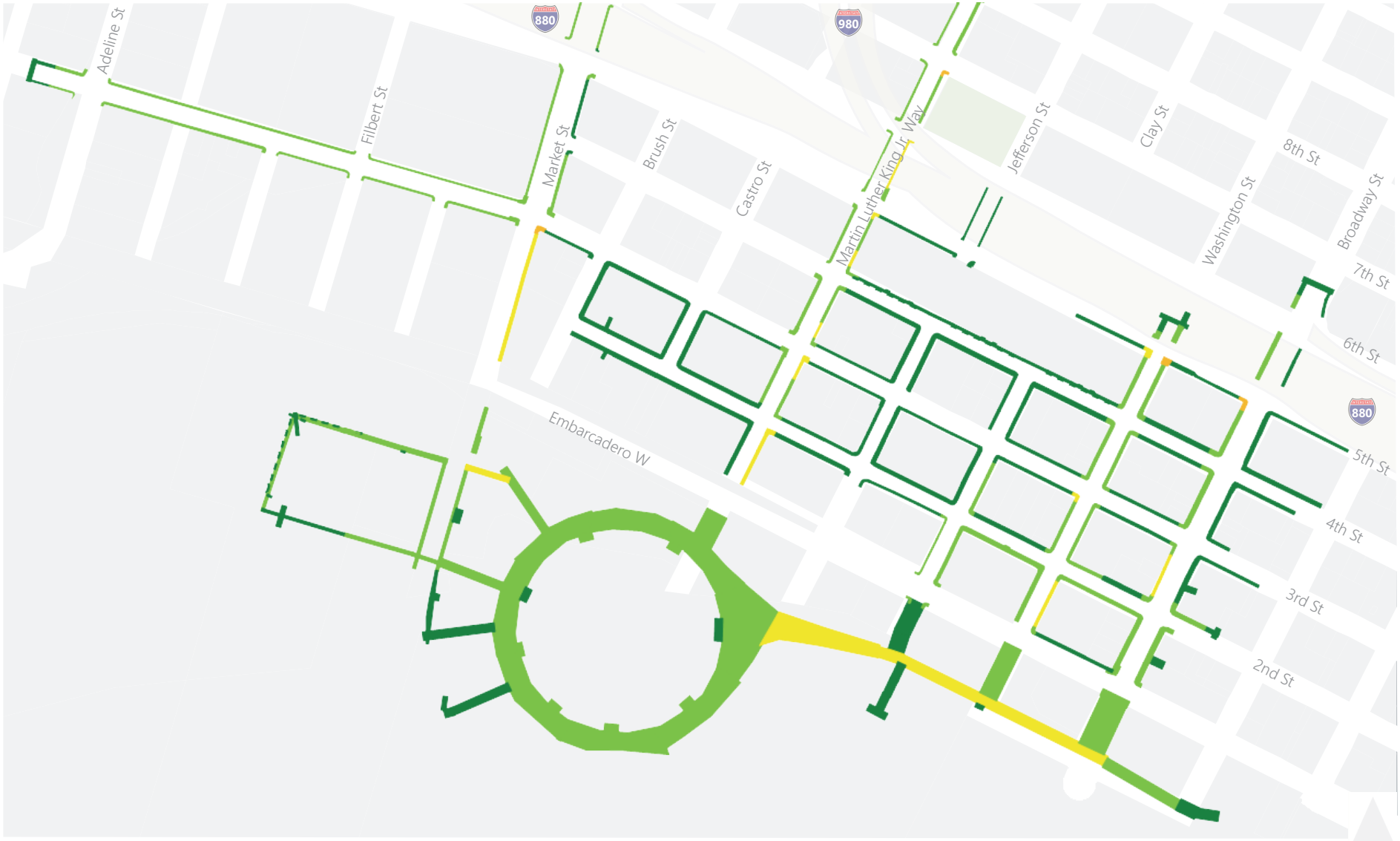
Full Build Out, Midday Ballgame - Average Pedestrian Speeds
5PM - 6PM

Figure I-3



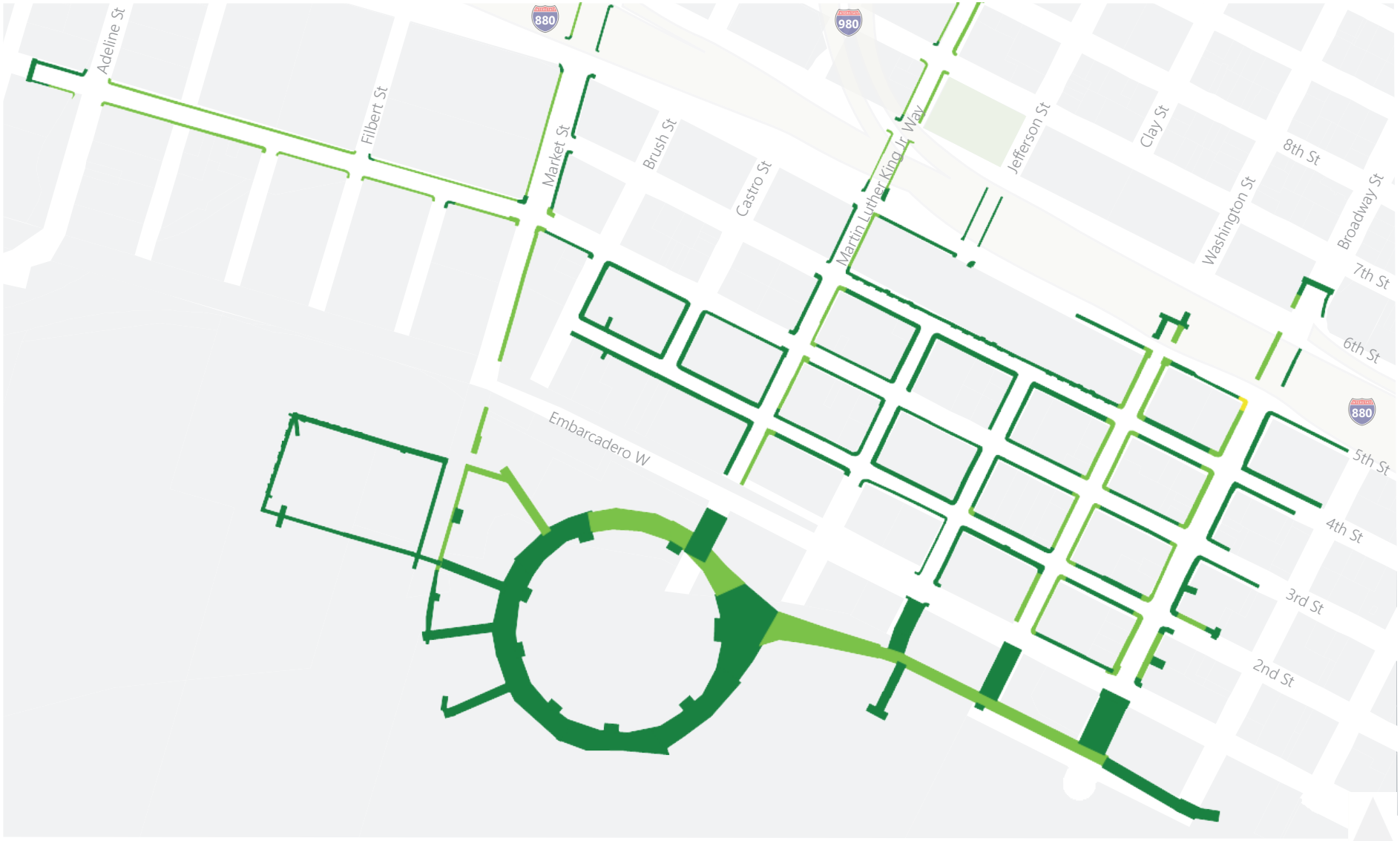
Full Build Out, Evening Ballgame - Average Pedestrian Density
3PM - 4PM

Figure I-4



Full Build Out, Evening Ballgame - Average Pedestrian Density
4PM - 5PM

Figure I-5



Full Build Out, Evening Ballgame - Average Pedestrian Density
5PM - 6PM

Figure I-6

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	39	104.1%	41.6	6.2	D
	Through	264	265	100.5%	14.1	1.3	B
	Right Turn	682	675	99.0%	6.8	0.5	A
	Subtotal	983	979	99.6%	10.1	0.6	B
SB	Left Turn						
	Through	52	49	94.4%	15.3	2.6	B
	Right Turn	14	12	85.0%	8.8	2.1	A
	Subtotal	66	61	92.4%	14.1	2.4	B
EB	Left Turn	38	39	101.6%	44.1	3.5	D
	Through	94	87	92.6%	37.2	5.2	D
	Right Turn	57	54	95.1%	1.6	0.6	A
	Subtotal	189	180	95.1%	28.0	3.3	C
WB	Left Turn	399	384	96.2%	38.8	2.7	D
	Through	75	75	100.1%	28.4	3.7	C
	Right Turn	19	20	104.7%	16.9	4.6	B
	Subtotal	493	479	97.1%	36.2	1.8	D
Total		1,731	1,698	98.1%	19.5	0.7	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	18	98.3%	29.9	5.8	C
	Through	193	186	96.5%	27.1	2.4	C
	Right Turn	53	52	98.7%	18.3	3.7	B
	Subtotal	264	256	97.1%	25.4	2.5	C
SB	Left Turn	59	57	96.3%	28.3	3.1	C
	Through	165	155	93.9%	16.1	1.8	B
	Right Turn	22	22	100.5%	4.7	1.1	A
	Subtotal	246	234	95.0%	17.9	1.6	B
EB	Left Turn	23	24	103.5%	11.1	3.2	B
	Through	66	75	114.1%	10.3	2.0	B
	Right Turn	9	8	92.2%	5.5	3.1	A
	Subtotal	98	107	109.6%	10.1	1.4	B
WB	Left Turn	42	38	89.8%	11.3	2.7	B
	Through	63	68	108.4%	11.6	2.3	B
	Right Turn	347	324	93.4%	8.5	0.6	A
	Subtotal	452	430	95.1%	9.2	0.6	A
Total		1,060	1,028	96.9%	15.3	0.9	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	321	302	94.1%	42.3	4.8	D
	Through	54	53	97.6%	35.1	3.2	D
	Right Turn	190	177	92.9%	17.4	2.0	B
	Subtotal	565	531	94.1%	33.3	3.5	C
SB	Left Turn	74	74	100.3%	37.1	2.9	D
	Through	44	40	91.8%	40.0	4.8	D
	Right Turn	13	14	106.2%	5.5	0.5	A
	Subtotal	131	128	98.0%	34.7	2.3	C
EB	Left Turn						
	Through	681	672	98.7%	19.5	1.1	B
	Right Turn	95	92	96.4%	3.5	0.4	A
	Subtotal	776	764	98.4%	17.5	0.9	B
WB	Left Turn	110	109	98.8%	88.8	13.1	F
	Through	159	163	102.5%	8.8	2.0	A
	Right Turn	34	31	91.8%	5.4	2.5	A
	Subtotal	303	303	100.0%	37.3	5.7	D
Total		1,775	1,727	97.3%	27.1	1.3	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	308	290	94.3%	78.5	22.1	E
	Through	1,312	1,267	96.5%	11.6	0.6	B
	Right Turn						
	Subtotal	1,620	1,557	96.1%	24.3	4.5	C
SB	Left Turn						
	Through	366	354	96.7%	9.8	1.4	A
	Right Turn	51	48	94.1%	6.7	1.5	A
	Subtotal	417	402	96.4%	9.4	1.2	A
EB	Left Turn						
	Through	216	219	101.3%	49.3	14.6	D
	Right Turn	36	38	104.7%	41.5	14.4	D
	Subtotal	252	256	101.7%	48.1	14.3	D
WB	Left Turn						
	Through	117	116	99.2%	24.7	1.6	C
	Right Turn						
	Subtotal	117	116	99.2%	24.7	1.6	C
Total		2,406	2,331	96.9%	24.4	3.3	C

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,300	1,249	96.1%	2.1	0.6	A
	Right Turn	12	15	128.3%	1.8	0.9	A
	Subtotal	1,312	1,265	96.4%	2.1	0.6	A
SB	Left Turn						
	Through	390	378	96.8%	1.8	0.5	A
	Right Turn						
	Subtotal	390	378	96.8%	1.8	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	27	24	89.6%	24.4	5.7	C
	Through						
	Right Turn	46	44	96.5%	21.0	4.5	C
	Subtotal	73	69	94.0%	22.2	4.4	C
Total		1,775	1,711	96.4%	2.8	0.6	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	895	861	96.2%	9.2	1.3	A
	Right Turn	451	428	94.9%	8.6	1.3	A
	Subtotal	1,346	1,289	95.7%	9.0	1.2	A
SB	Left Turn	85	80	94.6%	49.6	2.6	D
	Through	348	338	97.2%	3.2	0.4	A
	Right Turn						
	Subtotal	433	419	96.7%	12.1	1.0	B
EB	Left Turn	22	23	105.5%	38.4	2.0	D
	Through	654	640	97.9%	34.1	2.1	C
	Right Turn	42	40	94.0%	22.7	4.0	C
	Subtotal	718	703	97.9%	33.6	2.1	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,497	2,410	96.5%	16.7	0.7	B

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	60	60	99.5%	7.6	1.0	A
	Through	857	817	95.3%	10.5	1.6	B
	Right Turn						
	Subtotal	917	877	95.6%	10.3	1.5	B
SB	Left Turn						
	Through	337	328	97.3%	24.9	2.5	C
	Right Turn	21	20	93.3%	8.7	2.1	A
	Subtotal	358	348	97.1%	24.0	2.4	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	96	91	94.4%	39.5	2.3	D
	Through	222	223	100.3%	36.3	1.5	D
	Right Turn	226	222	98.2%	22.4	6.0	C
	Subtotal	544	535	98.4%	31.1	2.7	C
Total		1,819	1,759	96.7%	19.3	1.3	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	87	92	105.3%	17.5	1.6	B
	Through	617	580	94.0%	11.8	0.8	B
	Right Turn	379	361	95.2%	8.6	1.1	A
	Subtotal	1,083	1,033	95.3%	11.2	0.9	B
SB	Left Turn	59	60	101.7%	41.6	5.1	D
	Through	129	114	88.0%	14.8	1.8	B
	Right Turn	35	32	92.0%	3.8	0.8	A
	Subtotal	223	206	92.2%	21.0	2.4	C
EB	Left Turn	78	79	101.4%	46.5	4.1	D
	Through	634	636	100.3%	30.3	1.2	C
	Right Turn	45	57	126.4%	25.6	3.8	C
	Subtotal	757	772	102.0%	31.6	1.5	C
WB	Left Turn	184	179	97.2%	50.7	8.9	D
	Through	339	322	95.0%	21.9	1.8	C
	Right Turn	23	24	104.3%	10.8	3.9	B
	Subtotal	546	525	96.2%	31.2	2.7	C
Total		2,609	2,535	97.2%	22.3	0.9	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn	33	33	100.3%	5.1	1.6	A
	Subtotal	33	33	100.3%	5.1	1.6	A
SB	Left Turn	567	539	95.0%	53.6	4.7	D
	Through	122	127	103.8%	39.5	1.4	D
	Right Turn						
	Subtotal	689	665	96.5%	50.9	3.8	D
EB	Left Turn						
	Through	1,140	1,094	95.9%	6.2	1.4	A
	Right Turn	50	50	99.6%	3.7	0.8	A
	Subtotal	1,190	1,143	96.1%	6.1	1.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,912	1,842	96.3%	22.3	1.9	C

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	666	685	102.9%	10.3	4.8	B
	Right Turn	10	12	115.0%	2.1	1.5	A
	Subtotal	676	697	103.0%	10.2	4.7	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	23	19	81.3%	41.6	27.4	D
	Through	35	34	96.6%	17.1	2.0	B
	Right Turn						
	Subtotal	58	53	90.5%	26.4	10.9	C
Total		734	749	102.1%	11.3	4.7	B

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	347	345	99.5%	24.1	1.3	C
	Through	585	597	102.1%	20.2	0.9	C
	Right Turn	315	315	100.1%	13.5	1.2	B
	Subtotal	1,247	1,258	100.9%	19.6	0.6	B
EB	Left Turn						
	Through	1,021	993	97.3%	10.1	1.4	B
	Right Turn	51	54	106.1%	8.6	2.5	A
	Subtotal	1,072	1,047	97.7%	10.0	1.5	B
WB	Left Turn	40	55	138.5%	39.7	3.3	D
	Through	231	209	90.5%	15.6	0.9	B
	Right Turn						
	Subtotal	271	265	97.6%	20.7	0.9	C
Total		2,590	2,570	99.2%	15.8	0.6	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	257	256	99.4%	24.5	1.6	C
	Right Turn	134	121	90.6%	20.6	2.6	C
	Subtotal	391	377	96.4%	23.3	1.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	250	237	95.0%	24.4	3.3	C
	Through	1,468	1,397	95.2%	21.6	2.8	C
	Right Turn	22	19	84.5%	16.5	5.2	B
	Subtotal	1,740	1,653	95.0%	22.0	2.8	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,131	2,030	95.3%	22.2	2.5	C

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	59	48	81.9%	26.7	2.7	C
	Through	568	540	95.1%	22.0	1.0	C
	Right Turn	26	30	113.5%	27.0	4.6	C
	Subtotal	653	618	94.6%	22.6	1.0	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	505	486	96.3%	19.9	0.8	B
	Through	863	856	99.1%	15.9	2.8	B
	Right Turn						
	Subtotal	1,368	1,342	98.1%	17.3	1.8	B
WB	Left Turn						
	Through	212	222	104.5%	20.2	0.9	C
	Right Turn	7	6	91.4%	10.3	2.4	B
	Subtotal	219	228	104.1%	19.9	0.8	B
Total		2,240	2,188	97.7%	19.1	1.0	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	593	523	88.1%	2.8	1.4	A
	Right Turn						
	Subtotal	593	523	88.1%	2.8	1.4	A
SB	Left Turn						
	Through	658	596	90.6%	5.9	0.2	A
	Right Turn						
	Subtotal	658	596	90.6%	5.9	0.2	A
EB	Left Turn						
	Through	33	31	93.9%	38.1	4.1	D
	Right Turn						
	Subtotal	33	31	93.9%	38.1	4.1	D
WB	Left Turn						
	Through	39	40	103.6%	34.4	6.4	C
	Right Turn	25	22	89.6%	21.5	6.4	C
	Subtotal	64	63	98.1%	30.1	5.0	C
Total		1,348	1,213	90.0%	6.6	0.9	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	618	543	87.8%	7.0	2.3	A
	Right Turn						
	Subtotal	618	543	87.8%	7.0	2.3	A
SB	Left Turn						
	Through	658	598	90.9%	1.7	0.1	A
	Right Turn						
	Subtotal	658	598	90.9%	1.7	0.1	A
EB	Left Turn						
	Through	110	107	97.6%	12.9	1.4	B
	Right Turn						
	Subtotal	110	107	97.6%	12.9	1.4	B
WB	Left Turn						
	Through	106	96	90.3%	26.4	4.0	C
	Right Turn	33	31	95.2%	22.2	10.8	C
	Subtotal	139	127	91.4%	25.3	5.3	C
Total		1,525	1,375	90.2%	6.8	1.2	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	651	572	87.8%	16.5	2.8	B
	Right Turn						
	Subtotal	651	572	87.8%	16.5	2.8	B
SB	Left Turn						
	Through	658	601	91.3%	8.7	0.4	A
	Right Turn						
	Subtotal	658	601	91.3%	8.7	0.4	A
EB	Left Turn						
	Through	37	34	91.9%	33.1	2.8	C
	Right Turn						
	Subtotal	37	34	91.9%	33.1	2.8	C
WB	Left Turn						
	Through	210	186	88.5%	25.7	1.6	C
	Right Turn						
	Subtotal	210	186	88.5%	25.7	1.6	C
Total		1,556	1,392	89.5%	14.7	1.2	B

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	472	398	84.4%	22.2	1.3	C
	Right Turn	179	171	95.3%	13.2	1.5	B
	Subtotal	651	569	87.4%	19.5	0.7	B
SB	Left Turn	36	36	99.4%	43.6	6.5	D
	Through	543	494	91.0%	14.5	1.5	B
	Right Turn						
	Subtotal	579	530	91.6%	16.4	1.6	B
EB	Left Turn	56	55	98.6%	31.7	2.8	C
	Through	1,431	1,351	94.4%	30.1	1.6	C
	Right Turn	115	111	96.1%	31.1	2.8	C
	Subtotal	1,602	1,517	94.7%	30.3	1.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,832	2,615	92.4%	25.1	1.1	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	6	76.3%	11.2	3.0	B
	Through						
	Right Turn	6	3	48.3%	8.3	1.7	A
	Subtotal	14	9	64.3%	10.4	2.3	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	27	88.4%	18.8	1.0	B
	Right Turn	6	7	110.0%	7.5	3.2	A
	Subtotal	37	34	91.9%	16.6	1.3	B
WB	Left Turn	7	7	92.9%	9.0	1.7	A
	Through	202	167	82.8%	9.2	1.0	A
	Right Turn						
	Subtotal	209	174	83.1%	9.3	0.9	A
Total		260	217	83.3%	10.5	0.8	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn Through Right Turn	516	519	100.5%	26.8	1.4	C
	Subtotal	516	519	100.5%	26.8	1.4	C
SB	Left Turn Through Right Turn	312	319	102.3%	7.9	1.0	A
	Subtotal	312	319	102.3%	7.9	1.0	A
EB	Left Turn Through Right Turn	567	500	88.2%	18.4	1.1	B
	Subtotal	567	500	88.2%	18.4	1.1	B
WB	Left Turn Through Right Turn	625	578	92.5%	9.6	1.0	A
	Subtotal	625	578	92.5%	9.6	1.0	A
Total		2,020	1,916	94.9%	16.3	0.7	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	100.0%	9.5	2.5	A
	Through						
	Right Turn	9	9	98.9%	7.3	3.5	A
	Subtotal	23	23	99.6%	8.8	2.5	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	25	81.0%	16.1	1.0	B
	Right Turn	6	5	85.0%	17.4	3.4	B
	Subtotal	37	30	81.6%	16.2	0.9	B
WB	Left Turn	13	13	96.9%	11.6	2.0	B
	Through	195	159	81.7%	14.4	1.4	B
	Right Turn						
	Subtotal	208	172	82.6%	14.2	1.3	B
Total		268	225	84.0%	13.9	1.1	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	8	93.3%	12.1	5.0	B
	Through	90	87	96.3%	5.7	1.1	A
	Right Turn	12	11	90.8%	9.4	3.6	A
	Subtotal	111	106	95.5%	6.6	1.3	A
SB	Left Turn	15	11	74.0%	23.9	6.1	C
	Through	111	102	91.5%	9.8	2.2	A
	Right Turn	150	129	85.9%	13.9	2.9	B
	Subtotal	276	242	87.5%	12.6	2.8	B
EB	Left Turn	15	14	94.0%	24.0	3.4	C
	Through	22	17	78.2%	24.8	4.8	C
	Right Turn	3	3	86.7%	6.8	7.5	A
	Subtotal	40	34	84.8%	23.1	2.4	C
WB	Left Turn	16	19	117.5%	4.2	1.7	A
	Through	49	42	86.5%	5.8	1.0	A
	Right Turn	23	24	105.7%	14.8	2.6	B
	Subtotal	88	86	97.2%	8.1	1.6	A
Total		515	467	90.7%	11.2	1.5	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	194	192	99.0%	43.0	2.4	D
	Right Turn	275	270	98.2%	39.1	3.1	D
	Subtotal	469	462	98.5%	40.7	2.7	D
SB	Left Turn	480	480	100.1%	40.9	1.3	D
	Through	236	230	97.6%	25.0	2.0	C
	Right Turn						
	Subtotal	716	711	99.3%	35.8	1.1	D
EB	Left Turn	797	783	98.2%	33.6	2.7	C
	Through	690	616	89.3%	23.1	1.2	C
	Right Turn	47	49	103.6%	19.7	2.5	B
	Subtotal	1,534	1,448	94.4%	28.7	1.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,719	2,621	96.4%	32.7	1.2	C

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	39	99.2%	30.6	3.0	C
	Through	166	165	99.3%	17.5	2.1	B
	Right Turn						
	Subtotal	205	204	99.3%	20.0	2.0	C
SB	Left Turn						
	Through	555	550	99.1%	16.4	2.9	B
	Right Turn	22	21	95.5%	30.2	6.5	C
	Subtotal	577	571	99.0%	16.9	3.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	162	162	100.2%	47.3	2.4	D
	Through	145	140	96.3%	36.9	1.7	D
	Right Turn	517	513	99.3%	4.5	0.4	A
	Subtotal	824	815	98.9%	18.5	0.8	B
Total		1,606	1,590	99.0%	18.1	1.0	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	516	516	99.9%	11.0	2.1	B
	Right Turn						
	Subtotal	516	516	99.9%	11.0	2.1	B
SB	Left Turn						
	Through	312	319	102.3%	15.0	2.1	B
	Right Turn	90	70	77.7%	18.8	3.2	B
	Subtotal	402	389	96.8%	15.7	2.3	B
EB	Left Turn	1,104	1,055	95.6%	20.7	3.1	C
	Through						
	Right Turn						
	Subtotal	1,104	1,055	95.6%	20.7	3.1	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,022	1,960	96.9%	17.2	2.2	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	658	596	90.5%	6.0	0.4	A
	Subtotal	658	596	90.5%	6.0	0.4	A
EB	Left Turn	593	524	88.3%	6.0	1.2	A
	Through						
	Right Turn						
	Subtotal	593	524	88.3%	6.0	1.2	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,251	1,119	89.5%	6.0	0.6	A

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	72	61	84.4%	44.0	2.9	D
	Through	456	392	85.9%	1.6	0.4	A
	Right Turn						
	Subtotal	528	453	85.7%	7.3	0.5	A
SB	Left Turn						
	Through	512	468	91.5%	4.9	0.7	A
	Right Turn	12	11	87.5%	3.6	2.5	A
	Subtotal	524	479	91.4%	4.9	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	67	64	96.0%	43.9	2.9	D
	Through	120	115	95.8%	37.6	1.9	D
	Right Turn	19	21	107.9%	23.7	4.1	C
	Subtotal	206	200	97.0%	38.2	1.0	D
Total		1,258	1,131	89.9%	11.7	0.4	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	424	364	85.8%	6.7	0.6	A
	Right Turn	51	48	93.7%	6.7	1.4	A
	Subtotal	475	411	86.6%	6.7	0.5	A
SB	Left Turn	55	56	102.4%	45.4	5.9	D
	Through	468	423	90.5%	6.1	0.7	A
	Right Turn						
	Subtotal	523	480	91.7%	10.7	1.0	B
EB	Left Turn	13	21	161.5%	27.6	7.5	C
	Through	820	807	98.4%	25.8	1.8	C
	Right Turn	56	58	102.7%	21.0	4.7	C
	Subtotal	889	885	99.6%	25.5	1.9	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,887	1,777	94.1%	17.2	0.8	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	38	96.9%	9.2	1.7	A
	Through	398	344	86.5%	2.1	0.3	A
	Right Turn						
	Subtotal	437	382	87.4%	2.8	0.3	A
SB	Left Turn						
	Through	491	446	90.9%	4.5	0.4	A
	Right Turn	48	59	121.9%	6.6	1.7	A
	Subtotal	539	505	93.7%	4.7	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	207	203	98.0%	35.0	1.4	D
	Through	230	228	99.0%	35.4	1.6	D
	Right Turn	25	26	103.6%	27.4	5.0	C
	Subtotal	462	457	98.8%	34.8	1.2	C
Total		1,438	1,343	93.4%	14.4	0.4	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,475	1,409	95.5%	5.6	4.4	A
	Right Turn	20	19	93.0%	3.0	1.3	A
	Subtotal	1,495	1,427	95.5%	5.6	4.4	A
NE	Left Turn	64	63	97.7%	44.1	3.0	D
	Through						
	Right Turn	37	35	94.1%	40.9	4.5	D
	Subtotal	101	97	96.3%	43.0	2.8	D
EB	Left Turn	168	159	94.5%	27.8	4.5	C
	Through	444	436	98.2%	28.2	1.3	C
	Right Turn						
	Subtotal	612	595	97.1%	28.1	1.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,208	2,119	96.0%	13.6	3.3	B

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,440	1,354	94.0%	11.0	4.7	B
	Through	267	264	98.8%	8.7	4.4	A
	Right Turn						
	Subtotal	1,707	1,617	94.8%	10.6	4.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	407	350	85.9%	34.7	2.3	C
	Right Turn	682	646	94.7%	38.3	3.6	D
	Subtotal	1,089	996	91.4%	37.0	3.0	D
Total		2,796	2,613	93.5%	20.7	3.7	C

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,194	1,197	100.3%	1.4	0.4	A
	Through						
	Right Turn	35	32	91.1%	2.0	0.6	A
	Subtotal	1,229	1,229	100.0%	1.4	0.4	A
SB	Left Turn						
	Through	386	389	100.7%	0.4	0.1	A
	Right Turn	26	28	106.2%	4.8	0.3	A
	Subtotal	412	416	101.1%	0.7	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	269	259	96.1%	19.5	0.9	B
	Through	181	136	74.9%	52.4	1.7	D
	Right Turn						
	Subtotal	450	394	87.6%	30.8	0.5	C
Total		2,091	2,040	97.6%	7.0	0.3	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	675	666	98.7%	5.9	0.5	A
	Through	1,147	1,148	100.1%	6.3	0.5	A
	Right Turn	27	25	90.7%	5.5	0.9	A
	Subtotal	1,849	1,839	99.4%	6.1	0.4	A
EB	Left Turn						
	Through	298	289	96.8%	39.0	2.0	D
	Right Turn	184	168	91.5%	35.8	2.9	D
	Subtotal	482	457	94.8%	37.8	1.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,331	2,296	98.5%	12.4	0.7	B

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	70	70	99.7%	16.6	2.2	B
	Right Turn	58	56	95.9%	11.9	2.5	B
	Subtotal	128	125	98.0%	14.5	1.6	B
SB	Left Turn	30	35	116.0%	31.0	5.1	C
	Through	63	54	85.7%	23.2	3.3	C
	Right Turn						
	Subtotal	93	89	95.5%	26.3	3.2	C
EB	Left Turn	16	16	100.0%	23.7	5.1	C
	Through	1,446	1,356	93.8%	23.9	2.0	C
	Right Turn	213	196	92.0%	24.1	2.6	C
	Subtotal	1,675	1,568	93.6%	23.9	1.9	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,896	1,782	94.0%	23.4	1.8	C

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	49	86.6%	42.6	4.3	D
	Through	546	537	98.3%	18.2	0.9	B
	Right Turn	798	806	101.0%	10.0	1.3	A
	Subtotal	1,400	1,391	99.4%	14.3	0.8	B
SB	Left Turn						
	Through	57	52	91.9%	16.5	2.8	B
	Right Turn	20	20	101.5%	9.7	2.0	A
	Subtotal	77	73	94.4%	14.5	2.2	B
EB	Left Turn	49	48	98.4%	43.9	3.0	D
	Through	102	99	97.4%	42.6	3.6	D
	Right Turn	81	75	93.0%	1.9	0.6	A
	Subtotal	232	223	96.0%	29.2	2.8	C
WB	Left Turn	454	423	93.2%	40.0	3.9	D
	Through	95	93	97.5%	32.4	3.9	C
	Right Turn	21	21	98.6%	15.9	4.4	B
	Subtotal	570	536	94.1%	37.8	3.5	D
Total		2,279	2,223	97.5%	21.5	1.3	C

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	31	30	96.5%	39.0	2.8	D
	Through	323	313	96.8%	49.2	10.2	D
	Right Turn	82	80	97.6%	45.8	13.8	D
	Subtotal	436	423	96.9%	47.8	10.0	D
SB	Left Turn	76	77	100.8%	35.3	2.5	D
	Through	177	168	94.9%	19.7	2.6	B
	Right Turn	17	17	98.2%	6.2	2.0	A
	Subtotal	270	261	96.8%	23.4	2.0	C
EB	Left Turn	27	26	94.4%	17.0	4.1	B
	Through	103	112	108.7%	16.1	1.7	B
	Right Turn	13	13	100.8%	8.8	4.4	A
	Subtotal	143	151	105.3%	15.6	1.6	B
WB	Left Turn	68	57	84.4%	20.8	3.1	C
	Through	77	77	99.5%	20.3	3.7	C
	Right Turn	372	352	94.7%	12.5	2.5	B
	Subtotal	517	486	94.0%	14.7	2.2	B
Total		1,366	1,321	96.7%	27.1	3.3	C

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	339	318	93.8%	52.0	3.7	D
	Through	78	82	104.7%	40.1	5.4	D
	Right Turn	295	277	93.9%	27.4	2.8	C
	Subtotal	712	677	95.1%	40.5	2.6	D
SB	Left Turn	89	88	99.1%	47.0	3.4	D
	Through	50	46	91.4%	42.7	5.2	D
	Right Turn	13	13	102.3%	5.9	1.6	A
	Subtotal	152	147	96.8%	41.9	2.6	D
EB	Left Turn						
	Through	781	780	99.8%	25.9	2.0	C
	Right Turn	119	119	100.3%	4.0	0.5	A
	Subtotal	900	899	99.9%	23.0	1.9	C
WB	Left Turn	109	104	95.8%	81.6	16.8	F
	Through	218	207	94.9%	11.3	1.5	B
	Right Turn	40	35	86.3%	8.0	2.7	A
	Subtotal	367	346	94.2%	32.3	5.9	C
Total		2,131	2,069	97.1%	31.6	1.3	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	311	291	93.6%	76.4	19.4	E
	Through	1,485	1,381	93.0%	37.8	5.2	D
	Right Turn						
	Subtotal	1,796	1,672	93.1%	44.7	3.6	D
SB	Left Turn						
	Through	446	434	97.2%	12.4	5.0	B
	Right Turn	54	47	87.6%	6.4	1.6	A
	Subtotal	500	481	96.2%	11.8	4.4	B
EB	Left Turn						
	Through	312	302	96.9%	98.8	45.9	F
	Right Turn	36	34	94.2%	70.3	26.3	E
	Subtotal	348	336	96.6%	95.8	43.3	F
WB	Left Turn						
	Through	180	171	95.2%	27.0	1.7	C
	Right Turn						
	Subtotal	180	171	95.2%	27.0	1.7	C
Total		2,824	2,660	94.2%	44.0	5.3	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,472	1,361	92.4%	11.6	1.6	B
	Right Turn	13	14	110.0%	9.5	3.3	A
	Subtotal	1,485	1,375	92.6%	11.6	1.6	B
SB	Left Turn						
	Through	487	469	96.4%	3.2	2.4	A
	Right Turn						
	Subtotal	487	469	96.4%	3.2	2.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	13	13	101.5%	43.7	21.5	E
	Through						
	Right Turn	49	48	97.1%	43.5	15.0	E
	Subtotal	62	61	98.1%	43.0	14.0	E
Total		2,034	1,905	93.7%	10.5	1.9	B

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,085	1,001	92.3%	31.2	3.0	C
	Right Turn	436	404	92.6%	19.0	1.9	B
	Subtotal	1,521	1,405	92.4%	27.7	2.6	C
SB	Left Turn	123	122	99.2%	54.6	5.5	D
	Through	435	419	96.3%	4.8	1.3	A
	Right Turn						
	Subtotal	558	541	96.9%	16.1	1.8	B
EB	Left Turn	76	75	98.4%	47.3	5.5	D
	Through	812	794	97.7%	42.8	6.5	D
	Right Turn	52	51	97.5%	35.3	6.9	D
	Subtotal	940	919	97.8%	42.8	6.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,019	2,865	94.9%	30.4	2.8	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	119	114	95.5%	9.4	1.3	A
	Through	1,042	960	92.1%	19.5	2.4	B
	Right Turn						
	Subtotal	1,161	1,073	92.4%	18.4	2.1	B
SB	Left Turn						
	Through	427	415	97.2%	23.5	2.0	C
	Right Turn	15	16	103.3%	7.3	3.3	A
	Subtotal	442	431	97.4%	23.0	2.1	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	131	128	97.8%	42.3	5.5	D
	Through	233	217	93.1%	35.3	1.5	D
	Right Turn	213	219	102.7%	52.2	18.7	D
	Subtotal	577	564	97.7%	43.7	7.5	D
Total		2,180	2,067	94.8%	26.3	2.8	C

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	96	105	109.5%	19.6	1.8	B
	Through	727	675	92.8%	13.3	1.0	B
	Right Turn	432	398	92.1%	14.4	1.5	B
	Subtotal	1,255	1,178	93.9%	14.3	0.8	B
SB	Left Turn	65	66	100.9%	56.4	8.3	E
	Through	176	158	89.8%	19.8	3.7	B
	Right Turn	45	42	94.2%	4.0	0.5	A
	Subtotal	286	266	93.0%	26.4	2.3	C
EB	Left Turn	91	92	100.9%	58.2	8.0	E
	Through	1,058	1,037	98.0%	40.2	5.3	D
	Right Turn	36	50	138.1%	35.9	7.4	D
	Subtotal	1,185	1,179	99.5%	41.4	5.2	D
WB	Left Turn	230	223	96.8%	62.8	12.4	E
	Through	356	351	98.6%	22.9	2.4	C
	Right Turn	37	38	101.9%	14.5	3.2	B
	Subtotal	623	611	98.1%	36.9	4.3	D
Total		3,349	3,234	96.6%	29.4	2.5	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	62	61	98.2%	3.9	0.6	A
	Subtotal	62	61	98.2%	3.9	0.6	A
SB	Left Turn	613	682	111.2%	39.4	1.5	D
	Through	146	151	103.2%	39.6	1.9	D
	Right Turn						
	Subtotal	759	833	109.7%	39.5	1.3	D
EB	Left Turn						
	Through	1,268	1,223	96.4%	9.6	1.5	A
	Right Turn	103	98	94.7%	8.2	2.2	A
	Subtotal	1,371	1,320	96.3%	9.5	1.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,192	2,213	101.0%	20.6	1.2	C

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	724	732	101.1%	5.4	4.3	A
	Right Turn	7	7	104.3%	1.3	1.6	A
	Subtotal	731	739	101.1%	5.4	4.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	35	31	87.1%	50.2	10.7	D
	Through	34	32	94.4%	37.6	3.4	D
	Right Turn						
	Subtotal	69	63	90.7%	44.2	5.3	D
Total		800	802	100.2%	8.4	4.3	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	421	422	100.2%	21.4	0.8	C
	Through	600	598	99.7%	16.8	0.9	B
	Right Turn	354	350	98.9%	12.5	0.9	B
	Subtotal	1,375	1,370	99.7%	17.1	0.6	B
EB	Left Turn						
	Through	1,478	1,421	96.1%	20.3	2.2	C
	Right Turn	77	71	91.8%	16.9	3.1	B
	Subtotal	1,555	1,492	95.9%	20.2	2.2	C
WB	Left Turn	54	62	114.4%	69.7	8.0	E
	Through	269	264	98.1%	17.5	0.9	B
	Right Turn						
	Subtotal	323	326	100.8%	27.5	1.8	C
Total		3,253	3,188	98.0%	19.6	0.9	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	291	308	105.9%	32.1	1.8	C
	Right Turn	160	130	81.3%	28.8	2.6	C
	Subtotal	451	438	97.2%	31.1	1.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	206	197	95.7%	14.6	1.1	B
	Through	1,715	1,740	101.5%	13.6	1.4	B
	Right Turn	22	23	102.7%	10.2	4.3	B
	Subtotal	1,943	1,960	100.9%	13.6	1.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,394	2,398	100.2%	16.8	1.3	B

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	71	64	90.4%	18.3	1.7	B
	Through	572	575	100.5%	19.3	1.0	B
	Right Turn	34	44	127.9%	19.9	5.2	B
	Subtotal	677	682	100.8%	19.2	1.1	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	611	584	95.5%	23.0	1.1	C
	Through	1,288	1,252	97.2%	17.9	2.5	B
	Right Turn						
	Subtotal	1,899	1,835	96.6%	19.5	1.7	B
WB	Left Turn						
	Through	252	263	104.5%	20.8	1.0	C
	Right Turn	6	7	108.3%	10.7	2.9	B
	Subtotal	258	270	104.6%	20.5	1.0	C
Total		2,834	2,787	98.4%	19.5	1.2	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	739	604	81.7%	22.2	2.2	C
	Right Turn						
	Subtotal	739	604	81.7%	22.2	2.2	C
SB	Left Turn						
	Through	778	722	92.9%	9.6	0.6	A
	Right Turn						
	Subtotal	778	722	92.9%	9.6	0.6	A
EB	Left Turn						
	Through	27	26	96.7%	32.3	4.1	C
	Right Turn						
	Subtotal	27	26	96.7%	32.3	4.1	C
WB	Left Turn						
	Through	34	32	92.6%	31.0	3.5	C
	Right Turn	28	27	97.9%	26.7	5.3	C
	Subtotal	62	59	95.0%	29.1	3.6	C
Total		1,606	1,411	87.9%	16.2	0.9	B

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	767	631	82.3%	20.4	1.6	C
	Right Turn						
	Subtotal	767	631	82.3%	20.4	1.6	C
SB	Left Turn						
	Through	778	722	92.9%	4.1	0.8	A
	Right Turn						
	Subtotal	778	722	92.9%	4.1	0.8	A
EB	Left Turn						
	Through	194	182	93.7%	14.3	2.2	B
	Right Turn						
	Subtotal	194	182	93.7%	14.3	2.2	B
WB	Left Turn						
	Through	158	131	83.1%	36.4	6.0	D
	Right Turn	35	28	79.7%	50.8	14.5	D
	Subtotal	193	159	82.5%	38.8	6.9	D
Total		1,932	1,694	87.7%	14.5	1.2	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	802	658	82.1%	23.7	1.3	C
	Right Turn						
	Subtotal	802	658	82.1%	23.7	1.3	C
SB	Left Turn						
	Through	778	723	93.0%	8.3	0.8	A
	Right Turn						
	Subtotal	778	723	93.0%	8.3	0.8	A
EB	Left Turn	4	4	107.5%	52.4	16.5	D
	Through	57	53	92.3%	36.4	4.4	D
	Right Turn						
	Subtotal	61	57	93.3%	37.4	4.4	D
WB	Left Turn						
	Through	268	322	120.0%	40.8	8.8	D
	Right Turn						
	Subtotal	268	322	120.0%	40.8	8.8	D
Total		1,909	1,760	92.2%	21.0	2.0	C

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	589	476	80.8%	24.6	1.4	C
	Right Turn	217	187	86.1%	15.9	1.6	B
	Subtotal	806	663	82.2%	22.2	0.9	C
SB	Left Turn	20	20	98.0%	52.8	10.3	D
	Through	634	580	91.5%	26.1	1.8	C
	Right Turn						
	Subtotal	654	600	91.7%	27.0	1.8	C
EB	Left Turn	70	69	98.9%	23.1	2.7	C
	Through	1,661	1,671	100.6%	20.9	1.9	C
	Right Turn	144	143	99.0%	27.7	3.9	C
	Subtotal	1,875	1,883	100.4%	21.5	1.9	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,335	3,146	94.3%	22.7	1.0	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	11	100.0%	14.0	2.8	B
	Through						
	Right Turn	7	6	80.0%	9.5	1.4	A
	Subtotal	18	17	92.2%	12.4	1.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	53	49	91.7%	17.0	1.1	B
	Right Turn	4	4	100.0%	10.4	5.0	B
	Subtotal	57	53	92.3%	16.5	1.3	B
WB	Left Turn	5	5	90.0%	10.6	11.7	B
	Through	257	288	112.2%	13.6	6.3	B
	Right Turn						
	Subtotal	262	293	111.8%	13.6	6.3	B
Total		337	362	107.4%	14.0	5.3	B

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	654	639	97.8%	47.6	12.5	D
	Subtotal	654	639	97.8%	47.6	12.5	D
SB	Left Turn Through Right Turn	389	400	102.9%	10.1	1.0	B
	Subtotal	389	400	102.9%	10.1	1.0	B
EB	Left Turn Through Right Turn	706	608	86.2%	87.4	33.5	F
	Subtotal	706	608	86.2%	87.4	33.5	F
WB	Left Turn Through Right Turn	739	699	94.6%	11.8	0.8	B
	Subtotal	739	699	94.6%	11.8	0.8	B
Total		2,488	2,347	94.3%	40.7	9.4	D

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	97.1%	11.8	3.2	B
	Through						
	Right Turn	23	18	80.0%	10.6	1.5	B
	Subtotal	37	32	86.5%	11.0	2.0	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	58	51	88.4%	15.5	0.6	B
	Right Turn	2	2	120.0%	14.8	5.5	B
	Subtotal	60	54	89.5%	15.5	0.5	B
WB	Left Turn	9	10	107.8%	14.4	5.5	B
	Through	248	278	111.9%	17.8	3.1	B
	Right Turn						
	Subtotal	257	287	111.8%	17.7	3.1	B
Total		354	373	105.3%	16.8	2.3	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	5	90.0%	13.2	5.4	B
	Through	140	135	96.1%	6.2	1.7	A
	Right Turn	8	9	117.5%	13.6	4.2	B
	Subtotal	153	148	97.0%	6.9	1.8	A
SB	Left Turn	32	27	84.7%	35.4	6.9	D
	Through	140	136	96.9%	19.1	4.2	B
	Right Turn	203	250	123.1%	19.3	3.5	B
	Subtotal	375	413	110.0%	20.3	3.9	C
EB	Left Turn	38	33	86.6%	21.6	2.3	C
	Through	40	34	84.3%	22.7	2.9	C
	Right Turn	3	3	100.0%	13.0	7.3	B
	Subtotal	81	70	85.9%	21.8	1.8	C
WB	Left Turn	14	12	85.0%	3.2	1.8	A
	Through	49	46	94.3%	7.4	1.5	A
	Right Turn	9	12	134.4%	18.4	3.3	B
	Subtotal	72	70	97.5%	8.5	1.5	A
Total		681	701	102.9%	16.4	2.2	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	206	205	99.7%	46.5	2.9	D
	Right Turn	353	346	98.0%	46.0	3.5	D
	Subtotal	559	552	98.7%	46.2	2.9	D
SB	Left Turn	449	449	100.0%	43.7	1.1	D
	Through	237	234	98.5%	24.7	1.7	C
	Right Turn						
	Subtotal	686	683	99.5%	37.2	1.2	D
EB	Left Turn	799	781	97.7%	20.9	1.6	C
	Through	860	802	93.3%	11.2	1.1	B
	Right Turn	40	42	105.3%	10.7	1.5	B
	Subtotal	1,699	1,625	95.7%	15.8	1.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,944	2,859	97.1%	26.8	0.8	C

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	41	41	101.0%	28.3	3.6	C
	Through	175	172	98.1%	17.1	1.8	B
	Right Turn						
	Subtotal	216	213	98.6%	19.3	2.1	B
SB	Left Turn						
	Through	531	526	99.1%	14.1	3.1	B
	Right Turn	22	25	114.1%	37.4	8.8	D
	Subtotal	553	551	99.7%	15.2	3.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	155	159	102.4%	45.0	2.7	D
	Through	160	156	97.8%	38.8	2.5	D
	Right Turn	494	485	98.2%	4.4	0.3	A
	Subtotal	809	800	98.9%	19.1	0.8	B
Total		1,578	1,565	99.2%	17.8	1.4	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	654	637	97.4%	27.0	5.5	C
	Right Turn						
	Subtotal	654	637	97.4%	27.0	5.5	C
SB	Left Turn						
	Through	389	401	103.1%	22.5	3.1	C
	Right Turn	93	65	70.3%	26.1	6.1	C
	Subtotal	482	466	96.7%	23.0	3.0	C
EB	Left Turn	1,142	1,046	91.6%	135.9	30.4	F
	Through						
	Right Turn						
	Subtotal	1,142	1,046	91.6%	135.9	30.4	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,278	2,149	94.4%	78.9	14.3	E

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	778	722	92.7%	8.5	0.5	A
	Subtotal	778	722	92.7%	8.5	0.5	A
EB	Left Turn	739	610	82.5%	92.5	11.8	F
	Through						
	Right Turn						
	Subtotal	739	610	82.5%	92.5	11.8	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,517	1,331	87.8%	46.9	5.3	D

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	101	93	92.2%	41.8	3.4	D
	Through	558	451	80.8%	1.5	0.3	A
	Right Turn						
	Subtotal	659	544	82.5%	8.4	0.7	A
SB	Left Turn						
	Through	572	522	91.3%	15.6	2.1	B
	Right Turn	32	32	100.0%	12.0	4.2	B
	Subtotal	604	554	91.8%	15.4	2.2	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	82	80	97.1%	73.9	9.8	E
	Through	116	113	97.3%	36.3	2.4	D
	Right Turn	19	19	98.9%	26.7	5.9	C
	Subtotal	217	211	97.4%	49.6	4.2	D
Total		1,480	1,310	88.5%	18.0	1.5	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	523	421	80.4%	7.2	0.6	A
	Right Turn	54	47	87.0%	9.4	2.4	A
	Subtotal	577	468	81.0%	7.4	0.5	A
SB	Left Turn	67	66	99.0%	59.5	9.8	E
	Through	534	485	90.9%	22.2	4.3	C
	Right Turn						
	Subtotal	601	552	91.8%	26.8	4.7	C
EB	Left Turn	14	25	175.0%	20.8	6.8	C
	Through	1,238	1,190	96.1%	20.9	1.1	C
	Right Turn	70	70	100.4%	13.4	4.0	B
	Subtotal	1,322	1,285	97.2%	20.5	1.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,500	2,304	92.2%	19.3	1.3	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	47	45	96.4%	16.7	4.3	B
	Through	490	400	81.6%	3.1	0.5	A
	Right Turn						
	Subtotal	537	445	82.9%	4.5	0.7	A
SB	Left Turn						
	Through	564	516	91.5%	21.2	11.7	C
	Right Turn	57	66	116.1%	18.7	7.2	B
	Subtotal	621	582	93.8%	20.9	11.1	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	246	246	100.1%	36.8	2.7	D
	Through	246	241	97.9%	35.0	1.7	C
	Right Turn	24	24	101.3%	26.5	3.1	C
	Subtotal	516	511	99.1%	35.4	1.4	D
Total		1,674	1,539	91.9%	21.0	4.6	C

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,565	1,524	97.4%	22.3	10.0	C
	Right Turn	36	32	89.7%	7.1	2.8	A
	Subtotal	1,601	1,556	97.2%	22.0	9.8	C
NE	Left Turn	82	83	100.7%	53.6	5.2	D
	Through						
	Right Turn	36	34	95.0%	46.5	3.3	D
	Subtotal	118	117	99.0%	51.4	3.9	D
EB	Left Turn	225	211	93.8%	38.3	11.5	D
	Through	548	528	96.3%	27.9	1.2	C
	Right Turn						
	Subtotal	773	739	95.6%	30.9	3.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,492	2,412	96.8%	26.2	7.3	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,372	1,313	95.7%	29.8	8.0	C
	Through	500	503	100.7%	23.6	7.7	C
	Right Turn						
	Subtotal	1,872	1,817	97.1%	28.1	7.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	420	375	89.3%	38.1	6.1	D
	Right Turn	766	748	97.6%	48.0	10.3	D
	Subtotal	1,186	1,123	94.7%	44.8	8.7	D
Total		3,058	2,939	96.1%	34.5	6.9	C

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,464	1,459	99.7%	2.6	0.4	A
	Through						
	Right Turn	33	31	94.5%	2.9	0.7	A
	Subtotal	1,497	1,490	99.5%	2.6	0.4	A
SB	Left Turn						
	Through	412	411	99.7%	0.8	0.1	A
	Right Turn	27	27	99.6%	4.8	0.2	A
	Subtotal	439	438	99.7%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn	2	0	0.0%	0.0	0.0	A
	Subtotal	2	0	0.0%	0.0	0.0	A
WB	Left Turn	270	274	101.4%	17.1	0.9	B
	Through	183	133	72.6%	52.5	1.7	D
	Right Turn						
	Subtotal	453	407	89.8%	28.7	1.1	C
Total		2,391	2,335	97.6%	6.9	0.3	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	738	746	101.0%	6.9	0.4	A
	Through	1,378	1,368	99.3%	8.1	0.3	A
	Right Turn	32	31	96.9%	8.1	1.7	A
	Subtotal	2,148	2,145	99.9%	7.7	0.2	A
EB	Left Turn						
	Through	416	388	93.2%	38.6	1.5	D
	Right Turn	179	179	99.9%	38.3	1.3	D
	Subtotal	595	567	95.2%	38.5	1.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,743	2,712	98.9%	14.1	0.4	B

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	94	90	95.5%	30.8	3.5	C
	Right Turn	93	88	94.2%	20.4	3.3	C
	Subtotal	187	177	94.9%	25.6	3.2	C
SB	Left Turn	57	60	106.0%	44.1	4.5	D
	Through	85	77	90.8%	38.6	4.5	D
	Right Turn						
	Subtotal	142	138	96.9%	41.0	4.1	D
EB	Left Turn	9	10	106.7%	23.3	8.0	C
	Through	1,549	1,476	95.3%	30.2	4.8	C
	Right Turn	290	355	122.3%	42.7	6.9	D
	Subtotal	1,848	1,840	99.6%	32.6	4.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,177	2,155	99.0%	32.6	3.9	C

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	65	64	98.6%	44.2	3.3	D
	Through	561	557	99.3%	18.3	1.4	B
	Right Turn	859	877	102.1%	11.0	1.4	B
	Subtotal	1,485	1,498	100.8%	15.2	0.8	B
SB	Left Turn						
	Through	88	86	97.6%	16.6	1.6	B
	Right Turn	25	25	98.4%	10.8	2.2	B
	Subtotal	113	111	97.8%	15.3	1.4	B
EB	Left Turn	90	87	96.2%	43.4	3.1	D
	Through	146	134	92.1%	42.9	1.7	D
	Right Turn	66	66	100.3%	1.4	0.4	A
	Subtotal	302	287	95.1%	33.5	1.4	C
WB	Left Turn	325	357	109.8%	40.9	3.6	D
	Through	102	100	98.0%	34.8	4.4	C
	Right Turn	21	20	94.8%	23.1	2.5	C
	Subtotal	448	477	106.4%	38.9	3.0	D
Total		2,348	2,372	101.0%	22.2	1.0	C

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	22	22	99.5%	36.2	4.7	D
	Through	222	225	101.5%	29.3	2.3	C
	Right Turn	48	47	98.5%	23.3	3.1	C
	Subtotal	292	295	100.9%	28.9	2.2	C
SB	Left Turn	98	97	98.8%	30.0	1.8	C
	Through	167	163	97.8%	18.3	1.5	B
	Right Turn	14	15	105.0%	4.8	1.1	A
	Subtotal	279	275	98.5%	21.7	0.8	C
EB	Left Turn	29	30	101.7%	14.1	3.5	B
	Through	119	128	107.6%	13.0	1.6	B
	Right Turn	22	19	86.4%	8.1	2.4	A
	Subtotal	170	177	103.8%	12.6	1.5	B
WB	Left Turn	83	72	86.1%	14.6	2.4	B
	Through	105	113	107.2%	13.6	1.8	B
	Right Turn	257	280	108.8%	9.5	0.9	A
	Subtotal	445	464	104.2%	11.2	1.2	B
Total		1,186	1,209	102.0%	18.1	0.8	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	242	268	110.8%	45.9	3.8	D
	Through	93	93	99.8%	38.2	3.3	D
	Right Turn	169	169	100.0%	23.1	4.4	C
	Subtotal	504	530	105.2%	37.3	2.5	D
SB	Left Turn	91	89	98.0%	43.9	3.4	D
	Through	72	72	100.1%	41.1	2.3	D
	Right Turn	10	10	103.0%	6.4	2.0	A
	Subtotal	173	172	99.2%	40.6	2.2	D
EB	Left Turn						
	Through	874	887	101.5%	26.0	3.4	C
	Right Turn	131	127	97.1%	4.5	0.7	A
	Subtotal	1,005	1,014	100.9%	23.3	3.2	C
WB	Left Turn	89	88	99.2%	68.0	10.5	E
	Through	196	201	102.7%	10.4	2.1	B
	Right Turn	38	40	105.5%	6.4	2.0	A
	Subtotal	323	330	102.0%	25.5	4.0	C
Total		2,005	2,045	102.0%	28.7	1.9	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	182	206	113.0%	48.1	8.7	D
	Through	831	946	113.8%	26.6	5.6	C
	Right Turn						
	Subtotal	1,013	1,152	113.7%	30.5	4.7	C
SB	Left Turn						
	Through	493	492	99.7%	18.1	2.8	B
	Right Turn	51	53	102.9%	5.9	0.7	A
	Subtotal	544	544	100.0%	16.9	2.4	B
EB	Left Turn						
	Through	363	390	107.5%	103.6	42.4	F
	Right Turn	40	40	100.0%	72.0	20.1	E
	Subtotal	403	430	106.7%	100.6	40.0	F
WB	Left Turn						
	Through	200	200	99.8%	24.7	2.0	C
	Right Turn						
	Subtotal	200	200	99.8%	24.7	2.0	C
Total		2,160	2,325	107.7%	40.1	6.9	D

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	825	940	113.9%	9.6	5.1	A
	Right Turn	6	10	166.7%	10.3	10.7	B
	Subtotal	831	950	114.3%	9.6	5.2	A
SB	Left Turn						
	Through	532	538	101.0%	4.5	1.0	A
	Right Turn						
	Subtotal	532	538	101.0%	4.5	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	12	13	106.7%	22.4	10.4	C
	Through						
	Right Turn	74	74	100.4%	26.5	15.2	D
	Subtotal	86	87	101.3%	25.8	14.3	D
Total		1,449	1,574	108.6%	8.7	3.7	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	585	673	115.0%	26.6	7.3	C
	Right Turn	314	350	111.3%	18.9	11.3	B
	Subtotal	899	1,022	113.7%	23.9	8.4	C
SB	Left Turn	101	107	105.9%	61.8	19.3	E
	Through	468	476	101.6%	4.1	0.4	A
	Right Turn						
	Subtotal	569	583	102.4%	14.7	3.8	B
EB	Left Turn	38	37	97.1%	56.1	25.9	E
	Through	804	817	101.7%	56.5	28.7	E
	Right Turn	64	65	101.3%	50.4	24.8	D
	Subtotal	906	919	101.4%	56.1	28.3	E
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,374	2,524	106.3%	33.6	14.6	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	83	90	108.9%	12.8	1.4	B
	Through	540	627	116.1%	14.8	3.0	B
	Right Turn						
	Subtotal	623	718	115.2%	14.5	2.7	B
SB	Left Turn						
	Through	437	447	102.3%	19.6	1.9	B
	Right Turn	19	18	94.7%	5.4	1.2	A
	Subtotal	456	465	102.0%	19.1	1.9	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	132	135	101.9%	39.8	2.9	D
	Through	221	220	99.5%	35.9	1.4	D
	Right Turn	234	233	99.7%	34.1	18.1	C
	Subtotal	587	588	100.1%	36.1	7.0	D
Total		1,666	1,771	106.3%	22.9	3.0	C

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	89	106	118.9%	17.9	1.6	B
	Through	521	560	107.4%	13.0	1.4	B
	Right Turn	164	200	122.1%	14.1	3.5	B
	Subtotal	774	866	111.8%	13.9	1.4	B
SB	Left Turn	78	78	99.4%	54.1	12.1	D
	Through	170	151	89.0%	19.0	2.8	B
	Right Turn	67	65	96.4%	5.5	0.8	A
	Subtotal	315	293	93.1%	25.3	3.6	C
EB	Left Turn	127	125	98.7%	101.3	44.2	F
	Through	1,212	1,190	98.2%	78.2	46.3	E
	Right Turn	33	55	165.5%	70.4	44.8	E
	Subtotal	1,372	1,370	99.9%	80.1	46.0	F
WB	Left Turn	253	255	100.7%	52.9	6.0	D
	Through	406	425	104.7%	25.4	2.4	C
	Right Turn	28	27	97.5%	18.1	2.1	B
	Subtotal	687	707	102.9%	35.1	2.8	D
Total		3,148	3,236	102.8%	47.8	19.9	D

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	39	41	104.9%	6.5	2.7	A
	Subtotal	39	41	104.9%	6.5	2.7	A
SB	Left Turn	575	574	99.9%	44.2	0.7	D
	Through	175	179	102.1%	44.9	1.3	D
	Right Turn						
	Subtotal	750	753	100.4%	44.3	0.6	D
EB	Left Turn						
	Through	1,111	1,168	105.1%	12.9	9.5	B
	Right Turn	108	111	102.8%	9.9	6.1	A
	Subtotal	1,219	1,279	104.9%	12.6	9.2	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,008	2,072	103.2%	24.0	5.7	C

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	723	694	95.9%	3.3	0.8	A
	Right Turn	15	15	100.0%	1.1	0.3	A
	Subtotal	738	709	96.0%	3.2	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	27	26	97.8%	46.2	3.2	D
	Through	20	21	106.5%	37.1	4.5	D
	Right Turn						
	Subtotal	47	48	101.5%	42.2	2.4	D
Total		785	756	96.3%	5.7	0.8	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	452	451	99.8%	23.5	2.1	C
	Through	673	651	96.7%	18.1	0.8	B
	Right Turn	443	443	100.0%	14.7	0.8	B
	Subtotal	1,568	1,545	98.5%	18.7	0.8	B
EB	Left Turn						
	Through	1,410	1,458	103.4%	32.1	7.4	C
	Right Turn	44	34	78.2%	24.7	9.0	C
	Subtotal	1,454	1,493	102.7%	32.0	7.4	C
WB	Left Turn	21	23	111.0%	64.3	4.7	E
	Through	244	263	107.7%	21.8	1.0	C
	Right Turn						
	Subtotal	265	286	108.0%	25.3	1.2	C
Total		3,287	3,324	101.1%	25.2	3.5	C

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	265	321	120.9%	34.3	3.8	C
	Right Turn	118	127	107.2%	31.7	5.9	C
	Subtotal	383	447	116.7%	33.5	4.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	180	183	101.4%	20.5	5.6	C
	Through	1,456	1,522	104.5%	16.3	7.1	B
	Right Turn	89	90	100.6%	10.9	7.0	B
	Subtotal	1,725	1,794	104.0%	16.5	6.9	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,108	2,241	106.3%	19.9	6.1	B

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	44	147.3%	36.2	26.4	D
	Through	561	601	107.2%	38.6	22.1	D
	Right Turn	39	48	124.1%	34.0	13.3	C
	Subtotal	630	694	110.1%	38.1	21.7	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	497	534	107.4%	42.1	20.0	D
	Through	1,365	1,377	100.9%	16.9	2.1	B
	Right Turn						
	Subtotal	1,862	1,911	102.6%	23.9	5.8	C
WB	Left Turn						
	Through	235	239	101.8%	21.2	0.9	C
	Right Turn	7	7	98.6%	20.2	6.4	C
	Subtotal	242	246	101.7%	21.2	0.8	C
Total		2,734	2,851	104.3%	27.1	8.9	C

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	400	506	126.6%	29.1	1.9	C
	Right Turn						
	Subtotal	400	506	126.6%	29.1	1.9	C
SB	Left Turn						
	Through	509	519	101.9%	5.8	0.9	A
	Right Turn						
	Subtotal	509	519	101.9%	5.8	0.9	A
EB	Left Turn	2	2	105.0%	34.6	22.4	C
	Through	42	40	94.8%	38.6	7.1	D
	Right Turn						
	Subtotal	44	42	95.2%	38.7	7.2	D
WB	Left Turn						
	Through	44	41	93.6%	38.1	7.6	D
	Right Turn	55	51	92.9%	25.2	5.5	C
	Subtotal	99	92	93.2%	31.1	5.9	C
Total		1,052	1,159	110.2%	19.2	1.3	B

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	457	561	122.8%	25.2	2.1	C
	Right Turn						
	Subtotal	457	561	122.8%	25.2	2.1	C
SB	Left Turn						
	Through	509	517	101.6%	4.0	1.1	A
	Right Turn						
	Subtotal	509	517	101.6%	4.0	1.1	A
EB	Left Turn						
	Through	254	246	96.9%	19.9	2.0	B
	Right Turn						
	Subtotal	254	246	96.9%	19.9	2.0	B
WB	Left Turn						
	Through	216	199	91.9%	55.6	14.2	E
	Right Turn	74	67	90.8%	68.4	17.0	E
	Subtotal	290	266	91.6%	58.9	14.6	E
Total		1,510	1,590	105.3%	23.1	2.7	C

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	531	630	118.7%	23.3	1.4	C
	Right Turn						
	Subtotal	531	630	118.7%	23.3	1.4	C
SB	Left Turn						
	Through	509	515	101.2%	8.3	0.9	A
	Right Turn						
	Subtotal	509	515	101.2%	8.3	0.9	A
EB	Left Turn						
	Through	219	209	95.6%	42.3	6.2	D
	Right Turn						
	Subtotal	219	209	95.6%	42.3	6.2	D
WB	Left Turn						
	Through	137	161	117.4%	40.6	8.5	D
	Right Turn						
	Subtotal	137	161	117.4%	40.6	8.5	D
Total		1,396	1,516	108.6%	22.7	0.8	C

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	451	515	114.2%	26.2	1.6	C
	Right Turn	80	117	145.8%	11.8	2.5	B
	Subtotal	531	632	118.9%	23.5	1.6	C
SB	Left Turn	32	31	95.6%	42.8	8.9	D
	Through	351	355	101.1%	14.9	2.0	B
	Right Turn						
	Subtotal	383	386	100.7%	17.2	2.1	B
EB	Left Turn	99	100	101.2%	33.0	5.1	C
	Through	1,317	1,393	105.8%	28.6	6.0	C
	Right Turn	158	158	99.7%	29.0	5.9	C
	Subtotal	1,574	1,651	104.9%	28.9	5.8	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,488	2,668	107.2%	26.0	3.8	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	17	16	92.9%	11.5	1.3	B
	Through						
	Right Turn	9	8	92.2%	8.3	1.1	A
	Subtotal	26	24	92.7%	10.5	1.0	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	214	205	96.0%	22.1	0.5	C
	Right Turn	5	4	78.0%	18.5	6.9	B
	Subtotal	219	209	95.6%	22.0	0.5	C
WB	Left Turn	4	4	92.5%	14.4	9.0	B
	Through	120	129	107.8%	10.8	1.5	B
	Right Turn						
	Subtotal	124	133	107.3%	11.1	1.4	B
Total		369	366	99.3%	17.3	0.7	B

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	777	776	99.8%	33.8	9.3	C
	Subtotal	777	776	99.8%	33.8	9.3	C
SB	Left Turn Through Right Turn	431	464	107.6%	14.0	1.0	B
	Subtotal	431	464	107.6%	14.0	1.0	B
EB	Left Turn Through Right Turn	362	433	119.5%	227.5	52.9	F
	Subtotal	362	433	119.5%	227.5	52.9	F
WB	Left Turn Through Right Turn	484	499	103.1%	16.6	1.2	B
	Subtotal	484	499	103.1%	16.6	1.2	B
Total		2,054	2,171	105.7%	64.4	12.0	E

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	16	104.0%	8.7	2.3	A
	Through						
	Right Turn	35	34	96.6%	8.9	2.3	A
	Subtotal	50	49	98.8%	8.9	1.8	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	220	209	95.0%	17.3	0.7	B
	Right Turn	3	3	83.3%	14.8	5.4	B
	Subtotal	223	211	94.8%	17.3	0.7	B
WB	Left Turn	8	9	116.3%	20.1	3.4	C
	Through	109	119	109.4%	15.0	1.8	B
	Right Turn						
	Subtotal	117	129	109.8%	15.3	1.8	B
Total		390	389	99.8%	15.5	0.7	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	9	115.0%	14.7	5.6	B
	Through	151	147	97.2%	7.3	1.3	A
	Right Turn	20	19	96.0%	8.3	2.3	A
	Subtotal	179	175	97.8%	7.8	1.3	A
SB	Left Turn	42	44	104.5%	20.3	4.7	C
	Through	188	181	96.5%	12.8	2.1	B
	Right Turn	83	95	114.2%	17.6	3.8	B
	Subtotal	313	320	102.3%	15.3	2.7	B
EB	Left Turn	121	116	95.6%	26.8	2.2	C
	Through	123	117	95.2%	26.1	1.4	C
	Right Turn	11	10	87.3%	22.5	5.4	C
	Subtotal	255	242	95.1%	26.3	1.3	C
WB	Left Turn	9	10	106.7%	4.0	2.1	A
	Through	26	26	98.8%	4.2	1.2	A
	Right Turn	9	8	87.8%	8.8	2.7	A
	Subtotal	44	43	98.2%	4.9	1.4	A
Total		791	781	98.7%	16.4	1.3	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	211	210	99.3%	60.4	4.2	E
	Right Turn	406	407	100.2%	79.4	13.1	E
	Subtotal	617	616	99.9%	73.0	9.7	E
SB	Left Turn	543	544	100.2%	47.8	2.4	D
	Through	250	254	101.5%	23.9	1.7	C
	Right Turn						
	Subtotal	793	798	100.6%	40.2	1.7	D
EB	Left Turn	862	861	99.9%	46.8	3.6	D
	Through	547	594	108.6%	22.8	3.1	C
	Right Turn	39	42	107.2%	21.1	3.5	C
	Subtotal	1,448	1,497	103.4%	36.5	3.3	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,858	2,911	101.9%	45.3	2.9	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	42	42	100.7%	34.6	3.0	C
	Through	173	169	97.9%	23.3	2.7	C
	Right Turn						
	Subtotal	215	212	98.4%	25.5	2.8	C
SB	Left Turn						
	Through	615	601	97.8%	33.5	8.7	C
	Right Turn	25	28	110.0%	45.7	12.6	D
	Subtotal	640	629	98.3%	34.1	8.7	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	179	185	103.4%	45.4	2.2	D
	Through	184	184	100.0%	34.0	2.5	C
	Right Turn	571	561	98.3%	5.1	0.3	A
	Subtotal	934	931	99.6%	18.9	0.6	B
Total		1,789	1,771	99.0%	25.1	3.4	C

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	777	784	100.9%	10.9	2.1	B
	Right Turn						
	Subtotal	777	784	100.9%	10.9	2.1	B
SB	Left Turn						
	Through	431	461	107.0%	14.7	1.6	B
	Right Turn	102	76	74.3%	17.0	5.4	B
	Subtotal	533	537	100.8%	14.9	1.2	B
EB	Left Turn	236	348	147.3%	163.8	73.7	F
	Through						
	Right Turn						
	Subtotal	236	348	147.3%	163.8	73.7	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,546	1,668	107.9%	45.1	18.5	D

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	509	520	102.1%	7.1	0.4	A
	Subtotal	509	520	102.1%	7.1	0.4	A
EB	Left Turn	400	500	125.0%	136.8	15.2	F
	Through						
	Right Turn						
	Subtotal	400	500	125.0%	136.8	15.2	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		909	1,020	112.2%	70.7	8.3	E

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	100	111	110.5%	47.9	22.7	D
	Through	450	504	112.0%	1.8	0.5	A
	Right Turn						
	Subtotal	550	615	111.8%	10.1	4.5	B
SB	Left Turn						
	Through	291	290	99.8%	9.3	6.9	A
	Right Turn	23	22	93.5%	9.0	15.8	A
	Subtotal	314	312	99.3%	9.3	7.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	92	92	100.0%	48.4	9.2	D
	Through	109	109	99.8%	46.8	23.1	D
	Right Turn	9	8	92.2%	23.1	5.5	C
	Subtotal	210	209	99.6%	46.8	11.8	D
Total		1,074	1,136	105.7%	16.7	6.5	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	384	436	113.4%	5.9	0.6	A
	Right Turn	75	80	106.3%	5.4	0.6	A
	Subtotal	459	515	112.2%	5.9	0.6	A
SB	Left Turn	65	69	106.8%	44.9	6.0	D
	Through	237	232	98.0%	14.6	6.6	B
	Right Turn						
	Subtotal	302	302	99.9%	21.6	6.3	C
EB	Left Turn	11	21	190.9%	19.8	5.4	B
	Through	1,316	1,327	100.8%	20.4	0.9	C
	Right Turn	77	77	99.7%	8.1	4.1	A
	Subtotal	1,404	1,425	101.5%	19.7	0.9	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,165	2,242	103.5%	16.8	1.4	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	61	60	98.2%	12.7	13.0	B
	Through	334	398	119.2%	3.0	0.5	A
	Right Turn						
	Subtotal	395	458	116.0%	4.3	2.0	A
SB	Left Turn						
	Through	260	261	100.5%	8.8	3.3	A
	Right Turn	79	83	105.3%	7.4	3.5	A
	Subtotal	339	345	101.7%	8.4	3.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	212	198	93.5%	35.5	2.2	D
	Through	260	260	100.1%	39.4	6.6	D
	Right Turn	27	26	95.2%	25.0	4.7	C
	Subtotal	499	484	97.0%	37.1	3.5	D
Total		1,233	1,287	104.4%	17.7	2.5	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,422	1,467	103.2%	58.8	10.4	E
	Right Turn	72	77	106.3%	15.3	3.3	B
	Subtotal	1,494	1,544	103.3%	56.6	10.0	E
NE	Left Turn	93	92	98.9%	61.4	6.1	E
	Through						
	Right Turn	44	43	98.6%	41.7	4.3	D
	Subtotal	137	135	98.8%	55.0	4.3	E
EB	Left Turn	162	179	110.3%	65.7	12.7	E
	Through	648	663	102.3%	30.2	1.0	C
	Right Turn						
	Subtotal	810	841	103.9%	37.8	3.0	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,441	2,520	103.3%	50.2	6.7	D

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,344	1,348	100.3%	47.5	4.7	D
	Through	333	383	115.0%	42.6	5.9	D
	Right Turn						
	Subtotal	1,677	1,731	103.2%	46.4	4.9	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	177	177	100.2%	32.3	5.6	C
	Right Turn	696	723	103.9%	51.9	12.0	D
	Subtotal	873	900	103.1%	48.0	10.4	D
Total		2,550	2,631	103.2%	46.9	5.4	D

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,544	1,519	98.4%	2.1	0.4	A
	Through						
	Right Turn	49	47	96.7%	2.3	0.6	A
	Subtotal	1,593	1,567	98.3%	2.1	0.4	A
SB	Left Turn						
	Through	480	468	97.6%	0.7	0.1	A
	Right Turn	31	31	100.3%	4.8	0.2	A
	Subtotal	511	500	97.7%	0.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn	7	4	57.1%	5.8	0.6	A
	Subtotal	7	4	57.1%	5.8	0.6	A
WB	Left Turn	87	93	106.9%	8.3	0.8	A
	Through	125	117	93.6%	53.9	1.7	D
	Right Turn						
	Subtotal	212	210	99.1%	33.7	1.9	C
Total		2,323	2,280	98.2%	4.8	0.2	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	636	636	99.9%	6.0	0.6	A
	Through	1,449	1,431	98.8%	6.7	0.4	A
	Right Turn	33	31	95.2%	7.2	1.1	A
	Subtotal	2,118	2,098	99.0%	6.5	0.3	A
EB	Left Turn						
	Through	323	359	111.2%	37.9	1.0	D
	Right Turn	62	78	126.5%	34.0	3.7	C
	Subtotal	385	438	113.6%	37.2	1.2	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,503	2,535	101.3%	11.8	0.4	B

Intersection 32 **Washington St/5th St** **0**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	120	115	96.0%	33.6	3.6	C
	Right Turn	161	156	97.1%	25.5	2.7	C
	Subtotal	281	272	96.6%	28.9	2.8	C
SB	Left Turn	65	71	109.8%	41.1	4.8	D
	Through	94	88	93.3%	35.4	2.7	D
	Right Turn						
	Subtotal	159	159	100.1%	37.8	1.9	D
EB	Left Turn	5	5	102.0%	88.5	45.2	F
	Through	1,222	1,289	105.5%	97.2	32.1	F
	Right Turn	219	235	107.3%	77.6	21.3	E
	Subtotal	1,446	1,529	105.8%	94.2	30.2	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,886	1,960	103.9%	80.6	23.5	F

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	48	96.4%	37.5	3.1	D
	Through	336	346	102.9%	14.3	1.2	B
	Right Turn	728	731	100.5%	7.4	0.5	A
	Subtotal	1,114	1,125	101.0%	10.8	0.3	B
SB	Left Turn						
	Through	41	39	94.9%	15.6	3.3	B
	Right Turn	14	14	101.4%	8.3	1.6	A
	Subtotal	55	53	96.5%	13.7	2.4	B
EB	Left Turn	79	80	100.6%	40.6	3.8	D
	Through	132	117	88.9%	40.9	2.6	D
	Right Turn	52	54	103.7%	1.0	0.5	A
	Subtotal	263	251	95.3%	32.2	1.2	C
WB	Left Turn	212	225	106.3%	38.1	2.1	D
	Through	86	91	105.5%	32.3	2.4	C
	Right Turn	25	27	108.8%	18.5	4.2	B
	Subtotal	323	343	106.3%	35.1	1.9	D
Total		1,755	1,772	101.0%	18.6	0.6	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	7	94.3%	28.0	9.5	C
	Through	122	116	95.4%	21.6	1.7	C
	Right Turn	8	10	122.5%	14.1	4.4	B
	Subtotal	137	133	96.9%	21.3	1.6	C
SB	Left Turn	70	70	99.9%	22.7	3.3	C
	Through	127	121	95.5%	14.1	1.2	B
	Right Turn	12	11	91.7%	4.7	1.2	A
	Subtotal	209	202	96.7%	16.5	1.4	B
EB	Left Turn	16	16	99.4%	9.2	1.6	A
	Through	78	88	113.3%	8.2	1.8	A
	Right Turn	9	7	72.2%	4.0	2.5	A
	Subtotal	103	111	107.6%	8.1	1.6	A
WB	Left Turn	29	28	94.8%	7.6	1.9	A
	Through	72	80	110.6%	7.1	1.6	A
	Right Turn	126	120	95.6%	4.6	0.9	A
	Subtotal	227	228	100.2%	5.8	1.0	A
Total		676	673	99.6%	12.5	0.7	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	114	120	105.0%	35.1	2.4	D
	Through	63	61	97.1%	33.1	3.2	C
	Right Turn	102	93	91.3%	17.1	2.1	B
	Subtotal	279	274	98.2%	28.5	1.4	C
SB	Left Turn	77	77	99.5%	37.6	3.3	D
	Through	47	46	97.2%	36.1	3.0	D
	Right Turn	11	11	98.2%	5.1	0.7	A
	Subtotal	135	133	98.6%	34.5	2.6	C
EB	Left Turn						
	Through	768	764	99.4%	15.6	0.6	B
	Right Turn	92	89	96.8%	4.7	1.3	A
	Subtotal	860	853	99.2%	14.5	0.6	B
WB	Left Turn	71	68	96.3%	46.6	7.3	D
	Through	198	206	103.9%	7.4	1.9	A
	Right Turn	50	51	101.0%	6.0	1.7	A
	Subtotal	319	325	101.8%	15.5	1.6	B
Total		1,593	1,585	99.5%	18.8	0.6	B

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	64	52	81.4%	41.6	5.3	D
	Through	525	548	104.4%	13.7	1.2	B
	Right Turn						
	Subtotal	589	600	101.9%	16.2	1.0	B
SB	Left Turn						
	Through	464	459	98.8%	25.6	1.4	C
	Right Turn	20	20	101.5%	5.1	1.0	A
	Subtotal	484	479	98.9%	24.8	1.3	C
EB	Left Turn						
	Through	176	191	108.2%	20.5	2.7	C
	Right Turn	36	35	95.8%	13.5	3.8	B
	Subtotal	212	225	106.1%	19.4	2.6	B
WB	Left Turn						
	Through	133	141	106.2%	13.8	2.3	B
	Right Turn						
	Subtotal	133	141	106.2%	13.8	2.3	B
Total		1,418	1,445	101.9%	19.3	0.7	B

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	516	534	103.6%	2.6	0.7	A
	Right Turn	9	16	175.6%	1.7	1.6	A
	Subtotal	525	550	104.8%	2.5	0.7	A
SB	Left Turn						
	Through	481	474	98.6%	5.0	0.6	A
	Right Turn						
	Subtotal	481	474	98.6%	5.0	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	2	76.7%	18.6	5.7	C
	Through						
	Right Turn	49	47	96.5%	11.6	1.5	B
	Subtotal	52	50	95.4%	11.9	1.6	B
Total		1,058	1,074	101.5%	4.1	0.4	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	410	427	104.0%	24.8	1.6	C
	Right Turn	155	155	100.1%	17.8	1.4	B
	Subtotal	565	582	103.0%	22.9	1.4	C
SB	Left Turn	114	112	98.3%	50.9	4.1	D
	Through	428	419	97.9%	2.1	0.3	A
	Right Turn						
	Subtotal	542	531	98.0%	12.4	1.2	B
EB	Left Turn	51	50	98.6%	36.1	2.9	D
	Through	683	685	100.3%	33.7	3.6	C
	Right Turn	53	54	101.5%	30.0	5.0	C
	Subtotal	787	789	100.2%	33.6	3.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,894	1,902	100.4%	24.4	1.5	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	104	106	101.6%	33.7	2.8	C
	Through	357	372	104.1%	4.0	0.6	A
	Right Turn						
	Subtotal	461	478	103.6%	10.6	1.0	B
SB	Left Turn						
	Through	416	408	98.0%	6.1	1.8	A
	Right Turn	10	12	119.0%	3.7	1.5	A
	Subtotal	426	420	98.5%	6.1	1.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	126	124	98.1%	39.7	3.4	D
	Through	205	206	100.3%	35.4	2.4	D
	Right Turn	191	192	100.3%	8.1	0.7	A
	Subtotal	522	521	99.8%	26.4	1.6	C
Total		1,409	1,418	100.6%	15.1	0.9	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	99	118.2%	18.7	2.1	B
	Through	286	284	99.4%	11.8	1.2	B
	Right Turn	178	182	102.4%	3.3	0.4	A
	Subtotal	548	566	103.2%	10.3	0.8	B
SB	Left Turn	35	38	107.1%	29.4	4.9	C
	Through	161	142	88.3%	15.4	1.6	B
	Right Turn	54	53	98.9%	4.5	0.7	A
	Subtotal	250	233	93.2%	15.2	1.2	B
EB	Left Turn	82	79	96.5%	44.6	2.6	D
	Through	805	811	100.8%	30.4	1.2	C
	Right Turn	30	42	141.3%	25.6	2.9	C
	Subtotal	917	933	101.7%	31.4	1.1	C
WB	Left Turn	235	235	99.8%	39.1	2.4	D
	Through	284	286	100.6%	19.3	0.9	B
	Right Turn	22	22	101.4%	11.7	2.7	B
	Subtotal	541	543	100.3%	27.6	1.3	C
Total		2,256	2,274	100.8%	23.6	0.6	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	16	17	105.6%	4.8	0.8	A
	Subtotal	16	17	105.6%	4.8	0.8	A
SB	Left Turn	391	402	102.8%	48.3	0.6	D
	Through	95	102	107.7%	45.8	1.9	D
	Right Turn						
	Subtotal	486	504	103.8%	47.8	0.5	D
EB	Left Turn						
	Through	868	872	100.4%	3.5	0.4	A
	Right Turn	84	81	96.2%	2.7	0.6	A
	Subtotal	952	953	100.1%	3.4	0.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,454	1,474	101.4%	18.6	0.5	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	469	478	101.9%	2.6	0.6	A
	Right Turn	9	9	104.4%	1.5	1.2	A
	Subtotal	478	487	102.0%	2.6	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	17	18	104.7%	20.0	4.9	C
	Through	29	32	111.0%	20.2	4.8	C
	Right Turn						
	Subtotal	46	50	108.7%	20.1	3.5	C
Total		524	537	102.6%	4.2	0.7	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	345	345	100.1%	27.5	1.0	C
	Through	453	450	99.3%	22.2	1.3	C
	Right Turn	371	365	98.3%	13.6	0.7	B
	Subtotal	1,169	1,160	99.2%	21.1	0.7	C
EB	Left Turn						
	Through	997	1,016	101.9%	7.3	1.7	A
	Right Turn	21	22	105.7%	3.7	2.7	A
	Subtotal	1,018	1,038	102.0%	7.3	1.7	A
WB	Left Turn	4	15	372.5%	33.2	4.3	C
	Through	170	179	105.0%	15.3	1.0	B
	Right Turn						
	Subtotal	174	193	111.1%	16.7	0.9	B
Total		2,361	2,392	101.3%	14.7	0.6	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	137	196	143.1%	32.6	1.6	C
	Right Turn	43	56	129.1%	23.9	4.1	C
	Subtotal	180	252	139.7%	30.7	1.7	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	89	92	102.9%	7.9	1.1	A
	Through	1,137	1,152	101.3%	5.8	1.3	A
	Right Turn	49	54	109.8%	3.1	1.3	A
	Subtotal	1,275	1,297	101.7%	5.9	1.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,455	1,549	106.4%	9.9	1.6	A

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	9	124.3%	30.2	10.0	C
	Through	311	369	118.5%	19.1	9.0	B
	Right Turn	10	23	230.0%	7.7	3.5	A
	Subtotal	328	400	122.0%	18.7	8.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	468	475	101.5%	22.8	7.3	C
	Through	874	894	102.3%	8.3	1.1	A
	Right Turn						
	Subtotal	1,342	1,369	102.0%	13.3	2.6	B
WB	Left Turn						
	Through	167	182	109.2%	21.5	1.3	C
	Right Turn	11	10	89.1%	14.1	7.9	B
	Subtotal	178	192	108.0%	21.2	1.4	C
Total		1,848	1,961	106.1%	15.2	3.5	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	210	214	101.9%	3.7	0.4	A
	Right Turn						
	Subtotal	210	214	101.9%	3.7	0.4	A
SB	Left Turn						
	Through	417	420	100.8%	2.4	0.5	A
	Right Turn						
	Subtotal	417	420	100.8%	2.4	0.5	A
EB	Left Turn						
	Through	26	24	93.5%	41.1	5.8	D
	Right Turn						
	Subtotal	26	24	93.5%	41.1	5.8	D
WB	Left Turn						
	Through	41	38	92.9%	36.1	4.5	D
	Right Turn	31	29	92.6%	13.1	3.8	B
	Subtotal	72	67	92.8%	26.0	3.0	C
Total		725	725	100.0%	6.3	0.5	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	241	246	102.0%	6.7	0.8	A
	Right Turn						
	Subtotal	241	246	102.0%	6.7	0.8	A
SB	Left Turn						
	Through	417	422	101.1%	3.5	0.5	A
	Right Turn						
	Subtotal	417	422	101.1%	3.5	0.5	A
EB	Left Turn						
	Through	191	191	99.9%	38.3	2.2	D
	Right Turn						
	Subtotal	191	191	99.9%	38.3	2.2	D
WB	Left Turn						
	Through	158	140	88.3%	23.3	1.6	C
	Right Turn	34	27	78.5%	16.3	4.0	B
	Subtotal	192	166	86.6%	22.2	1.9	C
Total		1,041	1,025	98.4%	13.8	0.9	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	275	275	100.1%	4.2	1.1	A
	Right Turn						
	Subtotal	275	275	100.1%	4.2	1.1	A
SB	Left Turn						
	Through	417	421	100.9%	7.4	0.7	A
	Right Turn	1	1	70.0%	3.6	6.0	A
	Subtotal	418	421	100.8%	7.4	0.7	A
EB	Left Turn						
	Through	73	74	100.7%	38.7	1.9	D
	Right Turn						
	Subtotal	73	74	100.7%	38.7	1.9	D
WB	Left Turn						
	Through	54	64	119.1%	29.2	3.7	C
	Right Turn						
	Subtotal	54	64	119.1%	29.2	3.7	C
Total		820	834	101.8%	10.8	0.7	B

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	232	233	100.3%	12.3	1.1	B
	Right Turn	43	45	103.7%	4.1	0.6	A
	Subtotal	275	277	100.8%	11.0	0.9	B
SB	Left Turn	39	36	91.0%	48.2	3.6	D
	Through	265	269	101.5%	12.2	0.8	B
	Right Turn						
	Subtotal	304	305	100.2%	16.4	1.1	B
EB	Left Turn	47	52	109.6%	32.3	3.5	C
	Through	980	1,004	102.5%	29.1	2.1	C
	Right Turn	153	152	99.3%	24.0	3.2	C
	Subtotal	1,180	1,208	102.4%	28.6	2.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,759	1,790	101.7%	23.8	1.5	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	96.0%	8.4	1.9	A
	Through						
	Right Turn	7	7	92.9%	6.8	1.3	A
	Subtotal	17	16	94.7%	7.8	1.0	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	70	70	100.3%	22.8	0.9	C
	Right Turn	3	3	110.0%	12.6	7.1	B
	Subtotal	73	74	100.7%	22.4	0.9	C
WB	Left Turn	3	2	80.0%	21.3	11.8	C
	Through	44	53	120.5%	11.6	3.1	B
	Right Turn						
	Subtotal	47	55	117.9%	11.9	3.3	B
Total		137	145	105.8%	16.8	1.5	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn Through Right Turn	524	535	102.1%	10.2	0.5	B
	Subtotal	524	535	102.1%	10.2	0.5	B
SB	Left Turn Through Right Turn	410	428	104.4%	8.3	0.5	A
	Subtotal	410	428	104.4%	8.3	0.5	A
EB	Left Turn Through Right Turn	187	196	104.7%	19.1	1.0	B
	Subtotal	187	196	104.7%	19.1	1.0	B
WB	Left Turn Through Right Turn	396	403	101.7%	22.4	2.0	C
	Subtotal	396	403	101.7%	22.4	2.0	C
Total		1,517	1,562	102.9%	13.9	0.6	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	18	98.9%	10.1	2.0	B
	Through						
	Right Turn	25	25	98.4%	8.4	2.7	A
	Subtotal	43	42	98.6%	9.1	2.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	71	73	102.7%	16.5	0.5	B
	Right Turn	6	6	103.3%	15.2	1.5	B
	Subtotal	77	79	102.7%	16.4	0.6	B
WB	Left Turn	5	5	96.0%	12.8	5.2	B
	Through	29	37	129.0%	12.3	3.3	B
	Right Turn						
	Subtotal	34	42	124.1%	12.3	2.8	B
Total		154	164	106.3%	13.4	0.8	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	4	100.0%	6.0	5.6	A
	Through	170	167	98.5%	4.2	0.7	A
	Right Turn	16	16	96.9%	4.2	1.6	A
	Subtotal	190	187	98.4%	4.2	0.5	A
SB	Left Turn	33	32	96.7%	7.8	2.8	A
	Through	160	166	103.8%	4.4	1.3	A
	Right Turn	8	17	215.0%	3.8	1.5	A
	Subtotal	201	215	107.0%	4.9	1.4	A
EB	Left Turn	51	51	99.4%	26.5	2.6	C
	Through	35	37	104.3%	26.7	3.7	C
	Right Turn	10	11	106.0%	17.3	4.7	B
	Subtotal	96	98	101.9%	25.5	2.4	C
WB	Left Turn	16	17	106.3%	2.6	0.5	A
	Through	22	21	95.5%	2.7	0.6	A
	Right Turn	12	10	83.3%	8.4	1.4	A
	Subtotal	50	48	96.0%	3.8	0.6	A
Total		537	548	102.0%	8.3	0.4	A

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	201	194	96.5%	49.7	5.5	D
	Right Turn	307	313	102.1%	56.8	12.0	E
	Subtotal	508	507	99.9%	54.0	9.1	D
SB	Left Turn	439	448	102.0%	43.5	1.2	D
	Through	307	297	96.9%	25.1	1.3	C
	Right Turn						
	Subtotal	746	745	99.9%	36.2	1.1	D
EB	Left Turn	817	856	104.8%	46.3	7.8	D
	Through	316	350	110.8%	18.5	3.9	B
	Right Turn	45	47	104.0%	18.2	4.5	B
	Subtotal	1,178	1,253	106.3%	37.5	6.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,432	2,505	103.0%	40.5	4.2	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	37	93.3%	28.9	3.2	C
	Through	172	171	99.1%	17.7	1.4	B
	Right Turn						
	Subtotal	212	208	98.0%	19.7	1.6	B
SB	Left Turn						
	Through	578	573	99.2%	20.0	5.0	B
	Right Turn	24	24	100.8%	43.4	17.7	D
	Subtotal	602	597	99.2%	20.9	5.4	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	169	168	99.3%	45.2	2.6	D
	Through	161	157	97.2%	39.0	2.5	D
	Right Turn	539	536	99.4%	4.9	0.5	A
	Subtotal	869	860	98.9%	19.0	1.0	B
Total		1,683	1,665	98.9%	19.8	2.3	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	524	532	101.4%	3.6	0.5	A
	Right Turn						
	Subtotal	524	532	101.4%	3.6	0.5	A
SB	Left Turn						
	Through	410	428	104.4%	6.5	0.6	A
	Right Turn	90	63	70.0%	6.5	1.7	A
	Subtotal	500	491	98.2%	6.5	0.7	A
EB	Left Turn	65	60	92.9%	22.5	3.4	C
	Through						
	Right Turn						
	Subtotal	65	60	92.9%	22.5	3.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,089	1,083	99.4%	6.0	0.4	A

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	417	417	100.0%	6.6	0.6	A
	Subtotal	417	417	100.0%	6.6	0.6	A
EB	Left Turn	210	214	101.7%	5.4	1.3	A
	Through						
	Right Turn						
	Subtotal	210	214	101.7%	5.4	1.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		627	631	100.6%	6.2	0.6	A

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	61	108.2%	8.9	2.0	A
	Through	223	225	101.0%	3.2	0.7	A
	Right Turn						
	Subtotal	279	286	102.5%	4.4	0.7	A
SB	Left Turn						
	Through	217	221	101.6%	6.0	0.6	A
	Right Turn	9	8	83.3%	5.2	2.8	A
	Subtotal	226	228	100.9%	5.9	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	87	84	96.8%	10.7	1.0	B
	Through	83	83	100.4%	11.6	0.9	B
	Right Turn	19	19	97.4%	5.1	1.5	A
	Subtotal	189	186	98.4%	10.5	0.7	B
Total		694	700	100.9%	6.5	0.5	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	215	218	101.2%	12.6	1.0	B
	Right Turn	27	27	101.1%	3.8	0.8	A
	Subtotal	242	245	101.2%	11.6	0.9	B
SB	Left Turn	37	36	97.0%	30.9	4.4	C
	Through	153	154	100.4%	11.9	1.0	B
	Right Turn						
	Subtotal	190	190	99.7%	15.5	1.6	B
EB	Left Turn	11	22	199.1%	9.5	3.1	A
	Through	800	824	103.0%	8.3	1.0	A
	Right Turn	73	75	102.9%	12.9	0.8	B
	Subtotal	884	921	104.2%	8.7	0.9	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,316	1,356	103.0%	10.2	0.5	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	46	41	88.3%	6.3	1.0	A
	Through	180	199	110.7%	4.2	0.7	A
	Right Turn						
	Subtotal	226	240	106.2%	4.6	0.7	A
SB	Left Turn						
	Through	157	156	99.4%	5.0	0.5	A
	Right Turn	45	56	123.6%	3.4	0.9	A
	Subtotal	202	212	104.8%	4.6	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	167	169	101.2%	12.9	0.9	B
	Through	171	170	99.6%	13.0	1.5	B
	Right Turn	9	9	102.2%	8.2	2.7	A
	Subtotal	347	349	100.4%	12.9	0.8	B
Total		775	800	103.2%	8.2	0.5	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,125	1,227	109.0%	18.6	11.9	B
	Right Turn	38	41	108.4%	8.4	4.4	A
	Subtotal	1,163	1,268	109.0%	18.2	11.6	B
NE	Left Turn	71	69	97.3%	48.0	3.6	D
	Through						
	Right Turn	27	29	106.7%	41.3	3.2	D
	Subtotal	98	98	99.9%	46.1	2.9	D
EB	Left Turn	124	127	102.1%	41.0	6.7	D
	Through	453	466	102.9%	30.9	1.1	C
	Right Turn						
	Subtotal	577	593	102.7%	33.1	1.8	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,838	1,959	106.6%	24.2	8.1	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,080	1,188	110.0%	17.3	7.9	B
	Through	240	258	107.5%	17.3	8.0	B
	Right Turn						
	Subtotal	1,320	1,446	109.6%	17.3	7.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	97	99	102.3%	31.7	1.8	C
	Right Turn	490	493	100.7%	36.7	1.5	D
	Subtotal	587	593	101.0%	35.9	1.3	D
Total		1,907	2,039	106.9%	22.7	5.7	C

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,233	1,223	99.2%	0.9	0.1	A
	Through						
	Right Turn	40	42	105.8%	1.7	0.3	A
	Subtotal	1,273	1,265	99.4%	0.9	0.1	A
SB	Left Turn						
	Through	334	332	99.3%	0.3	0.0	A
	Right Turn	25	26	102.0%	4.7	0.4	A
	Subtotal	359	357	99.5%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	43	44	102.1%	6.4	0.5	A
	Through	92	95	103.5%	54.6	2.0	D
	Right Turn						
	Subtotal	135	139	103.0%	39.4	2.3	D
Total		1,767	1,761	99.7%	3.9	0.2	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	479	483	100.9%	3.7	0.2	A
	Through	1,108	1,102	99.5%	4.3	0.3	A
	Right Turn	23	23	100.4%	4.1	1.2	A
	Subtotal	1,610	1,609	99.9%	4.1	0.2	A
EB	Left Turn						
	Through	208	213	102.5%	39.6	1.1	D
	Right Turn	33	35	104.8%	28.6	3.7	C
	Subtotal	241	248	102.8%	38.1	1.0	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,851	1,857	100.3%	8.7	0.2	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	127	121	95.5%	31.9	1.5	C
	Right Turn	106	105	99.1%	22.0	2.2	C
	Subtotal	233	226	97.1%	27.3	1.7	C
SB	Left Turn	39	44	113.3%	40.1	4.1	D
	Through	90	83	91.7%	32.1	3.1	C
	Right Turn						
	Subtotal	129	127	98.2%	34.8	2.8	C
EB	Left Turn	12	12	100.0%	67.2	33.4	E
	Through	1,033	1,081	104.6%	70.7	36.7	E
	Right Turn	111	132	119.2%	36.8	20.0	D
	Subtotal	1,156	1,225	106.0%	67.0	34.8	E
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,518	1,578	104.0%	58.8	27.2	E

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	35	101.1%	38.3	4.1	D
	Through	88	88	100.3%	11.7	1.7	B
	Right Turn	570	572	100.4%	5.6	0.5	A
	Subtotal	693	696	100.4%	8.0	0.6	A
SB	Left Turn						
	Through	50	45	89.4%	14.8	2.6	B
	Right Turn	11	11	103.6%	8.0	2.4	A
	Subtotal	61	56	92.0%	13.4	2.3	B
EB	Left Turn	39	41	106.2%	38.2	5.3	D
	Through	149	140	94.0%	31.7	1.9	C
	Right Turn	47	42	89.8%	0.9	0.5	A
	Subtotal	235	224	95.2%	27.0	1.7	C
WB	Left Turn	182	181	99.3%	34.9	1.2	C
	Through	64	63	98.6%	26.9	2.9	C
	Right Turn	16	15	96.3%	12.1	6.0	B
	Subtotal	262	259	99.0%	31.6	1.4	C
Total		1,251	1,235	98.7%	16.7	0.7	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	13	11	87.7%	23.1	4.9	C
	Through	110	105	95.3%	17.6	1.7	B
	Right Turn	5	6	122.0%	10.0	5.1	A
	Subtotal	128	122	95.5%	17.8	1.5	B
SB	Left Turn	56	55	97.9%	18.3	2.1	B
	Through	117	103	87.9%	12.9	1.9	B
	Right Turn	7	7	105.7%	4.8	1.3	A
	Subtotal	180	165	91.7%	14.3	1.5	B
EB	Left Turn	21	20	96.2%	7.0	2.5	A
	Through	39	50	128.5%	8.6	3.4	A
	Right Turn	10	10	95.0%	3.3	0.9	A
	Subtotal	70	80	114.0%	7.5	2.3	A
WB	Left Turn	24	17	72.5%	6.9	1.9	A
	Through	43	54	126.3%	6.7	1.4	A
	Right Turn	100	93	92.8%	3.7	0.2	A
	Subtotal	167	165	98.5%	5.0	0.5	A
Total		545	532	97.6%	11.2	0.8	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	89	83	92.9%	27.4	3.0	C
	Through	39	37	93.6%	27.7	4.7	C
	Right Turn	112	107	95.4%	11.6	1.7	B
	Subtotal	240	226	94.2%	20.0	1.7	B
SB	Left Turn	71	69	97.7%	33.0	3.2	C
	Through	23	21	90.9%	28.1	3.9	C
	Right Turn	15	15	102.0%	5.3	0.4	A
	Subtotal	109	106	96.9%	28.0	2.1	C
EB	Left Turn						
	Through	636	636	99.9%	13.4	1.2	B
	Right Turn	83	77	92.3%	3.4	0.5	A
	Subtotal	719	712	99.1%	12.3	1.1	B
WB	Left Turn	83	77	93.1%	39.5	5.0	D
	Through	158	159	100.6%	6.5	1.1	A
	Right Turn	38	38	98.9%	3.6	0.9	A
	Subtotal	279	274	98.2%	15.5	2.0	B
Total		1,347	1,318	97.8%	15.5	0.8	B

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	43	41	95.3%	37.9	5.1	D
	Through	403	408	101.3%	16.4	1.3	B
	Right Turn						
	Subtotal	446	449	100.8%	18.4	1.3	B
SB	Left Turn						
	Through	356	353	99.2%	31.7	3.6	C
	Right Turn	30	30	99.3%	4.3	0.7	A
	Subtotal	386	383	99.2%	29.5	3.3	C
EB	Left Turn						
	Through	96	104	108.6%	18.4	3.8	B
	Right Turn	29	31	106.6%	14.0	8.1	B
	Subtotal	125	135	108.2%	17.4	4.6	B
WB	Left Turn						
	Through	116	118	101.7%	11.7	1.5	B
	Right Turn						
	Subtotal	116	118	101.7%	11.7	1.5	B
Total		1,073	1,086	101.2%	21.5	1.4	C

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	401	404	100.6%	1.6	0.7	A
	Right Turn	2	3	165.0%	2.4	6.1	A
	Subtotal	403	407	100.9%	1.6	0.7	A
SB	Left Turn						
	Through	383	377	98.4%	4.0	1.8	A
	Right Turn						
	Subtotal	383	377	98.4%	4.0	1.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	3	83.3%	15.0	14.8	C
	Through						
	Right Turn	32	30	93.8%	8.7	1.1	A
	Subtotal	35	33	92.9%	8.9	1.1	A
Total		821	816	99.4%	3.0	1.0	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	306	315	102.8%	15.5	1.9	B
	Right Turn	127	119	93.9%	11.0	1.2	B
	Subtotal	433	434	100.2%	14.3	1.6	B
SB	Left Turn	140	143	102.1%	20.4	1.5	C
	Through	336	330	98.2%	6.8	0.9	A
	Right Turn						
	Subtotal	476	473	99.3%	10.9	0.7	B
EB	Left Turn	29	30	103.8%	17.2	1.1	B
	Through	525	533	101.4%	16.3	0.6	B
	Right Turn	47	47	99.4%	11.5	1.4	B
	Subtotal	601	609	101.4%	16.0	0.6	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,510	1,516	100.4%	13.9	0.5	B

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	76	79	104.2%	13.4	1.2	B
	Through	259	266	102.8%	5.7	1.0	A
	Right Turn						
	Subtotal	335	345	103.1%	7.4	0.8	A
SB	Left Turn						
	Through	327	318	97.2%	9.7	0.8	A
	Right Turn	12	13	107.5%	4.6	0.8	A
	Subtotal	339	331	97.6%	9.4	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	149	155	104.1%	21.2	1.4	C
	Through	191	185	96.9%	19.4	1.1	B
	Right Turn	166	160	96.2%	7.6	0.9	A
	Subtotal	506	500	98.8%	16.2	0.7	B
Total		1,180	1,176	99.7%	11.7	0.4	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	57	66	115.6%	17.3	1.7	B
	Through	229	221	96.5%	15.8	1.4	B
	Right Turn	139	138	99.2%	7.2	0.8	A
	Subtotal	425	425	100.0%	13.2	0.8	B
SB	Left Turn	20	19	94.5%	22.2	6.8	C
	Through	125	110	87.8%	15.0	1.7	B
	Right Turn	39	40	103.3%	4.2	0.7	A
	Subtotal	184	169	91.8%	13.3	1.7	B
EB	Left Turn	60	59	98.2%	27.3	3.8	C
	Through	399	413	103.5%	19.9	1.0	B
	Right Turn	29	36	124.5%	12.5	2.6	B
	Subtotal	488	508	104.1%	20.2	1.2	C
WB	Left Turn	185	188	101.4%	20.2	1.3	C
	Through	210	206	98.2%	11.9	1.9	B
	Right Turn	27	25	93.3%	6.1	2.7	A
	Subtotal	422	419	99.3%	15.3	1.3	B
Total		1,519	1,521	100.1%	16.2	0.7	B

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	16	14	88.1%	4.3	0.4	A
	Subtotal	16	14	88.1%	4.3	0.4	A
SB	Left Turn	314	318	101.4%	28.3	1.6	C
	Through	104	109	105.1%	30.4	2.0	C
	Right Turn						
	Subtotal	418	428	102.3%	28.8	1.5	C
EB	Left Turn						
	Through	687	692	100.7%	4.6	0.6	A
	Right Turn	105	101	96.5%	3.8	0.4	A
	Subtotal	792	793	100.1%	4.5	0.6	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,226	1,235	100.7%	12.9	0.5	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	400	401	100.2%	2.1	0.3	A
	Right Turn	8	8	98.8%	1.5	1.1	A
	Subtotal	408	409	100.2%	2.1	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	18	17	93.9%	12.7	4.0	B
	Through	30	29	97.3%	12.8	3.2	B
	Right Turn						
	Subtotal	48	46	96.0%	12.7	2.7	B
Total		456	455	99.8%	3.2	0.4	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	203	205	101.0%	24.1	1.3	C
	Through	391	379	96.9%	21.8	1.4	C
	Right Turn	280	274	97.9%	10.6	1.1	B
	Subtotal	874	858	98.2%	18.8	1.1	B
EB	Left Turn						
	Through	543	554	102.0%	8.4	1.0	A
	Right Turn	15	17	111.3%	8.5	2.2	A
	Subtotal	558	570	102.2%	8.4	1.0	A
WB	Left Turn	2	12	610.0%	13.1	4.8	B
	Through	142	137	96.7%	7.6	1.7	A
	Right Turn						
	Subtotal	144	150	103.8%	8.0	1.5	A
Total		1,576	1,578	100.1%	14.0	0.8	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	111	120	107.9%	11.1	0.8	B
	Right Turn	21	20	95.2%	7.2	1.3	A
	Subtotal	132	140	105.9%	10.6	0.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	54	59	108.9%	4.5	0.4	A
	Through	950	953	100.4%	4.3	0.4	A
	Right Turn	13	13	100.8%	2.7	1.5	A
	Subtotal	1,017	1,025	100.8%	4.3	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,149	1,165	101.4%	5.1	0.3	A

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	5	67.1%	36.8	16.6	D
	Through	254	258	101.7%	31.4	1.7	C
	Right Turn	4	15	382.5%	24.3	7.4	C
	Subtotal	265	278	105.0%	31.0	1.7	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	352	357	101.3%	37.2	1.5	D
	Through	394	397	100.8%	10.1	1.4	B
	Right Turn						
	Subtotal	746	754	101.1%	22.9	0.9	C
WB	Left Turn						
	Through	137	143	104.0%	27.6	2.4	C
	Right Turn	3	3	90.0%	9.5	8.6	A
	Subtotal	140	145	103.7%	27.3	2.3	C
Total		1,151	1,177	102.3%	25.4	0.9	C

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	159	161	101.1%	2.6	0.5	A
	Right Turn						
	Subtotal	159	161	101.1%	2.6	0.5	A
SB	Left Turn						
	Through	319	321	100.7%	6.4	1.3	A
	Right Turn						
	Subtotal	319	321	100.7%	6.4	1.3	A
EB	Left Turn	2	2	120.0%	31.0	19.4	C
	Through	22	20	90.0%	38.6	5.2	D
	Right Turn						
	Subtotal	24	22	92.5%	37.8	3.8	D
WB	Left Turn						
	Through	31	29	91.9%	39.1	3.5	D
	Right Turn	25	24	96.4%	12.2	5.4	B
	Subtotal	56	53	93.9%	26.8	4.7	C
Total		558	557	99.8%	8.5	1.1	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	186	186	100.1%	6.3	1.1	A
	Subtotal	186	186	100.1%	6.3	1.1	A
SB	Left Turn Through Right Turn	319	319	99.9%	7.8	1.5	A
	Subtotal	319	319	99.9%	7.8	1.5	A
EB	Left Turn Through Right Turn	95	90	94.8%	34.1	2.6	C
	Subtotal	95	90	94.8%	34.1	2.6	C
WB	Left Turn Through	127	108	85.4%	24.1	3.0	C
	Right Turn	27	23	86.3%	13.7	3.1	B
	Subtotal	154	132	85.5%	22.3	2.8	C
Total		754	727	96.4%	13.4	1.0	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	213	208	97.6%	3.8	1.0	A
	Subtotal	213	208	97.6%	3.8	1.0	A
SB	Left Turn Through Right Turn	319	319	99.8%	8.4	1.5	A
	Subtotal	319	319	99.8%	8.4	1.5	A
EB	Left Turn Through Right Turn	22	21	96.4%	39.6	4.4	D
	Subtotal	22	21	96.4%	39.6	4.4	D
WB	Left Turn Through Right Turn	37	39	104.6%	24.4	3.2	C
	Subtotal	37	39	104.6%	24.4	3.2	C
Total		591	586	99.2%	8.9	1.0	A

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	177	171	96.5%	8.1	0.4	A
	Right Turn	36	37	103.9%	3.8	1.0	A
	Subtotal	213	208	97.7%	7.3	0.5	A
SB	Left Turn	19	20	104.2%	47.2	5.4	D
	Through	203	199	98.0%	7.8	1.5	A
	Right Turn						
	Subtotal	222	219	98.6%	11.4	1.5	B
EB	Left Turn	20	21	106.0%	33.2	5.0	C
	Through	835	831	99.5%	32.0	2.0	C
	Right Turn	116	119	102.4%	22.3	3.4	C
	Subtotal	971	971	100.0%	30.8	2.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,406	1,398	99.4%	24.3	1.5	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1	1	70.0%	3.2	2.8	A
	Through						
	Right Turn	3	4	116.7%	6.1	1.0	A
	Subtotal	4	4	105.0%	6.0	0.8	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	19	19	100.0%	22.0	1.9	C
	Right Turn	3	2	73.3%	7.1	4.1	A
	Subtotal	22	21	96.4%	20.7	2.1	C
WB	Left Turn	1	1	80.0%	6.8	10.3	A
	Through	36	38	105.8%	11.7	2.7	B
	Right Turn						
	Subtotal	37	39	105.1%	11.8	2.6	B
Total		63	64	102.1%	14.4	1.8	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	394	400	101.5%	13.2	2.6	B
	Subtotal	394	400	101.5%	13.2	2.6	B
SB	Left Turn Through Right Turn	315	336	106.5%	6.2	0.7	A
	Subtotal	315	336	106.5%	6.2	0.7	A
EB	Left Turn Through Right Turn	142	142	99.6%	19.5	1.7	B
	Subtotal	142	142	99.6%	19.5	1.7	B
WB	Left Turn Through Right Turn	303	303	100.0%	25.5	1.5	C
	Subtotal	303	303	100.0%	25.5	1.5	C
Total		1,154	1,180	102.3%	15.1	1.1	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	10	120.0%	9.9	3.9	A
	Through						
	Right Turn	12	13	110.0%	9.4	3.0	A
	Subtotal	20	23	114.0%	9.7	2.5	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	20	21	107.0%	15.6	0.9	B
	Right Turn	2	2	100.0%	11.1	6.6	B
	Subtotal	22	23	106.4%	15.3	0.8	B
WB	Left Turn	5	4	86.0%	6.8	3.0	A
	Through	29	29	101.4%	9.1	2.6	A
	Right Turn						
	Subtotal	34	34	99.1%	8.8	2.3	A
Total		76	80	105.1%	11.0	0.6	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	6	6	105.0%	4.6	3.9	A
	Through	91	88	97.0%	2.4	0.7	A
	Right Turn	16	16	97.5%	2.7	0.7	A
	Subtotal	113	110	97.5%	2.6	0.6	A
SB	Left Turn	1	1	140.0%	4.1	4.6	A
	Through	117	121	103.8%	2.8	0.6	A
	Right Turn	6	7	110.0%	2.4	2.1	A
	Subtotal	124	129	104.4%	2.8	0.6	A
EB	Left Turn	18	19	107.2%	25.4	5.7	C
	Through	9	11	118.9%	25.9	7.5	C
	Right Turn	5	5	98.0%	8.1	3.2	A
	Subtotal	32	35	109.1%	23.4	3.7	C
WB	Left Turn	10	10	95.0%	2.2	0.3	A
	Through	22	21	95.9%	2.4	0.4	A
	Right Turn	13	13	103.1%	7.4	0.9	A
	Subtotal	45	44	97.8%	3.9	0.4	A
Total		314	319	101.4%	5.2	0.7	A

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	178	167	93.9%	31.9	1.2	C
	Right Turn	209	217	103.8%	24.9	1.5	C
	Subtotal	387	384	99.3%	28.0	0.8	C
SB	Left Turn	374	377	100.8%	26.8	1.4	C
	Through	212	212	99.9%	15.8	1.0	B
	Right Turn						
	Subtotal	586	589	100.5%	22.9	1.1	C
EB	Left Turn	592	598	101.0%	37.3	4.7	D
	Through	273	259	94.9%	27.1	1.2	C
	Right Turn	48	48	100.0%	22.0	1.5	C
	Subtotal	913	905	99.1%	33.6	3.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,886	1,878	99.6%	29.1	1.9	C

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	36	32	89.2%	22.1	2.0	C
	Through	155	149	96.0%	11.0	1.0	B
	Right Turn						
	Subtotal	191	181	94.7%	12.9	0.9	B
SB	Left Turn						
	Through	455	453	99.5%	7.0	0.9	A
	Right Turn	19	20	106.3%	13.2	3.2	B
	Subtotal	474	473	99.7%	7.3	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	132	135	102.3%	32.2	1.8	C
	Through	131	133	101.6%	30.6	1.4	C
	Right Turn	421	410	97.3%	3.9	0.3	A
	Subtotal	684	678	99.1%	14.8	0.8	B
Total		1,349	1,332	98.7%	11.9	0.4	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	394	407	103.2%	10.5	0.9	B
	Right Turn						
	Subtotal	394	407	103.2%	10.5	0.9	B
SB	Left Turn						
	Through	315	336	106.5%	18.2	3.7	B
	Right Turn	70	49	70.4%	16.4	7.3	B
	Subtotal	385	385	99.9%	18.0	2.9	B
EB	Left Turn	52	45	86.5%	39.4	9.8	D
	Through						
	Right Turn						
	Subtotal	52	45	86.5%	39.4	9.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		831	837	100.7%	15.5	1.4	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	319	325	101.8%	10.1	1.3	B
	Subtotal	319	325	101.8%	10.1	1.3	B
EB	Left Turn	159	160	100.9%	16.4	3.4	B
	Through						
	Right Turn						
	Subtotal	159	160	100.9%	16.4	3.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		478	485	101.5%	12.2	1.4	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	43	39	91.6%	6.0	0.8	A
	Through	154	154	99.8%	3.3	0.5	A
	Right Turn						
	Subtotal	197	193	98.0%	3.8	0.5	A
SB	Left Turn						
	Through	155	152	98.3%	4.6	0.7	A
	Right Turn	10	10	99.0%	4.6	1.9	A
	Subtotal	165	162	98.3%	4.6	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	67	66	97.9%	8.1	1.4	A
	Through	95	91	95.9%	9.5	1.0	A
	Right Turn	2	4	185.0%	5.0	2.4	A
	Subtotal	164	160	97.8%	8.8	0.9	A
Total		526	516	98.0%	5.6	0.5	A

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	138	138	99.9%	8.5	1.5	A
	Right Turn	18	19	107.8%	3.4	0.5	A
	Subtotal	156	157	100.8%	7.8	1.3	A
SB	Left Turn	22	22	101.4%	19.9	4.2	B
	Through	105	101	96.4%	8.1	0.9	A
	Right Turn						
	Subtotal	127	124	97.2%	10.2	0.6	B
EB	Left Turn	3	14	456.7%	10.2	5.0	B
	Through	335	338	100.9%	8.7	1.0	A
	Right Turn	60	60	100.2%	8.3	1.9	A
	Subtotal	398	412	103.4%	8.7	1.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		681	692	101.7%	8.7	0.7	A

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	17	110.7%	4.9	1.7	A
	Through	126	136	107.5%	3.7	0.5	A
	Right Turn						
	Subtotal	141	152	107.9%	3.9	0.5	A
SB	Left Turn						
	Through	100	98	98.0%	4.0	0.6	A
	Right Turn	32	40	124.4%	2.6	1.4	A
	Subtotal	132	138	104.4%	3.6	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	137	128	93.1%	10.2	0.8	B
	Through	146	149	101.7%	9.8	1.0	A
	Right Turn	12	12	95.8%	5.7	1.1	A
	Subtotal	295	288	97.5%	9.8	0.6	A
Total		568	578	101.7%	6.8	0.5	A

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	806	809	100.4%	7.3	0.8	A
	Right Turn	19	21	109.5%	5.5	1.0	A
	Subtotal	825	830	100.6%	7.3	0.8	A
NE	Left Turn	73	71	97.0%	16.4	2.4	B
	Through						
	Right Turn	30	29	98.0%	14.8	2.3	B
	Subtotal	103	100	97.3%	15.9	1.6	B
EB	Left Turn	89	91	102.1%	12.8	1.3	B
	Through	259	269	103.8%	13.5	1.0	B
	Right Turn						
	Subtotal	348	360	103.4%	13.3	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,276	1,290	101.1%	9.6	0.6	A

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	813	816	100.4%	5.1	0.6	A
	Through	155	157	101.0%	4.7	0.6	A
	Right Turn						
	Subtotal	968	973	100.5%	5.1	0.6	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	77	78	101.8%	36.7	3.5	D
	Right Turn	340	343	100.9%	39.0	0.9	D
	Subtotal	417	421	101.1%	38.5	0.9	D
Total		1,385	1,394	100.7%	15.2	0.4	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	864	865	100.1%	0.6	0.0	A
	Through						
	Right Turn	42	39	93.8%	1.5	0.1	A
	Subtotal	906	904	99.8%	0.7	0.0	A
SB	Left Turn						
	Through	234	235	100.3%	0.2	0.0	A
	Right Turn	14	12	85.7%	4.2	0.3	A
	Subtotal	248	247	99.5%	0.4	0.1	A
EB	Left Turn						
	Through						
	Right Turn	1	0	0.0%	0.0	0.0	A
	Subtotal	1	0	0.0%	0.0	0.0	A
WB	Left Turn	51	50	97.3%	5.9	0.4	A
	Through	69	72	104.6%	11.3	1.2	B
	Right Turn						
	Subtotal	120	122	101.5%	9.1	0.8	A
Total		1,275	1,273	99.8%	1.4	0.1	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	309	318	102.9%	3.9	0.5	A
	Through	820	815	99.4%	4.6	0.2	A
	Right Turn	21	23	110.5%	3.7	0.7	A
	Subtotal	1,150	1,157	100.6%	4.4	0.3	A
EB	Left Turn						
	Through	139	141	101.4%	13.6	1.1	B
	Right Turn	41	40	96.3%	8.6	1.4	A
	Subtotal	180	181	100.3%	12.5	1.1	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,330	1,337	100.5%	5.5	0.2	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	57	57	99.3%	17.1	2.5	B
	Right Turn	65	67	103.7%	7.3	2.2	A
	Subtotal	122	124	101.6%	11.8	2.0	B
SB	Left Turn	34	33	97.1%	21.1	1.9	C
	Through	50	51	101.4%	17.8	1.7	B
	Right Turn						
	Subtotal	84	84	99.6%	19.1	1.2	B
EB	Left Turn	8	9	115.0%	13.2	4.0	B
	Through	814	800	98.3%	11.8	1.7	B
	Right Turn	74	78	105.8%	11.3	2.6	B
	Subtotal	896	888	99.1%	11.8	1.6	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,102	1,096	99.4%	12.3	1.4	B

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	9	2	91	22	NO
	Through	1,000	31	3	320	80	NO
	Right Turn	1,000	31	3	320	80	NO
SB	Left Turn						
	Through	185	3	1	51	14	NO
	Right Turn	185	3	1	53	14	NO
EB	Left Turn	800	9	1	83	20	NO
	Through	800	17	4	122	24	NO
	Right Turn	800	0	0	39	14	NO
WB	Left Turn	580	56	5	230	25	NO
	Through	580	14	2	156	54	NO
	Right Turn	580	11	2	157	54	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	56	7	429	63	NO
	Through	1,000	56	7	429	63	NO
	Right Turn	1,000	58	6	435	63	NO
SB	Left Turn	500	26	2	218	35	NO
	Through	500	26	2	218	35	NO
	Right Turn	500	24	2	222	35	NO
EB	Left Turn	1,000	6	1	129	34	NO
	Through	1,000	6	1	129	34	NO
	Right Turn	1,000	6	1	132	34	NO
WB	Left Turn	1,000	6	2	239	99	NO
	Through	1,000	6	2	239	99	NO
	Right Turn	1,000	13	1	293	35	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	84	16	392	68	MAX
	Through	510	28	6	320	46	NO
	Right Turn						
SB	Left Turn	180	20	2	121	14	NO
	Through	200	21	2	122	14	NO
	Right Turn	200	18	3	126	11	NO
EB	Left Turn						
	Through	600	75	5	322	18	NO
	Right Turn	600	75	5	324	18	NO
WB	Left Turn	400	123	24	454	68	MAX
	Through	1,000	6	2	121	24	NO
	Right Turn	1,000	4	2	122	24	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	400	160	58	498	61	MAX
	Through	500	51	5	496	37	NO
	Right Turn						
SB	Left Turn						
	Through	190	16	3	216	4	MAX
	Right Turn	190	18	3	222	4	MAX
EB	Left Turn						
	Through	1,000	84	32	398	92	NO
	Right Turn	1,000	82	32	398	92	NO
WB	Left Turn						
	Through	200	12	2	204	63	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	6	3	237	60	MAX
	Right Turn	210	8	4	270	60	MAX
SB	Left Turn						
	Through	220	2	1	174	60	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	12	4	183	80	NO
	Through						
	Right Turn	220	12	4	183	80	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	39	8	309	13	MAX
	Right Turn	210	41	8	313	13	MAX
SB	Left Turn	150	24	4	150	37	NO
	Through	150	4	1	115	18	NO
	Right Turn						
EB	Left Turn	1,000	64	4	285	43	NO
	Through	1,000	64	4	285	43	NO
	Right Turn	1,000	64	5	289	43	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	19	3	246	40	MAX
	Through	170	19	3	246	40	MAX
	Right Turn						
SB	Left Turn						
	Through	140	30	3	178	40	MAX
	Right Turn	140	1	0	54	35	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	68	6	282	57	MAX
	Through	800	68	6	282	57	NO
	Right Turn	200	22	10	214	108	MAX

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	19	7	270	11	MAX
	Through	145	71	9	277	9	MAX
	Right Turn	145	71	9	278	9	MAX
SB	Left Turn	80	7	2	82	9	MAX
	Through	240	6	1	68	17	NO
	Right Turn	80	1	0	47	17	NO
EB	Left Turn	160	20	2	136	18	NO
	Through	500	53	3	239	38	NO
	Right Turn	500	55	3	242	38	NO
WB	Left Turn	190	35	6	127	21	NO
	Through	400	30	4	198	22	NO
	Right Turn	400	27	4	199	22	NO

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	1	0	52	22	NO
SB	Left Turn	180	129	10	294	10	MAX
	Through	180	129	10	295	10	MAX
	Right Turn						
EB	Left Turn						
	Through	270	23	5	222	37	NO
	Right Turn	270	18	6	224	44	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	10	7	189	81	NO
	Right Turn	200	9	7	189	81	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	6	4	98	38	NO
	Through	310	3	1	66	14	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	75	3	401	39	NO
	Through	1,000	76	3	401	39	NO
	Right Turn	1,000	74	3	403	39	NO
EB	Left Turn						
	Through	390	34	5	360	39	NO
	Right Turn	390	34	5	360	39	NO
WB	Left Turn	130	11	2	108	23	NO
	Through	380	11	1	119	16	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	79	10	327	13	MAX
	Right Turn	220	84	10	333	13	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	106	16	388	14	MAX
	Through	315	106	16	388	14	MAX
	Right Turn	315	106	16	392	14	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	33	2	146	11	NO
	Through	200	33	2	146	11	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	30	6	364	38	NO
	Right Turn						
WB	Left Turn						
	Through	240	12	1	130	22	NO
	Right Turn	240	7	1	126	25	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	6	5	230	72	MAX
	Right Turn						
SB	Left Turn						
	Through	200	16	1	201	41	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	18	8	216	34	MAX
SB	Left Turn Through Right Turn	200	3	0	93	41	NO
EB	Left Turn Through Right Turn	300	8	1	135	42	NO
WB	Left Turn Through Right Turn	300 300	17 17	4 4	147 147	32 32	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	49	10	263	38	MAX
SB	Left Turn Through Right Turn	200	30	2	241	36	MAX
EB	Left Turn Through Right Turn	300	4	1	70	15	NO
WB	Left Turn Through Right Turn	300	27	3	257	31	NO

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	55	3	229	33	MAX
	Right Turn	200	56	3	231	33	MAX
SB	Left Turn	210	46	6	268	25	MAX
	Through	210	46	6	268	25	MAX
	Right Turn						
EB	Left Turn	300	125	6	403	22	MAX
	Through	300	125	6	403	22	MAX
	Right Turn	300	126	6	404	22	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	24	5	NO
	Through						
	Right Turn	200	0	0	26	5	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	3	0	73	18	NO
	Right Turn	310	3	0	75	18	NO
WB	Left Turn	300	8	1	171	31	NO
	Through	300	8	1	171	31	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	45	3	215	19	NO
SB	Left Turn Through Right Turn	200	9	1	79	11	NO
EB	Left Turn Through Right Turn	600	24	3	307	42	NO
WB	Left Turn Through Right Turn	800	33	4	554	126	NO

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	51	18	NO
	Through						
	Right Turn	200	1	0	51	18	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	2	0	71	18	NO
	Right Turn	300	2	0	71	18	NO
WB	Left Turn	290	14	2	188	38	NO
	Through	290	14	2	188	38	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	68	17	NO
	Through	200	2	1	68	17	NO
	Right Turn	200	3	1	69	17	NO
SB	Left Turn	200	17	5	186	38	NO
	Through	200	17	5	186	38	NO
	Right Turn	200	19	5	190	38	NO
EB	Left Turn	290	4	1	65	21	NO
	Through	290	4	1	65	21	NO
	Right Turn	290	5	1	71	21	NO
WB	Left Turn	300	2	1	99	24	NO
	Through	300	3	1	132	22	NO
	Right Turn	300	2	1	92	24	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	76	6	341	62	MAX
	Right Turn	200	76	6	341	62	MAX
SB	Left Turn	200	86	5	290	13	MAX
	Through	200	60	5	287	12	MAX
	Right Turn						
EB	Left Turn	300	111	8	389	9	MAX
	Through	300	111	8	389	9	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	8	2	132	27	NO
	Through	200	13	2	161	17	NO
	Right Turn						
SB	Left Turn						
	Through	200	33	7	249	60	MAX
	Right Turn	200	33	7	249	60	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	45	3	226	34	NO
	Through	1,000	23	2	165	87	NO
	Right Turn	150	1	0	105	29	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	20	4	174	42	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	0	0	NO
	Right Turn	500	0	0	12	16	NO
EB	Left Turn	1,000	60	16	512	103	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	9	1	226	38	NO
EB	Left Turn	600	7	4	331	145	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	15	1	129	37	NO
	Through	200	15	1	129	37	NO
	Right Turn						
SB	Left Turn						
	Through	200	10	2	201	44	MAX
	Right Turn	200	10	2	201	44	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	32	1	159	25	NO
	Through	200	32	1	159	25	NO
	Right Turn	220	30	1	162	25	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	14	2	225	39	MAX
	Right Turn	210	14	2	225	39	MAX
SB	Left Turn	170	23	3	233	54	MAX
	Through	170	23	3	233	54	MAX
	Right Turn						
EB	Left Turn	180	71	6	311	26	MAX
	Through	180	71	6	311	26	MAX
	Right Turn	180	71	6	311	26	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	3	1	121	30	NO
	Through	180	3	1	121	30	NO
	Right Turn						
SB	Left Turn						
	Through	200	9	2	195	22	NO
	Right Turn	200	9	2	195	22	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	28	2	159	24	NO
	Through	300	31	2	159	24	NO
	Right Turn	300	33	2	162	24	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	22	22	255	150	MAX
	Right Turn	180	32	24	289	150	MAX
NE	Left Turn	670	16	2	101	17	NO
	Through						
	Right Turn	670	16	2	101	17	NO
EB	Left Turn	380	43	2	140	16	NO
	Through	380	43	2	140	16	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	44	18	264	67	MAX
	Through	190	44	18	264	67	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	103	8	402	52	MAX
	Right Turn	250	103	8	402	52	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	2	2	191	94	NO
	Through						
	Right Turn	1,000	1	1	92	75	NO
SB	Left Turn						
	Through	1,000	0	0	96	11	NO
	Right Turn	1,000	1	0	54	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	41	3	281	21	NO
	Through	350	19	1	87	13	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **3 PM to 4 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	24	2	213	16	MAX
	Through	200	24	2	213	16	MAX
	Right Turn	200	25	2	218	16	MAX
EB	Left Turn						
	Through	500	63	4	370	48	NO
	Right Turn	500	75	4	401	48	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	8	1	115	24	NO
	Right Turn	200	8	2	117	24	NO
SB	Left Turn	200	11	2	107	19	NO
	Through	200	11	2	107	19	NO
	Right Turn						
EB	Left Turn	800	107	11	506	85	NO
	Through	800	107	11	506	85	NO
	Right Turn	800	106	11	507	85	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	13	2	113	27	NO
	Through	1,000	76	7	640	199	NO
	Right Turn	1,000	76	7	640	199	NO
SB	Left Turn						
	Through	185	4	1	66	23	NO
	Right Turn	185	4	1	67	23	NO
EB	Left Turn	800	11	1	93	24	NO
	Through	800	23	3	150	31	NO
	Right Turn	800	0	0	54	23	NO
WB	Left Turn	580	61	8	268	48	NO
	Through	580	20	3	178	31	NO
	Right Turn	580	17	3	179	31	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	214	56	1,043	264	MAX
	Through	1,000	214	56	1,043	264	MAX
	Right Turn	1,000	217	56	1,049	264	MAX
SB	Left Turn	500	37	3	267	24	NO
	Through	500	37	3	267	24	NO
	Right Turn	500	35	4	271	24	NO
EB	Left Turn	1,000	13	1	166	41	NO
	Through	1,000	13	1	166	41	NO
	Right Turn	1,000	14	2	169	41	NO
WB	Left Turn	1,000	22	6	433	57	NO
	Through	1,000	22	6	433	57	NO
	Right Turn	1,000	20	7	326	86	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	121	16	490	12	MAX
	Through	510	85	12	469	25	NO
	Right Turn						
SB	Left Turn	180	28	2	159	41	NO
	Through	200	29	2	160	41	NO
	Right Turn	200	25	3	171	42	NO
EB	Left Turn						
	Through	600	114	8	400	64	NO
	Right Turn	600	114	9	402	64	NO
WB	Left Turn	400	98	28	409	96	MAX
	Through	1,000	11	2	161	34	NO
	Right Turn	1,000	9	2	161	34	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	400	155	56	627	44	MAX
	Through	500	229	32	635	39	MAX
	Right Turn						
SB	Left Turn						
	Through	190	20	7	218	3	MAX
	Right Turn	190	22	7	224	3	MAX
EB	Left Turn						
	Through	1,000	238	94	692	29	NO
	Right Turn	1,000	237	94	692	29	NO
WB	Left Turn						
	Through	200	25	3	281	18	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	73	10	305	5	MAX
	Right Turn	210	87	11	338	5	MAX
SB	Left Turn						
	Through	220	12	14	276	67	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	16	9	168	96	NO
	Through						
	Right Turn	220	16	9	168	96	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	135	13	313	11	MAX
	Right Turn	210	139	13	317	11	MAX
SB	Left Turn	100	48	11	244	56	MAX
	Through	150	8	2	188	56	MAX
	Right Turn						
EB	Left Turn	1,000	120	26	457	123	NO
	Through	1,000	120	26	457	123	NO
	Right Turn	1,000	120	27	461	123	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	55	8	292	18	MAX
	Through	170	55	8	292	18	MAX
	Right Turn						
SB	Left Turn						
	Through	140	38	4	252	36	MAX
	Right Turn	140	1	1	67	69	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	78	19	329	68	MAX
	Through	800	78	19	329	68	NO
	Right Turn	200	66	40	304	114	MAX

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	31	6	274	10	MAX
	Through	145	109	11	278	9	MAX
	Right Turn	145	109	11	278	9	MAX
SB	Left Turn	80	13	4	108	34	MAX
	Through	240	10	1	105	14	NO
	Right Turn	80	1	0	57	12	NO
EB	Left Turn	160	29	6	168	39	MAX
	Through	500	113	18	466	114	NO
	Right Turn	500	115	18	469	114	NO
WB	Left Turn	190	51	11	181	59	NO
	Through	400	33	4	194	28	NO
	Right Turn	400	31	4	195	28	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	1	0	40	7	NO
SB	Left Turn	180	118	7	295	20	MAX
	Through	180	118	7	296	20	MAX
	Right Turn						
EB	Left Turn						
	Through	270	39	6	278	42	MAX
	Right Turn	270	36	7	284	42	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	4	5	136	112	NO
	Right Turn	200	3	5	126	122	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	9	5	103	32	NO
	Through	310	6	2	64	14	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	75	4	439	68	NO
	Through	1,000	77	4	439	68	NO
	Right Turn	1,000	76	4	441	68	NO
EB	Left Turn						
	Through	390	96	13	439	24	MAX
	Right Turn	390	96	13	439	24	MAX
WB	Left Turn	130	26	4	155	54	MAX
	Through	380	13	1	121	19	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	168	7	340	0	MAX
	Right Turn	220	174	7	346	0	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	75	9	399	26	MAX
	Through	315	75	9	399	26	MAX
	Right Turn	315	76	9	403	26	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	33	3	144	21	NO
	Through	200	33	3	144	21	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	63	8	461	17	MAX
	Right Turn						
WB	Left Turn						
	Through	240	14	2	121	16	NO
	Right Turn	240	10	1	121	16	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	109	11	362	1	MAX
	Right Turn						
SB	Left Turn						
	Through	200	38	3	268	42	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	77	6	286	10	MAX
SB	Left Turn Through Right Turn	200	14	4	256	44	MAX
EB	Left Turn Through Right Turn	300	15	4	177	42	NO
WB	Left Turn Through Right Turn	300 300	36 36	8 8	260 260	87 87	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	91	5	265	34	MAX
SB	Left Turn Through Right Turn	200	33	4	271	26	MAX
EB	Left Turn Through Right Turn	300	8	1	100	36	NO
WB	Left Turn Through Right Turn	300	78	21	387	37	MAX

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	75	4	256	30	MAX
	Right Turn	200	76	4	257	30	MAX
SB	Left Turn	210	112	7	290	3	MAX
	Through	210	112	7	290	3	MAX
	Right Turn						
EB	Left Turn	300	107	10	395	2	MAX
	Through	300	107	10	395	2	MAX
	Right Turn	300	108	10	396	2	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	31	11	NO
	Through						
	Right Turn	200	1	0	33	11	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	4	0	100	28	NO
	Right Turn	310	4	0	102	28	NO
WB	Left Turn	300	21	12	259	66	NO
	Through	300	21	12	259	66	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	103	31	500	109	NO
SB	Left Turn Through Right Turn	200	15	2	76	9	NO
EB	Left Turn Through Right Turn	600	341	126	1,053	213	MAX
WB	Left Turn Through Right Turn	800	51	6	578	138	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	0	45	9	NO
	Through						
	Right Turn	200	2	0	45	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	4	0	95	28	NO
	Right Turn	300	4	0	95	28	NO
WB	Left Turn	290	31	7	256	47	NO
	Through	290	31	7	256	47	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	4	1	96	20	NO
	Through	200	4	1	96	20	NO
	Right Turn	200	4	1	98	20	NO
SB	Left Turn	200	52	12	266	19	MAX
	Through	200	52	12	266	19	MAX
	Right Turn	200	55	12	270	19	MAX
EB	Left Turn	290	8	1	106	34	NO
	Through	290	8	1	106	34	NO
	Right Turn	290	9	1	112	34	NO
WB	Left Turn	300	1	1	93	29	NO
	Through	300	3	2	130	28	NO
	Right Turn	300	2	1	86	29	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	105	9	469	47	MAX
	Right Turn	200	105	9	469	47	MAX
SB	Left Turn	200	82	3	289	7	MAX
	Through	200	54	6	289	8	MAX
	Right Turn						
EB	Left Turn	300	77	6	380	34	MAX
	Through	300	77	6	380	34	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn	200	8	2	130	25	NO
	Through	200	13	2	186	31	NO
	Right Turn						
SB	Left Turn						
	Through	200	28	6	252	66	MAX
	Right Turn	200	28	6	252	66	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	42	3	240	50	NO
	Through	1,000	25	2	147	78	NO
	Right Turn	150	1	1	116	92	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	56	11	221	34	MAX
SB	Left Turn Through	500	0	0	0	0	NO
	Right Turn	500	0	0	13	10	NO
EB	Left Turn Through Right Turn	1,000	660	159	1,657	439	MAX
WB	Left Turn Through Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn						
SB	Left Turn Through						
	Right Turn	450	21	2	221	30	NO
EB	Left Turn Through Right Turn	600	466	59	990	5	MAX
WB	Left Turn Through Right Turn						

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	22	2	151	37	NO
	Through	200	22	2	151	37	NO
	Right Turn						
SB	Left Turn						
	Through	200	45	7	280	34	MAX
	Right Turn	200	45	7	280	34	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	37	4	143	21	NO
	Through	200	37	4	143	21	NO
	Right Turn	220	36	4	146	21	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	17	2	246	34	MAX
	Right Turn	210	17	2	246	34	MAX
SB	Left Turn	170	97	27	298	7	MAX
	Through	170	97	27	298	7	MAX
	Right Turn						
EB	Left Turn	180	84	10	316	15	MAX
	Through	180	84	10	316	15	MAX
	Right Turn	180	84	10	316	15	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	6	2	117	29	NO
	Through	180	6	2	117	29	NO
	Right Turn						
SB	Left Turn						
	Through	200	53	33	245	27	MAX
	Right Turn	200	53	33	245	27	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	32	3	158	11	NO
	Through	300	31	2	158	11	NO
	Right Turn	300	33	2	160	11	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	102	52	539	161	MAX
	Right Turn	180	122	57	573	161	MAX
NE	Left Turn	670	20	1	92	14	NO
	Through						
	Right Turn	670	20	1	92	14	NO
EB	Left Turn	380	51	5	167	21	NO
	Through	380	51	5	167	21	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	127	37	312	20	MAX
	Through	190	127	37	312	20	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	134	27	414	78	MAX
	Right Turn	250	134	27	414	78	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	7	2	296	54	NO
	Through						
	Right Turn	1,000	2	1	185	54	NO
SB	Left Turn						
	Through	1,000	0	0	94	11	NO
	Right Turn	1,000	1	0	55	11	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	38	3	261	20	NO
	Through	350	19	2	81	14	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **4 PM to 5 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	35	2	230	8	MAX
	Through	200	35	2	230	8	MAX
	Right Turn	200	36	2	234	8	MAX
EB	Left Turn						
	Through	500	80	5	428	81	NO
	Right Turn	500	93	6	459	81	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	25	4	213	49	MAX
	Right Turn	200	25	4	214	49	MAX
SB	Left Turn	200	31	4	200	23	NO
	Through	200	31	4	200	23	NO
	Right Turn						
EB	Left Turn	800	202	35	729	71	NO
	Through	800	202	35	729	71	NO
	Right Turn	800	203	35	730	71	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	15	2	138	23	NO
	Through	1,000	85	6	647	90	NO
	Right Turn	1,000	85	6	647	90	NO
SB	Left Turn						
	Through	185	6	1	72	19	NO
	Right Turn	185	6	1	73	19	NO
EB	Left Turn	800	21	2	162	19	NO
	Through	800	32	2	210	44	NO
	Right Turn	800	0	0	33	11	NO
WB	Left Turn	580	54	7	225	38	NO
	Through	580	22	3	164	15	NO
	Right Turn	580	19	3	165	15	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	59	7	433	116	NO
	Through	1,000	59	7	433	116	NO
	Right Turn	1,000	62	7	439	116	NO
SB	Left Turn	500	31	1	229	27	NO
	Through	500	31	1	229	27	NO
	Right Turn	500	28	2	233	27	NO
EB	Left Turn	1,000	12	2	157	15	NO
	Through	1,000	12	2	157	15	NO
	Right Turn	1,000	13	2	160	15	NO
WB	Left Turn	1,000	15	4	390	102	NO
	Through	1,000	15	4	390	102	NO
	Right Turn	1,000	13	2	281	51	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	78	12	372	65	MAX
	Through	510	38	7	346	70	NO
	Right Turn						
SB	Left Turn	180	29	2	155	30	NO
	Through	200	30	2	156	30	NO
	Right Turn	200	29	3	167	30	NO
EB	Left Turn						
	Through	600	120	11	456	100	NO
	Right Turn	600	121	11	458	100	NO
WB	Left Turn	400	65	16	328	97	NO
	Through	1,000	9	2	154	42	NO
	Right Turn	1,000	8	2	154	42	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	400	58	18	343	129	NO
	Through	500	102	25	567	39	MAX
	Right Turn						
SB	Left Turn						
	Through	190	40	6	220	8	MAX
	Right Turn	190	43	6	226	8	MAX
EB	Left Turn						
	Through	1,000	285	100	670	56	NO
	Right Turn	1,000	284	100	670	56	NO
WB	Left Turn						
	Through	200	25	3	279	12	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	33	20	296	15	MAX
	Right Turn	210	41	25	329	15	MAX
SB	Left Turn						
	Through	220	12	5	296	65	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	10	6	124	67	NO
	Through						
	Right Turn	220	10	6	124	67	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	89	38	306	2	MAX
	Right Turn	210	91	39	310	2	MAX
SB	Left Turn	100	44	14	256	50	MAX
	Through	150	7	1	190	57	MAX
	Right Turn						
EB	Left Turn	1,000	172	129	590	299	NO
	Through	1,000	172	129	590	299	NO
	Right Turn	1,000	173	130	594	299	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	31	7	276	5	MAX
	Through	170	31	7	276	5	MAX
	Right Turn						
SB	Left Turn						
	Through	140	32	3	218	25	MAX
	Right Turn	140	0	0	39	16	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	78	25	328	85	MAX
	Through	800	78	25	328	85	NO
	Right Turn	200	45	39	291	130	MAX

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	24	8	272	9	MAX
	Through	145	74	11	284	16	MAX
	Right Turn	145	75	11	284	16	MAX
SB	Left Turn	80	16	6	113	37	MAX
	Through	240	9	1	84	13	NO
	Right Turn	80	2	0	62	30	NO
EB	Left Turn	160	119	167	538	404	MAX
	Through	500	276	193	807	367	MAX
	Right Turn	500	279	193	810	367	MAX
WB	Left Turn	190	48	6	175	28	NO
	Through	400	43	5	245	24	NO
	Right Turn	400	41	5	246	24	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	1	1	59	10	NO
SB	Left Turn	180	102	4	294	10	MAX
	Through	180	102	4	295	10	MAX
	Right Turn						
EB	Left Turn						
	Through	270	54	44	305	64	MAX
	Right Turn	270	51	45	311	64	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	1	0	52	18	NO
	Right Turn	200	0	0	51	19	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	7	2	92	11	NO
	Through	310	4	1	66	21	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	91	6	467	41	NO
	Through	1,000	92	5	467	41	NO
	Right Turn	1,000	92	5	469	41	NO
EB	Left Turn						
	Through	390	137	34	470	44	MAX
	Right Turn	390	137	34	470	44	MAX
WB	Left Turn	130	8	2	104	17	NO
	Through	380	17	1	141	16	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	183	8	337	4	MAX
	Right Turn	220	189	8	344	4	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	85	37	402	21	MAX
	Through	315	85	37	402	21	MAX
	Right Turn	315	86	38	406	21	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	69	47	238	88	MAX
	Through	200	69	47	238	88	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	76	12	463	11	MAX
	Right Turn						
WB	Left Turn						
	Through	240	15	1	113	15	NO
	Right Turn						

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	121	10	362	1	MAX
	Right Turn						
SB	Left Turn						
	Through	200	15	3	208	44	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	84	8	284	9	MAX
SB	Left Turn Through Right Turn	200	9	3	197	47	NO
EB	Left Turn Through Right Turn	300	27	4	229	56	NO
WB	Left Turn Through Right Turn	300 300	108 108	35 35	396 396	12 12	MAX MAX

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	89	7	282	21	MAX
SB	Left Turn Through Right Turn	200	23	4	239	39	MAX
EB	Left Turn Through Right Turn	300	48	11	272	11	NO
WB	Left Turn Through Right Turn	300	35	7	294	55	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	85	5	261	20	MAX
	Right Turn	200	86	5	263	20	MAX
SB	Left Turn	210	37	6	270	30	MAX
	Through	210	37	6	270	30	MAX
	Right Turn						
EB	Left Turn	300	123	28	397	29	MAX
	Through	300	123	28	397	29	MAX
	Right Turn	300	124	28	399	29	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	30	10	NO
	Through						
	Right Turn	200	1	0	32	10	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	27	1	223	8	NO
	Right Turn	310	27	1	225	8	NO
WB	Left Turn	300	7	1	172	42	NO
	Through	300	7	1	172	42	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	83	27	528	91	NO
SB	Left Turn Through Right Turn	200	27	3	260	8	MAX
EB	Left Turn Through Right Turn	600	488	93	1,366	165	MAX
WB	Left Turn Through Right Turn	800	55	7	464	102	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	66	11	NO
	Through						
	Right Turn	200	2	1	66	11	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	21	1	202	9	NO
	Right Turn	300	21	1	202	9	NO
WB	Left Turn	290	9	2	157	35	NO
	Through	290	9	2	157	35	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	5	1	106	19	NO
	Through	200	5	1	106	19	NO
	Right Turn	200	5	1	108	19	NO
SB	Left Turn	200	29	6	262	31	MAX
	Through	200	29	6	262	31	MAX
	Right Turn	200	30	6	266	31	MAX
EB	Left Turn	290	37	2	248	24	NO
	Through	290	37	2	248	24	NO
	Right Turn	290	39	2	254	24	NO
WB	Left Turn	300	0	0	40	11	NO
	Through	300	1	0	88	11	NO
	Right Turn	300	0	0	33	11	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	195	34	662	111	MAX
	Right Turn	200	195	34	662	111	MAX
SB	Left Turn	200	108	8	295	15	MAX
	Through	200	78	11	290	11	MAX
	Right Turn						
EB	Left Turn	300	171	17	406	14	MAX
	Through	300	171	17	406	14	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	10	3	139	25	NO
	Through	200	19	3	183	34	NO
	Right Turn						
SB	Left Turn						
	Through	200	66	19	354	87	MAX
	Right Turn	200	66	19	354	87	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	46	3	265	32	NO
	Through	1,000	25	3	203	118	NO
	Right Turn	150	1	1	130	44	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	27	6	195	20	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	27	52	NO
	Right Turn	500	0	0	14	18	NO
EB	Left Turn	1,000	161	77	1,646	489	MAX
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	12	1	193	21	NO
EB	Left Turn	600	519	64	993	2	MAX
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	30	11	197	46	NO
	Through	200	30	11	197	46	NO
	Right Turn						
SB	Left Turn						
	Through	200	15	15	224	41	MAX
	Right Turn	200	15	15	224	41	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	38	7	177	43	NO
	Through	200	38	7	177	43	NO
	Right Turn	220	36	8	178	46	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	13	2	232	29	MAX
	Right Turn	210	13	2	232	29	MAX
SB	Left Turn	170	31	11	263	59	MAX
	Through	170	31	11	263	59	MAX
	Right Turn						
EB	Left Turn	180	86	7	312	23	MAX
	Through	180	86	7	312	23	MAX
	Right Turn	180	86	7	312	23	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	6	3	137	14	NO
	Through	180	6	3	137	14	NO
	Right Turn						
SB	Left Turn						
	Through	200	12	5	232	19	MAX
	Right Turn	200	12	5	232	19	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	27	2	153	14	NO
	Through	300	33	3	156	14	NO
	Right Turn	300	35	3	159	14	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	615	236	960	190	AVG
	Right Turn	180	647	238	994	190	AVG
NE	Left Turn	670	22	2	113	16	NO
	Through						
	Right Turn	670	22	2	113	16	NO
EB	Left Turn	380	62	3	207	35	NO
	Through	380	62	3	207	35	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	198	22	331	15	AVG
	Through	190	198	22	331	15	AVG
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	127	28	410	68	MAX
	Right Turn	250	127	28	410	68	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	4	3	271	77	NO
	Through						
	Right Turn	1,000	2	2	188	71	NO
SB	Left Turn						
	Through	1,000	0	0	95	10	NO
	Right Turn	1,000	1	0	55	7	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	6	1	132	20	NO
	Through	350	17	2	81	9	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **5 PM to 6 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	28	2	223	10	MAX
	Through	200	28	2	223	10	MAX
	Right Turn	200	28	2	227	10	MAX
EB	Left Turn						
	Through	500	59	4	343	79	NO
	Right Turn	500	71	4	374	79	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	46	7	285	12	MAX
	Right Turn	200	47	7	286	12	MAX
SB	Left Turn	200	32	2	195	27	NO
	Through	200	32	2	195	27	NO
	Right Turn						
EB	Left Turn	800	490	165	793	66	NO
	Through	800	490	165	793	66	NO
	Right Turn	800	492	165	795	66	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	10	2	99	19	NO
	Through	1,000	39	4	373	59	NO
	Right Turn	1,000	39	3	373	59	NO
SB	Left Turn						
	Through	185	3	1	46	10	NO
	Right Turn	185	2	1	49	8	NO
EB	Left Turn	800	18	2	143	35	NO
	Through	800	26	3	170	42	NO
	Right Turn	800	0	0	25	9	NO
WB	Left Turn	580	33	3	173	26	NO
	Through	580	20	3	184	38	NO
	Right Turn	580	17	3	184	38	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	20	2	210	58	NO
	Through	1,000	20	2	210	58	NO
	Right Turn	1,000	21	2	216	58	NO
SB	Left Turn	500	17	1	190	36	NO
	Through	500	17	1	190	36	NO
	Right Turn	500	14	1	195	36	NO
EB	Left Turn	1,000	4	1	112	36	NO
	Through	1,000	4	1	112	36	NO
	Right Turn	1,000	4	1	115	36	NO
WB	Left Turn	1,000	3	1	158	79	NO
	Through	1,000	3	1	158	79	NO
	Right Turn	1,000	3	1	106	26	NO

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	24	3	222	46	MAX
	Through	510	16	2	168	23	NO
	Right Turn						
SB	Left Turn	180	22	3	144	24	NO
	Through	200	23	3	145	24	NO
	Right Turn	200	18	2	145	26	NO
EB	Left Turn						
	Through	600	72	3	333	22	NO
	Right Turn	600	72	3	335	22	NO
WB	Left Turn	400	32	6	223	41	NO
	Through	1,000	7	2	160	34	NO
	Right Turn	1,000	6	2	160	34	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	400	11	2	96	22	NO
	Through	500	25	2	229	51	NO
	Right Turn						
SB	Left Turn						
	Through	190	61	4	219	2	MAX
	Right Turn	190	64	4	225	2	MAX
EB	Left Turn						
	Through	1,000	25	4	240	34	NO
	Right Turn						
WB	Left Turn						
	Through	200	6	2	149	55	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	1	1	89	32	NO
	Right Turn	210	2	1	122	32	NO
SB	Left Turn						
	Through	220	13	2	239	49	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn	220	2	0	58	14	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	51	5	303	7	MAX
	Right Turn	210	53	5	307	7	MAX
SB	Left Turn	100	40	7	233	61	MAX
	Through	150	3	1	102	58	NO
	Right Turn						
EB	Left Turn	1,000	68	7	325	72	NO
	Through	1,000	68	7	325	72	NO
	Right Turn	1,000	68	8	329	72	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	23	3	161	48	NO
	Through	170	23	3	161	48	NO
	Right Turn						
SB	Left Turn						
	Through	140	8	2	168	46	MAX
	Right Turn	140	0	0	37	18	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	61	4	248	20	MAX
	Through	800	61	4	248	20	NO
	Right Turn	200	4	1	96	23	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	10	2	219	45	MAX
	Through	145	23	4	261	14	MAX
	Right Turn	145	23	4	261	14	MAX
SB	Left Turn	80	3	1	54	15	NO
	Through	240	8	1	84	18	NO
	Right Turn	80	1	0	45	3	NO
EB	Left Turn	160	20	3	146	23	NO
	Through	500	64	3	288	62	NO
	Right Turn	500	66	3	291	62	NO
WB	Left Turn	190	34	3	144	21	NO
	Through	400	25	2	192	27	NO
	Right Turn	400	23	2	192	27	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	30	11	NO
SB	Left Turn	180	72	3	246	18	MAX
	Through	180	73	3	247	18	MAX
	Right Turn						
EB	Left Turn						
	Through	270	10	1	197	63	NO
	Right Turn	270	7	1	200	62	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	2	0	116	14	NO
	Right Turn	200	1	0	120	11	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	2	1	45	21	NO
	Through	310	3	1	62	13	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	77	4	393	71	NO
	Through	1,000	78	4	394	71	NO
	Right Turn	1,000	77	4	395	71	NO
EB	Left Turn						
	Through	390	23	7	306	86	NO
	Right Turn	390	23	7	306	86	NO
WB	Left Turn	130	3	1	81	19	NO
	Through	380	9	1	116	18	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	66	19	318	13	MAX
	Right Turn	220	71	19	324	13	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	19	4	277	49	NO
	Through	315	19	4	277	49	NO
	Right Turn	315	19	4	281	49	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	18	7	121	69	NO
	Through	200	18	7	121	69	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	19	3	285	110	NO
	Right Turn						
WB	Left Turn						
	Through	240	13	1	102	18	NO
	Right Turn	240	10	1	102	19	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	2	1	161	53	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	1	136	43	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	8	1	163	35	NO
SB	Left Turn Through Right Turn	200	6	1	212	58	MAX
EB	Left Turn Through Right Turn	300	42	5	235	48	NO
WB	Left Turn Through Right Turn	300 300	20 20	2 2	179 179	35 35	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	5	2	171	49	NO
SB	Left Turn Through Right Turn	200	16	2	226	32	MAX
EB	Left Turn Through Right Turn	300	12	1	136	62	NO
WB	Left Turn Through Right Turn	300	10	2	155	65	NO

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	15	2	167	23	NO
	Right Turn	200	16	2	169	23	NO
SB	Left Turn	210	24	2	200	29	NO
	Through	210	24	2	200	29	NO
	Right Turn						
EB	Left Turn	300	88	6	348	41	MAX
	Through	300	88	6	348	41	MAX
	Right Turn	300	89	6	350	41	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	25	12	NO
	Through						
	Right Turn	200	0	0	27	13	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	8	1	135	34	NO
	Right Turn	310	9	1	136	34	NO
WB	Left Turn	300	4	2	132	58	NO
	Through	300	4	2	132	58	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	15	1	159	37	NO
SB	Left Turn Through Right Turn	200	12	1	172	29	NO
EB	Left Turn Through Right Turn	600	18	1	183	41	NO
WB	Left Turn Through Right Turn	800	60	7	460	80	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	81	14	NO
	Through						
	Right Turn	200	2	1	81	14	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	6	0	129	24	NO
	Right Turn	300	6	0	129	24	NO
WB	Left Turn	290	2	1	94	41	NO
	Through	290	2	1	94	41	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	3	1	99	26	NO
	Through	200	3	1	99	26	NO
	Right Turn	200	3	1	100	26	NO
SB	Left Turn	200	5	2	141	59	NO
	Through	200	5	2	141	59	NO
	Right Turn	200	5	2	145	59	NO
EB	Left Turn	290	13	1	126	23	NO
	Through	290	13	1	126	23	NO
	Right Turn	290	15	2	132	23	NO
WB	Left Turn	300	0	0	42	13	NO
	Through	300	1	0	89	10	NO
	Right Turn	300	0	0	35	13	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	113	23	528	98	MAX
	Right Turn	200	113	23	528	98	MAX
SB	Left Turn	200	79	4	284	2	MAX
	Through	200	67	6	284	2	MAX
	Right Turn						
EB	Left Turn	300	148	31	400	13	MAX
	Through	300	148	31	400	13	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	7	2	145	25	NO
	Through	200	14	1	176	24	NO
	Right Turn						
SB	Left Turn						
	Through	200	50	16	347	78	MAX
	Right Turn	200	50	16	347	78	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	43	4	236	32	NO
	Through	1,000	26	3	225	173	NO
	Right Turn	150	1	1	136	50	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	6	1	154	13	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	2	5	NO
	Right Turn	500	0	0	6	14	NO
EB	Left Turn	1,000	6	1	69	13	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	10	1	185	21	NO
EB	Left Turn	600	3	2	157	52	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	5	1	131	37	NO
	Through	200	5	1	131	37	NO
	Right Turn						
SB	Left Turn						
	Through	200	5	1	171	50	NO
	Right Turn	200	5	1	171	50	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	8	1	108	12	NO
	Through	200	8	1	108	12	NO
	Right Turn	220	6	0	106	14	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	14	1	194	30	NO
	Right Turn	210	14	1	194	30	NO
SB	Left Turn	170	12	1	134	41	NO
	Through	170	12	1	134	41	NO
	Right Turn						
EB	Left Turn	180	27	3	304	27	MAX
	Through	180	27	3	304	27	MAX
	Right Turn	180	27	3	304	27	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	4	1	173	53	NO
	Through	180	4	1	173	53	NO
	Right Turn						
SB	Left Turn						
	Through	200	3	0	151	42	NO
	Right Turn	200	3	0	152	42	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	7	1	84	10	NO
	Through	300	7	1	82	16	NO
	Right Turn	300	7	1	85	16	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	113	106	605	354	MAX
	Right Turn	180	126	110	639	354	MAX
NE	Left Turn	670	16	1	83	16	NO
	Through						
	Right Turn	670	16	1	83	16	NO
EB	Left Turn	380	47	3	156	17	NO
	Through	380	47	3	156	17	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	61	30	291	64	MAX
	Through	190	61	30	291	64	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	63	3	250	30	NO
	Right Turn	250	63	3	250	30	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	59	49	NO
	Through						
	Right Turn	1,000	0	0	24	48	NO
SB	Left Turn						
	Through	1,000	0	0	92	9	NO
	Right Turn	1,000	1	0	49	5	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	2	0	83	14	NO
	Through	350	13	2	82	12	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **6 PM to 7 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	13	1	179	18	NO
	Through	200	13	1	179	18	NO
	Right Turn	200	14	1	184	18	NO
EB	Left Turn						
	Through	500	35	1	160	27	NO
	Right Turn	500	46	1	191	27	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	35	4	263	35	MAX
	Right Turn	200	35	4	264	35	MAX
SB	Left Turn	200	25	2	176	35	NO
	Through	200	25	2	176	35	NO
	Right Turn						
EB	Left Turn	800	260	140	699	179	NO
	Through	800	260	140	699	179	NO
	Right Turn	800	259	141	700	179	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	8	3	84	23	NO
	Through	1,000	14	2	282	126	NO
	Right Turn	1,000	13	2	282	126	NO
SB	Left Turn						
	Through	185	3	1	46	9	NO
	Right Turn	185	2	1	48	9	NO
EB	Left Turn	800	8	2	100	52	NO
	Through	800	25	3	197	31	NO
	Right Turn	800	0	0	26	14	NO
WB	Left Turn	580	27	2	147	23	NO
	Through	580	10	2	124	36	NO
	Right Turn	580	7	2	125	36	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	16	2	193	27	NO
	Through	1,000	16	2	193	27	NO
	Right Turn	1,000	17	2	199	27	NO
SB	Left Turn	500	14	1	172	28	NO
	Through	500	14	1	172	28	NO
	Right Turn	500	11	2	171	26	NO
EB	Left Turn	1,000	3	1	116	35	NO
	Through	1,000	3	1	116	35	NO
	Right Turn	1,000	3	1	119	35	NO
WB	Left Turn	1,000	2	1	103	35	NO
	Through	1,000	2	1	103	35	NO
	Right Turn	1,000	2	0	97	18	NO

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	13	2	128	25	NO
	Through	510	9	2	173	33	NO
	Right Turn						
SB	Left Turn	180	12	2	103	22	NO
	Through	200	13	2	105	22	NO
	Right Turn	200	7	1	103	22	NO
EB	Left Turn						
	Through	600	45	5	306	30	NO
	Right Turn	600	44	5	308	30	NO
WB	Left Turn	400	34	7	267	41	NO
	Through	1,000	4	1	110	23	NO
	Right Turn	1,000	3	1	108	23	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	400	8	1	81	13	NO
	Through	500	24	2	391	99	NO
	Right Turn						
SB	Left Turn						
	Through	190	55	4	216	1	MAX
	Right Turn	190	59	4	223	1	MAX
EB	Left Turn						
	Through	1,000	13	6	156	58	NO
	Right Turn	1,000	11	6	156	58	NO
WB	Left Turn						
	Through	200	4	1	122	21	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	1	1	149	127	NO
	Right Turn	210	1	1	179	131	NO
SB	Left Turn						
	Through	220	8	5	256	98	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn	220	1	0	43	10	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	22	3	287	26	MAX
	Right Turn	210	23	3	291	26	MAX
SB	Left Turn	100	16	3	160	28	MAX
	Through	150	8	1	145	27	NO
	Right Turn						
EB	Left Turn	1,000	23	1	172	23	NO
	Through	1,000	23	1	172	23	NO
	Right Turn	1,000	21	2	175	23	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	9	1	167	47	NO
	Through	170	9	1	167	47	NO
	Right Turn						
SB	Left Turn						
	Through	140	10	1	133	25	NO
	Right Turn	140	0	0	45	12	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	34	2	212	25	MAX
	Through	800	34	2	212	25	NO
	Right Turn	200	3	1	81	28	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	6	1	166	69	MAX
	Through	145	23	3	251	24	MAX
	Right Turn	145	23	3	252	24	MAX
SB	Left Turn	80	1	1	43	9	NO
	Through	240	6	1	60	10	NO
	Right Turn	80	1	0	44	13	NO
EB	Left Turn	160	9	2	84	14	NO
	Through	500	23	1	158	34	NO
	Right Turn	500	23	1	162	34	NO
WB	Left Turn	190	16	1	118	18	NO
	Through	400	11	2	148	13	NO
	Right Turn	400	8	2	147	14	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	22	2	NO
SB	Left Turn	180	37	2	222	40	MAX
	Through	180	37	2	223	40	MAX
	Right Turn						
EB	Left Turn						
	Through	270	10	1	204	51	NO
	Right Turn	270	8	1	191	37	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	1	0	114	25	NO
	Right Turn	200	1	0	115	25	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	1	0	48	22	NO
	Through	310	2	1	48	19	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	47	4	267	29	NO
	Through	1,000	49	3	268	29	NO
	Right Turn	1,000	47	3	269	29	NO
EB	Left Turn						
	Through	390	15	2	226	30	NO
	Right Turn	390	15	2	226	30	NO
WB	Left Turn	130	1	1	91	16	NO
	Through	380	4	1	95	23	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	7	1	137	37	NO
	Right Turn	220	8	1	143	37	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	10	1	145	23	NO
	Through	315	10	1	145	23	NO
	Right Turn	315	9	1	149	23	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	21	2	135	18	NO
	Through	200	21	2	135	18	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	14	2	154	21	NO
	Right Turn						
WB	Left Turn						
	Through	240	11	1	100	18	NO
	Right Turn	240	7	1	99	19	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	1	0	104	33	NO
	Right Turn						
SB	Left Turn						
	Through	200	10	2	160	14	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	6	1	127	30	NO
SB	Left Turn Through Right Turn	200	13	3	205	40	MAX
EB	Left Turn Through Right Turn	300	16	3	126	20	NO
WB	Left Turn Through Right Turn	300 300	16 16	3 3	127 127	27 27	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	3	1	150	56	NO
SB	Left Turn Through Right Turn	200	14	3	202	40	MAX
EB	Left Turn Through Right Turn	300	3	0	55	10	NO
WB	Left Turn Through Right Turn	300	5	1	58	17	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	7	1	171	43	NO
	Right Turn	200	7	1	172	43	NO
SB	Left Turn	210	12	2	155	43	NO
	Through	210	12	2	155	43	NO
	Right Turn						
EB	Left Turn	300	77	6	331	40	MAX
	Through	300	77	6	331	40	MAX
	Right Turn	300	78	6	333	40	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	11	9	NO
	Through						
	Right Turn	200	0	0	12	11	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	2	0	58	10	NO
	Right Turn	310	2	0	59	10	NO
WB	Left Turn	300	2	1	49	7	NO
	Through	300	2	1	49	7	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	16	4	259	70	NO
SB	Left Turn Through Right Turn	200	7	1	139	15	NO
EB	Left Turn Through Right Turn	600	13	1	123	13	NO
WB	Left Turn Through Right Turn	800	52	4	531	153	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	43	8	NO
	Through						
	Right Turn	200	1	0	43	8	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	2	0	63	16	NO
	Right Turn	300	2	0	63	16	NO
WB	Left Turn	290	1	0	43	12	NO
	Through	290	1	0	43	12	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	61	18	NO
	Through	200	1	0	61	18	NO
	Right Turn	200	1	0	63	18	NO
SB	Left Turn	200	2	0	87	20	NO
	Through	200	2	0	87	20	NO
	Right Turn	200	2	0	92	20	NO
EB	Left Turn	290	4	1	66	18	NO
	Through	290	4	1	66	18	NO
	Right Turn	290	5	1	72	18	NO
WB	Left Turn	300	0	0	42	14	NO
	Through	300	0	0	90	14	NO
	Right Turn	300	0	0	36	14	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	45	2	214	29	MAX
	Right Turn	200	45	2	214	29	MAX
SB	Left Turn	200	39	3	244	43	MAX
	Through	200	24	3	223	47	MAX
	Right Turn						
EB	Left Turn	300	84	13	339	43	MAX
	Through	300	84	13	339	43	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	4	1	101	34	NO
	Through	200	7	1	132	17	NO
	Right Turn						
SB	Left Turn						
	Through	200	11	2	188	51	NO
	Right Turn	200	11	2	188	51	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	24	3	191	41	NO
	Through	1,000	17	1	120	53	NO
	Right Turn	150	0	0	54	28	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	13	1	166	31	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	19	61	NO
	Right Turn	500	0	0	1	5	NO
EB	Left Turn	1,000	8	1	72	24	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	14	3	178	17	NO
EB	Left Turn	600	14	4	304	84	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

Queue Length **7 PM to 8 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	3	1	117	32	NO
	Through	200	3	1	117	32	NO
	Right Turn						
SB	Left Turn						
	Through	200	3	1	89	14	NO
	Right Turn	200	3	1	89	14	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	5	1	85	17	NO
	Through	200	5	1	85	17	NO
	Right Turn	220	4	1	81	13	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	6	1	138	39	NO
	Right Turn	210	6	1	138	39	NO
SB	Left Turn	170	5	0	77	11	NO
	Through	170	5	0	77	11	NO
	Right Turn						
EB	Left Turn	180	12	1	168	62	NO
	Through	180	12	1	168	62	NO
	Right Turn	180	12	1	168	62	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	2	0	121	21	NO
	Through	180	2	0	121	21	NO
	Right Turn						
SB	Left Turn						
	Through	200	1	0	81	36	NO
	Right Turn	200	1	0	81	36	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	4	0	67	16	NO
	Through	300	5	0	65	20	NO
	Right Turn	300	5	0	68	20	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	13	1	159	23	NO
	Right Turn	180	22	2	193	23	MAX
NE	Left Turn	670	6	1	69	16	NO
	Through						
	Right Turn	670	6	1	69	16	NO
EB	Left Turn	380	13	1	91	13	NO
	Through	380	13	1	91	13	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	13	1	173	28	NO
	Through	190	13	1	173	28	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	47	1	189	22	NO
	Right Turn	250	47	1	189	22	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	4	14	NO
	Through						
	Right Turn	1,000	0	0	0	0	NO
SB	Left Turn						
	Through	1,000	0	0	88	9	NO
	Right Turn	1,000	0	0	42	10	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	2	0	95	12	NO
	Through	350	1	0	52	10	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Midday Game**

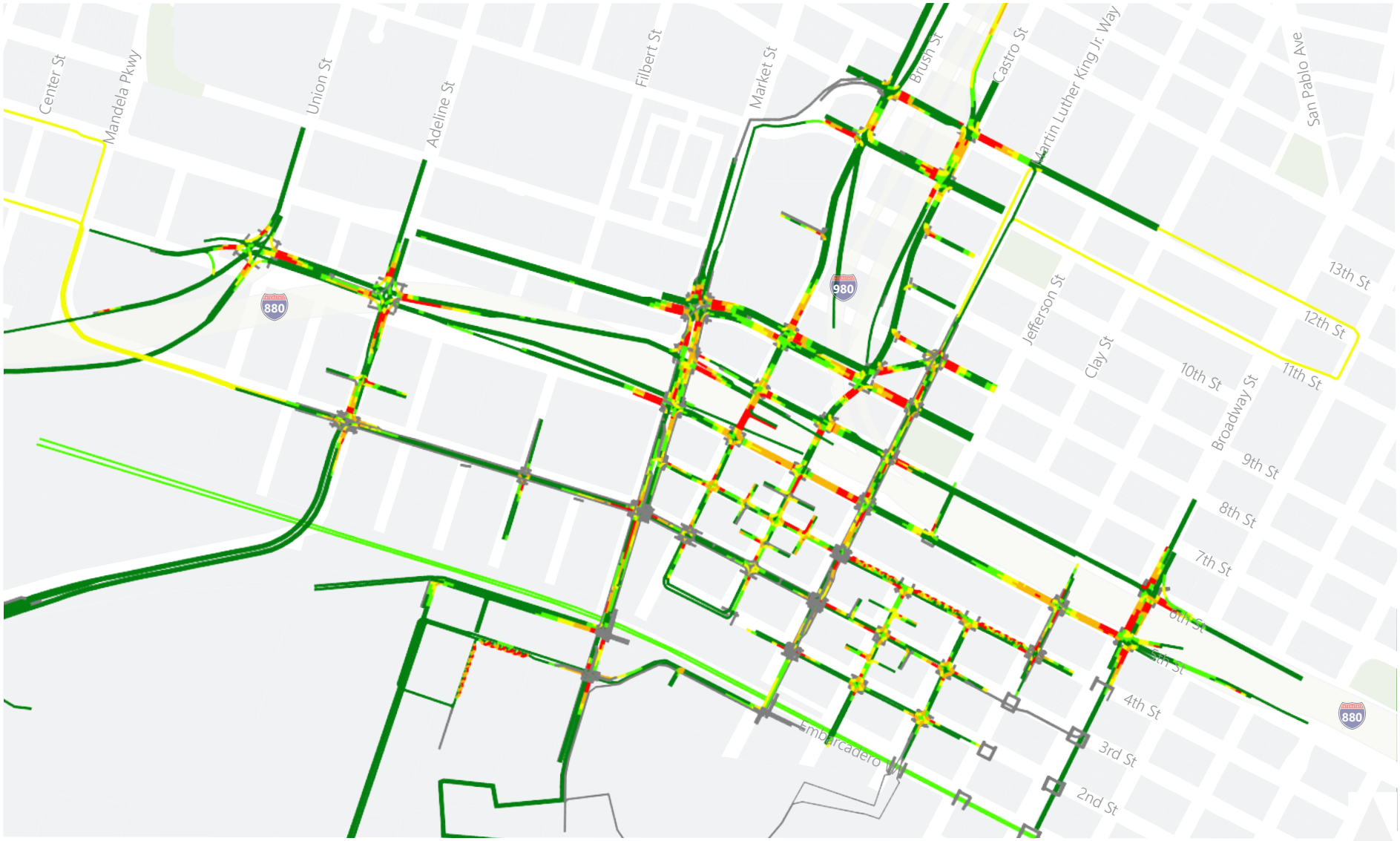
Queue Length **7 PM to 8 PM**

Intersection 31 **Brush St/11th St** **Signal**

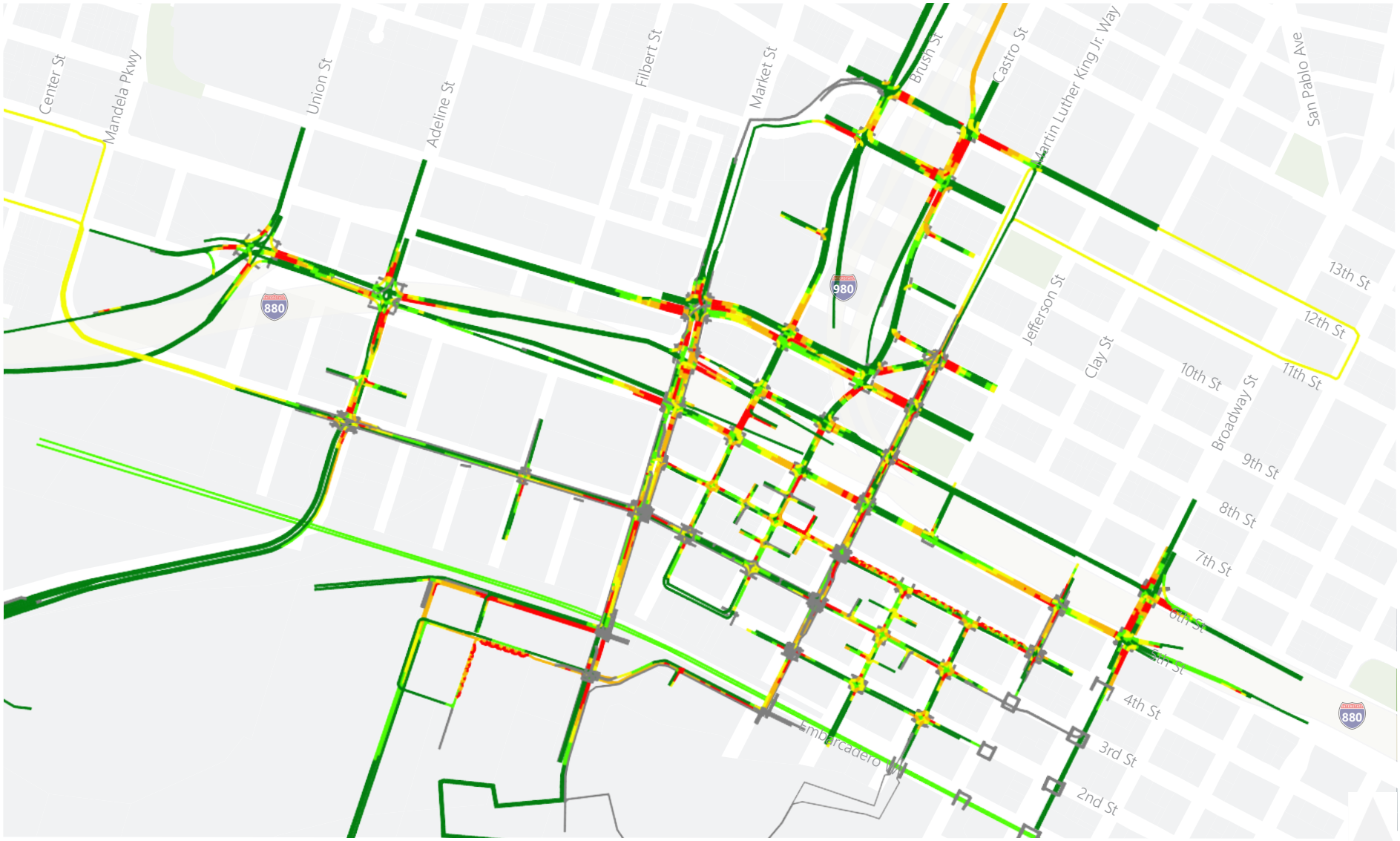
Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	11	1	141	24	NO
	Through	200	11	1	141	24	NO
	Right Turn	200	11	1	144	24	NO
EB	Left Turn						
	Through	500	8	1	87	15	NO
	Right Turn	500	13	1	117	15	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	6	1	115	33	NO
	Right Turn	200	5	2	116	33	NO
SB	Left Turn	200	7	1	86	25	NO
	Through	200	7	1	86	25	NO
	Right Turn						
EB	Left Turn	800	30	4	280	46	NO
	Through	800	30	4	280	46	NO
	Right Turn	800	27	4	281	46	NO
WB	Left Turn						
	Through						
	Right Turn						

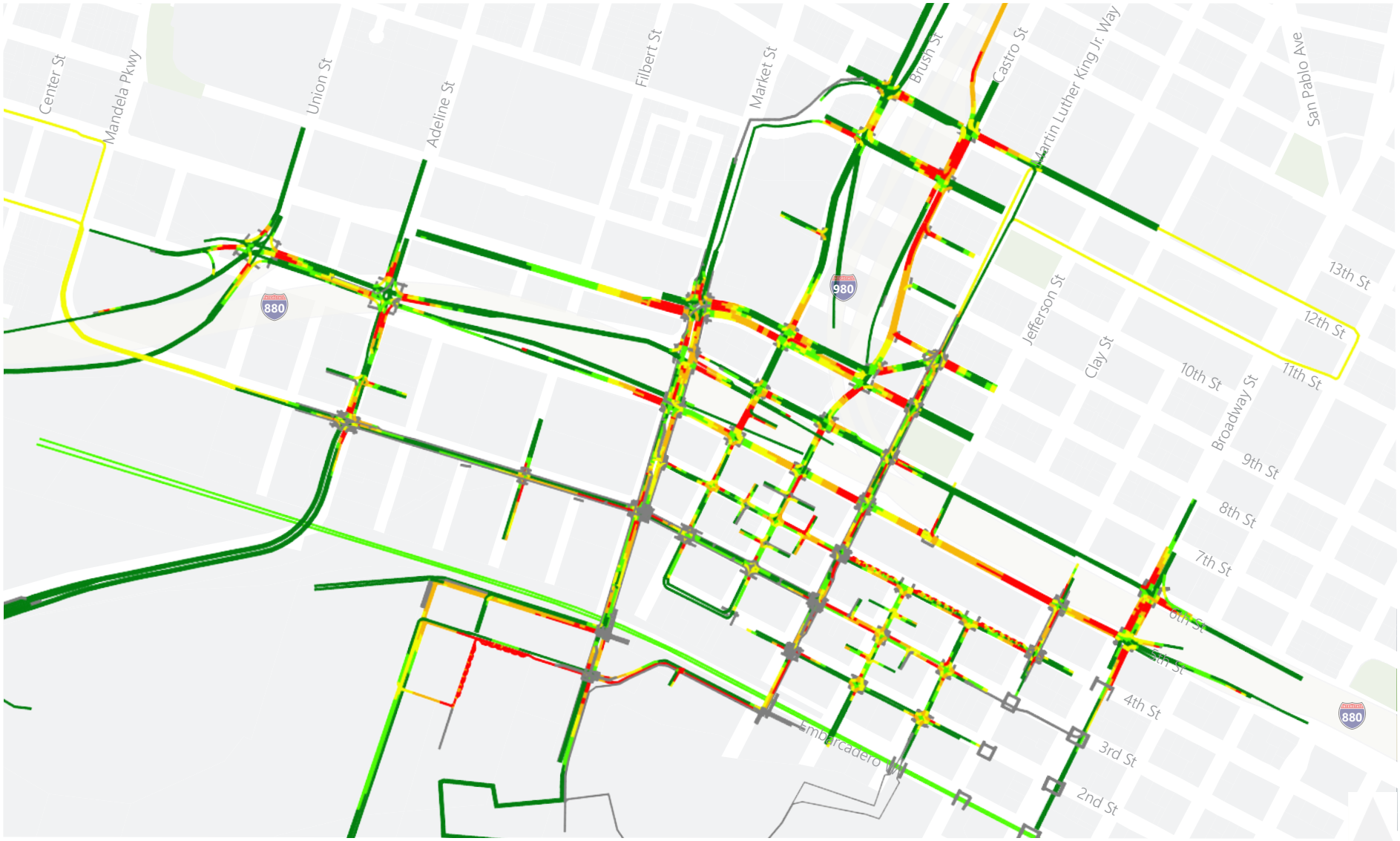


Full Build Out, Midday Ballgame - Average Motor Vehicle Speeds
3PM - 4PM



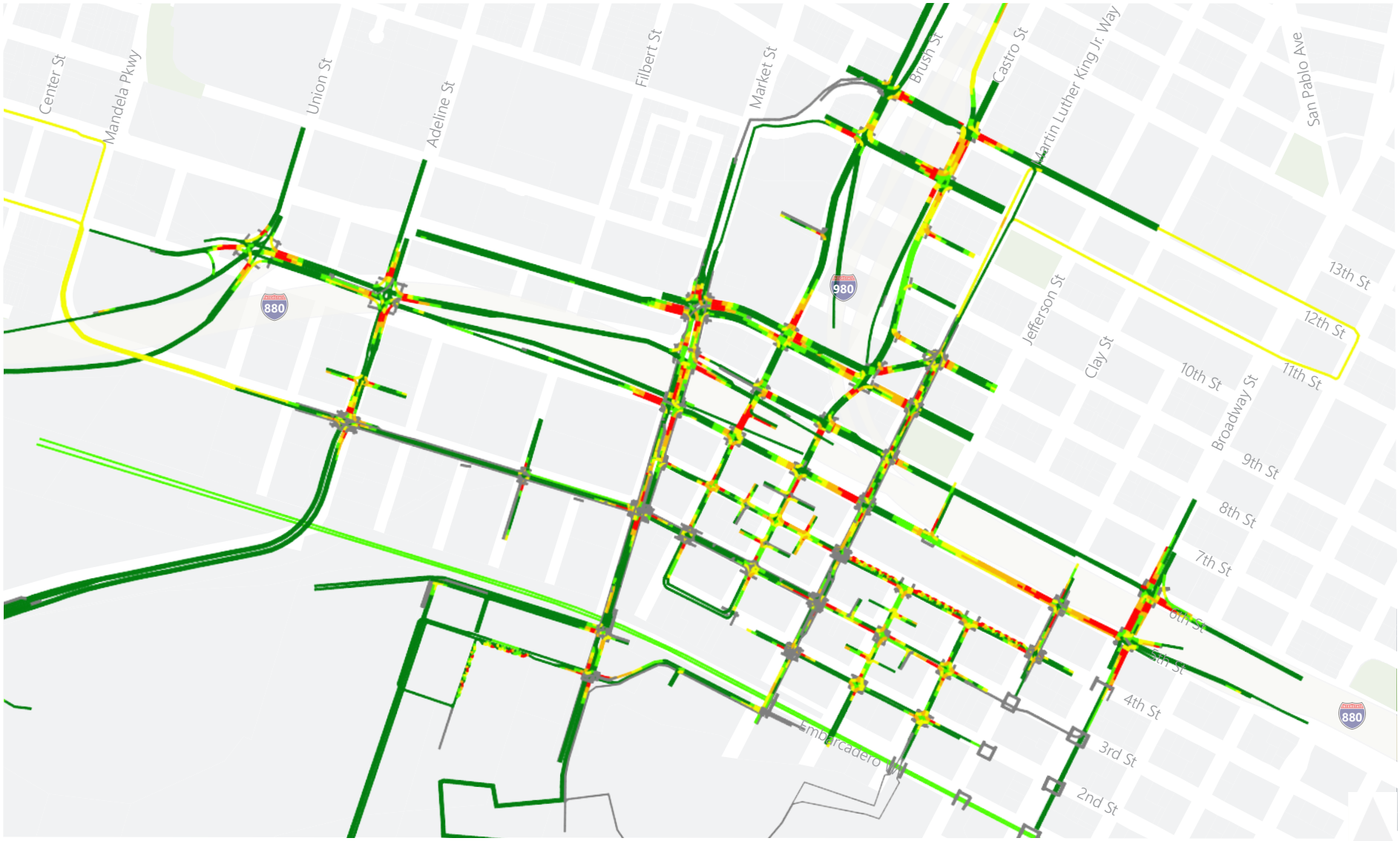
Full Build Out, Midday Ballgame - Average Motor Vehicle Speeds
4PM - 5PM

Figure I-8



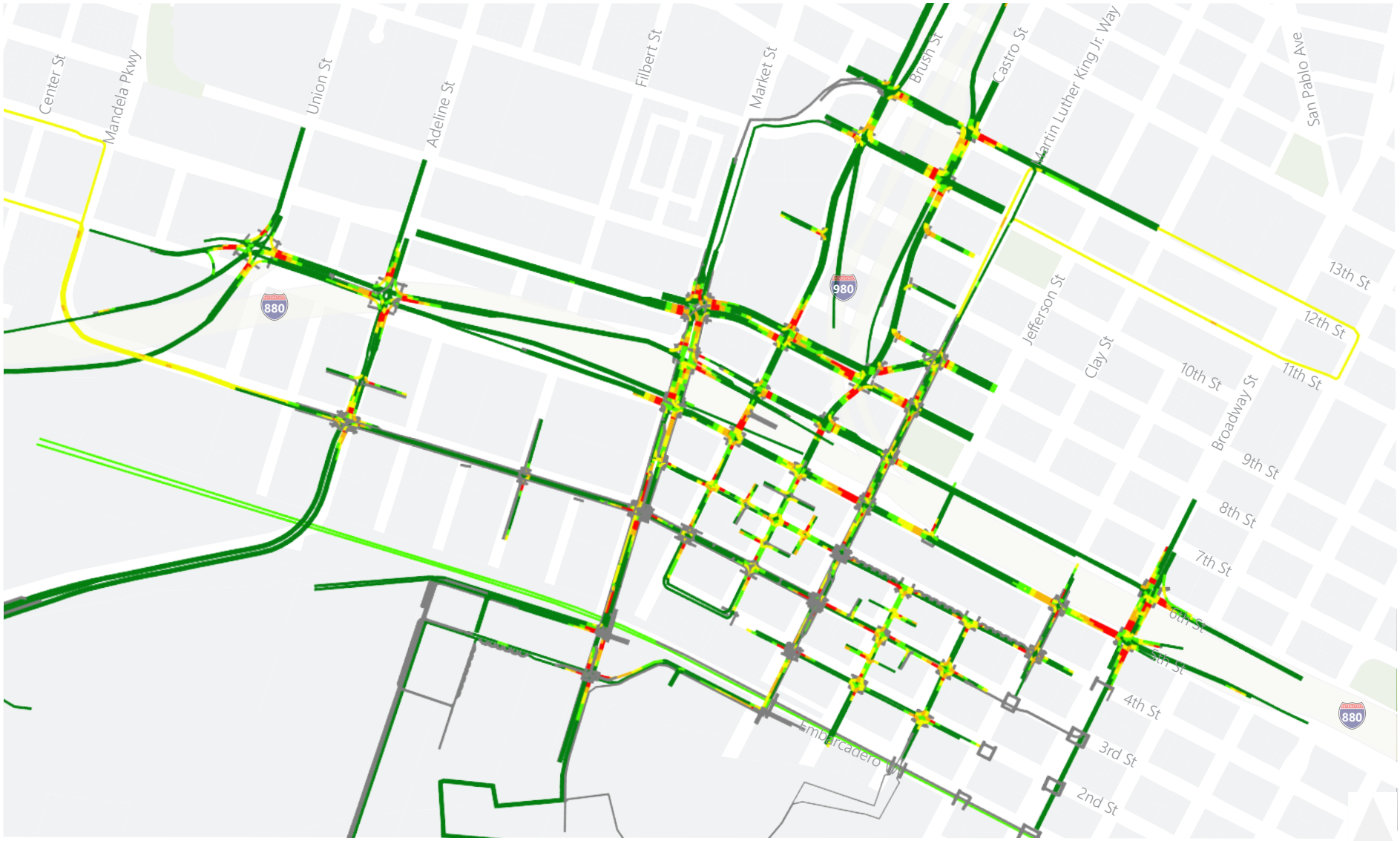
Full Build Out, Midday Ballgame - Average Motor Vehicle Speeds
5PM - 6PM

Figure I-9



Full Build Out, Midday Ballgame - Average Motor Vehicle Speeds
6PM - 7PM

Figure I-10



Full Build Out, Midday Ballgame - Average Motor Vehicle Speeds
7PM - 8PM

Figure I-11

FEHR PEERS

Appendix I:

Existing Plus Full Buildout Non-Ballpark Development Plus Ballgame Lane Configurations and Traffic Controls

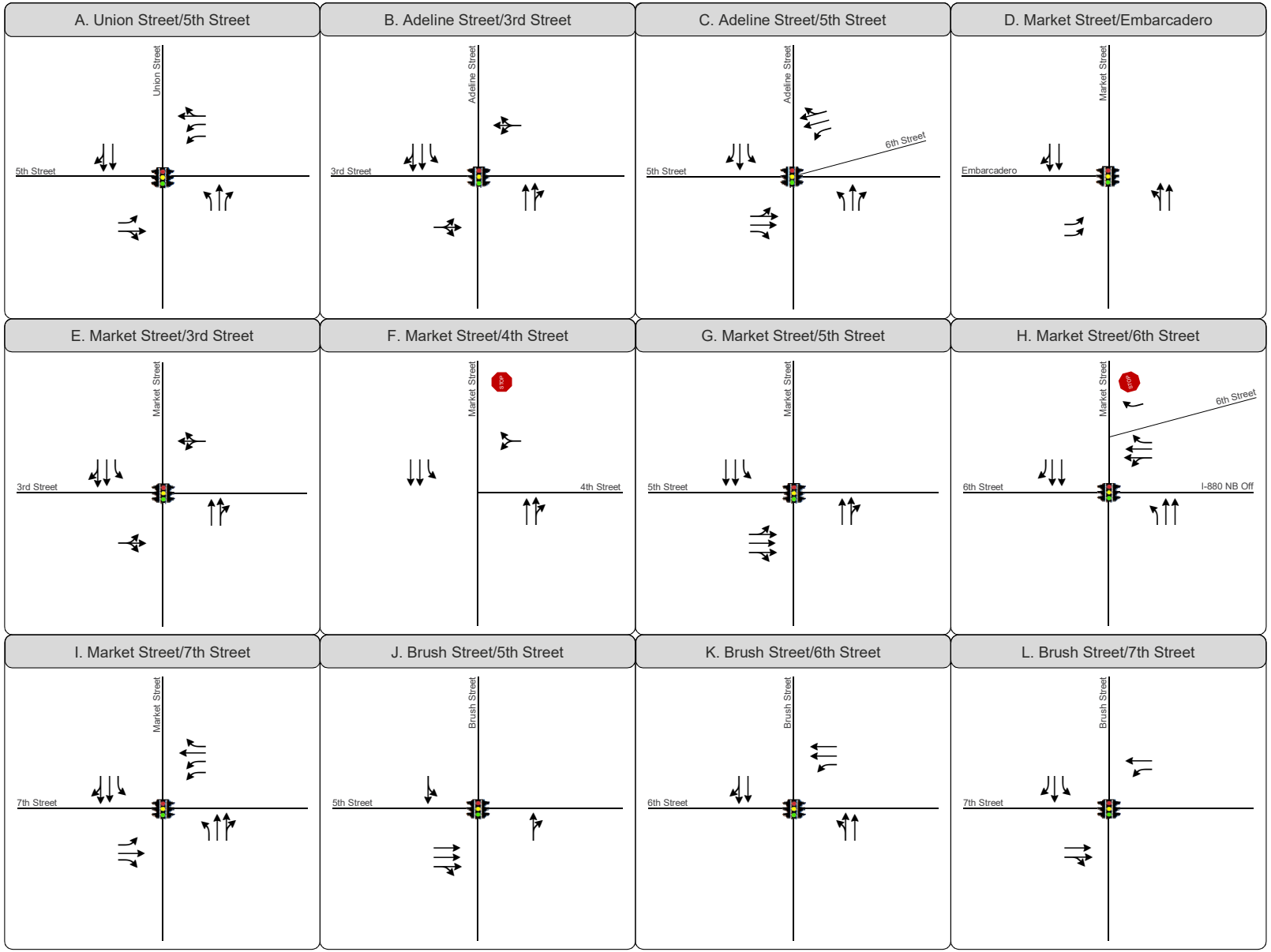


Figure I-1

Existing Plus Full Buildout Non-Ballpark Plus Ballpark Conditions Intersection Lane Configurations and Traffic Controls

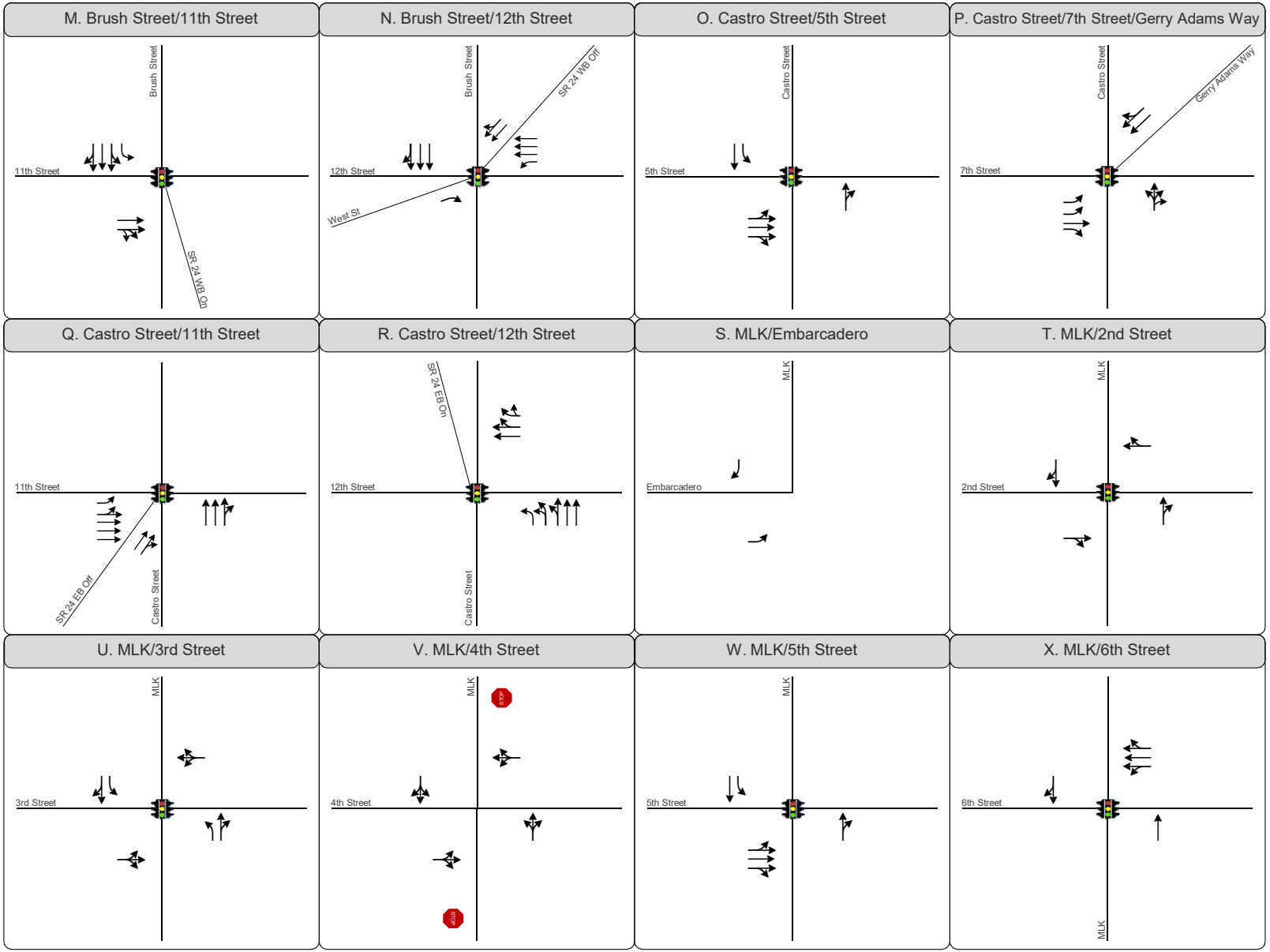


Figure I-2

Existing Plus Full Buildout Non-Ballpark Plus Ballpark Conditions Intersection Lane Configurations and Traffic Controls

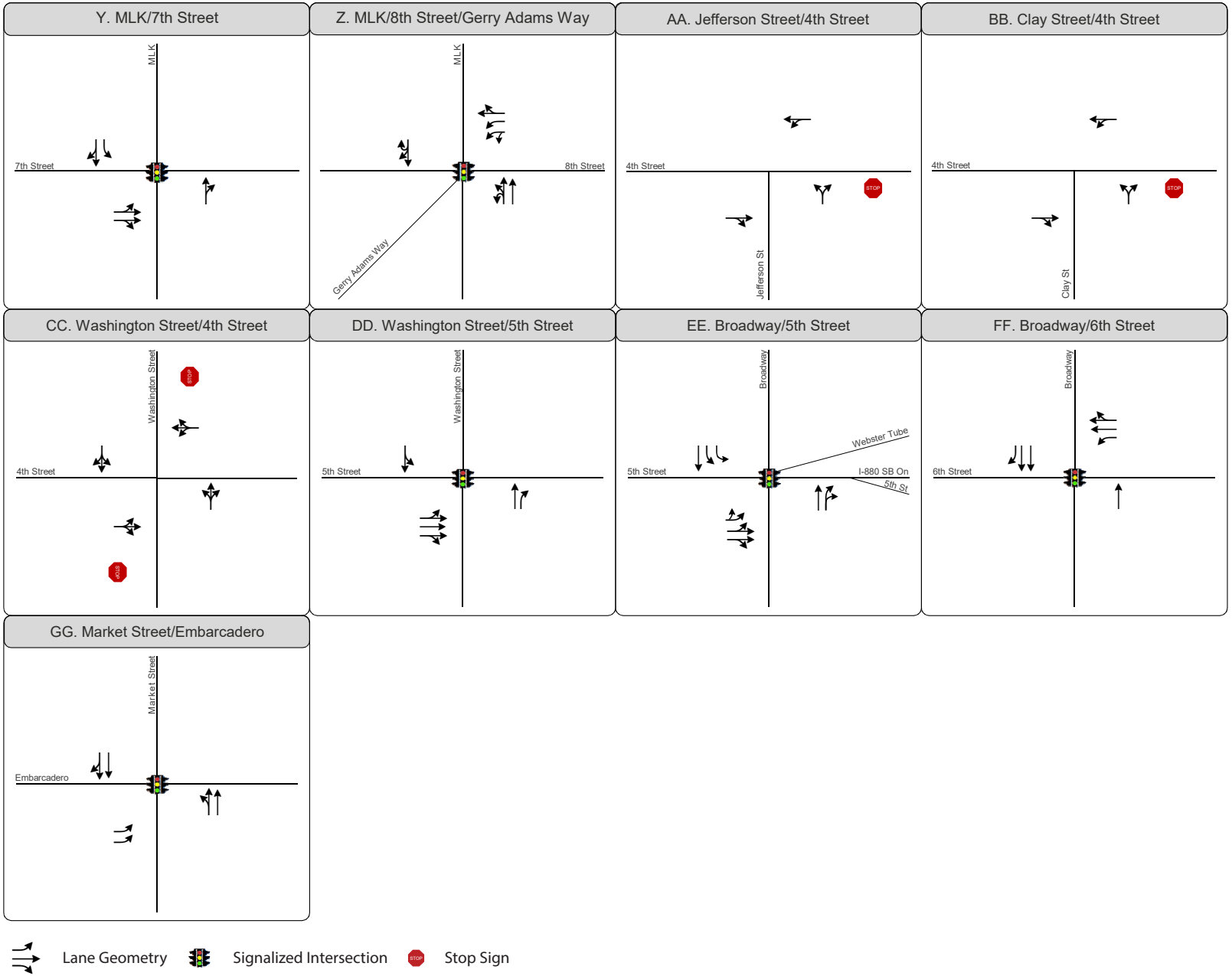


Figure I-3

Existing Plus Full Buildout Non-Ballpark Plus Ballpark Conditions Intersection Lane Configurations and Traffic Controls

FEHR PEERS

Appendix J:

Existing Plus Full Buildout Non-Ballpark Development Plus Evening Game Results

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **4-5 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
MLK east side from Embarcadero to 2nd (south)	Platooned	1004	3.9	9	100	B	37	4.5	63	C
MLK east side from Embarcadero to 2nd (north)	Platooned	990	3.9	5	100	B	27	3.6	40	D
MLK/2nd Northeast corner	Platooned	833	2.9	2	500	B	15	5.1	83	C
MLK east side from 2rd to 3th (north)	Platooned	804	3.9	3	100	B	22	2.7	22	E
MLK/3rd Northeast corner	Platooned	605	1.2	3	100	B	20	2.5	19	E
MLK east side from 3rd to 4th (south)	Platooned	500	4.1	2	100	B	13	3.6	41	C
MLK east side from 4th to 5th (south)	Platooned	464	4.0	2	100	B	16	2.4	18	E
MLK/5th Northeast corner	Platooned	527	1.6	4	100	B	24	3.0	29	D
MLK east side from 5th to 6th (south)	Platooned	477	4.1	1	500	B	9	4.8	73	C
MLK east side from 5th to 6th (middle)	Platooned	480	4.1	2	143	B	15	3.5	39	D
MLK east side from 5th to 6th (north)	Platooned	483	4.0	2	100	B	15	3.2	33	D
MLK/7th Northeast corner	Platooned	515	1.7	2	100	B	11	2.9	27	D
MLK/8th Northeast corner	Platooned	522	1.4	3	100	B	11	3.3	35	D
MLK/8th Northwest corner	Platooned	283	1.3	1	111	B	7	3.1	30	D
Clay/Embarcadero Northeast corner	Platooned	795	2.0	3	125	B	21	3.3	35	D
Clay/2nd Northeast corner	Platooned	369	0.9	3	100	B	9	3.9	49	C
Washington/2nd Northeast corner	Platooned	1023	1.9	4	100	B	16	3.5	39	D
Washington/3rd Northwest corner	Platooned	574	1.6	2	167	B	13	3.5	39	D
Washington/4th Northwest corner	Platooned	490	1.4	3	100	B	13	3.0	29	D
Broadway west side from 2nd to 3rd (south)	Platooned	911	4.1	3	100	B	19	4.5	63	C
Broadway west side from 2nd to 3rd (middle)	Platooned	912	4.1	3	100	B	20	4.2	57	C
Broadway west side from 2nd to 3rd (north)	Platooned	913	4.0	3	100	B	22	4.1	53	C
Broadway west side from 4th to 5th (south)	Platooned	1184	3.9	4	100	B	27	4.0	50	C
Broadway west side from 4th to 5th (middle)	Platooned	1184	3.9	5	100	B	31	4.0	50	C
Broadway west side from 4th to 5th (north)	Platooned	1184	3.8	5	100	B	35	3.8	45	C
Broadway/5th Southwest corner	Platooned	1186	2.8	5	100	B	33	4.4	62	C
Broadway west side from 5th to 6th (south)	Platooned	1214	4.0	6	100	B	33	4.3	57	C
Broadway west side from 5th to 6th (middle)	Platooned	1222	4.0	6	100	B	29	4.8	72	C
Broadway west side from 5th to 6th (north)	Platooned	1222	3.9	5	100	B	31	4.0	49	C
3rd/Adeline Southwest corner	Platooned	485	1.7	1	100	B	6	3.1	31	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **5-6 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
MLK east side from Embarcadero to 2nd (south)	Platooned	1395	3.8	13	100	B	46	4.0	51	C
MLK east side from Embarcadero to 2nd (north)	Platooned	1371	3.9	6	100	B	30	3.4	37	D
MLK/2nd Northeast corner	Platooned	1159	2.8	3	100	B	17	4.8	73	C
MLK east side from 2rd to 3th (north)	Platooned	1119	3.8	5	100	B	26	2.5	19	E
MLK/3rd Northeast corner	Platooned	853	1.1	5	71	C	24	2.3	17	E
MLK east side from 3rd to 4th (south)	Platooned	663	4.0	3	100	B	15	3.4	36	D
MLK east side from 4th to 5th (south)	Platooned	611	4.0	3	100	B	17	2.3	17	E
MLK east side from 4th to 5th (north)	Platooned	610	3.7	3	125	B	26	5.1	82	C
MLK/5th Northeast corner	Platooned	666	1.5	6	100	B	26	2.9	26	D
MLK east side from 5th to 6th (south)	Platooned	610	4.1	2	100	B	9	4.7	69	C
MLK east side from 5th to 6th (middle)	Platooned	612	4.1	3	100	B	16	3.4	37	D
MLK east side from 5th to 6th (north)	Platooned	615	4.0	2	100	B	16	3.1	30	D
MLK west side from 5th to 6th (south)	Platooned	351	4.2	1	100	B	8	5.2	85	C
MLK west side from 5th to 6th (middle)	Platooned	352	4.1	2	100	B	12	5.2	87	C
MLK/7th Northeast corner	Platooned	635	1.6	2	100	B	12	2.8	25	D
MLK/7th Northwest corner	Platooned	356	1.3	1	100	B	9	5.3	89	C
MLK/8th Northeast corner	Platooned	630	1.3	3	100	B	12	3.2	31	D
MLK/8th Northwest corner	Platooned	361	1.2	2	100	B	9	2.8	25	D
Clay/Embarcadero Northeast corner	Platooned	1016	1.8	5	100	B	35	2.6	21	E
Clay/2nd Northeast corner	Platooned	489	0.9	3	100	B	10	3.8	45	C
Washington/Embarcadero corner	Platooned	778	2.1	2	100	B	20	4.9	77	C
Washington/2nd Northeast corner	Platooned	1307	1.7	5	100	B	19	3.2	32	D
Washington/3rd Northwest corner	Platooned	745	1.5	3	100	B	18	3.1	30	D
Washington/4th Northwest corner	Platooned	632	1.3	4	100	B	16	2.8	24	D
Broadway west side from 2nd to 3rd (south)	Platooned	1204	4.0	5	100	B	23	4.1	52	C
Broadway west side from 2nd to 3rd (middle)	Platooned	1202	4.0	4	100	B	23	3.9	48	C
Broadway west side from 2nd to 3rd (north)	Platooned	1201	3.9	5	100	B	29	3.6	41	C
Broadway west side from 4th to 5th (south)	Platooned	1518	3.8	5	100	B	31	3.8	44	C
Broadway west side from 4th to 5th (middle)	Platooned	1524	3.8	6	100	B	36	3.7	43	C
Broadway west side from 4th to 5th (north)	Platooned	1545	3.7	6	100	B	42	3.4	37	D
Broadway/5th Southwest corner	Platooned	1554	2.7	6	100	B	41	4.0	51	C
Broadway west side from 5th to 6th (south)	Platooned	1539	3.9	7	100	B	43	3.7	44	C
Broadway west side from 5th to 6th (middle)	Platooned	1520	3.9	8	100	B	37	4.2	56	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Pedestrian Peak Interval Operations Summary **5-6 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Broadway west side from 5th to 6th (north)	Platooned	1512	3.8	6	100	B	37	3.6	41	C
3rd/Adeline Southwest corner	Platooned	591	1.7	1	100	B	7	3.0	29	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **6-7 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	1494	4.0	16	100	B	38	4.8	71	C
Market east side from Embarcadero to 3rd (north)	Platooned	1509	3.8	17	100	B	42	4.5	64	C
Market west side from 5th to 6th (north)	Platooned	504	3.9	3	100	B	18	5.3	88	C
MLK east side from Embarcadero to 2nd (south)	Platooned	2380	3.7	24	100	B	66	3.4	36	D
MLK east side from Embarcadero to 2nd (north)	Platooned	2367	3.6	12	91	B	44	2.8	25	D
MLK/2nd Northeast corner	Platooned	2069	2.4	7	100	B	29	3.7	43	C
MLK east side from 2rd to 3th (north)	Platooned	1954	3.5	9	50	C	38	2.0	13	E
MLK/3rd Southeast corner	Platooned	2062	3.3	4	100	B	26	5.1	83	C
MLK/3rd Southwest corner	Platooned	752	0.9	4	100	B	28	4.5	63	C
MLK/3rd Northeast corner	Platooned	1513	1.2	8	50	C	37	1.8	11	F
MLK east side from 3rd to 4th (south)	Platooned	1183	3.8	5	100	B	20	2.9	27	D
MLK east side from 3rd to 4th (north)	Platooned	1189	3.6	6	100	B	27	5.0	80	C
MLK/4th Southeast corner	Platooned	1207	3.5	3	100	B	19	4.9	74	C
MLK/4th Northwest corner	Platooned	657	2.4	2	100	B	15	4.2	57	C
MLK east side from 4th to 5th (south)	Platooned	1082	3.6	5	56	C	29	1.8	10	F
MLK east side from 4th to 5th (middle)	Platooned	1082	3.5	5	100	B	34	5.1	82	C
MLK east side from 4th to 5th (north)	Platooned	1096	3.3	6	100	B	44	3.9	49	C
MLK west side from 4th to 5th (south)	Platooned	648	3.9	3	143	B	20	4.7	69	C
MLK west side from 4th to 5th (middle)	Platooned	647	3.9	3	333	B	23	4.4	61	C
MLK west side from 4th to 5th (north)	Platooned	655	3.7	3	125	B	30	4.1	53	C
MLK/5th Southeast corner	Platooned	1102	3.2	2	100	B	27	3.6	40	D
MLK/5th Northeast corner	Platooned	1193	1.4	11	59	C	50	2.1	14	E
MLK/5th Northwest corner	Platooned	687	1.9	5	100	B	26	4.4	60	C
MLK east side from 5th to 6th (south)	Platooned	1103	3.9	3	100	B	12	4.0	51	C
MLK east side from 5th to 6th (middle)	Platooned	1108	3.9	6	100	B	25	2.8	24	D
MLK east side from 5th to 6th (north)	Platooned	1111	3.7	5	100	B	25	2.4	19	E
MLK west side from 5th to 6th (south)	Platooned	661	4.1	2	100	B	11	4.6	66	C
MLK west side from 5th to 6th (middle)	Platooned	664	4.0	3	100	B	17	4.5	64	C
MLK west side from 5th to 6th (north)	Platooned	666	3.9	3	100	B	18	4.9	75	C
MLK/6th Southeast corner	Platooned	1115	3.5	1	100	B	11	4.6	67	C
MLK/6th Northwest corner	Platooned	667	2.9	2	250	B	18	4.0	50	C
MLK west side from 6th to 7th (north)	Platooned	675	3.8	5	100	B	30	4.9	76	C
MLK/7th Southeast corner	Platooned	1128	3.2	2	100	B	15	4.9	75	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **6-7 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
MLK/7th Northeast corner	Platooned	1182	1.2	6	50	C	23	2.0	13	E
MLK/7th Northwest corner	Platooned	690	1.0	4	50	C	21	3.5	39	D
MLK west side from 7th to 8th (south)	Platooned	681	3.9	2	100	B	13	5.3	88	C
MLK west side from 7th to 8th (middle)	Platooned	686	3.8	2	100	B	14	5.3	88	C
MLK west side from 7th to 8th (north)	Platooned	687	3.6	3	100	B	17	4.8	72	C
MLK/8th Southeast corner	Platooned	1142	3.4	2	100	B	15	4.7	68	C
MLK/8th Southwest corner	Platooned	687	3.4	1	100	B	11	3.9	48	C
MLK/8th Northeast corner	Platooned	1172	1.0	8	48	C	26	2.2	15	E
MLK/8th Northwest corner	Platooned	711	1.0	4	50	C	17	2.0	13	E
Clay/Embarcadero Southeast corner	Platooned	1491	3.5	3	100	B	22	4.6	66	C
Clay/Embarcadero Northeast corner	Platooned	1741	2.0	7	100	B	48	2.2	15	E
Clay/Embarcadero Northwest corner	Platooned	523	1.3	2	100	B	11	4.6	67	C
Clay west side from Embarcadero to 2nd (north)	Platooned	477	4.1	2	100	B	13	5.2	86	C
Clay/2nd Northeast corner	Platooned	918	1.2	5	100	B	14	3.2	32	D
Washington/Embarcadero corner	Platooned	1158	2.1	3	100	B	19	5.1	81	C
Washington/2nd Northeast corner	Platooned	2232	1.3	12	50	C	31	2.5	20	E
Washington/2nd Northwest corner	Platooned	1562	2.0	4	100	B	24	4.6	67	C
Washington/3rd Southeast corner	Platooned	1465	3.5	2	100	B	17	5.3	89	C
Washington/3rd Southwest corner	Platooned	1458	3.7	3	100	B	18	5.3	88	C
Washington/3rd Northwest corner	Platooned	1260	1.3	5	100	B	28	2.4	19	E
Washington west side from 3rd to 4th (north)	Platooned	1050	3.6	5	100	B	33	5.0	80	C
Washington/4th Southeast corner	Platooned	1825	3.6	4	100	B	23	5.2	86	C
Washington/4th Northwest corner	Platooned	1097	1.1	8	50	C	26	2.2	15	E
Washington east side from 4th to 5th (south)	Platooned	1753	3.5	8	100	B	38	5.1	83	C
Washington east side from 4th to 5th (north)	Platooned	1737	3.4	9	100	B	54	4.7	68	C
Washington west side from 4th to 5th (north)	Platooned	1004	3.5	5	100	B	33	5.0	80	C
Washington/5th Southeast corner	Platooned	1749	3.3	4	200	B	33	4.5	64	C
Broadway west side from Embarcadero to 2nd (south)	Platooned	1480	3.7	6	100	B	31	5.3	89	C
Broadway west side from 2nd to 3rd (south)	Platooned	1742	3.8	7	100	B	28	3.7	42	C
Broadway west side from 2nd to 3rd (middle)	Platooned	1747	3.7	7	100	B	30	3.4	37	D
Broadway west side from 2nd to 3rd (north)	Platooned	1754	3.7	7	100	B	36	3.2	33	D
Broadway/3rd Southwest corner	Platooned	1932	3.6	6	100	B	41	4.8	74	C
Broadway west side from 3rd to 4th (north)	Platooned	2052	3.7	9	100	B	53	5.0	77	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Pedestrian Peak Interval Operations Summary **6-7 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Broadway/4th Southwest corner	Platooned	2064	3.5	5	250	B	37	5.1	83	C
Broadway/4th Northwest corner	Platooned	2363	2.1	11	100	B	60	5.2	83	C
Broadway west side from 4th to 5th (south)	Platooned	2270	3.7	8	100	B	40	3.3	34	D
Broadway west side from 4th to 5th (middle)	Platooned	2289	3.6	9	100	B	48	3.2	32	D
Broadway west side from 4th to 5th (north)	Platooned	2290	3.4	10	100	B	59	2.9	27	D
Broadway/5th Southwest corner	Platooned	2278	2.9	9	100	B	54	3.5	38	D
Broadway west side from 5th to 6th (south)	Platooned	2295	3.7	11	100	B	52	3.4	36	D
Broadway west side from 5th to 6th (middle)	Platooned	2300	3.7	12	100	B	52	3.6	40	C
Broadway west side from 5th to 6th (north)	Platooned	2322	3.7	9	100	B	49	3.1	31	D
3rd/Adeline Southwest corner	Platooned	978	1.4	2	50	C	10	2.5	19	E

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **7-8 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	989	4	10	100	B	33	5.1	82	C
Market east side from Embarcadero to 3rd (north)	Platooned	961	4	10	100	B	36	4.9	74	C
MLK east side from Embarcadero to 2nd (south)	Platooned	1653	3	18	100	B	88	2.9	27	D
MLK east side from Embarcadero to 2nd (north)	Platooned	1576	4	8	100	B	41	2.9	26	D
MLK/2nd Northeast corner	Platooned	1322	2	5	100	B	27	3.8	46	C
MLK east side from 2rd to 3th (north)	Platooned	1237	4	6	100	B	35	2.1	14	E
MLK/3rd Northeast corner	Platooned	846	1	4	100	B	31	2.0	13	E
MLK east side from 3rd to 4th (south)	Platooned	688	4	3	100	B	17	3.1	31	D
MLK east side from 3rd to 4th (north)	Platooned	684	4	3	100	B	24	5.3	89	C
MLK/4th Northwest corner	Platooned	377	2	1	250	B	14	4.4	60	C
MLK east side from 4th to 5th (south)	Platooned	614	4	3	100	B	22	2.1	13	E
MLK east side from 4th to 5th (north)	Platooned	611	4	3	100	B	34	4.5	63	C
MLK/5th Northeast corner	Platooned	629	2	5	100	B	35	2.5	20	E
MLK/5th Northwest corner	Platooned	355	2	2	100	B	19	5.1	81	C
MLK east side from 5th to 6th (south)	Platooned	582	4	2	100	B	10	4.5	64	C
MLK east side from 5th to 6th (middle)	Platooned	580	4	3	100	B	19	3.2	32	D
MLK east side from 5th to 6th (north)	Platooned	571	4	2	100	B	18	2.9	27	D
MLK west side from 5th to 6th (south)	Platooned	351	4	1	100	B	9	4.9	75	C
MLK west side from 5th to 6th (middle)	Platooned	349	4	2	100	B	14	4.9	76	C
MLK/7th Northeast corner	Platooned	543	2	2	100	B	20	2.2	15	E
MLK/7th Northwest corner	Platooned	317	1	1	100	B	14	4.3	57	C
MLK/8th Northeast corner	Platooned	500	1	3	100	B	17	2.7	23	D
MLK/8th Northwest corner	Platooned	288	1	1	100	B	10	2.6	21	E
Clay/Embarcadero Northeast corner	Platooned	1001	1	7	100	B	69	1.8	11	F
Clay/Embarcadero Northwest corner	Platooned	410	1	2	100	B	17	3.8	44	C
Clay/2nd Northeast corner	Platooned	492	1	4	100	B	13	3.3	35	D
Washington/Embarcadero corner	Platooned	757	1	3	100	B	34	3.8	46	C
Washington/2nd Northeast corner	Platooned	1216	2	5	100	B	27	2.7	22	E
Washington/3rd Northwest corner	Platooned	673	1	2	100	B	20	2.9	26	D
Washington east side from 3rd to 4th (north)	Platooned	893	4	4	111	B	37	5.3	88	C
Washington/4th Northwest corner	Platooned	541	2	2	111	B	21	2.4	19	E
Broadway/Embarcadero Northwest corner	Platooned	981	2	5	143	B	59	4.8	72	C
Broadway west side from 2nd to 3rd (south)	Platooned	1049	4	4	100	B	23	4.0	51	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Pedestrian Peak Interval Operations Summary **7-8 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Market east side from Embarcadero to 3rd (south)	Platooned	989	4	10	100	B	33	5.1	82	C
Market east side from Embarcadero to 3rd (north)	Platooned	961	4	10	100	B	36	4.9	74	C
MLK east side from Embarcadero to 2nd (south)	Platooned	1653	3	18	100	B	88	2.9	27	D
MLK east side from Embarcadero to 2nd (north)	Platooned	1576	4	8	100	B	41	2.9	26	D
MLK/2nd Northeast corner	Platooned	1322	2	5	100	B	27	3.8	46	C
MLK east side from 2rd to 3th (north)	Platooned	1237	4	6	100	B	35	2.1	14	E
MLK/3rd Northeast corner	Platooned	846	1	4	100	B	31	2.0	13	E
MLK east side from 3rd to 4th (south)	Platooned	688	4	3	100	B	17	3.1	31	D
MLK east side from 3rd to 4th (north)	Platooned	684	4	3	100	B	24	5.3	89	C
MLK/4th Northwest corner	Platooned	377	2	1	250	B	14	4.4	60	C
MLK east side from 4th to 5th (south)	Platooned	614	4	3	100	B	22	2.1	13	E
MLK east side from 4th to 5th (north)	Platooned	611	4	3	100	B	34	4.5	63	C
MLK/5th Northeast corner	Platooned	629	2	5	100	B	35	2.5	20	E
MLK/5th Northwest corner	Platooned	355	2	2	100	B	19	5.1	81	C
MLK east side from 5th to 6th (south)	Platooned	582	4	2	100	B	10	4.5	64	C
MLK east side from 5th to 6th (middle)	Platooned	580	4	3	100	B	19	3.2	32	D
MLK east side from 5th to 6th (north)	Platooned	571	4	2	100	B	18	2.9	27	D
MLK west side from 5th to 6th (south)	Platooned	351	4	1	100	B	9	4.9	75	C
MLK west side from 5th to 6th (middle)	Platooned	349	4	2	100	B	14	4.9	76	C
MLK/7th Northeast corner	Platooned	543	2	2	100	B	20	2.2	15	E
MLK/7th Northwest corner	Platooned	317	1	1	100	B	14	4.3	57	C
MLK/8th Northeast corner	Platooned	500	1	3	100	B	17	2.7	23	D
MLK/8th Northwest corner	Platooned	288	1	1	100	B	10	2.6	21	E
Clay/Embarcadero Northeast corner	Platooned	1001	1	7	100	B	69	1.8	11	F
Clay/Embarcadero Northwest corner	Platooned	410	1	2	100	B	17	3.8	44	C
Clay/2nd Northeast corner	Platooned	492	1	4	100	B	13	3.3	35	D
Washington/Embarcadero corner	Platooned	757	1	3	100	B	34	3.8	46	C
Washington/2nd Northeast corner	Platooned	1216	2	5	100	B	27	2.7	22	E
Washington/3rd Northwest corner	Platooned	673	1	2	100	B	20	2.9	26	D
Washington east side from 3rd to 4th (north)	Platooned	893	4	4	111	B	37	5.3	88	C
Washington/4th Northwest corner	Platooned	541	2	2	111	B	21	2.4	19	E
Broadway/Embarcadero Northwest corner	Platooned	981	2	5	143	B	59	4.8	72	C
Broadway west side from 2nd to 3rd (south)	Platooned	1049	4	4	100	B	23	4.0	51	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Pedestrian Peak Interval Operations Summary **7-8 PM**

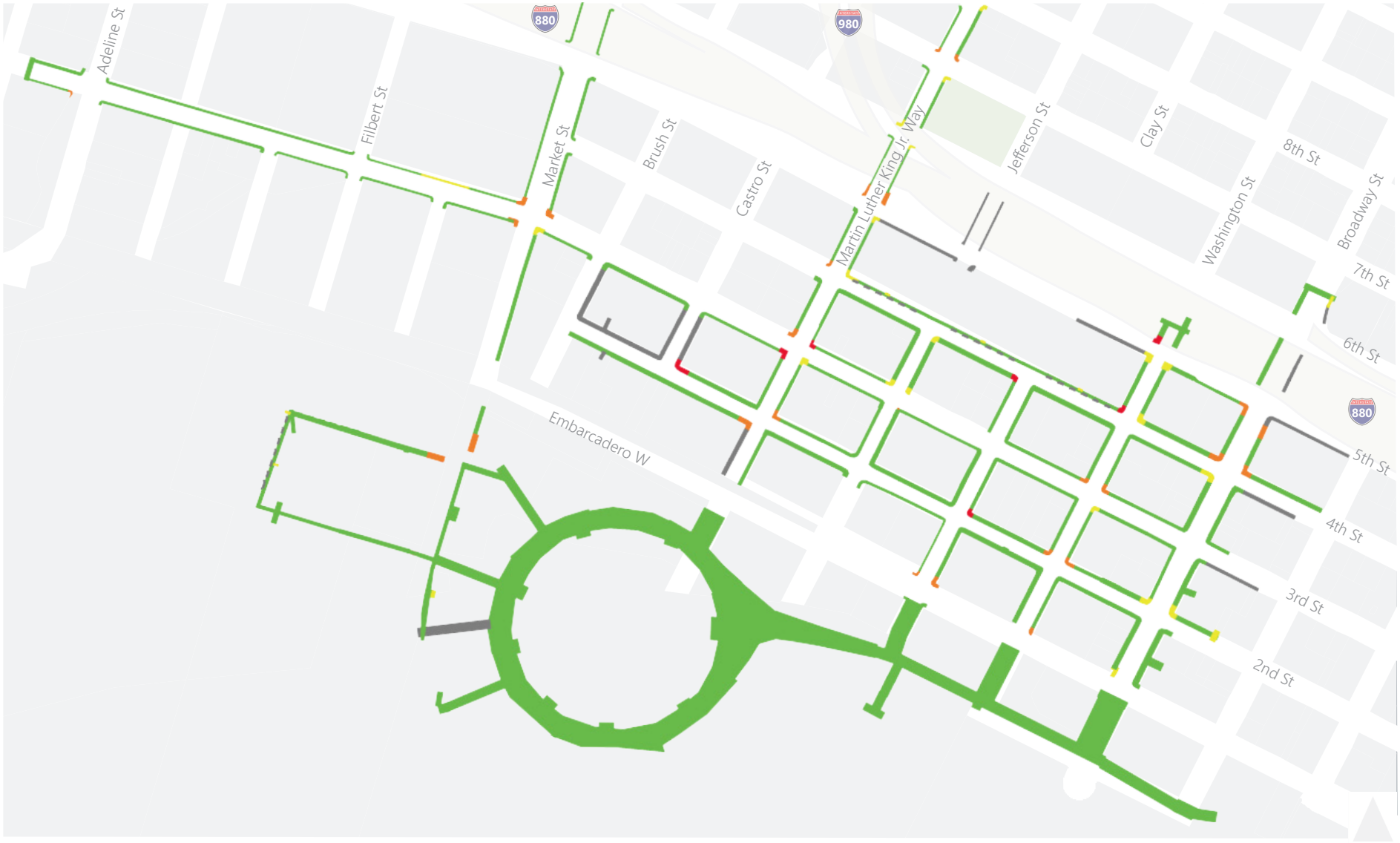
Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Broadway west side from 2nd to 3rd (middle)	Platooned	1044	4	4	100	B	23	3.9	49	C
Broadway west side from 2nd to 3rd (north)	Platooned	1043	4	4	100	B	26	3.8	44	C
Broadway west side from 4th to 5th (south)	Platooned	1240	4	4	100	B	32	3.7	42	C
Broadway west side from 4th to 5th (middle)	Platooned	1219	4	5	100	B	39	3.5	39	D
Broadway west side from 4th to 5th (north)	Platooned	1196	4	5	100	B	41	3.5	38	D
Broadway/5th Southwest corner	Platooned	1195	3	4	100	B	37	4.2	56	C
Broadway west side from 5th to 6th (south)	Platooned	1162	4	5	100	B	34	4.2	56	C
Broadway west side from 5th to 6th (middle)	Platooned	1162	4	6	167	B	37	4.3	57	C
Broadway west side from 5th to 6th (north)	Platooned	1161	4	4	200	B	36	3.6	42	C
3rd/Adeline Southwest corner	Platooned	427	2	1	100	B	6	3.1	31	D

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

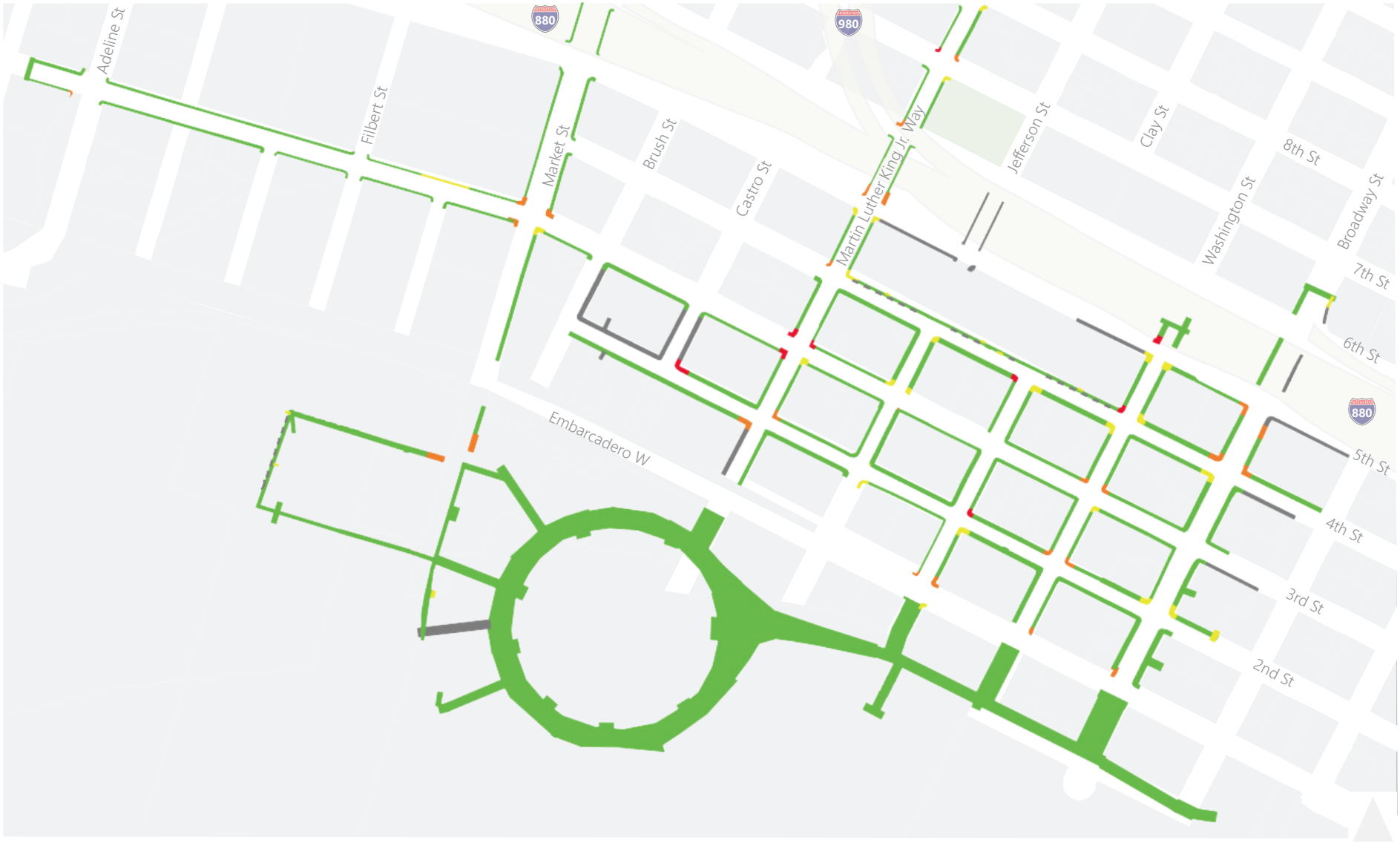
Pedestrian Peak Interval Operations Summary **7-8 PM**

Area	Facility	Flow (Ped/hour)	Speed (ft/s)	Average Peds	Average Space (ft2/ped)	LOS	Maximum Peds	Radius (ft)	Maximum Space (ft2/ped)	LOS
Broadway west side from 2nd to 3rd (middle)	Platooned	1044	4	4	100	B	23	3.9	49	C
Broadway west side from 2nd to 3rd (north)	Platooned	1043	4	4	100	B	26	3.8	44	C
Broadway west side from 4th to 5th (south)	Platooned	1240	4	4	100	B	32	3.7	42	C
Broadway west side from 4th to 5th (middle)	Platooned	1219	4	5	100	B	39	3.5	39	D
Broadway west side from 4th to 5th (north)	Platooned	1196	4	5	100	B	41	3.5	38	D
Broadway/5th Southwest corner	Platooned	1195	3	4	100	B	37	4.2	56	C
Broadway west side from 5th to 6th (south)	Platooned	1162	4	5	100	B	34	4.2	56	C
Broadway west side from 5th to 6th (middle)	Platooned	1162	4	6	167	B	37	4.3	57	C
Broadway west side from 5th to 6th (north)	Platooned	1161	4	4	200	B	36	3.6	42	C
3rd/Adeline Southwest corner	Platooned	427	2	1	100	B	6	3.1	31	D



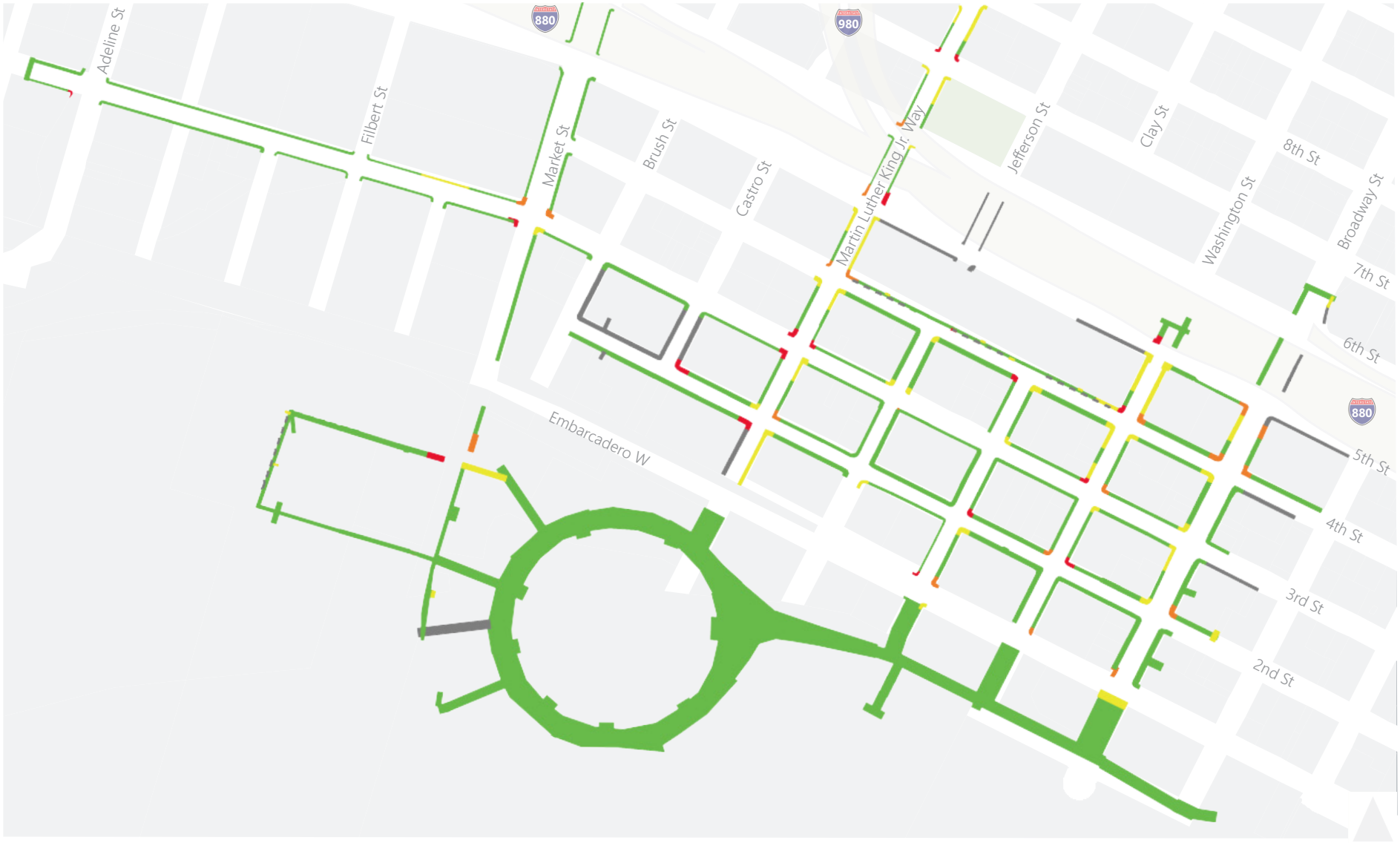
Full Build Out, Evening Ballgame - Average Pedestrian Speeds
4PM - 5PM

Figure J-1



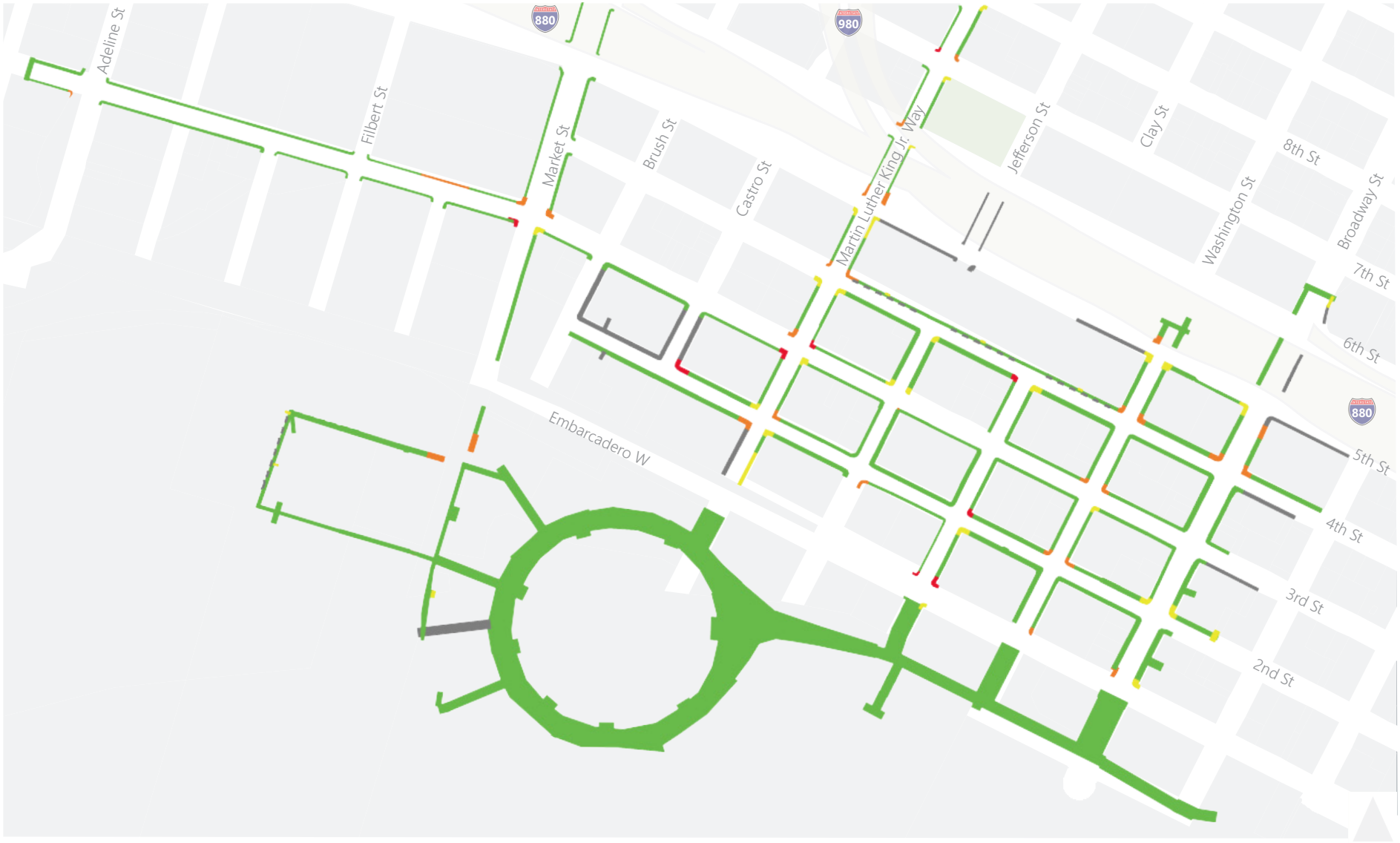
Full Build Out, Evening Ballgame - Average Pedestrian Speeds
5PM - 6PM

Figure J-2

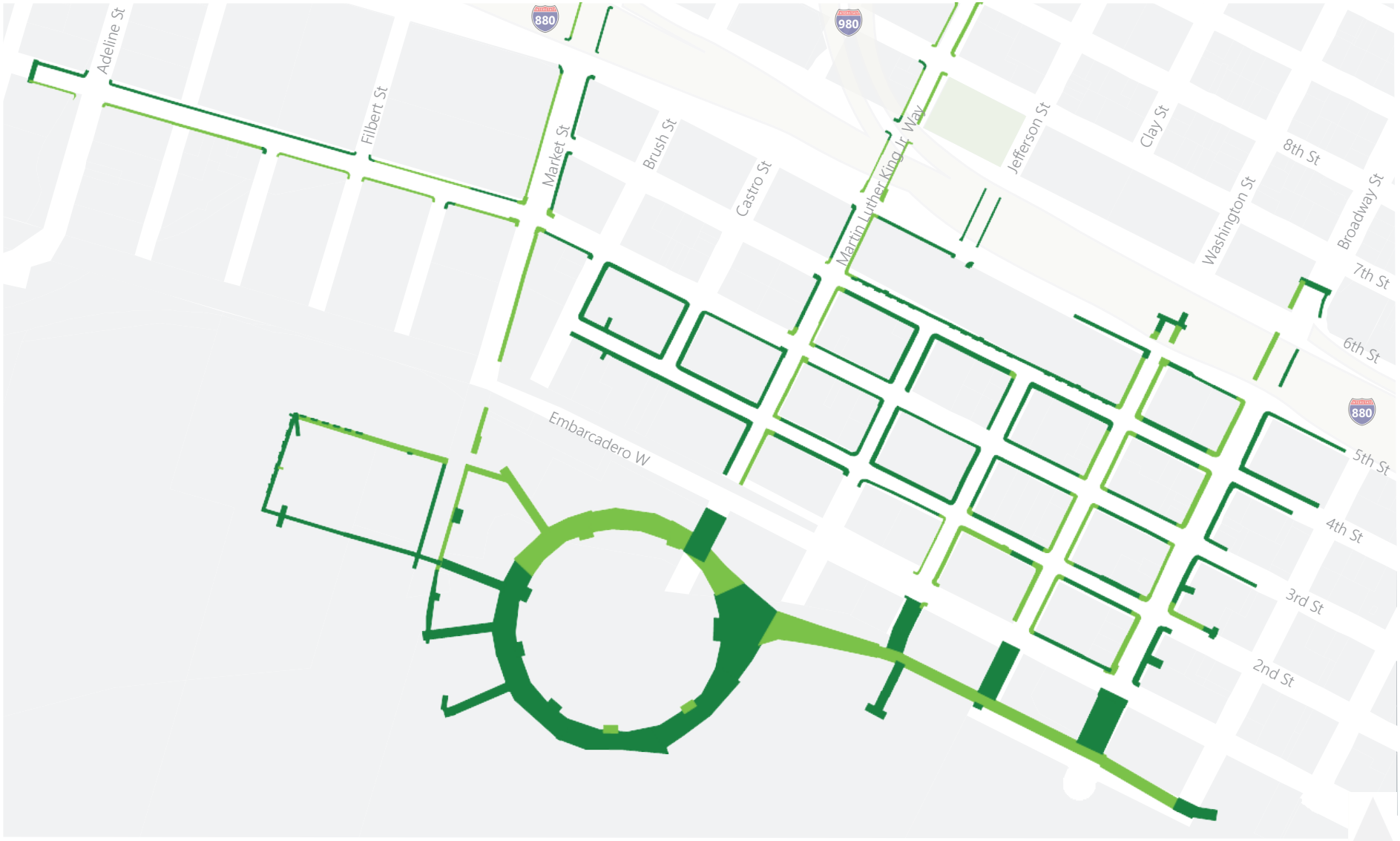


Full Build Out, Evening Ballgame - Average Pedestrian Speeds
6PM - 7PM

Figure J-3

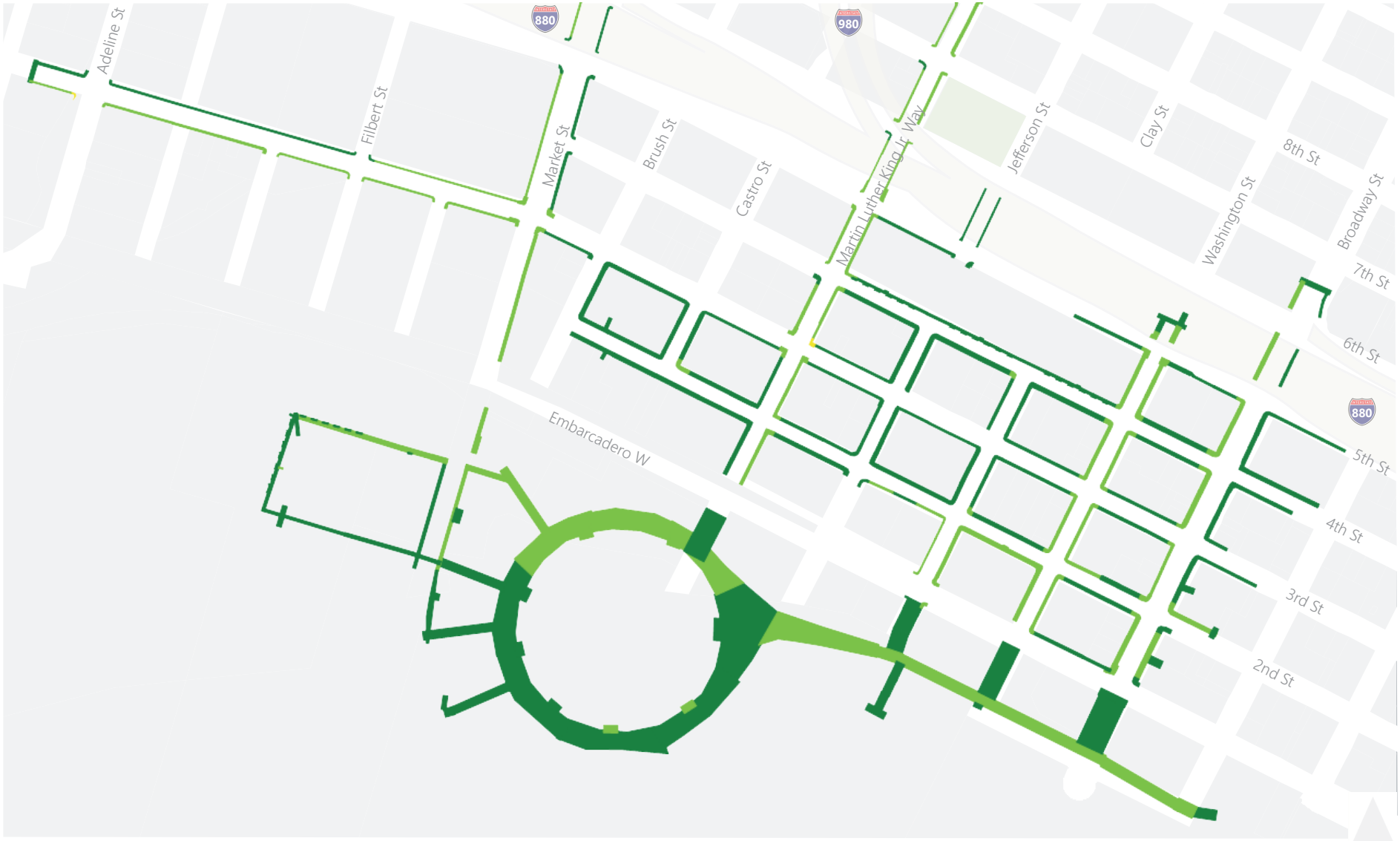


Full Build Out, Evening Ballgame - Average Pedestrian Speeds
7PM - 8PM



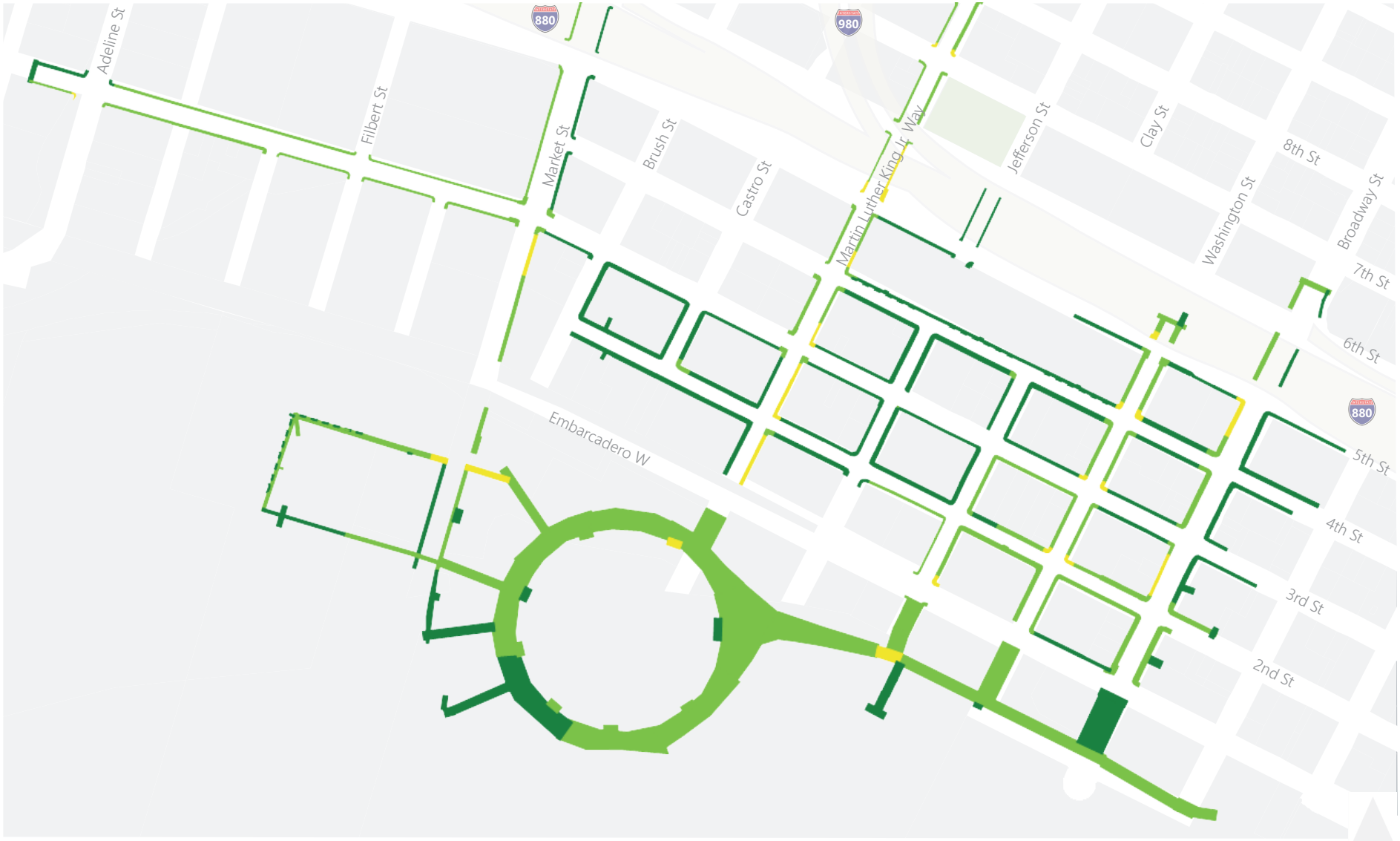
Full Build Out, Evening Ballgame - Average Pedestrian Density
4PM - 5PM

Figure J-5



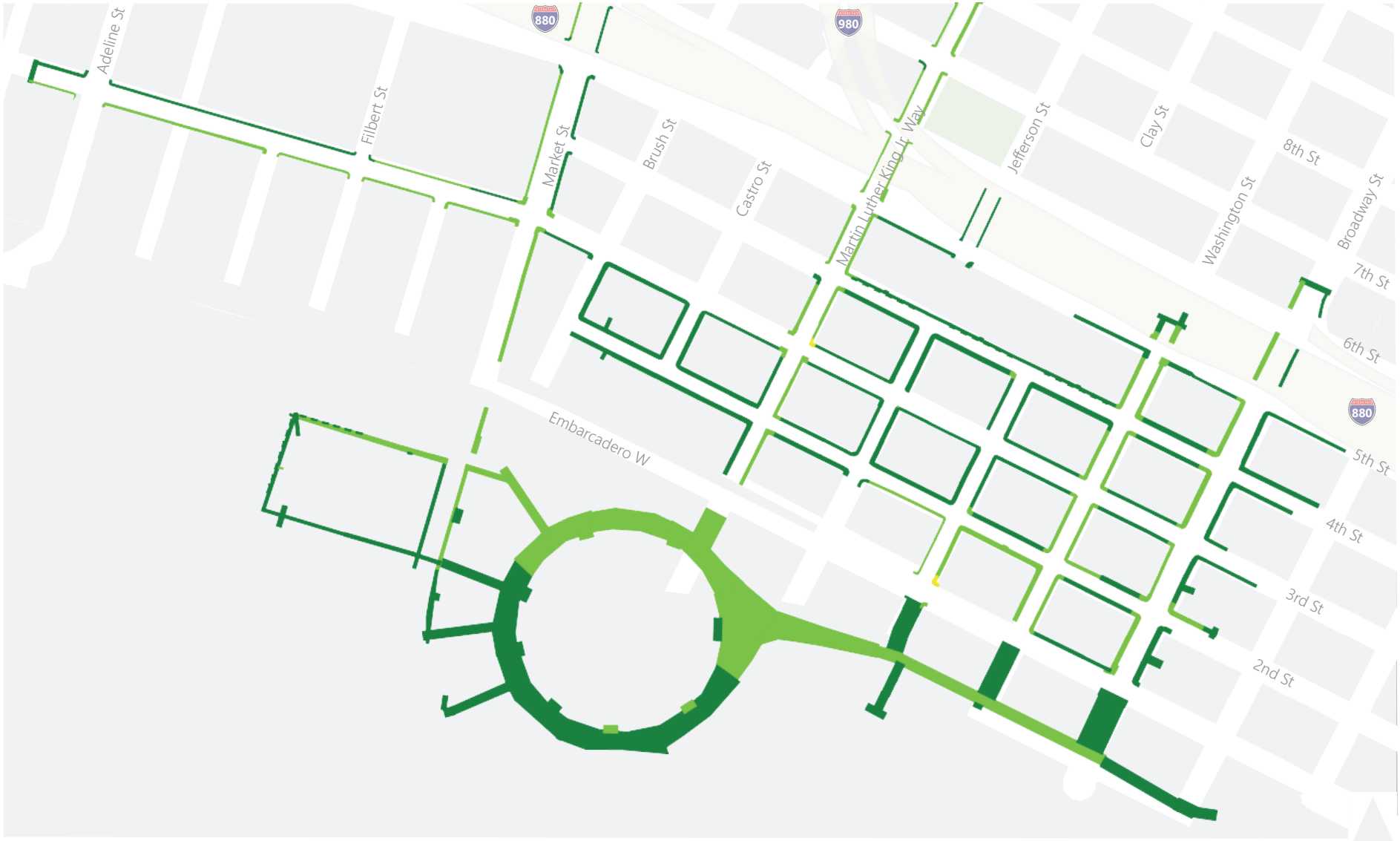
Full Build Out, Evening Ballgame - Average Pedestrian Density
5PM - 6PM

Figure J-6



Full Build Out, Evening Ballgame - Average Pedestrian Density
6PM - 7PM

Figure J-7



Full Build Out, Evening Ballgame - Average Pedestrian Density
7PM - 8PM

Figure J-8

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	36	98.1%	37.1	3.9	D
	Through	264	261	99.0%	13.1	1.6	B
	Right Turn	682	680	99.6%	7.3	0.5	A
	Subtotal	983	977	99.4%	9.9	0.6	A
SB	Left Turn						
	Through	52	49	93.7%	17.2	2.6	B
	Right Turn	14	13	95.0%	10.1	2.9	B
	Subtotal	66	62	93.9%	15.7	2.1	B
EB	Left Turn	38	39	101.8%	36.3	4.2	D
	Through	94	86	91.0%	32.8	3.2	C
	Right Turn	57	56	97.4%	0.9	0.3	A
	Subtotal	189	180	95.1%	23.7	2.2	C
WB	Left Turn	250	241	96.4%	35.2	3.8	D
	Through	75	73	96.9%	31.0	4.1	C
	Right Turn	19	17	88.4%	13.3	2.8	B
	Subtotal	344	330	96.0%	33.2	3.2	C
Total		1,582	1,549	97.9%	16.7	0.8	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	17	96.1%	25.7	4.0	C
	Through	193	185	96.0%	24.1	0.7	C
	Right Turn	53	56	105.1%	15.7	1.5	B
	Subtotal	264	258	97.8%	22.4	0.6	C
SB	Left Turn	53	50	93.6%	31.2	3.7	C
	Through	165	157	95.3%	20.1	2.6	C
	Right Turn	22	22	99.1%	5.1	0.8	A
	Subtotal	240	229	95.3%	21.0	2.0	C
EB	Left Turn	23	23	97.8%	11.3	4.6	B
	Through	66	76	114.7%	10.2	2.4	B
	Right Turn	9	10	105.6%	4.3	2.9	A
	Subtotal	98	108	109.9%	10.0	2.3	A
WB	Left Turn	42	37	86.9%	13.5	2.6	B
	Through	63	69	109.2%	12.2	2.0	B
	Right Turn	53	48	91.1%	8.4	1.3	A
	Subtotal	158	154	97.2%	11.4	0.9	B
Total		760	748	98.4%	17.9	0.9	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	63	57	90.6%	32.2	2.5	C
	Through	54	53	97.6%	27.5	2.1	C
	Right Turn	154	148	96.1%	16.9	1.3	B
	Subtotal	271	258	95.1%	22.4	1.1	C
SB	Left Turn	74	75	101.2%	40.3	1.7	D
	Through	44	42	94.5%	30.7	3.6	C
	Right Turn	13	13	99.2%	5.5	0.8	A
	Subtotal	131	129	98.8%	33.7	1.5	C
EB	Left Turn						
	Through	687	679	98.9%	16.3	1.3	B
	Right Turn	89	85	95.1%	3.3	0.3	A
	Subtotal	776	764	98.5%	14.9	1.1	B
WB	Left Turn	110	110	100.2%	68.2	17.5	E
	Through	268	263	97.9%	8.4	1.5	A
	Right Turn	34	34	100.6%	5.6	1.4	A
	Subtotal	412	407	98.8%	24.5	5.1	C
Total		1,590	1,558	98.0%	20.2	1.7	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	707	705	99.7%	13.7	1.4	B
	Right Turn						
	Subtotal	707	705	99.7%	13.7	1.4	B
SB	Left Turn						
	Through	487	484	99.3%	7.8	0.8	A
	Right Turn	51	52	101.0%	6.1	1.1	A
	Subtotal	538	535	99.5%	7.6	0.8	A
EB	Left Turn						
	Through	216	223	103.3%	19.9	1.1	B
	Right Turn	30	29	96.3%	15.3	4.0	B
	Subtotal	246	252	102.4%	19.4	1.2	B
WB	Left Turn						
	Through	131	124	94.7%	19.9	1.3	B
	Right Turn						
	Subtotal	131	124	94.7%	19.9	1.3	B
Total		1,622	1,616	99.7%	13.0	0.7	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **3 PM to 4 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	681	682	100.2%	3.6	1.1	A
	Right Turn	26	23	89.2%	1.8	1.3	A
	Subtotal	707	705	99.8%	3.5	1.1	A
SB	Left Turn						
	Through	511	511	99.9%	0.4	0.1	A
	Right Turn						
	Subtotal	511	511	99.9%	0.4	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	27	24	88.1%	13.0	2.1	B
	Through						
	Right Turn	46	45	97.2%	16.5	3.8	C
	Subtotal	73	69	93.8%	15.2	2.7	C
Total		1,291	1,285	99.5%	2.9	0.7	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	537	534	99.4%	28.5	1.8	C
	Right Turn	190	193	101.4%	20.5	1.8	C
	Subtotal	727	726	99.9%	26.4	1.6	C
SB	Left Turn	85	85	99.8%	33.9	2.2	C
	Through	427	426	99.8%	3.6	0.4	A
	Right Turn						
	Subtotal	512	511	99.8%	8.6	0.6	A
EB	Left Turn	22	23	106.4%	39.6	5.7	D
	Through	618	608	98.4%	35.6	2.2	D
	Right Turn	84	84	100.2%	25.3	3.5	C
	Subtotal	724	716	98.8%	34.5	2.1	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,963	1,953	99.5%	24.7	0.8	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	169	166	98.5%	48.8	1.9	D
	Through	390	392	100.4%	2.0	0.3	A
	Right Turn						
	Subtotal	559	558	99.8%	15.9	0.8	B
SB	Left Turn						
	Through	390	387	99.2%	8.3	0.5	A
	Right Turn	21	21	101.0%	3.6	0.7	A
	Subtotal	411	408	99.3%	8.0	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	122	124	101.3%	37.4	1.7	D
	Through	222	218	98.3%	36.0	1.6	D
	Right Turn	226	221	97.9%	7.9	0.5	A
	Subtotal	570	563	98.8%	25.3	0.9	C
Total		1,540	1,529	99.3%	17.3	0.5	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	102	95	93.4%	14.3	1.8	B
	Through	301	300	99.8%	10.2	0.8	B
	Right Turn	213	217	101.9%	4.8	0.5	A
	Subtotal	616	613	99.5%	8.9	0.5	A
SB	Left Turn	59	58	99.0%	20.8	3.5	C
	Through	162	158	97.3%	12.6	0.9	B
	Right Turn	35	34	96.0%	3.1	0.4	A
	Subtotal	256	250	97.5%	13.2	1.3	B
EB	Left Turn	78	76	97.1%	42.0	3.0	D
	Through	598	596	99.6%	34.3	1.0	C
	Right Turn	57	57	99.5%	26.5	2.5	C
	Subtotal	733	728	99.3%	34.5	1.2	C
WB	Left Turn	192	195	101.4%	31.3	2.0	C
	Through	291	289	99.3%	25.5	1.5	C
	Right Turn	23	23	100.4%	15.3	4.9	B
	Subtotal	506	507	100.1%	27.3	1.0	C
Total		2,111	2,097	99.3%	22.8	0.6	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	33	33	100.9%	4.4	0.2	A
	Subtotal	33	33	100.9%	4.4	0.2	A
SB	Left Turn	394	381	96.7%	42.5	2.7	D
	Through	122	133	108.9%	42.6	3.4	D
	Right Turn						
	Subtotal	516	514	99.6%	42.5	2.2	D
EB	Left Turn						
	Through	843	834	98.9%	1.9	0.3	A
	Right Turn	50	52	103.0%	1.6	0.7	A
	Subtotal	893	885	99.1%	1.9	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,442	1,433	99.3%	16.5	0.8	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	493	495	100.3%	3.0	1.0	A
	Right Turn	10	9	87.0%	1.1	0.5	A
	Subtotal	503	503	100.0%	3.0	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	23	20	87.4%	26.3	5.0	C
	Through	35	34	96.0%	28.3	6.0	C
	Right Turn						
	Subtotal	58	54	92.6%	27.5	4.4	C
Total		561	557	99.3%	5.4	1.0	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	336	327	97.3%	26.6	1.6	C
	Through	483	473	98.0%	21.6	1.3	C
	Right Turn	315	323	102.6%	12.0	1.3	B
	Subtotal	1,134	1,123	99.1%	20.3	1.2	C
EB	Left Turn						
	Through	855	854	99.9%	8.0	0.7	A
	Right Turn	15	15	100.0%	3.7	2.4	A
	Subtotal	870	869	99.9%	8.0	0.7	A
WB	Left Turn	5	15	308.0%	16.6	5.5	B
	Through	191	182	95.4%	8.0	1.7	A
	Right Turn						
	Subtotal	196	198	100.9%	8.7	1.7	A
Total		2,200	2,190	99.6%	14.4	0.5	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	153	158	103.0%	34.3	2.0	C
	Right Turn	99	100	101.3%	22.5	1.8	C
	Subtotal	252	258	102.3%	29.7	1.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	120	113	93.9%	7.4	1.5	A
	Through	1,128	1,115	98.9%	7.6	0.7	A
	Right Turn	22	22	98.6%	5.1	1.6	A
	Subtotal	1,270	1,250	98.4%	7.6	0.7	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,522	1,508	99.0%	11.3	0.7	B

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	12	106.4%	33.3	7.3	C
	Through	355	341	96.2%	30.7	1.7	C
	Right Turn	19	27	142.1%	20.9	4.4	C
	Subtotal	385	380	98.7%	30.1	1.6	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	376	369	98.1%	41.6	2.1	D
	Through	815	811	99.5%	8.0	0.8	A
	Right Turn						
	Subtotal	1,191	1,180	99.1%	18.5	0.5	B
WB	Left Turn						
	Through	185	187	100.9%	7.0	0.8	A
	Right Turn	7	7	102.9%	3.2	1.9	A
	Subtotal	192	194	101.0%	6.8	0.8	A
Total		1,768	1,754	99.2%	19.7	0.5	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	235	231	98.4%	1.0	0.2	A
	Right Turn						
	Subtotal	235	231	98.4%	1.0	0.2	A
SB	Left Turn						
	Through	202	192	95.0%	0.7	0.2	A
	Right Turn						
	Subtotal	202	192	95.0%	0.7	0.2	A
EB	Left Turn						
	Through	33	31	93.6%	38.8	1.8	D
	Right Turn						
	Subtotal	33	31	93.6%	38.8	1.8	D
WB	Left Turn						
	Through	39	38	97.7%	33.6	2.8	C
	Right Turn	25	26	104.0%	11.4	4.4	B
	Subtotal	64	64	100.2%	24.6	3.1	C
Total		534	518	97.0%	6.1	0.6	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	260	257	98.7%	2.1	0.5	A
	Subtotal	260	257	98.7%	2.1	0.5	A
SB	Left Turn Through Right Turn	202	191	94.6%	5.7	0.8	A
	Subtotal	202	191	94.6%	5.7	0.8	A
EB	Left Turn Through Right Turn	110	107	97.1%	15.4	3.1	B
	Subtotal	110	107	97.1%	15.4	3.1	B
WB	Left Turn						
	Through	106	95	89.6%	23.6	2.2	C
	Right Turn	33	34	103.3%	13.1	3.6	B
	Subtotal	139	129	92.9%	20.8	2.1	C
Total		711	684	96.1%	8.7	0.8	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	293	291	99.2%	3.7	0.7	A
	Subtotal	293	291	99.2%	3.7	0.7	A
SB	Left Turn Through Right Turn	202	192	95.0%	2.4	0.5	A
	Subtotal	202	192	95.0%	2.4	0.5	A
EB	Left Turn Through Right Turn	37	34	91.4%	37.5	3.5	D
	Subtotal	37	34	91.4%	37.5	3.5	D
WB	Left Turn Through Right Turn	71	66	92.5%	38.9	1.7	D
	Subtotal	71	66	92.5%	38.9	1.7	D
Total		603	582	96.5%	9.2	0.5	A

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	248	246	99.3%	21.1	1.7	C
	Right Turn	45	44	97.3%	5.8	0.8	A
	Subtotal	293	290	99.0%	18.8	1.3	B
SB	Left Turn	36	34	95.3%	35.4	5.8	D
	Through	156	150	96.2%	10.8	1.0	B
	Right Turn						
	Subtotal	192	184	96.0%	15.4	1.8	B
EB	Left Turn	56	55	98.4%	23.6	4.0	C
	Through	1,125	1,119	99.4%	23.4	2.2	C
	Right Turn	46	42	91.1%	16.2	3.6	B
	Subtotal	1,227	1,216	99.1%	23.2	2.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,712	1,690	98.7%	21.6	1.6	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	6	77.5%	12.9	2.5	B
	Through						
	Right Turn	6	3	45.0%	7.9	0.8	A
	Subtotal	14	9	63.6%	11.4	2.0	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	27	85.8%	2.7	0.8	A
	Right Turn	6	7	120.0%	2.8	0.6	A
	Subtotal	37	34	91.4%	2.7	0.7	A
WB	Left Turn	7	7	94.3%	7.9	4.2	A
	Through	63	60	95.4%	7.9	1.1	A
	Right Turn						
	Subtotal	70	67	95.3%	7.9	1.1	A
Total		121	109	90.4%	6.6	0.5	A

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	589	589	99.9%	7.4	0.6	A
	Subtotal	589	589	99.9%	7.4	0.6	A
SB	Left Turn Through Right Turn	416	414	99.4%	1.4	0.3	A
	Subtotal	416	414	99.4%	1.4	0.3	A
EB	Left Turn Through Right Turn	209	208	99.7%	36.3	2.7	D
	Subtotal	209	208	99.7%	36.3	2.7	D
WB	Left Turn Through Right Turn	192	183	95.1%	25.9	2.0	C
	Subtotal	192	183	95.1%	25.9	2.0	C
Total		1,406	1,393	99.1%	12.4	0.5	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	102.1%	14.6	2.4	B
	Through						
	Right Turn	9	8	92.2%	14.8	5.7	B
	Subtotal	23	23	98.3%	14.8	2.2	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	31	25	79.4%	1.1	0.6	A
	Right Turn	6	5	83.3%	1.1	1.2	A
	Subtotal	37	30	80.0%	1.1	0.6	A
WB	Left Turn	13	12	89.2%	2.0	1.6	A
	Through	56	53	94.1%	2.3	0.9	A
	Right Turn						
	Subtotal	69	64	93.2%	2.2	0.8	A
Total		129	117	90.3%	4.4	1.0	A

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	101.1%	6.4	3.6	A
	Through	90	88	97.2%	3.5	1.2	A
	Right Turn	12	10	84.2%	2.2	0.7	A
	Subtotal	111	107	96.1%	3.6	1.0	A
SB	Left Turn	15	13	86.0%	6.0	3.2	A
	Through	111	105	94.7%	4.0	0.9	A
	Right Turn	11	12	105.5%	3.4	1.2	A
	Subtotal	137	130	94.6%	4.2	0.8	A
EB	Left Turn	15	14	96.0%	30.3	7.7	C
	Through	22	16	72.7%	33.9	8.0	C
	Right Turn	3	2	63.3%	10.9	9.0	B
	Subtotal	40	32	80.8%	30.8	5.8	C
WB	Left Turn	16	17	103.8%	2.7	0.6	A
	Through	49	44	88.8%	2.8	0.2	A
	Right Turn	23	26	112.2%	7.5	0.5	A
	Subtotal	88	86	97.6%	4.1	0.3	A
Total		376	355	94.3%	6.4	1.1	A

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	194	187	96.4%	45.0	3.1	D
	Right Turn	275	274	99.7%	42.8	4.8	D
	Subtotal	469	461	98.3%	43.7	4.1	D
SB	Left Turn	480	477	99.3%	41.2	2.1	D
	Through	236	232	98.4%	25.1	2.1	C
	Right Turn						
	Subtotal	716	709	99.0%	35.9	1.7	D
EB	Left Turn	798	789	98.9%	37.6	4.2	D
	Through	388	380	97.8%	23.0	3.0	C
	Right Turn	47	58	122.3%	20.0	3.1	C
	Subtotal	1,233	1,226	99.4%	32.3	3.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,418	2,396	99.1%	35.6	1.9	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	36	92.3%	31.1	3.2	C
	Through	166	162	97.6%	18.3	1.8	B
	Right Turn						
	Subtotal	205	198	96.6%	20.6	2.0	C
SB	Left Turn						
	Through	555	550	99.0%	17.5	4.0	B
	Right Turn	22	21	95.9%	22.6	6.6	C
	Subtotal	577	571	98.9%	17.7	4.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	162	160	98.8%	46.8	1.6	D
	Through	119	120	100.8%	36.7	2.7	D
	Right Turn	517	513	99.1%	4.4	0.3	A
	Subtotal	798	793	99.3%	17.8	0.8	B
Total		1,580	1,561	98.8%	18.1	1.4	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	589	589	100.0%	1.4	0.3	A
	Right Turn						
	Subtotal	589	589	100.0%	1.4	0.3	A
SB	Left Turn						
	Through	416	414	99.6%	3.1	0.3	A
	Right Turn	101	100	99.4%	3.0	0.7	A
	Subtotal	517	515	99.5%	3.1	0.2	A
EB	Left Turn	118	115	97.7%	38.3	2.4	D
	Through						
	Right Turn						
	Subtotal	118	115	97.7%	38.3	2.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,224	1,219	99.6%	5.6	0.2	A

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	202	192	95.0%	4.2	0.8	A
	Subtotal	202	192	95.0%	4.2	0.8	A
EB	Left Turn	235	232	98.8%	4.2	0.5	A
	Through						
	Right Turn						
	Subtotal	235	232	98.8%	4.2	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		437	424	97.0%	4.2	0.4	A

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	38	38	98.9%	48.3	7.6	D
	Through	266	263	98.8%	1.9	0.3	A
	Right Turn						
	Subtotal	304	300	98.8%	7.7	1.5	A
SB	Left Turn						
	Through	151	144	95.1%	2.8	0.6	A
	Right Turn	12	11	94.2%	2.5	1.5	A
	Subtotal	163	155	95.0%	2.7	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	41	41	100.0%	37.7	3.0	D
	Through	120	115	95.4%	36.8	2.5	D
	Right Turn	19	19	102.1%	23.6	5.9	C
	Subtotal	180	175	97.2%	35.5	1.6	D
Total		647	630	97.4%	14.2	0.6	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	249	249	99.8%	10.1	1.1	B
	Right Turn	36	33	91.9%	3.6	0.5	A
	Subtotal	285	282	98.8%	9.4	1.0	A
SB	Left Turn	55	58	105.8%	42.2	5.4	D
	Through	118	112	94.9%	8.9	1.5	A
	Right Turn						
	Subtotal	173	170	98.4%	20.2	2.1	C
EB	Left Turn	26	36	138.8%	16.1	4.7	B
	Through	763	758	99.4%	17.6	1.6	B
	Right Turn	45	43	94.7%	5.5	1.0	A
	Subtotal	834	837	100.3%	16.9	1.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,292	1,289	99.8%	15.7	1.0	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	37	95.6%	3.6	1.2	A
	Through	236	248	104.9%	3.0	0.3	A
	Right Turn						
	Subtotal	275	285	103.6%	3.1	0.3	A
SB	Left Turn						
	Through	150	144	95.9%	3.7	0.5	A
	Right Turn	48	60	124.0%	2.5	0.6	A
	Subtotal	198	203	102.7%	3.3	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	171	162	94.7%	36.4	1.5	D
	Through	214	215	100.4%	36.5	1.4	D
	Right Turn	25	26	104.8%	26.4	4.6	C
	Subtotal	410	403	98.3%	35.9	0.8	D
Total		883	891	100.9%	18.0	0.4	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,115	1,097	98.4%	2.6	0.2	A
	Right Turn	20	17	85.0%	3.3	1.4	A
	Subtotal	1,135	1,114	98.2%	2.6	0.2	A
NE	Left Turn	64	62	96.9%	40.4	2.9	D
	Through						
	Right Turn	37	36	97.3%	40.9	3.8	D
	Subtotal	101	98	97.0%	40.6	1.7	D
EB	Left Turn	110	109	99.0%	39.0	1.8	D
	Through	388	387	99.7%	41.5	0.9	D
	Right Turn						
	Subtotal	498	496	99.5%	41.0	0.7	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,734	1,708	98.5%	15.9	0.2	B

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,077	1,061	98.5%	2.8	0.3	A
	Through	212	207	97.5%	3.7	0.5	A
	Right Turn						
	Subtotal	1,289	1,267	98.3%	3.0	0.3	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	160	162	101.2%	32.9	2.0	C
	Right Turn	547	542	99.1%	38.0	1.1	D
	Subtotal	707	704	99.6%	36.9	1.0	D
Total		1,996	1,971	98.8%	15.1	0.4	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,114	1,111	99.8%	0.9	0.1	A
	Through						
	Right Turn	80	77	96.3%	1.9	0.2	A
	Subtotal	1,194	1,188	99.5%	1.0	0.1	A
SB	Left Turn						
	Through	353	349	98.8%	0.2	0.0	A
	Right Turn	26	26	101.5%	4.7	0.3	A
	Subtotal	379	375	99.0%	0.5	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	71	98.8%	5.5	0.5	A
	Through	131	134	102.6%	39.3	4.8	D
	Right Turn						
	Subtotal	203	206	101.2%	27.6	3.2	C
Total		1,776	1,769	99.6%	4.0	0.4	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	478	484	101.3%	3.4	0.3	A
	Through	1,034	1,027	99.3%	3.8	0.2	A
	Right Turn	27	22	82.6%	4.0	0.9	A
	Subtotal	1,539	1,533	99.6%	3.6	0.2	A
EB	Left Turn						
	Through	184	179	97.5%	34.9	2.9	C
	Right Turn	39	38	96.4%	28.1	2.1	C
	Subtotal	223	217	97.3%	33.7	2.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,762	1,750	99.3%	7.4	0.4	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	70	67	96.1%	16.5	3.4	B
	Right Turn	58	61	104.3%	10.3	2.9	B
	Subtotal	128	128	99.8%	13.6	2.8	B
SB	Left Turn	30	34	112.3%	24.8	2.5	C
	Through	63	55	87.6%	20.2	3.6	C
	Right Turn						
	Subtotal	93	89	95.6%	21.9	2.8	C
EB	Left Turn	16	15	94.4%	22.4	5.3	C
	Through	1,145	1,124	98.2%	23.9	3.7	C
	Right Turn	74	74	99.7%	15.7	2.0	B
	Subtotal	1,235	1,213	98.2%	23.4	3.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,456	1,430	98.2%	22.4	3.1	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **4 PM to 5 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	53	94.5%	38.2	4.7	D
	Through	546	535	98.1%	18.2	0.5	B
	Right Turn	858	859	100.1%	11.1	1.6	B
	Subtotal	1,460	1,448	99.1%	14.7	0.9	B
SB	Left Turn						
	Through	57	52	91.6%	16.5	2.8	B
	Right Turn	20	20	100.0%	9.1	1.4	A
	Subtotal	77	72	93.8%	14.5	2.0	B
EB	Left Turn	49	46	93.3%	36.7	5.6	D
	Through	102	102	99.9%	35.0	2.2	D
	Right Turn	81	75	93.1%	1.2	0.4	A
	Subtotal	232	223	96.1%	23.9	1.4	C
WB	Left Turn	301	284	94.3%	38.0	4.9	D
	Through	95	95	100.1%	28.7	4.2	C
	Right Turn	21	21	99.5%	16.7	5.3	B
	Subtotal	417	400	95.9%	34.7	3.1	C
Total		2,186	2,142	98.0%	19.4	0.9	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	31	30	96.5%	24.0	3.6	C
	Through	323	309	95.5%	29.6	1.7	C
	Right Turn	82	83	101.5%	23.9	2.4	C
	Subtotal	436	422	96.7%	28.1	1.5	C
SB	Left Turn	107	101	94.0%	40.8	4.3	D
	Through	177	166	93.7%	23.6	2.4	C
	Right Turn	17	17	98.2%	6.9	3.1	A
	Subtotal	301	283	94.1%	28.8	1.8	C
EB	Left Turn	27	26	97.0%	21.4	4.8	C
	Through	104	114	109.8%	18.6	3.4	B
	Right Turn	13	11	86.2%	11.8	3.3	B
	Subtotal	144	152	105.3%	18.6	3.0	B
WB	Left Turn	68	60	87.9%	21.9	5.0	C
	Through	77	80	103.2%	21.6	4.2	C
	Right Turn	73	68	93.7%	14.6	4.3	B
	Subtotal	218	208	95.3%	19.4	3.6	B
Total		1,099	1,064	96.8%	25.3	1.0	C

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	77	72	93.0%	38.8	3.7	D
	Through	78	75	96.5%	32.6	3.5	C
	Right Turn	258	243	94.2%	27.1	3.1	C
	Subtotal	413	390	94.4%	30.4	1.9	C
SB	Left Turn	89	88	98.5%	45.0	1.7	D
	Through	50	48	95.8%	30.4	4.9	C
	Right Turn	13	12	94.6%	5.3	1.0	A
	Subtotal	152	148	97.3%	37.1	1.9	D
EB	Left Turn						
	Through	810	815	100.6%	25.6	2.3	C
	Right Turn	150	144	96.3%	4.2	0.4	A
	Subtotal	960	959	99.9%	22.4	2.0	C
WB	Left Turn	109	100	92.1%	76.6	20.0	E
	Through	327	316	96.6%	12.0	1.3	B
	Right Turn	40	36	88.8%	6.2	1.9	A
	Subtotal	476	452	94.9%	26.2	5.9	C
Total		2,001	1,949	97.4%	26.0	1.6	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	898	881	98.2%	33.9	2.0	C
	Right Turn						
	Subtotal	898	881	98.2%	33.9	2.0	C
SB	Left Turn						
	Through	910	875	96.1%	14.9	4.0	B
	Right Turn	54	50	92.2%	18.6	5.0	B
	Subtotal	964	925	95.9%	15.1	4.0	B
EB	Left Turn						
	Through	312	319	102.2%	23.3	1.3	C
	Right Turn	68	61	89.0%	19.0	4.1	B
	Subtotal	380	379	99.8%	22.6	1.2	C
WB	Left Turn						
	Through	192	183	95.4%	20.7	1.8	C
	Right Turn						
	Subtotal	192	183	95.4%	20.7	1.8	C
Total		2,434	2,369	97.3%	23.7	1.9	C

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	873	854	97.8%	14.9	3.9	B
	Right Turn	25	22	87.2%	18.1	5.1	C
	Subtotal	898	875	97.5%	15.0	3.8	B
SB	Left Turn						
	Through	951	917	96.4%	3.6	2.1	A
	Right Turn						
	Subtotal	951	917	96.4%	3.6	2.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	13	13	98.5%	29.1	8.0	D
	Through						
	Right Turn	49	46	93.7%	37.8	7.4	E
	Subtotal	62	59	94.7%	35.8	5.9	E
Total		1,911	1,851	96.9%	10.0	2.2	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	676	654	96.8%	53.3	6.5	D
	Right Turn	246	237	96.1%	28.5	0.7	C
	Subtotal	922	891	96.6%	46.8	5.3	D
SB	Left Turn	136	128	94.3%	34.7	3.4	C
	Through	847	817	96.4%	7.2	0.7	A
	Right Turn						
	Subtotal	983	945	96.1%	11.0	0.8	B
EB	Left Turn	76	73	95.7%	40.9	4.7	D
	Through	789	781	98.9%	33.2	1.1	C
	Right Turn	104	104	100.0%	28.3	1.9	C
	Subtotal	969	957	98.8%	33.2	1.0	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,874	2,793	97.2%	30.0	1.6	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	228	221	97.0%	52.5	1.3	D
	Through	524	503	96.0%	3.0	0.4	A
	Right Turn						
	Subtotal	752	724	96.3%	18.1	1.2	B
SB	Left Turn						
	Through	678	649	95.7%	8.3	1.0	A
	Right Turn	15	15	97.3%	4.2	1.0	A
	Subtotal	693	664	95.7%	8.2	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	305	299	98.0%	36.0	1.1	D
	Through	233	220	94.5%	29.7	1.5	C
	Right Turn	213	221	103.7%	8.8	0.8	A
	Subtotal	751	740	98.6%	26.0	0.5	C
Total		2,196	2,128	96.9%	17.8	0.6	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	115	111	96.9%	22.1	2.5	C
	Through	348	350	100.5%	11.8	0.9	B
	Right Turn	274	263	96.1%	5.8	0.6	A
	Subtotal	737	724	98.3%	11.2	0.7	B
SB	Left Turn	74	75	100.7%	35.7	3.0	D
	Through	280	270	96.4%	19.1	1.5	B
	Right Turn	45	44	96.9%	4.5	0.5	A
	Subtotal	399	388	97.3%	20.7	1.7	C
EB	Left Turn	91	96	105.6%	44.8	2.9	D
	Through	1,012	994	98.2%	29.8	1.6	C
	Right Turn	51	46	89.8%	27.6	2.6	C
	Subtotal	1,154	1,136	98.4%	31.0	1.5	C
WB	Left Turn	362	349	96.3%	36.2	1.7	D
	Through	300	302	100.7%	18.7	1.2	B
	Right Turn	37	37	101.1%	10.4	2.3	B
	Subtotal	699	688	98.5%	27.1	0.8	C
Total		2,989	2,937	98.3%	23.8	0.8	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	62	65	104.0%	4.9	0.6	A
	Subtotal	62	65	104.0%	4.9	0.6	A
SB	Left Turn	408	400	98.1%	41.6	2.0	D
	Through	146	147	100.8%	42.0	3.9	D
	Right Turn						
	Subtotal	554	547	98.8%	41.8	2.0	D
EB	Left Turn						
	Through	1,068	1,046	97.9%	4.6	0.3	A
	Right Turn	103	98	94.9%	2.4	0.5	A
	Subtotal	1,171	1,144	97.7%	4.5	0.3	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,787	1,756	98.2%	16.1	0.7	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	519	513	98.9%	3.5	0.9	A
	Right Turn	7	7	97.1%	1.7	0.9	A
	Subtotal	526	520	98.9%	3.4	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	35	32	91.4%	30.8	4.1	C
	Through	34	36	106.2%	29.1	2.3	C
	Right Turn						
	Subtotal	69	68	98.7%	29.8	2.6	C
Total		595	588	98.9%	6.5	0.9	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	422	423	100.1%	21.8	1.6	C
	Through	492	481	97.7%	16.6	2.0	B
	Right Turn	443	441	99.5%	10.5	0.9	B
	Subtotal	1,357	1,344	99.0%	16.2	1.4	B
EB	Left Turn						
	Through	1,332	1,308	98.2%	11.7	1.3	B
	Right Turn	28	23	82.5%	7.2	2.1	A
	Subtotal	1,360	1,332	97.9%	11.6	1.2	B
WB	Left Turn	6	16	265.0%	37.6	11.9	D
	Through	256	248	96.7%	15.4	1.7	B
	Right Turn						
	Subtotal	262	263	100.5%	16.7	1.5	B
Total		2,979	2,939	98.6%	14.2	0.6	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	219	227	103.5%	31.8	2.2	C
	Right Turn	112	107	95.4%	28.8	3.6	C
	Subtotal	331	334	100.8%	30.9	2.4	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	158	147	92.9%	12.3	1.2	B
	Through	1,358	1,339	98.6%	11.4	1.1	B
	Right Turn	22	21	97.3%	10.8	4.1	B
	Subtotal	1,538	1,507	98.0%	11.5	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,869	1,840	98.5%	15.0	1.0	B

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	94.3%	27.5	8.4	C
	Through	460	439	95.5%	29.4	2.0	C
	Right Turn	45	58	128.0%	24.9	5.7	C
	Subtotal	519	510	98.3%	28.9	2.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	491	479	97.5%	39.2	2.5	D
	Through	1,263	1,251	99.1%	9.2	1.3	A
	Right Turn						
	Subtotal	1,754	1,730	98.6%	17.5	1.1	B
WB	Left Turn						
	Through	248	253	101.9%	10.6	1.2	B
	Right Turn	6	6	95.0%	5.6	2.9	A
	Subtotal	254	259	101.8%	10.5	1.2	B
Total		2,527	2,499	98.9%	19.1	1.0	B

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	437	424	96.9%	2.2	0.5	A
	Right Turn						
	Subtotal	437	424	96.9%	2.2	0.5	A
SB	Left Turn						
	Through	391	382	97.6%	3.4	0.8	A
	Right Turn						
	Subtotal	391	382	97.6%	3.4	0.8	A
EB	Left Turn						
	Through	27	26	97.4%	31.6	2.9	C
	Right Turn						
	Subtotal	27	26	97.4%	31.6	2.9	C
WB	Left Turn						
	Through	34	34	98.8%	30.8	4.5	C
	Right Turn	28	27	95.7%	13.2	3.3	B
	Subtotal	62	60	97.4%	23.1	4.0	C
Total		917	892	97.3%	5.0	0.4	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	465	446	95.9%	5.3	1.1	A
	Right Turn						
	Subtotal	465	446	95.9%	5.3	1.1	A
SB	Left Turn						
	Through	391	382	97.8%	6.9	0.8	A
	Right Turn						
	Subtotal	391	382	97.8%	6.9	0.8	A
EB	Left Turn						
	Through	194	188	96.9%	12.0	2.2	B
	Right Turn						
	Subtotal	194	188	96.9%	12.0	2.2	B
WB	Left Turn						
	Through	158	133	84.2%	22.7	1.4	C
	Right Turn	35	28	81.1%	20.6	5.4	C
	Subtotal	193	162	83.7%	22.3	1.9	C
Total		1,243	1,178	94.8%	9.2	0.7	A

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	500	472	94.3%	13.2	1.7	B
	Right Turn						
	Subtotal	500	472	94.3%	13.2	1.7	B
SB	Left Turn						
	Through	391	384	98.2%	3.8	0.7	A
	Right Turn						
	Subtotal	391	384	98.2%	3.8	0.7	A
EB	Left Turn	4	4	110.0%	57.2	16.1	E
	Through	57	53	92.1%	42.3	3.3	D
	Right Turn						
	Subtotal	61	57	93.3%	43.6	3.5	D
WB	Left Turn						
	Through	148	139	94.0%	41.9	3.7	D
	Right Turn						
	Subtotal	148	139	94.0%	41.9	3.7	D
Total		1,100	1,051	95.6%	15.2	1.0	B

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	445	418	93.9%	22.1	1.6	C
	Right Turn	59	56	94.7%	5.2	0.7	A
	Subtotal	504	474	94.0%	20.2	1.5	C
SB	Left Turn	21	22	104.8%	38.0	8.9	D
	Through	299	294	98.2%	13.1	1.2	B
	Right Turn						
	Subtotal	320	316	98.6%	14.9	1.4	B
EB	Left Turn	70	73	104.0%	20.8	2.9	C
	Through	1,308	1,284	98.2%	20.6	2.6	C
	Right Turn	92	91	98.7%	16.9	3.7	B
	Subtotal	1,470	1,448	98.5%	20.4	2.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,294	2,238	97.5%	19.6	1.7	B

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	11	100.9%	15.2	2.5	B
	Through						
	Right Turn	7	6	84.3%	8.1	0.9	A
	Subtotal	18	17	94.4%	12.8	1.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	53	48	90.4%	2.6	0.8	A
	Right Turn	4	5	115.0%	1.8	0.6	A
	Subtotal	57	53	92.1%	2.6	0.7	A
WB	Left Turn	5	5	104.0%	7.5	3.7	A
	Through	137	121	88.0%	9.9	1.1	A
	Right Turn						
	Subtotal	142	126	88.5%	9.8	1.1	A
Total		217	195	90.0%	8.1	0.9	A

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	744	736	98.9%	24.5	2.3	C
	Subtotal	744	736	98.9%	24.5	2.3	C
SB	Left Turn Through Right Turn	518	500	96.5%	7.5	0.7	A
	Subtotal	518	500	96.5%	7.5	0.7	A
EB	Left Turn Through Right Turn	404	397	98.2%	18.7	0.8	B
	Subtotal	404	397	98.2%	18.7	0.8	B
WB	Left Turn Through Right Turn	371	371	99.9%	8.6	1.3	A
	Subtotal	371	371	99.9%	8.6	1.3	A
Total		2,037	2,003	98.3%	16.2	0.8	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	92.9%	11.5	2.1	B
	Through						
	Right Turn	23	20	87.8%	12.6	1.9	B
	Subtotal	37	33	89.7%	12.2	1.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	58	51	88.6%	3.0	0.8	A
	Right Turn	2	2	115.0%	3.2	5.7	A
	Subtotal	60	54	89.5%	2.9	0.8	A
WB	Left Turn	9	11	123.3%	8.0	3.7	A
	Through	128	112	87.7%	7.4	1.1	A
	Right Turn						
	Subtotal	137	123	90.0%	7.5	1.2	A
Total		234	210	89.8%	7.0	1.0	A

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	5	104.0%	9.8	4.1	A
	Through	140	133	95.1%	5.2	0.8	A
	Right Turn	8	10	120.0%	6.6	2.5	A
	Subtotal	153	148	96.7%	5.5	0.7	A
SB	Left Turn	32	28	87.2%	14.3	3.0	B
	Through	140	137	98.1%	8.5	1.4	A
	Right Turn	83	76	91.7%	8.8	1.5	A
	Subtotal	255	241	94.7%	9.2	1.0	A
EB	Left Turn	38	33	87.1%	37.5	6.7	D
	Through	40	36	90.0%	39.9	5.3	D
	Right Turn	3	3	103.3%	20.7	10.6	C
	Subtotal	81	72	89.1%	37.9	3.8	D
WB	Left Turn	14	11	77.9%	3.2	2.4	A
	Through	49	46	94.5%	4.3	0.9	A
	Right Turn	9	13	144.4%	12.6	1.8	B
	Subtotal	72	70	97.5%	5.6	0.9	A
Total		561	532	94.8%	11.6	0.8	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	206	201	97.3%	48.9	4.6	D
	Right Turn	353	350	99.1%	49.3	6.3	D
	Subtotal	559	550	98.4%	49.2	5.6	D
SB	Left Turn	449	445	99.1%	43.5	2.0	D
	Through	237	235	99.3%	24.5	1.7	C
	Right Turn						
	Subtotal	686	680	99.2%	36.9	1.7	D
EB	Left Turn	801	793	99.0%	29.7	5.0	C
	Through	511	501	98.0%	14.4	1.0	B
	Right Turn	40	46	115.0%	13.7	2.7	B
	Subtotal	1,352	1,339	99.1%	23.5	3.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,597	2,570	99.0%	32.5	2.7	C

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	41	39	95.1%	28.5	2.3	C
	Through	175	168	96.2%	17.0	1.5	B
	Right Turn						
	Subtotal	216	207	96.0%	19.2	1.3	B
SB	Left Turn						
	Through	531	528	99.5%	13.8	2.9	B
	Right Turn	22	24	106.8%	27.9	8.1	C
	Subtotal	553	552	99.7%	14.4	3.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	155	155	100.1%	45.4	2.2	D
	Through	201	199	99.1%	40.4	2.5	D
	Right Turn	494	487	98.6%	4.9	0.6	A
	Subtotal	850	841	99.0%	20.8	0.7	C
Total		1,619	1,600	98.8%	18.4	1.1	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	744	731	98.3%	4.5	0.6	A
	Right Turn						
	Subtotal	744	731	98.3%	4.5	0.6	A
SB	Left Turn						
	Through	518	500	96.5%	11.6	1.2	B
	Right Turn	460	431	93.7%	14.5	1.7	B
	Subtotal	978	931	95.2%	12.9	1.1	B
EB	Left Turn	154	147	95.6%	40.8	3.5	D
	Through						
	Right Turn						
	Subtotal	154	147	95.6%	40.8	3.5	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,876	1,809	96.4%	11.8	0.8	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	391	382	97.7%	7.6	0.5	A
	Subtotal	391	382	97.7%	7.6	0.5	A
EB	Left Turn	437	426	97.5%	11.1	1.2	B
	Through						
	Right Turn						
	Subtotal	437	426	97.5%	11.1	1.2	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		828	808	97.6%	9.4	0.6	A

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	63	63	99.4%	60.1	17.6	E
	Through	452	424	93.7%	6.7	1.2	A
	Right Turn						
	Subtotal	515	486	94.4%	13.8	4.2	B
SB	Left Turn						
	Through	229	225	98.3%	4.0	0.7	A
	Right Turn	32	32	98.8%	4.9	2.1	A
	Subtotal	261	257	98.3%	4.1	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	91	90	98.6%	35.2	2.5	D
	Through	116	114	98.0%	38.0	3.0	D
	Right Turn	52	51	97.9%	24.8	2.9	C
	Subtotal	259	254	98.2%	34.3	1.8	C
Total		1,035	997	96.3%	16.6	2.2	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	466	433	92.8%	17.2	1.2	B
	Right Turn	38	37	97.1%	6.7	1.9	A
	Subtotal	504	470	93.2%	16.4	1.3	B
SB	Left Turn	67	65	97.5%	46.0	8.4	D
	Through	183	181	99.0%	14.9	0.9	B
	Right Turn						
	Subtotal	250	247	98.6%	23.1	1.9	C
EB	Left Turn	30	37	124.0%	15.7	4.1	B
	Through	1,200	1,191	99.2%	11.4	1.1	B
	Right Turn	78	77	98.5%	4.0	1.2	A
	Subtotal	1,308	1,305	99.8%	11.1	1.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,062	2,021	98.0%	13.8	0.6	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	47	46	97.4%	10.2	1.5	B
	Through	449	425	94.6%	7.5	0.5	A
	Right Turn						
	Subtotal	496	471	94.9%	7.7	0.4	A
SB	Left Turn						
	Through	223	221	99.2%	4.8	0.6	A
	Right Turn	66	74	111.8%	4.7	0.9	A
	Subtotal	289	295	102.1%	4.8	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	223	216	96.8%	34.4	2.1	C
	Through	230	231	100.3%	35.2	1.9	D
	Right Turn	24	24	98.3%	23.5	3.5	C
	Subtotal	477	470	98.6%	34.3	1.6	C
Total		1,262	1,236	97.9%	17.1	0.6	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,267	1,230	97.1%	5.3	0.6	A
	Right Turn	36	37	101.9%	5.6	1.3	A
	Subtotal	1,303	1,267	97.2%	5.3	0.6	A
NE	Left Turn	82	80	97.9%	37.1	2.8	D
	Through						
	Right Turn	184	180	97.7%	40.1	2.1	D
	Subtotal	266	260	97.8%	39.2	2.0	D
EB	Left Turn	136	132	97.0%	39.6	2.2	D
	Through	576	567	98.4%	40.5	1.0	D
	Right Turn						
	Subtotal	712	699	98.1%	40.3	1.0	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,281	2,226	97.6%	20.3	0.4	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,239	1,205	97.2%	4.1	1.0	A
	Through	246	238	96.5%	4.8	0.8	A
	Right Turn						
	Subtotal	1,485	1,442	97.1%	4.2	0.9	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	166	169	101.7%	30.3	2.4	C
	Right Turn	682	676	99.2%	34.6	0.5	C
	Subtotal	848	845	99.7%	33.7	0.7	C
Total		2,333	2,287	98.0%	15.1	0.7	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,490	1,481	99.4%	1.9	0.2	A
	Through						
	Right Turn	129	128	99.2%	3.0	0.6	A
	Subtotal	1,619	1,609	99.4%	2.0	0.2	A
SB	Left Turn						
	Through	436	428	98.3%	0.6	0.1	A
	Right Turn	27	30	110.7%	4.6	0.3	A
	Subtotal	463	458	99.0%	0.8	0.1	A
EB	Left Turn						
	Through						
	Right Turn	2	0	0.0%	0.0	0.0	A
	Subtotal	2	0	0.0%	0.0	0.0	A
WB	Left Turn	68	68	100.6%	5.8	0.5	A
	Through	131	133	101.4%	42.8	5.0	D
	Right Turn						
	Subtotal	199	201	101.1%	30.2	3.1	C
Total		2,283	2,269	99.4%	4.3	0.4	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	604	596	98.7%	5.2	0.3	A
	Through	1,360	1,351	99.4%	5.6	0.3	A
	Right Turn	32	31	97.2%	5.9	1.3	A
	Subtotal	1,996	1,979	99.1%	5.5	0.2	A
EB	Left Turn						
	Through	287	279	97.4%	34.7	1.6	C
	Right Turn	48	49	102.7%	30.7	4.6	C
	Subtotal	335	329	98.1%	34.1	1.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,331	2,307	99.0%	9.6	0.3	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	94	87	92.1%	34.2	2.4	C
	Right Turn	93	91	98.1%	22.6	3.9	C
	Subtotal	187	178	95.1%	28.3	2.6	C
SB	Left Turn	57	63	111.2%	39.0	4.0	D
	Through	128	118	92.4%	35.4	2.3	D
	Right Turn						
	Subtotal	185	182	98.2%	36.6	2.6	D
EB	Left Turn	9	9	103.3%	26.6	14.6	C
	Through	1,202	1,187	98.8%	25.3	6.4	C
	Right Turn	127	129	101.5%	19.2	2.8	B
	Subtotal	1,338	1,325	99.1%	24.7	6.1	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,710	1,685	98.5%	26.4	4.9	C

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Volume and Delay by Movement **5 PM to 6 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	65	62	96.0%	41.1	3.6	D
	Through	561	560	99.8%	19.7	1.0	B
	Right Turn	934	943	101.0%	13.8	2.2	B
	Subtotal	1,560	1,565	100.3%	17.0	1.5	B
SB	Left Turn						
	Through	88	83	94.3%	20.3	1.6	C
	Right Turn	25	28	110.0%	10.6	1.4	B
	Subtotal	113	111	97.8%	17.9	1.4	B
EB	Left Turn	90	87	96.6%	36.4	2.5	D
	Through	146	135	92.5%	33.6	2.4	C
	Right Turn	66	64	97.1%	1.5	0.2	A
	Subtotal	302	286	94.7%	27.3	2.0	C
WB	Left Turn	307	298	97.1%	37.8	2.2	D
	Through	102	106	104.3%	31.5	2.6	C
	Right Turn	21	20	96.7%	18.1	4.3	B
	Subtotal	430	425	98.8%	35.3	1.5	D
Total		2,405	2,387	99.2%	21.6	1.1	C

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	22	19	85.5%	23.8	5.1	C
	Through	222	226	101.8%	29.3	1.2	C
	Right Turn	48	48	99.4%	20.6	1.7	C
	Subtotal	292	293	100.2%	27.5	0.9	C
SB	Left Turn	137	133	97.1%	35.9	3.3	D
	Through	167	163	97.8%	19.4	2.1	B
	Right Turn	14	14	101.4%	5.6	1.7	A
	Subtotal	318	311	97.6%	25.9	2.1	C
EB	Left Turn	29	28	97.6%	16.0	3.0	B
	Through	120	129	107.3%	13.9	1.6	B
	Right Turn	22	22	100.0%	8.5	1.9	A
	Subtotal	171	179	104.7%	13.6	1.6	B
WB	Left Turn	83	73	88.3%	18.0	3.1	B
	Through	105	109	103.9%	17.4	2.5	B
	Right Turn	79	69	87.6%	12.7	1.8	B
	Subtotal	267	252	94.2%	16.3	2.3	B
Total		1,048	1,034	98.6%	21.9	1.0	C

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	73	78	106.2%	40.1	3.0	D
	Through	93	92	98.8%	33.2	3.6	C
	Right Turn	160	149	93.1%	21.9	2.3	C
	Subtotal	326	318	97.7%	29.6	1.8	C
SB	Left Turn	91	91	99.5%	44.5	4.5	D
	Through	72	71	98.9%	41.2	4.9	D
	Right Turn	10	9	87.0%	6.2	2.4	A
	Subtotal	173	170	98.5%	41.1	2.8	D
EB	Left Turn						
	Through	910	914	100.4%	22.6	2.3	C
	Right Turn	170	165	97.0%	4.0	0.5	A
	Subtotal	1,080	1,079	99.9%	19.8	2.0	B
WB	Left Turn	89	88	98.5%	64.2	10.1	E
	Through	347	341	98.3%	10.3	1.9	B
	Right Turn	38	39	102.9%	5.2	1.6	A
	Subtotal	474	468	98.7%	20.2	2.9	C
Total		2,053	2,035	99.1%	23.2	1.4	C

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	914	899	98.4%	38.0	2.3	D
	Right Turn						
	Subtotal	914	899	98.4%	38.0	2.3	D
SB	Left Turn						
	Through	1,049	1,008	96.1%	14.1	1.5	B
	Right Turn	51	48	94.9%	21.1	4.3	C
	Subtotal	1,100	1,056	96.0%	14.4	1.6	B
EB	Left Turn						
	Through	363	371	102.2%	23.9	2.1	C
	Right Turn	80	75	93.1%	21.9	3.6	C
	Subtotal	443	446	100.6%	23.5	2.2	C
WB	Left Turn						
	Through	204	195	95.7%	19.3	0.8	B
	Right Turn						
	Subtotal	204	195	95.7%	19.3	0.8	B
Total		2,661	2,596	97.6%	24.5	1.3	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **5 PM to 6 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	904	889	98.3%	34.3	6.4	D
	Right Turn	10	8	79.0%	16.0	7.5	C
	Subtotal	914	897	98.1%	34.2	6.3	D
SB	Left Turn						
	Through	1,088	1,046	96.1%	6.2	1.9	A
	Right Turn						
	Subtotal	1,088	1,046	96.1%	6.2	1.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	12	12	100.0%	36.6	10.5	E
	Through						
	Right Turn	74	75	101.1%	48.1	7.2	E
	Subtotal	86	87	100.9%	46.5	7.3	E
Total		2,088	2,029	97.2%	20.3	3.4	C

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	724	708	97.7%	39.1	2.0	D
	Right Turn	254	253	99.5%	28.2	2.7	C
	Subtotal	978	960	98.2%	36.2	1.8	D
SB	Left Turn	117	119	102.1%	29.6	3.6	C
	Through	967	932	96.4%	9.0	1.6	A
	Right Turn						
	Subtotal	1,084	1,052	97.0%	11.4	1.6	B
EB	Left Turn	38	40	104.5%	41.1	5.0	D
	Through	783	787	100.5%	35.3	1.5	D
	Right Turn	121	118	97.1%	30.2	2.1	C
	Subtotal	942	944	100.3%	34.9	1.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,004	2,956	98.4%	27.0	1.1	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	234	226	96.6%	52.7	2.3	D
	Through	528	519	98.4%	5.9	1.8	A
	Right Turn						
	Subtotal	762	745	97.8%	20.1	1.4	C
SB	Left Turn						
	Through	741	725	97.9%	8.2	1.5	A
	Right Turn	19	18	93.7%	4.7	1.5	A
	Subtotal	760	743	97.8%	8.2	1.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	343	330	96.2%	38.3	1.6	D
	Through	221	223	100.9%	30.3	1.9	C
	Right Turn	234	228	97.2%	9.4	1.2	A
	Subtotal	798	780	97.8%	27.6	0.7	C
Total		2,320	2,269	97.8%	18.8	0.8	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	109	107	97.7%	23.7	1.9	C
	Through	517	501	96.8%	12.0	1.3	B
	Right Turn	136	138	101.4%	6.7	1.0	A
	Subtotal	762	745	97.8%	12.7	0.9	B
SB	Left Turn	89	84	94.8%	67.9	20.6	E
	Through	294	288	97.9%	20.7	1.0	C
	Right Turn	67	69	102.2%	5.4	0.5	A
	Subtotal	450	441	98.0%	27.5	4.7	C
EB	Left Turn	127	125	98.7%	45.7	4.9	D
	Through	1,198	1,191	99.4%	34.2	3.0	C
	Right Turn	50	48	95.4%	32.9	4.0	C
	Subtotal	1,375	1,364	99.2%	35.2	3.1	D
WB	Left Turn	416	405	97.4%	37.6	1.7	D
	Through	392	392	99.9%	18.6	0.7	B
	Right Turn	28	26	91.4%	11.6	3.8	B
	Subtotal	836	822	98.4%	27.7	1.0	C
Total		3,423	3,373	98.5%	27.4	1.5	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	39	37	95.4%	5.4	1.0	A
	Subtotal	39	37	95.4%	5.4	1.0	A
SB	Left Turn	493	488	99.0%	39.5	2.4	D
	Through	175	177	101.2%	39.0	3.2	D
	Right Turn						
	Subtotal	668	665	99.6%	39.4	2.3	D
EB	Left Turn						
	Through	1,046	1,052	100.6%	8.0	3.7	A
	Right Turn	108	107	99.4%	4.0	2.0	A
	Subtotal	1,154	1,159	100.5%	7.6	3.6	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,861	1,862	100.1%	18.9	2.5	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	641	642	100.1%	3.8	1.1	A
	Right Turn	15	15	102.0%	1.5	1.4	A
	Subtotal	656	657	100.1%	3.7	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	27	24	89.6%	29.5	5.9	C
	Through	20	19	97.0%	28.4	3.7	C
	Right Turn						
	Subtotal	47	44	92.8%	29.1	4.3	C
Total		703	701	99.6%	5.3	1.2	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	454	448	98.6%	18.5	1.8	B
	Through	627	620	98.8%	14.7	1.6	B
	Right Turn	553	552	99.8%	11.0	1.9	B
	Subtotal	1,634	1,619	99.1%	14.5	1.5	B
EB	Left Turn						
	Through	1,397	1,397	100.0%	14.3	2.8	B
	Right Turn	26	26	101.5%	8.6	2.4	A
	Subtotal	1,423	1,423	100.0%	14.2	2.8	B
WB	Left Turn	3	11	370.0%	56.6	15.1	E
	Through	283	271	95.7%	19.0	1.4	B
	Right Turn						
	Subtotal	286	282	98.5%	20.5	1.8	C
Total		3,343	3,324	99.4%	14.9	1.4	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	300	308	102.6%	33.3	2.8	C
	Right Turn	100	95	95.3%	33.5	4.1	C
	Subtotal	400	403	100.8%	33.4	3.0	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	134	132	98.3%	19.2	3.9	B
	Through	1,355	1,360	100.4%	17.9	3.8	B
	Right Turn	89	87	97.8%	15.0	3.8	B
	Subtotal	1,578	1,579	100.0%	17.8	3.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,978	1,982	100.2%	21.0	3.4	C

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	14	85.0%	25.7	6.8	C
	Through	535	532	99.5%	27.5	1.4	C
	Right Turn	61	69	112.6%	30.6	5.9	C
	Subtotal	612	615	100.4%	27.7	1.4	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	468	472	100.8%	43.5	2.2	D
	Through	1,383	1,376	99.5%	10.3	1.4	B
	Right Turn						
	Subtotal	1,851	1,847	99.8%	18.7	1.2	B
WB	Left Turn						
	Through	270	268	99.2%	11.6	0.9	B
	Right Turn	7	6	80.0%	5.2	3.2	A
	Subtotal	277	274	98.7%	11.5	0.9	B
Total		2,740	2,736	99.8%	20.0	1.1	C

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	492	477	97.0%	8.5	5.2	A
	Right Turn						
	Subtotal	492	477	97.0%	8.5	5.2	A
SB	Left Turn						
	Through	455	449	98.8%	4.1	0.6	A
	Right Turn						
	Subtotal	455	449	98.8%	4.1	0.6	A
EB	Left Turn	2	2	100.0%	28.6	19.7	C
	Through	42	40	94.5%	35.1	2.3	D
	Right Turn						
	Subtotal	44	42	94.8%	35.0	2.3	C
WB	Left Turn						
	Through	44	41	93.0%	32.6	4.2	C
	Right Turn	55	51	93.5%	18.9	5.0	B
	Subtotal	99	92	93.2%	25.0	4.4	C
Total		1,090	1,061	97.3%	9.1	2.6	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	549	532	96.9%	16.6	6.5	B
	Right Turn						
	Subtotal	549	532	96.9%	16.6	6.5	B
SB	Left Turn						
	Through	455	449	98.7%	8.4	0.7	A
	Right Turn						
	Subtotal	455	449	98.7%	8.4	0.7	A
EB	Left Turn						
	Through	254	243	95.7%	12.0	2.3	B
	Right Turn						
	Subtotal	254	243	95.7%	12.0	2.3	B
WB	Left Turn						
	Through	216	195	90.0%	53.8	18.3	D
	Right Turn	74	64	86.5%	66.4	27.3	E
	Subtotal	290	259	89.1%	56.8	20.3	E
Total		1,548	1,483	95.8%	20.4	5.9	C

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	623	597	95.8%	22.4	2.9	C
	Right Turn						
	Subtotal	623	597	95.8%	22.4	2.9	C
SB	Left Turn						
	Through	455	450	98.9%	5.7	1.1	A
	Right Turn						
	Subtotal	455	450	98.9%	5.7	1.1	A
EB	Left Turn						
	Through	219	211	96.1%	44.5	4.9	D
	Right Turn						
	Subtotal	219	211	96.1%	44.5	4.9	D
WB	Left Turn						
	Through	154	152	98.4%	58.4	12.3	E
	Right Turn						
	Subtotal	154	152	98.4%	58.4	12.3	E
Total		1,451	1,409	97.1%	24.2	1.7	C

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	558	534	95.8%	25.0	2.0	C
	Right Turn	65	63	96.9%	5.3	1.1	A
	Subtotal	623	597	95.9%	23.0	2.0	C
SB	Left Turn	33	30	92.1%	38.1	6.8	D
	Through	348	345	99.0%	15.5	1.6	B
	Right Turn						
	Subtotal	381	375	98.4%	17.4	1.6	B
EB	Left Turn	99	100	101.0%	29.3	5.7	C
	Through	1,249	1,246	99.7%	29.4	6.9	C
	Right Turn	107	106	98.7%	24.9	7.7	C
	Subtotal	1,455	1,451	99.7%	29.1	6.7	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,459	2,424	98.6%	25.8	4.3	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	17	17	97.6%	15.3	1.9	B
	Through						
	Right Turn	9	7	82.2%	9.2	2.0	A
	Subtotal	26	24	92.3%	13.4	1.2	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	214	206	96.4%	3.5	0.7	A
	Right Turn	5	4	84.0%	3.0	2.3	A
	Subtotal	219	211	96.1%	3.4	0.7	A
WB	Left Turn	4	4	95.0%	8.2	5.1	A
	Through	137	126	92.0%	9.7	1.1	A
	Right Turn						
	Subtotal	141	130	92.1%	9.7	1.1	A
Total		386	364	94.4%	6.3	0.5	A

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	791	780	98.6%	24.7	1.7	C
	Subtotal	791	780	98.6%	24.7	1.7	C
SB	Left Turn Through Right Turn	574	558	97.2%	10.3	0.9	B
	Subtotal	574	558	97.2%	10.3	0.9	B
EB	Left Turn Through Right Turn	454	448	98.8%	18.3	1.1	B
	Subtotal	454	448	98.8%	18.3	1.1	B
WB	Left Turn Through Right Turn	432	437	101.0%	8.9	1.1	A
	Subtotal	432	437	101.0%	8.9	1.1	A
Total		2,251	2,222	98.7%	16.7	0.6	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	96.7%	11.3	2.9	B
	Through						
	Right Turn	35	34	98.0%	11.8	2.0	B
	Subtotal	50	49	97.6%	11.7	1.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	220	210	95.5%	9.1	1.2	A
	Right Turn	3	3	103.3%	5.8	5.3	A
	Subtotal	223	213	95.6%	9.0	1.2	A
WB	Left Turn	8	8	101.3%	11.2	5.3	B
	Through	126	113	90.0%	9.4	1.5	A
	Right Turn						
	Subtotal	134	122	90.7%	9.4	1.6	A
Total		407	383	94.2%	9.5	1.0	A

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	8	100.0%	11.8	4.7	B
	Through	151	148	98.0%	7.5	1.2	A
	Right Turn	20	20	99.0%	9.8	1.2	A
	Subtotal	179	176	98.2%	7.9	1.3	A
SB	Left Turn	42	39	93.6%	20.4	2.9	C
	Through	188	184	97.9%	13.0	1.4	B
	Right Turn	100	93	92.8%	12.6	1.9	B
	Subtotal	330	316	95.8%	13.8	1.5	B
EB	Left Turn	121	115	95.4%	37.1	3.6	D
	Through	123	115	93.2%	35.6	1.8	D
	Right Turn	11	10	91.8%	30.8	8.5	C
	Subtotal	255	240	94.2%	36.1	1.8	D
WB	Left Turn	9	8	91.1%	3.8	1.5	A
	Through	26	26	101.5%	5.1	1.8	A
	Right Turn	9	8	93.3%	10.3	2.6	B
	Subtotal	44	43	97.7%	5.9	1.8	A
Total		808	775	95.9%	18.9	0.9	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	211	210	99.4%	66.5	7.7	E
	Right Turn	406	407	100.2%	91.2	19.7	F
	Subtotal	617	617	100.0%	82.7	15.3	F
SB	Left Turn	543	551	101.5%	48.1	1.6	D
	Through	250	248	99.0%	23.8	2.2	C
	Right Turn						
	Subtotal	793	799	100.7%	40.6	1.3	D
EB	Left Turn	869	860	98.9%	49.8	4.8	D
	Through	493	468	94.9%	21.3	2.4	C
	Right Turn	39	40	102.6%	19.6	3.2	B
	Subtotal	1,401	1,367	97.6%	39.2	3.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,811	2,783	99.0%	49.2	3.9	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	42	38	89.5%	35.3	3.2	D
	Through	173	173	99.8%	22.3	2.6	C
	Right Turn						
	Subtotal	215	210	97.8%	24.6	2.7	C
SB	Left Turn						
	Through	615	607	98.7%	31.8	8.2	C
	Right Turn	25	24	96.8%	39.1	6.3	D
	Subtotal	640	631	98.6%	32.1	8.1	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	179	178	99.3%	46.3	2.6	D
	Through	241	235	97.7%	34.0	2.3	C
	Right Turn	571	568	99.4%	5.7	0.3	A
	Subtotal	991	981	99.0%	19.8	0.8	B
Total		1,846	1,822	98.7%	24.6	3.0	C

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	791	781	98.7%	3.4	0.3	A
	Right Turn						
	Subtotal	791	781	98.7%	3.4	0.3	A
SB	Left Turn						
	Through	574	559	97.4%	10.4	1.3	B
	Right Turn	555	518	93.3%	12.4	1.6	B
	Subtotal	1,129	1,077	95.4%	11.4	1.0	B
EB	Left Turn	123	120	97.8%	40.9	4.4	D
	Through						
	Right Turn						
	Subtotal	123	120	97.8%	40.9	4.4	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,043	1,978	96.8%	10.0	0.5	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	455	449	98.8%	7.6	0.3	A
	Subtotal	455	449	98.8%	7.6	0.3	A
EB	Left Turn	492	479	97.3%	16.1	4.4	B
	Through						
	Right Turn						
	Subtotal	492	479	97.3%	16.1	4.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		947	928	98.0%	12.0	2.2	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	93	89	96.0%	73.5	18.3	E
	Through	564	545	96.6%	7.1	2.0	A
	Right Turn						
	Subtotal	657	634	96.5%	16.5	3.8	B
SB	Left Turn						
	Through	273	271	99.3%	4.7	0.6	A
	Right Turn	23	22	94.3%	4.8	1.9	A
	Subtotal	296	293	99.0%	4.7	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	108	104	96.7%	38.3	1.9	D
	Through	109	108	98.7%	35.0	3.0	C
	Right Turn	50	47	93.2%	24.1	2.2	C
	Subtotal	267	259	96.9%	34.4	1.6	C
Total		1,220	1,186	97.2%	17.5	2.2	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	540	522	96.7%	16.1	1.9	B
	Right Turn	74	70	95.0%	7.9	0.9	A
	Subtotal	614	592	96.5%	15.2	1.7	B
SB	Left Turn	65	68	105.2%	43.3	4.9	D
	Through	206	202	98.2%	13.6	1.0	B
	Right Turn						
	Subtotal	271	271	99.9%	21.2	1.6	C
EB	Left Turn	28	36	126.8%	17.2	2.9	B
	Through	1,326	1,315	99.2%	11.9	1.3	B
	Right Turn	90	92	102.0%	5.4	1.5	A
	Subtotal	1,444	1,442	99.9%	11.6	1.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,329	2,305	99.0%	13.6	0.8	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	61	56	92.3%	10.9	2.7	B
	Through	507	500	98.5%	8.7	0.8	A
	Right Turn						
	Subtotal	568	556	97.9%	8.9	0.6	A
SB	Left Turn						
	Through	241	242	100.2%	5.0	0.6	A
	Right Turn	89	91	102.5%	4.5	0.5	A
	Subtotal	330	333	100.8%	4.9	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	225	211	93.9%	35.3	1.4	D
	Through	258	259	100.3%	35.9	1.3	D
	Right Turn	27	28	103.0%	23.4	3.9	C
	Subtotal	510	498	97.6%	34.9	1.0	C
Total		1,408	1,387	98.5%	17.3	0.5	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,319	1,311	99.4%	9.2	3.6	A
	Right Turn	72	74	103.1%	7.4	1.5	A
	Subtotal	1,391	1,385	99.6%	9.1	3.4	A
NE	Left Turn	93	91	97.5%	35.6	3.6	D
	Through						
	Right Turn	227	225	99.0%	39.2	2.6	D
	Subtotal	320	316	98.6%	38.1	2.0	D
EB	Left Turn	207	197	95.1%	40.1	2.2	D
	Through	747	749	100.3%	37.6	0.6	D
	Right Turn						
	Subtotal	954	946	99.2%	38.1	0.7	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,665	2,647	99.3%	22.9	1.7	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,313	1,293	98.5%	9.3	7.2	A
	Through	306	304	99.2%	8.5	6.4	A
	Right Turn						
	Subtotal	1,619	1,597	98.6%	9.1	7.0	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	147	148	100.9%	29.8	2.2	C
	Right Turn	673	677	100.7%	34.4	2.4	C
	Subtotal	820	826	100.7%	33.6	1.9	C
Total		2,439	2,423	99.3%	17.5	5.0	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,620	1,604	99.0%	3.1	0.4	A
	Through						
	Right Turn	161	158	98.0%	3.6	0.4	A
	Subtotal	1,781	1,762	98.9%	3.2	0.4	A
SB	Left Turn						
	Through	554	553	99.7%	0.9	0.1	A
	Right Turn	31	29	93.5%	4.6	0.4	A
	Subtotal	585	582	99.4%	1.0	0.1	A
EB	Left Turn						
	Through						
	Right Turn	7	4	57.1%	6.1	1.5	A
	Subtotal	7	4	57.1%	6.1	1.5	A
WB	Left Turn	63	66	104.6%	6.3	0.6	A
	Through	119	118	99.2%	42.4	3.6	D
	Right Turn						
	Subtotal	182	184	101.0%	29.4	2.7	C
Total		2,555	2,532	99.1%	4.6	0.5	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	696	698	100.3%	6.4	0.6	A
	Through	1,515	1,508	99.5%	7.0	0.2	A
	Right Turn	33	34	103.6%	7.5	1.7	A
	Subtotal	2,244	2,240	99.8%	6.8	0.3	A
EB	Left Turn						
	Through	383	373	97.4%	35.1	1.4	D
	Right Turn	45	43	94.9%	30.7	3.6	C
	Subtotal	428	416	97.1%	34.7	1.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,672	2,656	99.4%	11.2	0.4	B

Intersection 32 **Washington St/5th St** **0**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	120	115	95.7%	31.1	2.8	C
	Right Turn	161	157	97.5%	25.5	3.3	C
	Subtotal	281	272	96.7%	27.9	2.6	C
SB	Left Turn	65	70	108.3%	37.5	3.5	D
	Through	146	140	95.5%	34.1	1.8	C
	Right Turn						
	Subtotal	211	210	99.5%	35.2	1.2	D
EB	Left Turn	5	4	72.0%	71.8	47.4	E
	Through	1,175	1,155	98.3%	88.8	33.1	F
	Right Turn	184	182	98.6%	61.5	21.2	E
	Subtotal	1,364	1,340	98.3%	85.2	31.5	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,856	1,822	98.2%	70.8	23.0	E

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	50	50	100.2%	40.1	5.5	D
	Through	336	340	101.1%	15.0	0.9	B
	Right Turn	877	870	99.1%	11.0	0.9	B
	Subtotal	1,263	1,259	99.7%	13.3	0.7	B
SB	Left Turn						
	Through	41	38	93.2%	17.0	3.8	B
	Right Turn	14	14	101.4%	8.3	1.5	A
	Subtotal	55	52	95.3%	14.8	3.2	B
EB	Left Turn	79	81	102.7%	36.3	2.7	D
	Through	132	119	90.2%	33.7	2.2	C
	Right Turn	52	53	101.2%	1.1	0.4	A
	Subtotal	263	253	96.1%	27.8	2.0	C
WB	Left Turn	212	230	108.3%	38.1	3.4	D
	Through	86	84	97.3%	31.4	3.1	C
	Right Turn	25	23	92.4%	17.7	3.7	B
	Subtotal	323	337	104.2%	35.1	1.9	D
Total		1,904	1,901	99.8%	19.1	0.6	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	8	107.1%	24.8	4.4	C
	Through	122	116	94.9%	28.8	1.9	C
	Right Turn	8	10	122.5%	16.5	5.3	B
	Subtotal	137	133	97.2%	27.7	2.0	C
SB	Left Turn	159	145	91.3%	29.8	2.6	C
	Through	127	121	94.9%	18.6	1.9	B
	Right Turn	12	13	105.8%	5.6	1.2	A
	Subtotal	298	278	93.4%	23.8	1.7	C
EB	Left Turn	16	15	95.0%	9.7	3.1	A
	Through	80	88	109.6%	8.6	1.6	A
	Right Turn	9	7	76.7%	6.0	2.8	A
	Subtotal	105	110	104.6%	8.6	1.3	A
WB	Left Turn	29	24	82.4%	11.5	2.8	B
	Through	72	78	108.6%	11.6	1.6	B
	Right Turn	72	65	90.3%	8.4	1.4	A
	Subtotal	173	167	96.6%	10.4	1.1	B
Total		713	688	96.5%	18.9	0.7	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	60	53	88.5%	34.6	4.2	C
	Through	63	64	101.6%	33.7	4.0	C
	Right Turn	102	93	91.0%	17.3	2.3	B
	Subtotal	225	210	93.3%	26.7	2.3	C
SB	Left Turn	77	75	96.8%	39.2	3.4	D
	Through	47	45	96.2%	33.8	4.6	C
	Right Turn	11	13	118.2%	5.2	0.5	A
	Subtotal	135	133	98.3%	34.0	2.3	C
EB	Left Turn						
	Through	828	825	99.7%	15.2	1.7	B
	Right Turn	181	167	92.3%	6.3	1.1	A
	Subtotal	1,009	992	98.3%	13.7	1.5	B
WB	Left Turn	71	66	93.0%	45.2	7.5	D
	Through	252	265	105.2%	8.5	1.9	A
	Right Turn	50	51	101.6%	4.7	1.2	A
	Subtotal	373	382	102.4%	14.4	2.4	B
Total		1,742	1,717	98.6%	17.0	0.9	B

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	597	609	102.1%	29.7	3.7	C
	Right Turn						
	Subtotal	597	609	102.1%	29.7	3.7	C
SB	Left Turn						
	Through	1,406	1,334	94.9%	24.8	4.0	C
	Right Turn	20	16	82.0%	21.8	4.9	C
	Subtotal	1,426	1,351	94.7%	24.8	4.0	C
EB	Left Turn						
	Through	176	192	109.3%	22.4	1.9	C
	Right Turn	127	110	86.6%	17.6	1.8	B
	Subtotal	303	302	99.8%	20.7	1.8	C
WB	Left Turn						
	Through	143	142	99.2%	21.0	1.4	C
	Right Turn						
	Subtotal	143	142	99.2%	21.0	1.4	C
Total		2,469	2,404	97.4%	25.3	2.3	C

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	578	603	104.3%	6.5	3.2	A
	Right Turn	19	16	86.3%	3.1	3.1	A
	Subtotal	597	619	103.7%	6.4	3.2	A
SB	Left Turn						
	Through	1,423	1,347	94.6%	9.0	2.4	A
	Right Turn						
	Subtotal	1,423	1,347	94.6%	9.0	2.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	2	70.0%	24.0	18.0	C
	Through						
	Right Turn	49	46	94.3%	18.0	5.8	C
	Subtotal	52	48	92.9%	18.2	5.9	C
Total		2,072	2,014	97.2%	8.4	2.1	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	457	480	104.9%	37.6	4.7	D
	Right Turn	170	180	106.1%	24.5	2.2	C
	Subtotal	627	660	105.2%	34.1	3.7	C
SB	Left Turn	146	145	99.3%	42.3	4.8	D
	Through	1,316	1,241	94.3%	9.2	2.7	A
	Right Turn						
	Subtotal	1,462	1,386	94.8%	12.7	2.1	B
EB	Left Turn	51	47	92.5%	39.1	2.8	D
	Through	689	681	98.8%	34.5	1.6	C
	Right Turn	107	107	100.4%	30.5	2.3	C
	Subtotal	847	836	98.7%	34.3	1.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,936	2,881	98.1%	23.8	1.5	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	158	168	106.2%	47.5	2.8	D
	Through	350	361	103.1%	11.5	2.3	B
	Right Turn						
	Subtotal	508	529	104.1%	23.0	1.6	C
SB	Left Turn						
	Through	949	916	96.5%	23.5	3.0	C
	Right Turn	10	9	94.0%	7.8	2.7	A
	Subtotal	959	926	96.5%	23.3	3.0	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	513	469	91.4%	37.2	4.5	D
	Through	205	203	98.8%	25.0	1.8	C
	Right Turn	191	192	100.4%	10.5	2.2	B
	Subtotal	909	863	95.0%	28.5	2.4	C
Total		2,376	2,318	97.5%	25.2	2.3	C

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	97	101	104.4%	29.6	4.4	C
	Through	273	289	105.8%	20.3	1.4	C
	Right Turn	171	166	96.9%	10.0	0.8	B
	Subtotal	541	556	102.7%	18.9	1.1	B
SB	Left Turn	57	59	103.3%	34.3	3.2	C
	Through	362	362	99.9%	35.6	9.4	D
	Right Turn	54	54	99.3%	5.2	0.4	A
	Subtotal	473	474	100.3%	32.1	7.1	C
EB	Left Turn	82	77	94.1%	44.1	4.7	D
	Through	813	823	101.3%	29.5	1.2	C
	Right Turn	46	40	87.8%	56.3	26.6	E
	Subtotal	941	941	100.0%	32.0	2.1	C
WB	Left Turn	551	531	96.4%	53.5	12.6	D
	Through	284	280	98.6%	16.8	1.2	B
	Right Turn	22	18	83.6%	9.2	1.9	A
	Subtotal	857	829	96.8%	40.2	8.0	D
Total		2,812	2,800	99.6%	31.8	4.2	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	16	17	106.9%	4.7	0.9	A
	Subtotal	16	17	106.9%	4.7	0.9	A
SB	Left Turn	417	418	100.2%	43.3	2.0	D
	Through	95	103	108.7%	41.1	3.9	D
	Right Turn						
	Subtotal	512	521	101.8%	42.8	1.3	D
EB	Left Turn						
	Through	921	928	100.7%	3.1	0.7	A
	Right Turn	84	80	95.7%	1.9	0.5	A
	Subtotal	1,005	1,008	100.3%	3.0	0.6	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,533	1,546	100.9%	16.4	0.6	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	495	503	101.7%	3.5	1.4	A
	Right Turn	9	10	108.9%	1.2	0.8	A
	Subtotal	504	513	101.8%	3.4	1.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	17	15	90.0%	29.1	8.5	C
	Through	29	28	97.6%	26.0	4.2	C
	Right Turn						
	Subtotal	46	44	94.8%	26.9	4.5	C
Total		550	557	101.2%	5.3	1.2	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	366	368	100.5%	20.9	1.2	C
	Through	479	478	99.7%	17.5	1.6	B
	Right Turn	592	574	97.0%	11.5	1.1	B
	Subtotal	1,437	1,419	98.8%	16.0	0.8	B
EB	Left Turn						
	Through	1,020	1,030	101.0%	8.6	0.6	A
	Right Turn	21	20	95.7%	4.2	1.9	A
	Subtotal	1,041	1,050	100.9%	8.5	0.6	A
WB	Left Turn	4	14	347.5%	36.9	12.6	D
	Through	265	261	98.5%	16.5	2.8	B
	Right Turn						
	Subtotal	269	275	102.2%	17.5	2.6	B
Total		2,747	2,744	99.9%	13.3	0.6	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	314	316	100.6%	26.9	1.2	C
	Right Turn	43	45	104.0%	30.5	1.8	C
	Subtotal	357	361	101.0%	27.3	1.1	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	102	106	103.9%	9.7	2.1	A
	Through	1,203	1,207	100.3%	10.8	1.4	B
	Right Turn	49	49	100.2%	8.2	1.8	A
	Subtotal	1,354	1,362	100.6%	10.7	1.4	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,711	1,723	100.7%	14.2	1.3	B

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	6	84.3%	32.0	8.1	C
	Through	448	456	101.7%	27.2	1.5	C
	Right Turn	63	72	113.5%	26.5	3.6	C
	Subtotal	518	533	102.9%	27.2	1.6	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	457	446	97.7%	41.7	2.1	D
	Through	929	951	102.4%	9.2	1.3	A
	Right Turn						
	Subtotal	1,386	1,397	100.8%	19.6	1.2	B
WB	Left Turn						
	Through	262	268	102.3%	10.6	1.5	B
	Right Turn	11	10	92.7%	6.0	1.4	A
	Subtotal	273	278	101.9%	10.4	1.5	B
Total		2,177	2,209	101.5%	20.3	0.9	C

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	555	538	96.9%	5.9	2.7	A
	Right Turn						
	Subtotal	555	538	96.9%	5.9	2.7	A
SB	Left Turn						
	Through	619	600	97.0%	4.1	0.7	A
	Right Turn						
	Subtotal	619	600	97.0%	4.1	0.7	A
EB	Left Turn						
	Through	26	24	93.1%	34.2	3.3	C
	Right Turn						
	Subtotal	26	24	93.1%	34.2	3.3	C
WB	Left Turn						
	Through	41	39	95.4%	29.3	4.6	C
	Right Turn	31	30	96.5%	20.0	5.6	B
	Subtotal	72	69	95.8%	25.3	4.6	C
Total		1,272	1,231	96.8%	6.7	1.5	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	586	574	97.9%	10.0	3.8	A
	Right Turn						
	Subtotal	586	574	97.9%	10.0	3.8	A
SB	Left Turn						
	Through	619	603	97.4%	6.9	0.7	A
	Right Turn						
	Subtotal	619	603	97.4%	6.9	0.7	A
EB	Left Turn						
	Through	191	193	100.9%	14.1	1.6	B
	Right Turn						
	Subtotal	191	193	100.9%	14.1	1.6	B
WB	Left Turn						
	Through	158	139	88.2%	29.7	10.6	C
	Right Turn	34	29	85.6%	37.4	19.7	D
	Subtotal	192	169	87.8%	31.0	11.9	C
Total		1,588	1,538	96.8%	11.6	2.5	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	620	605	97.6%	17.8	2.6	B
	Right Turn						
	Subtotal	620	605	97.6%	17.8	2.6	B
SB	Left Turn						
	Through	619	603	97.4%	6.8	0.6	A
	Right Turn	1	1	60.0%	6.0	12.3	A
	Subtotal	620	604	97.4%	6.8	0.6	A
EB	Left Turn						
	Through	73	72	99.0%	38.8	2.8	D
	Right Turn						
	Subtotal	73	72	99.0%	38.8	2.8	D
WB	Left Turn						
	Through	231	221	95.5%	43.8	2.1	D
	Right Turn						
	Subtotal	231	221	95.5%	43.8	2.1	D
Total		1,544	1,502	97.3%	18.2	1.0	B

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	575	564	98.1%	22.7	1.5	C
	Right Turn	45	43	95.6%	4.4	0.7	A
	Subtotal	620	607	97.9%	21.4	1.4	C
SB	Left Turn	41	43	104.4%	36.5	6.1	D
	Through	472	465	98.5%	14.0	1.3	B
	Right Turn						
	Subtotal	513	508	99.0%	15.9	1.5	B
EB	Left Turn	47	50	105.5%	25.6	4.8	C
	Through	1,051	1,065	101.4%	24.1	2.5	C
	Right Turn	148	142	96.2%	18.9	2.6	B
	Subtotal	1,246	1,257	100.9%	23.5	2.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,379	2,372	99.7%	21.4	1.3	C

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	97.0%	15.7	3.5	B
	Through						
	Right Turn	7	6	88.6%	8.8	1.8	A
	Subtotal	17	16	93.5%	13.0	2.4	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	70	70	100.0%	3.9	0.7	A
	Right Turn	3	2	76.7%	2.4	0.9	A
	Subtotal	73	72	99.0%	3.9	0.7	A
WB	Left Turn	3	3	103.3%	8.6	4.4	A
	Through	221	194	87.8%	12.0	1.2	B
	Right Turn						
	Subtotal	224	197	88.0%	12.0	1.2	B
Total		314	285	90.9%	10.0	1.0	B

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **6 PM to 7 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	509	524	102.9%	20.2	0.7	C
	Subtotal	509	524	102.9%	20.2	0.7	C
SB	Left Turn Through Right Turn	547	548	100.1%	14.0	1.1	B
	Subtotal	547	548	100.1%	14.0	1.1	B
EB	Left Turn Through Right Turn	532	514	96.5%	22.2	1.2	C
	Subtotal	532	514	96.5%	22.2	1.2	C
WB	Left Turn Through Right Turn	588	582	99.0%	16.1	1.3	B
	Subtotal	588	582	99.0%	16.1	1.3	B
Total		2,176	2,168	99.6%	18.0	0.4	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	18	16	90.0%	10.7	2.9	B
	Through						
	Right Turn	25	25	99.2%	10.5	1.7	B
	Subtotal	43	41	95.3%	10.6	1.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	71	71	99.3%	6.3	1.3	A
	Right Turn	6	6	100.0%	7.4	5.4	A
	Subtotal	77	77	99.4%	6.4	1.2	A
WB	Left Turn	5	5	94.0%	11.4	5.0	B
	Through	206	179	86.9%	11.5	1.0	B
	Right Turn						
	Subtotal	211	184	87.1%	11.5	1.0	B
Total		331	301	91.0%	10.1	0.8	B

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	4	95.0%	11.5	8.1	B
	Through	170	167	98.0%	7.7	1.4	A
	Right Turn	16	16	102.5%	10.6	2.1	B
	Subtotal	190	187	98.3%	8.0	1.5	A
SB	Left Turn	33	31	93.3%	23.2	3.9	C
	Through	160	162	101.3%	14.5	2.6	B
	Right Turn	185	171	92.6%	14.8	1.6	B
	Subtotal	378	364	96.3%	15.4	2.1	B
EB	Left Turn	51	53	104.1%	34.1	6.3	C
	Through	35	35	100.6%	33.5	6.1	C
	Right Turn	10	10	99.0%	17.5	3.9	B
	Subtotal	96	98	102.3%	32.5	3.6	C
WB	Left Turn	16	17	104.4%	3.3	2.0	A
	Through	22	19	86.8%	6.3	2.4	A
	Right Turn	12	12	100.0%	14.7	4.4	B
	Subtotal	50	48	95.6%	7.4	1.7	A
Total		714	697	97.6%	15.3	1.3	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	201	197	98.2%	53.8	3.6	D
	Right Turn	307	310	100.9%	62.5	4.2	E
	Subtotal	508	507	99.8%	59.2	3.5	E
SB	Left Turn	439	449	102.3%	44.4	1.5	D
	Through	307	291	94.8%	25.4	2.1	C
	Right Turn						
	Subtotal	746	740	99.2%	36.9	1.7	D
EB	Left Turn	821	849	103.4%	36.8	4.9	D
	Through	316	341	107.8%	11.6	2.1	B
	Right Turn	45	49	108.0%	10.1	3.0	B
	Subtotal	1,182	1,238	104.8%	28.8	3.8	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,436	2,486	102.0%	37.4	2.1	D

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn	40	39	97.0%	32.2	2.3	C
	Through	172	175	101.5%	19.9	1.8	B
	Right Turn						
	Subtotal	212	213	100.7%	22.2	1.6	C
SB	Left Turn						
	Through	578	571	98.7%	23.4	5.4	C
	Right Turn	24	23	97.1%	56.2	14.8	E
	Subtotal	602	594	98.7%	24.7	5.4	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	169	165	97.8%	42.7	2.4	D
	Through	314	299	95.1%	39.2	2.6	D
	Right Turn	539	534	99.0%	7.3	1.0	A
	Subtotal	1,022	997	97.6%	22.7	1.5	C
Total		1,836	1,805	98.3%	23.3	1.8	C

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	509	520	102.1%	2.4	0.2	A
	Right Turn						
	Subtotal	509	520	102.1%	2.4	0.2	A
SB	Left Turn						
	Through	547	544	99.4%	7.5	1.5	A
	Right Turn	986	890	90.3%	16.7	1.0	B
	Subtotal	1,533	1,434	93.5%	13.2	1.0	B
EB	Left Turn	88	85	96.4%	37.8	2.1	D
	Through						
	Right Turn						
	Subtotal	88	85	96.4%	37.8	2.1	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,130	2,039	95.7%	11.5	0.8	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	619	596	96.3%	7.3	0.4	A
	Subtotal	619	596	96.3%	7.3	0.4	A
EB	Left Turn	555	533	96.1%	10.5	3.3	B
	Through						
	Right Turn						
	Subtotal	555	533	96.1%	10.5	3.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,174	1,129	96.2%	8.8	1.7	A

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	56	58	104.1%	49.5	7.2	D
	Through	566	560	98.9%	5.6	0.7	A
	Right Turn						
	Subtotal	622	618	99.4%	9.8	1.3	A
SB	Left Turn						
	Through	354	355	100.2%	8.0	1.2	A
	Right Turn	9	7	81.1%	12.5	6.9	B
	Subtotal	363	362	99.7%	8.1	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	159	155	97.4%	38.5	2.6	D
	Through	83	85	101.8%	35.2	1.6	D
	Right Turn	101	84	83.5%	26.3	2.1	C
	Subtotal	343	324	94.4%	34.5	1.4	C
Total		1,328	1,304	98.2%	15.4	0.7	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	638	617	96.6%	10.7	0.8	B
	Right Turn	29	30	102.4%	7.5	2.6	A
	Subtotal	667	646	96.9%	10.6	0.7	B
SB	Left Turn	37	33	89.7%	47.0	6.7	D
	Through	248	246	99.3%	10.4	1.0	B
	Right Turn						
	Subtotal	285	279	98.0%	14.7	1.5	B
EB	Left Turn	22	32	143.2%	20.4	5.2	C
	Through	855	871	101.9%	14.9	0.9	B
	Right Turn	115	115	100.3%	6.7	1.5	A
	Subtotal	992	1,018	102.6%	14.1	0.8	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,944	1,944	100.0%	13.0	0.3	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	46	44	95.2%	10.4	2.2	B
	Through	614	605	98.5%	6.3	0.4	A
	Right Turn						
	Subtotal	660	649	98.3%	6.6	0.4	A
SB	Left Turn						
	Through	263	256	97.5%	4.3	0.4	A
	Right Turn	66	75	113.3%	5.6	1.0	A
	Subtotal	329	331	100.7%	4.6	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	230	225	97.7%	37.3	1.4	D
	Through	171	172	100.4%	35.5	1.8	D
	Right Turn	9	8	92.2%	21.4	3.7	C
	Subtotal	410	405	98.7%	36.2	1.1	D
Total		1,399	1,385	99.0%	14.8	0.4	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,138	1,142	100.4%	8.9	0.7	A
	Right Turn	38	37	97.4%	8.8	2.0	A
	Subtotal	1,176	1,179	100.3%	8.9	0.7	A
NE	Left Turn	71	68	95.1%	33.0	2.6	C
	Through						
	Right Turn	396	395	99.7%	43.1	3.2	D
	Subtotal	467	462	99.0%	41.6	2.8	D
EB	Left Turn	124	139	111.7%	37.3	1.4	D
	Through	665	674	101.3%	38.3	0.4	D
	Right Turn						
	Subtotal	789	812	102.9%	38.1	0.5	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,432	2,454	100.9%	24.7	0.7	C

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,093	1,111	101.7%	3.3	0.5	A
	Through	240	240	100.1%	4.1	0.5	A
	Right Turn						
	Subtotal	1,333	1,352	101.4%	3.5	0.5	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	97	97	100.1%	33.5	2.4	C
	Right Turn	477	482	101.0%	36.6	1.6	D
	Subtotal	574	579	100.9%	36.1	1.2	D
Total		1,907	1,931	101.2%	13.2	0.4	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	1,498	1,474	98.4%	2.3	0.2	A
	Through						
	Right Turn	201	208	103.3%	3.1	0.4	A
	Subtotal	1,699	1,682	99.0%	2.4	0.2	A
SB	Left Turn						
	Through	506	498	98.4%	0.5	0.1	A
	Right Turn	25	26	103.2%	4.7	0.2	A
	Subtotal	531	524	98.7%	0.7	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	43	44	101.9%	5.3	0.5	A
	Through	92	91	99.1%	38.4	5.2	D
	Right Turn						
	Subtotal	135	135	100.0%	27.7	3.7	C
Total		2,365	2,341	99.0%	3.5	0.3	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	648	652	100.5%	4.9	0.4	A
	Through	1,376	1,355	98.5%	5.3	0.1	A
	Right Turn	23	22	94.8%	5.8	2.0	A
	Subtotal	2,047	2,028	99.1%	5.2	0.2	A
EB	Left Turn						
	Through	251	266	105.8%	35.0	2.2	C
	Right Turn	33	32	98.2%	32.4	5.0	C
	Subtotal	284	298	104.9%	34.7	2.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,331	2,326	99.8%	9.0	0.3	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	127	125	98.3%	41.9	3.7	D
	Right Turn	106	108	101.4%	32.1	3.4	C
	Subtotal	233	232	99.7%	37.4	3.2	D
SB	Left Turn	39	43	111.0%	42.7	3.5	D
	Through	196	189	96.4%	33.3	2.6	C
	Right Turn						
	Subtotal	235	232	98.9%	35.0	2.3	D
EB	Left Turn	12	12	95.8%	47.0	19.5	D
	Through	1,037	1,073	103.5%	48.2	19.0	D
	Right Turn	182	186	102.1%	34.3	9.8	C
	Subtotal	1,231	1,270	103.2%	46.1	17.6	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,699	1,735	102.1%	43.5	13.3	D

Vissim Post-Processor **A's Ballpark**
Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**
Volume and Delay by Movement **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	35	36	101.4%	36.5	4.0	D
	Through	88	91	103.3%	14.2	1.7	B
	Right Turn	626	628	100.4%	7.7	0.6	A
	Subtotal	749	755	100.8%	9.8	0.7	A
SB	Left Turn						
	Through	50	45	89.4%	17.8	2.7	B
	Right Turn	11	12	110.9%	6.9	1.0	A
	Subtotal	61	57	93.3%	15.6	2.2	B
EB	Left Turn	39	41	103.9%	32.0	4.2	C
	Through	149	140	94.0%	29.0	2.0	C
	Right Turn	47	41	87.2%	0.7	0.2	A
	Subtotal	235	222	94.3%	24.3	1.5	C
WB	Left Turn	182	175	96.1%	35.8	2.9	D
	Through	64	61	95.2%	25.2	2.5	C
	Right Turn	16	15	93.1%	12.3	4.2	B
	Subtotal	262	251	95.7%	31.8	1.5	C
Total		1,307	1,284	98.2%	16.9	0.7	B

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	13	14	106.2%	26.0	4.7	C
	Through	110	103	93.6%	24.6	1.0	C
	Right Turn	5	6	114.0%	9.4	4.6	A
	Subtotal	128	123	95.7%	24.1	1.1	C
SB	Left Turn	86	85	98.6%	26.2	2.2	C
	Through	117	106	90.9%	19.8	1.7	B
	Right Turn	7	8	108.6%	5.3	1.4	A
	Subtotal	210	199	94.6%	22.0	1.5	C
EB	Left Turn	21	18	84.8%	7.8	1.4	A
	Through	40	52	130.8%	7.7	1.8	A
	Right Turn	10	11	105.0%	2.7	0.9	A
	Subtotal	71	81	113.5%	7.0	1.2	A
WB	Left Turn	24	19	77.1%	8.1	2.7	A
	Through	43	54	126.0%	8.4	1.0	A
	Right Turn	60	55	91.2%	5.4	1.1	A
	Subtotal	127	127	100.3%	7.0	0.6	A
Total		536	529	98.7%	16.6	0.7	B

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	49	44	88.8%	28.0	2.3	C
	Through	39	36	91.0%	28.4	4.6	C
	Right Turn	112	105	93.7%	14.1	1.8	B
	Subtotal	200	184	92.0%	20.2	1.8	C
SB	Left Turn	71	69	96.9%	34.0	2.5	C
	Through	23	22	96.5%	30.8	5.3	C
	Right Turn	15	14	94.7%	5.0	0.5	A
	Subtotal	109	105	96.5%	29.4	2.4	C
EB	Left Turn						
	Through	662	663	100.1%	12.7	1.0	B
	Right Turn	113	106	94.1%	3.1	0.4	A
	Subtotal	775	769	99.2%	11.3	0.8	B
WB	Left Turn	83	79	95.2%	44.0	6.0	D
	Through	198	192	97.2%	7.1	1.1	A
	Right Turn	38	36	95.3%	3.9	1.1	A
	Subtotal	319	308	96.4%	16.3	1.9	B
Total		1,403	1,366	97.3%	15.0	0.6	B

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	452	456	100.8%	24.3	1.4	C
	Right Turn						
	Subtotal	452	456	100.8%	24.3	1.4	C
SB	Left Turn						
	Through	769	798	103.8%	22.5	2.1	C
	Right Turn	30	30	99.3%	14.3	6.8	B
	Subtotal	799	828	103.7%	22.2	2.1	C
EB	Left Turn						
	Through	96	107	111.4%	26.2	3.5	C
	Right Turn	60	61	101.7%	21.3	3.9	C
	Subtotal	156	168	107.6%	24.4	2.6	C
WB	Left Turn						
	Through	119	123	102.9%	21.5	0.9	C
	Right Turn						
	Subtotal	119	123	102.9%	21.5	0.9	C
Total		1,526	1,574	103.2%	23.0	1.4	C

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	447	452	101.1%	2.6	0.6	A
	Right Turn	5	3	66.0%	1.7	3.4	A
	Subtotal	452	455	100.7%	2.6	0.6	A
SB	Left Turn						
	Through	796	821	103.2%	7.5	1.5	A
	Right Turn						
	Subtotal	796	821	103.2%	7.5	1.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	3	2	73.3%	11.8	6.0	B
	Through						
	Right Turn	32	31	97.2%	9.0	2.0	A
	Subtotal	35	33	95.1%	9.3	1.9	A
Total		1,283	1,310	102.1%	5.8	1.1	A

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	340	354	104.2%	28.2	1.4	C
	Right Turn	139	134	96.4%	22.2	1.3	C
	Subtotal	479	488	101.9%	26.5	1.0	C
SB	Left Turn	152	157	103.5%	47.0	6.8	D
	Through	707	719	101.8%	7.7	1.6	A
	Right Turn						
	Subtotal	859	877	102.1%	14.8	2.1	B
EB	Left Turn	29	29	100.3%	38.6	4.8	D
	Through	509	508	99.7%	35.8	3.6	D
	Right Turn	89	94	105.6%	28.3	4.1	C
	Subtotal	627	631	100.6%	34.8	3.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,965	1,996	101.6%	24.0	1.3	C

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	116	114	97.8%	46.4	3.4	D
	Through	253	272	107.5%	3.1	0.4	A
	Right Turn						
	Subtotal	369	386	104.5%	15.9	1.1	B
SB	Left Turn						
	Through	552	565	102.3%	11.2	2.4	B
	Right Turn	12	12	100.8%	4.4	1.4	A
	Subtotal	564	577	102.3%	11.1	2.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	307	306	99.7%	37.7	2.8	D
	Through	191	181	94.7%	31.4	1.9	C
	Right Turn	166	164	98.7%	7.7	0.3	A
	Subtotal	664	651	98.0%	28.4	1.4	C
Total		1,597	1,613	101.0%	19.2	1.1	B

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	67	68	100.7%	17.3	2.0	B
	Through	218	225	103.1%	12.2	1.0	B
	Right Turn	134	144	107.5%	5.0	0.5	A
	Subtotal	419	436	104.1%	10.6	0.8	B
SB	Left Turn	28	25	87.5%	20.7	2.5	C
	Through	217	219	101.1%	15.4	2.4	B
	Right Turn	39	41	104.1%	3.6	0.4	A
	Subtotal	284	284	100.1%	14.2	1.9	B
EB	Left Turn	60	59	98.3%	42.8	3.9	D
	Through	402	408	101.5%	32.1	2.0	C
	Right Turn	41	42	102.7%	24.8	4.2	C
	Subtotal	503	509	101.2%	32.7	2.1	C
WB	Left Turn	306	308	100.6%	34.2	3.3	C
	Through	210	208	99.1%	22.6	1.3	C
	Right Turn	27	26	95.6%	10.0	3.3	A
	Subtotal	543	542	99.8%	28.7	2.1	C
Total		1,749	1,771	101.3%	23.1	1.2	C

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn	16	14	84.4%	4.3	0.7	A
	Subtotal	16	14	84.4%	4.3	0.7	A
SB	Left Turn	307	306	99.5%	48.1	3.5	D
	Through	104	110	106.0%	44.2	4.1	D
	Right Turn						
	Subtotal	411	416	101.1%	47.1	3.4	D
EB	Left Turn						
	Through	695	693	99.7%	1.5	0.2	A
	Right Turn	105	106	100.6%	1.6	0.3	A
	Subtotal	800	798	99.8%	1.5	0.2	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,227	1,227	100.0%	17.0	0.9	B

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through	393	400	101.9%	1.9	0.5	A
	Right Turn	8	8	103.8%	1.4	0.6	A
	Subtotal	401	409	101.9%	1.9	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	18	17	92.8%	27.5	5.2	C
	Through	30	30	99.7%	27.3	4.5	C
	Right Turn						
	Subtotal	48	47	97.1%	27.6	3.4	C
Total		449	455	101.4%	4.5	0.4	A

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	205	205	99.8%	28.3	2.1	C
	Through	384	381	99.2%	24.6	1.2	C
	Right Turn	362	358	98.8%	11.5	0.9	B
	Subtotal	951	943	99.2%	20.4	0.7	C
EB	Left Turn						
	Through	549	565	102.9%	5.7	0.7	A
	Right Turn	15	15	96.7%	2.2	1.6	A
	Subtotal	564	580	102.7%	5.6	0.6	A
WB	Left Turn	2	13	630.0%	10.2	3.9	B
	Through	181	177	97.7%	7.4	1.4	A
	Right Turn						
	Subtotal	183	190	103.6%	7.6	1.3	A
Total		1,698	1,712	100.8%	14.0	0.5	B

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	178	201	113.1%	28.5	2.5	C
	Right Turn	21	19	91.9%	21.5	4.7	C
	Subtotal	199	221	110.9%	27.9	2.3	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	64	63	98.4%	4.9	1.1	A
	Through	941	938	99.7%	5.8	0.6	A
	Right Turn	13	15	111.5%	4.3	1.6	A
	Subtotal	1,018	1,015	99.7%	5.8	0.6	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,217	1,236	101.6%	9.7	0.6	A

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	7	6	90.0%	27.7	10.8	C
	Through	311	314	101.0%	26.6	2.7	C
	Right Turn	24	40	165.0%	14.9	6.2	B
	Subtotal	342	360	105.3%	25.3	2.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	344	355	103.1%	40.1	1.9	D
	Through	410	417	101.6%	6.4	0.6	A
	Right Turn						
	Subtotal	754	771	102.3%	21.9	1.2	C
WB	Left Turn						
	Through	176	181	103.0%	7.6	1.3	A
	Right Turn	3	3	100.0%	2.4	2.2	A
	Subtotal	179	184	102.9%	7.5	1.3	A
Total		1,275	1,316	103.2%	20.8	0.9	C

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	284	314	110.6%	1.2	0.2	A
	Right Turn						
	Subtotal	284	314	110.6%	1.2	0.2	A
SB	Left Turn						
	Through	333	350	105.0%	5.9	1.1	A
	Right Turn						
	Subtotal	333	350	105.0%	5.9	1.1	A
EB	Left Turn	2	2	95.0%	39.8	16.8	D
	Through	22	20	91.4%	31.6	3.9	C
	Right Turn						
	Subtotal	24	22	91.7%	31.9	3.8	C
WB	Left Turn						
	Through	31	29	92.3%	28.6	4.7	C
	Right Turn	25	23	90.0%	14.4	4.8	B
	Subtotal	56	51	91.3%	22.2	3.6	C
Total		697	737	105.8%	5.8	0.9	A

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	311	336	108.1%	3.0	0.9	A
	Right Turn						
	Subtotal	311	336	108.1%	3.0	0.9	A
SB	Left Turn						
	Through	333	348	104.6%	11.8	1.4	B
	Right Turn						
	Subtotal	333	348	104.6%	11.8	1.4	B
EB	Left Turn						
	Through	95	89	93.8%	16.6	2.2	B
	Right Turn						
	Subtotal	95	89	93.8%	16.6	2.2	B
WB	Left Turn						
	Through	127	110	86.6%	21.7	3.0	C
	Right Turn	27	24	87.8%	15.3	2.6	B
	Subtotal	154	134	86.8%	20.5	2.8	C
Total		893	907	101.6%	10.3	0.8	B

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	338	360	106.4%	7.5	0.6	A
	Right Turn						
	Subtotal	338	360	106.4%	7.5	0.6	A
SB	Left Turn						
	Through	333	345	103.5%	6.2	2.0	A
	Right Turn						
	Subtotal	333	345	103.5%	6.2	2.0	A
EB	Left Turn						
	Through	22	22	98.2%	40.2	3.8	D
	Right Turn						
	Subtotal	22	22	98.2%	40.2	3.8	D
WB	Left Turn						
	Through	104	112	107.6%	38.3	2.0	D
	Right Turn						
	Subtotal	104	112	107.6%	38.3	2.0	D
Total		797	838	105.1%	12.0	0.9	B

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	301	322	107.0%	15.8	1.4	B
	Right Turn	37	38	103.5%	4.3	0.6	A
	Subtotal	338	360	106.6%	14.6	1.2	B
SB	Left Turn	20	20	100.5%	37.7	6.6	D
	Through	255	260	101.8%	9.6	1.6	A
	Right Turn						
	Subtotal	275	280	101.7%	11.6	1.8	B
EB	Left Turn	20	21	107.0%	25.8	4.4	C
	Through	864	859	99.5%	24.3	2.5	C
	Right Turn	78	80	102.9%	17.8	3.7	B
	Subtotal	962	961	99.9%	23.8	2.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,575	1,601	101.7%	19.6	1.4	B

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1	2	150.0%	8.5	5.7	A
	Through						
	Right Turn	3	3	90.0%	7.3	2.9	A
	Subtotal	4	4	105.0%	9.5	3.1	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	19	19	100.5%	2.5	0.7	A
	Right Turn	3	3	83.3%	2.4	1.6	A
	Subtotal	22	22	98.2%	2.5	0.7	A
WB	Left Turn	1	1	90.0%	5.2	9.2	A
	Through	103	101	97.9%	9.6	1.3	A
	Right Turn						
	Subtotal	104	102	97.8%	9.6	1.4	A
Total		130	128	98.1%	8.4	1.1	A

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn Through Right Turn	383	386	100.7%	21.3	3.1	C
	Subtotal	383	386	100.7%	21.3	3.1	C
SB	Left Turn Through Right Turn	419	432	103.0%	8.1	0.6	A
	Subtotal	419	432	103.0%	8.1	0.6	A
EB	Left Turn Through Right Turn	267	289	108.4%	19.3	1.5	B
	Subtotal	267	289	108.4%	19.3	1.5	B
WB	Left Turn Through Right Turn	316	339	107.3%	9.9	1.6	A
	Subtotal	316	339	107.3%	9.9	1.6	A
Total		1,385	1,446	104.4%	14.3	1.2	B

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	7	92.5%	12.3	2.7	B
	Through						
	Right Turn	12	12	101.7%	10.5	1.8	B
	Subtotal	20	20	98.0%	11.2	1.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	20	20	102.0%	2.6	1.3	A
	Right Turn	2	2	90.0%	0.4	0.2	A
	Subtotal	22	22	100.9%	2.4	1.2	A
WB	Left Turn	5	5	90.0%	6.2	3.6	A
	Through	96	94	98.3%	7.9	0.7	A
	Right Turn						
	Subtotal	101	99	97.9%	7.8	0.8	A
Total		143	141	98.4%	7.4	0.5	A

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	6	6	105.0%	14.4	4.8	B
	Through	91	85	93.0%	10.7	2.4	B
	Right Turn	16	18	114.4%	9.1	2.7	A
	Subtotal	113	109	96.6%	10.7	2.0	B
SB	Left Turn	1	2	150.0%	19.6	20.1	B
	Through	117	121	103.6%	11.8	2.4	B
	Right Turn	73	71	97.5%	10.2	2.3	B
	Subtotal	191	194	101.5%	11.3	2.1	B
EB	Left Turn	18	20	110.6%	18.5	4.6	B
	Through	9	10	107.8%	19.6	5.6	B
	Right Turn	5	4	84.0%	6.8	3.9	A
	Subtotal	32	34	105.6%	17.6	3.9	B
WB	Left Turn	10	8	84.0%	2.1	0.2	A
	Through	22	21	95.9%	4.6	1.3	A
	Right Turn	13	15	113.8%	10.4	2.3	B
	Subtotal	45	44	98.4%	6.0	1.2	A
Total		381	381	100.1%	11.1	1.4	B

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	178	174	97.5%	31.1	1.8	C
	Right Turn	209	213	102.1%	25.4	2.3	C
	Subtotal	387	387	100.0%	27.9	1.9	C
SB	Left Turn	374	382	102.2%	27.0	1.0	C
	Through	212	208	98.3%	15.5	1.1	B
	Right Turn						
	Subtotal	586	591	100.8%	23.0	0.9	C
EB	Left Turn	595	592	99.5%	39.7	5.2	D
	Through	274	261	95.1%	29.0	1.4	C
	Right Turn	48	47	97.5%	23.6	2.9	C
	Subtotal	917	900	98.1%	35.8	4.0	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,890	1,877	99.3%	30.1	1.8	C

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	36	36	100.0%	21.7	2.2	C
	Through	155	152	98.0%	11.5	0.6	B
	Right Turn						
	Subtotal	191	188	98.4%	13.5	0.7	B
SB	Left Turn						
	Through	455	456	100.2%	7.4	1.1	A
	Right Turn	19	18	93.7%	16.9	4.6	B
	Subtotal	474	474	99.9%	7.7	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	132	133	101.0%	32.9	1.5	C
	Through	175	175	100.2%	31.1	0.9	C
	Right Turn	421	413	98.0%	4.0	0.2	A
	Subtotal	728	721	99.1%	15.9	0.7	B
Total		1,393	1,383	99.3%	12.8	0.6	B

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	383	393	102.6%	9.6	1.0	A
	Right Turn						
	Subtotal	383	393	102.6%	9.6	1.0	A
SB	Left Turn						
	Through	419	433	103.2%	19.8	1.9	B
	Right Turn	410	445	108.4%	22.1	1.6	C
	Subtotal	829	877	105.8%	21.0	1.0	C
EB	Left Turn	69	65	94.6%	46.3	7.8	D
	Through						
	Right Turn						
	Subtotal	69	65	94.6%	46.3	7.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,281	1,335	104.2%	18.9	0.8	B

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn						
	Through						
	Right Turn	333	352	105.8%	10.8	0.8	B
	Subtotal	333	352	105.8%	10.8	0.8	B
EB	Left Turn	284	315	110.8%	16.6	3.0	B
	Through						
	Right Turn						
	Subtotal	284	315	110.8%	16.6	3.0	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		617	667	108.1%	13.5	1.6	B

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	43	41	94.9%	45.6	5.0	D
	Through	278	304	109.4%	1.9	0.5	A
	Right Turn						
	Subtotal	321	345	107.5%	7.0	0.8	A
SB	Left Turn						
	Through	195	194	99.4%	4.2	0.6	A
	Right Turn	10	10	98.0%	4.2	2.6	A
	Subtotal	205	204	99.4%	4.2	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	80	84	104.5%	34.8	1.9	C
	Through	95	92	96.7%	35.8	1.6	D
	Right Turn	33	34	101.8%	22.2	3.3	C
	Subtotal	208	209	100.5%	33.2	1.5	C
Total		734	758	103.2%	13.5	0.6	B

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	290	321	110.7%	6.0	0.8	A
	Right Turn	21	19	91.9%	3.6	0.9	A
	Subtotal	311	340	109.5%	5.8	0.8	A
SB	Left Turn	22	23	103.2%	47.0	5.1	D
	Through	135	131	96.9%	4.5	0.7	A
	Right Turn						
	Subtotal	157	154	97.8%	10.8	1.2	B
EB	Left Turn	11	24	215.5%	17.9	5.8	B
	Through	353	359	101.7%	26.0	1.2	C
	Right Turn	70	71	101.1%	10.4	1.7	B
	Subtotal	434	453	104.5%	23.1	1.2	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		902	947	105.0%	14.9	0.7	B

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	97.3%	5.3	2.0	A
	Through	286	330	115.3%	2.5	0.4	A
	Right Turn						
	Subtotal	301	345	114.5%	2.6	0.5	A
SB	Left Turn						
	Through	139	135	97.1%	2.9	0.5	A
	Right Turn	40	50	123.8%	3.0	0.8	A
	Subtotal	179	185	103.1%	3.0	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	159	150	94.2%	38.3	2.6	D
	Through	146	149	101.7%	36.8	2.0	D
	Right Turn	12	11	87.5%	16.8	5.3	B
	Subtotal	317	309	97.4%	36.8	2.0	D
Total		797	838	105.1%	15.3	0.8	B

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	816	825	101.1%	2.3	0.4	A
	Right Turn	19	19	97.4%	1.9	0.9	A
	Subtotal	835	844	101.1%	2.3	0.4	A
NE	Left Turn	73	71	97.5%	36.4	2.7	D
	Through						
	Right Turn	168	168	100.1%	40.9	2.4	D
	Subtotal	241	239	99.3%	39.6	2.0	D
EB	Left Turn	89	88	98.9%	40.1	2.7	D
	Through	338	342	101.2%	42.6	1.0	D
	Right Turn						
	Subtotal	427	430	100.7%	42.1	0.8	D
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,503	1,513	100.7%	19.5	0.6	B

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	823	827	100.5%	1.6	0.2	A
	Through	155	158	102.2%	2.3	0.3	A
	Right Turn						
	Subtotal	978	985	100.7%	1.7	0.2	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through	77	76	98.6%	36.3	2.9	D
	Right Turn	331	332	100.2%	40.9	1.6	D
	Subtotal	408	408	99.9%	40.0	1.6	D
Total		1,386	1,393	100.5%	12.9	0.5	B

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
SW	Left Turn	960	951	99.1%	1.0	0.1	A
	Through						
	Right Turn	125	127	101.8%	2.1	0.3	A
	Subtotal	1,085	1,078	99.4%	1.1	0.1	A
SB	Left Turn						
	Through	278	279	100.5%	0.2	0.0	A
	Right Turn	14	13	95.0%	4.7	0.2	A
	Subtotal	292	293	100.2%	0.4	0.1	A
EB	Left Turn						
	Through						
	Right Turn	1	0	0.0%	0.0	0.0	A
	Subtotal	1	0	0.0%	0.0	0.0	A
WB	Left Turn	51	50	98.2%	5.9	0.4	A
	Through	69	70	101.2%	38.1	5.3	D
	Right Turn						
	Subtotal	120	120	99.9%	24.6	3.1	C
Total		1,498	1,491	99.5%	2.9	0.2	A

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	372	374	100.5%	3.1	0.3	A
	Through	897	889	99.1%	3.5	0.4	A
	Right Turn	21	22	106.7%	3.5	1.2	A
	Subtotal	1,290	1,286	99.7%	3.4	0.3	A
EB	Left Turn						
	Through	155	158	101.6%	34.2	2.1	C
	Right Turn	41	39	95.1%	25.5	6.4	C
	Subtotal	196	197	100.3%	32.4	2.4	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,486	1,482	99.7%	7.2	0.4	A

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	Total Delay (sec/veh) LOS
NB	Left Turn						
	Through	57	55	96.5%	17.7	3.5	B
	Right Turn	65	65	100.3%	10.4	2.0	B
	Subtotal	122	120	98.5%	13.7	2.5	B
SB	Left Turn	34	32	93.8%	28.1	4.9	C
	Through	90	92	101.8%	20.9	2.4	C
	Right Turn						
	Subtotal	124	124	99.6%	22.8	2.7	C
EB	Left Turn	8	9	111.3%	15.6	5.2	B
	Through	818	795	97.1%	17.5	3.7	B
	Right Turn	101	106	105.3%	16.0	3.1	B
	Subtotal	927	910	98.2%	17.3	3.3	B
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,173	1,154	98.3%	17.5	2.9	B

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	7	1	75	16	NO
	Through	1,000	30	4	396	73	NO
	Right Turn	1,000	29	4	396	73	NO
SB	Left Turn						
	Through	185	4	1	59	15	NO
	Right Turn	185	3	1	60	15	NO
EB	Left Turn	800	7	1	72	14	NO
	Through	800	15	2	125	20	NO
	Right Turn	800	0	0	27	11	NO
WB	Left Turn	580	36	5	195	39	NO
	Through	580	15	2	145	38	NO
	Right Turn	580	11	2	146	38	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	48	2	377	57	NO
	Through	1,000	48	2	377	57	NO
	Right Turn	1,000	50	2	383	57	NO
SB	Left Turn	500	31	5	240	45	NO
	Through	500	31	5	240	45	NO
	Right Turn	500	29	4	244	45	NO
EB	Left Turn	1,000	6	2	124	22	NO
	Through	1,000	6	2	124	22	NO
	Right Turn	1,000	6	2	127	22	NO
WB	Left Turn	1,000	11	1	208	34	NO
	Through	1,000	11	1	208	34	NO
	Right Turn	1,000	11	1	210	34	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	13	2	137	25	NO
	Through	510	23	2	290	41	NO
	Right Turn						
SB	Left Turn	180	20	1	142	29	NO
	Through	200	21	1	143	29	NO
	Right Turn	200	16	2	144	30	NO
EB	Left Turn						
	Through	600	63	5	320	22	NO
	Right Turn	600	63	5	322	22	NO
WB	Left Turn	400	93	32	428	87	MAX
	Through	1,000	9	2	190	46	NO
	Right Turn	1,000	7	2	191	46	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	500	30	4	242	43	NO
	Right Turn						
SB	Left Turn						
	Through	190	17	2	192	30	MAX
	Right Turn	190	20	2	199	30	MAX
EB	Left Turn						
	Through	1,000	29	2	258	28	NO
	Right Turn	1,000	27	2	260	28	NO
WB	Left Turn						
	Through	200	16	2	227	57	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	1	2	81	60	NO
	Right Turn	210	3	2	115	59	NO
SB	Left Turn						
	Through	220	0	0	32	39	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	6	2	129	39	NO
	Through						
	Right Turn	220	6	2	129	39	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	71	4	312	12	MAX
	Right Turn	210	73	4	316	12	MAX
SB	Left Turn	100	20	3	156	17	MAX
	Through	150	6	1	111	19	NO
	Right Turn						
EB	Left Turn	1,000	67	5	304	49	NO
	Through	1,000	67	5	304	49	NO
	Right Turn	1,000	66	5	306	49	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	54	4	270	25	MAX
	Through	170	54	4	270	25	MAX
	Right Turn						
SB	Left Turn						
	Through	140	11	1	169	37	MAX
	Right Turn	140	0	0	40	18	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	70	4	295	25	MAX
	Through	800	70	4	295	25	NO
	Right Turn	200	6	1	113	34	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	7	2	194	60	MAX
	Through	145	21	2	264	19	MAX
	Right Turn	145	22	2	264	19	MAX
SB	Left Turn	80	4	1	67	11	NO
	Through	240	7	1	85	16	NO
	Right Turn	80	0	0	41	12	NO
EB	Left Turn	160	18	2	122	26	NO
	Through	500	58	2	221	29	NO
	Right Turn	500	59	2	225	29	NO
WB	Left Turn	190	24	2	119	16	NO
	Through	400	32	2	192	33	NO
	Right Turn	400	29	2	192	33	NO

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	56	5	NO
SB	Left Turn	180	65	5	260	19	MAX
	Through	180	65	5	260	19	MAX
	Right Turn						
EB	Left Turn						
	Through	270	4	1	163	50	NO
	Right Turn	270	3	1	170	50	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	2	1	113	30	NO
	Right Turn	200	1	1	113	30	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	4	2	90	26	NO
	Through	310	5	2	84	28	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	75	6	370	53	NO
	Through	1,000	76	6	370	53	NO
	Right Turn	1,000	74	6	372	53	NO
EB	Left Turn						
	Through	390	22	3	266	54	NO
	Right Turn	390	22	3	266	54	NO
WB	Left Turn	130	2	1	69	20	NO
	Through	380	5	1	91	22	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	56	6	311	15	MAX
	Right Turn	220	60	6	317	15	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	25	3	329	55	MAX
	Through	315	25	3	329	55	MAX
	Right Turn	315	25	3	333	55	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	28	2	131	15	NO
	Through	200	28	2	131	15	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	14	2	217	54	NO
	Right Turn						
WB	Left Turn						
	Through	240	3	1	97	19	NO
	Right Turn	240	1	0	94	21	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	0	0	51	24	NO
	Right Turn						
SB	Left Turn						
	Through	200	0	0	44	44	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	2	1	85	36	NO
SB	Left Turn Through Right Turn	200	5	1	149	24	NO
EB	Left Turn Through Right Turn	300	9	2	116	57	NO
WB	Left Turn Through	300	14	2	137	14	NO
	Right Turn	300	15	2	137	14	NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	4	1	120	37	NO
SB	Left Turn Through Right Turn	200	2	0	85	29	NO
EB	Left Turn Through Right Turn	300	5	1	68	18	NO
WB	Left Turn Through Right Turn	300	14	1	109	26	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	30	3	188	10	NO
	Right Turn	200	29	3	186	10	NO
SB	Left Turn	210	13	2	133	23	NO
	Through	210	13	2	133	23	NO
	Right Turn						
EB	Left Turn	300	74	7	373	36	MAX
	Through	300	74	7	373	36	MAX
	Right Turn	300	74	8	375	36	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	23	2	NO
	Through						
	Right Turn	200	0	0	25	2	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	41	13	NO
	Right Turn	310	0	0	43	13	NO
WB	Left Turn	300	2	0	67	11	NO
	Through	300	2	0	67	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	11	1	141	17	NO
SB	Left Turn Through Right Turn	200	2	0	96	23	NO
EB	Left Turn Through Right Turn	600	42	3	230	30	NO
WB	Left Turn Through Right Turn	800	30	3	245	37	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	57	18	NO
	Through						
	Right Turn	200	2	1	57	18	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	0	0	21	14	NO
	Right Turn	300	0	0	21	14	NO
WB	Left Turn	290	1	0	47	19	NO
	Through	290	1	0	47	19	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	1	66	14	NO
	Through	200	1	1	66	14	NO
	Right Turn	200	2	1	67	14	NO
SB	Left Turn	200	2	1	96	28	NO
	Through	200	2	1	96	28	NO
	Right Turn	200	3	1	100	28	NO
EB	Left Turn	290	5	1	66	28	NO
	Through	290	5	1	66	28	NO
	Right Turn	290	6	2	72	28	NO
WB	Left Turn	300	1	0	69	13	NO
	Through	300	1	0	118	11	NO
	Right Turn	300	1	0	63	13	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	83	10	399	71	MAX
	Right Turn	200	83	10	399	71	MAX
SB	Left Turn	200	87	5	289	12	MAX
	Through	200	62	6	289	13	MAX
	Right Turn						
EB	Left Turn	300	112	14	398	13	MAX
	Through	300	112	14	398	13	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	7	1	128	19	NO
	Through	200	14	2	163	13	NO
	Right Turn						
SB	Left Turn						
	Through	200	35	9	256	74	MAX
	Right Turn	200	35	9	256	74	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	43	4	208	25	NO
	Through	1,000	20	2	147	80	NO
	Right Turn	150	1	0	104	40	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	2	1	136	29	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	0	0	NO
	Right Turn	500	0	0	17	11	NO
EB	Left Turn	1,000	22	2	134	24	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	3	1	136	37	NO
EB	Left Turn	600	1	1	52	23	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	3	112	37	NO
	Through	200	11	3	112	37	NO
	Right Turn						
SB	Left Turn						
	Through	200	1	0	69	13	NO
	Right Turn	200	1	0	69	13	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	28	2	159	28	NO
	Through	200	28	2	159	28	NO
	Right Turn	220	28	2	162	28	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	14	3	200	15	NO
	Right Turn	210	14	3	200	15	NO
SB	Left Turn	170	15	2	108	14	NO
	Through	170	15	2	108	14	NO
	Right Turn						
EB	Left Turn	180	46	4	271	48	MAX
	Through	180	46	4	271	48	MAX
	Right Turn	180	49	4	277	48	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	3	0	131	49	NO
	Through	180	3	0	131	49	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	94	21	NO
	Right Turn	200	2	0	95	21	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	24	2	144	20	NO
	Through	300	30	2	144	20	NO
	Right Turn	300	31	2	146	20	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	7	1	94	16	NO
	Right Turn	180	14	1	128	16	NO
NE	Left Turn	670	16	1	105	20	NO
	Through						
	Right Turn	670	16	1	105	20	NO
EB	Left Turn	380	42	1	142	12	NO
	Through	380	42	1	142	12	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	10	1	157	44	NO
	Through	190	10	1	157	44	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	73	3	261	23	MAX
	Right Turn	250	73	3	261	23	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	5	9	NO
	Through						
	Right Turn	1,000	0	0	7	16	NO
SB	Left Turn						
	Through	1,000	0	0	91	11	NO
	Right Turn	1,000	1	0	58	14	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	93	15	NO
	Through	350	12	3	74	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **3 PM to 4 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	11	1	156	24	NO
	Through	200	11	1	156	24	NO
	Right Turn	200	11	1	160	24	NO
EB	Left Turn						
	Through	500	28	2	129	29	NO
	Right Turn	500	40	2	160	29	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	8	3	119	30	NO
	Right Turn	200	8	2	120	30	NO
SB	Left Turn	200	10	2	120	31	NO
	Through	200	10	2	120	31	NO
	Right Turn						
EB	Left Turn	800	80	15	467	71	NO
	Through	800	80	15	467	71	NO
	Right Turn	800	79	15	469	71	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	12	4	130	46	NO
	Through	1,000	77	12	615	121	NO
	Right Turn	1,000	76	12	615	121	NO
SB	Left Turn						
	Through	185	4	1	58	11	NO
	Right Turn	185	4	0	60	11	NO
EB	Left Turn	800	9	2	83	21	NO
	Through	800	19	1	139	31	NO
	Right Turn	800	0	0	31	13	NO
WB	Left Turn	580	42	4	198	23	NO
	Through	580	19	5	186	60	NO
	Right Turn	580	15	6	187	60	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	110	8	682	111	NO
	Through	1,000	110	8	682	111	NO
	Right Turn	1,000	112	9	688	111	NO
SB	Left Turn	500	46	5	280	25	NO
	Through	500	46	5	280	25	NO
	Right Turn	500	37	4	285	25	NO
EB	Left Turn	1,000	17	4	191	59	NO
	Through	1,000	17	4	191	59	NO
	Right Turn	1,000	18	4	194	59	NO
WB	Left Turn	1,000	27	8	279	63	NO
	Through	1,000	27	8	279	63	NO
	Right Turn	1,000	27	8	280	63	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	20	4	174	43	NO
	Through	510	70	13	454	37	NO
	Right Turn						
SB	Left Turn	180	25	2	137	27	NO
	Through	200	26	2	139	27	NO
	Right Turn	200	22	3	149	27	NO
EB	Left Turn						
	Through	600	115	8	405	63	NO
	Right Turn	600	115	8	407	63	NO
WB	Left Turn	400	90	29	372	62	NO
	Through	1,000	16	3	206	30	NO
	Right Turn	1,000	15	3	206	30	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	500	103	5	469	44	NO
	Right Turn						
SB	Left Turn						
	Through	190	47	10	226	16	MAX
	Right Turn	190	51	10	233	16	MAX
EB	Left Turn						
	Through	1,000	56	4	461	122	NO
	Right Turn	1,000	55	4	463	122	NO
WB	Left Turn						
	Through	200	27	4	285	20	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	20	10	249	33	MAX
	Right Turn	210	29	12	282	33	MAX
SB	Left Turn						
	Through	220	13	9	301	81	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	9	2	110	27	NO
	Through						
	Right Turn	220	9	2	110	27	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	148	8	331	9	MAX
	Right Turn	210	151	8	335	9	MAX
SB	Left Turn	100	35	7	264	40	MAX
	Through	150	21	3	235	43	MAX
	Right Turn						
EB	Left Turn	1,000	89	4	387	56	NO
	Through	1,000	89	4	387	56	NO
	Right Turn	1,000	88	4	389	56	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	87	13	301	25	MAX
	Through	170	87	13	301	25	MAX
	Right Turn						
SB	Left Turn						
	Through	140	20	4	252	39	MAX
	Right Turn	140	0	0	28	9	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	95	4	406	37	MAX
	Through	800	95	4	406	37	NO
	Right Turn	200	6	1	104	15	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	14	2	260	14	MAX
	Through	145	31	3	270	7	MAX
	Right Turn	145	31	3	271	7	MAX
SB	Left Turn	80	10	2	94	22	MAX
	Through	240	18	1	130	20	NO
	Right Turn	80	1	0	68	20	NO
EB	Left Turn	160	24	3	153	32	NO
	Through	500	78	5	326	54	NO
	Right Turn	500	80	5	329	54	NO
WB	Left Turn	190	43	3	187	33	NO
	Through	400	23	3	164	22	NO
	Right Turn	400	21	3	165	22	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	1	0	46	6	NO
SB	Left Turn	180	72	5	278	21	MAX
	Through	180	72	5	279	21	MAX
	Right Turn						
EB	Left Turn						
	Through	270	16	1	277	61	MAX
	Right Turn	270	13	2	283	61	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	2	0	120	22	NO
	Right Turn	200	1	0	121	22	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	6	2	82	15	NO
	Through	310	5	1	62	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	73	8	451	35	NO
	Through	1,000	75	7	451	35	NO
	Right Turn	1,000	73	8	453	35	NO
EB	Left Turn						
	Through	390	52	7	408	35	MAX
	Right Turn	390	52	7	408	35	MAX
WB	Left Turn	130	4	2	88	28	NO
	Through	380	12	1	120	17	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	93	13	338	3	MAX
	Right Turn	220	98	13	344	3	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	49	4	408	18	MAX
	Through	315	49	4	408	18	MAX
	Right Turn	315	49	5	411	18	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	35	3	165	32	NO
	Through	200	35	3	165	32	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	27	5	362	78	NO
	Right Turn						
WB	Left Turn						
	Through	240	7	1	113	17	NO
	Right Turn	240	4	1	114	17	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	5	2	247	65	MAX
	Right Turn						
SB	Left Turn						
	Through	200	6	2	182	51	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	10	3	193	12	NO
SB	Left Turn Through Right Turn	200	13	2	220	30	MAX
EB	Left Turn Through Right Turn	300	13	3	188	38	NO
WB	Left Turn Through Right Turn	300 300	20 20	2 2	167 167	28 28	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	36	5	254	35	MAX
SB	Left Turn Through Right Turn	200	6	2	170	36	NO
EB	Left Turn Through Right Turn	300	11	1	94	17	NO
WB	Left Turn Through Right Turn	300	33	3	188	31	NO

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	55	5	228	33	MAX
	Right Turn	200	54	5	227	33	MAX
SB	Left Turn	210	24	2	204	15	NO
	Through	210	24	2	204	15	NO
	Right Turn						
EB	Left Turn	300	81	11	401	30	MAX
	Through	300	81	11	401	30	MAX
	Right Turn	300	82	11	402	30	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	34	9	NO
	Through						
	Right Turn	200	1	0	36	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	44	16	NO
	Right Turn	310	0	0	46	17	NO
WB	Left Turn	300	6	1	108	23	NO
	Through	300	6	1	108	23	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	56	6	452	79	NO
SB	Left Turn Through Right Turn	200	14	1	163	18	NO
EB	Left Turn Through Right Turn	600	30	3	274	52	NO
WB	Left Turn Through Right Turn	800	17	3	325	101	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	1	61	18	NO
	Through						
	Right Turn	200	2	1	61	18	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	1	0	39	12	NO
	Right Turn	300	1	0	39	12	NO
WB	Left Turn	290	4	1	105	18	NO
	Through	290	4	1	105	18	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	3	1	92	17	NO
	Through	200	3	1	92	17	NO
	Right Turn	200	3	1	94	17	NO
SB	Left Turn	200	11	2	166	26	NO
	Through	200	11	2	166	26	NO
	Right Turn	200	12	2	170	26	NO
EB	Left Turn	290	15	1	128	28	NO
	Through	290	15	1	128	28	NO
	Right Turn	290	17	1	134	28	NO
WB	Left Turn	300	1	0	84	21	NO
	Through	300	2	1	126	27	NO
	Right Turn	300	1	0	78	21	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	109	15	463	58	MAX
	Right Turn	200	109	15	463	58	MAX
SB	Left Turn	200	81	6	288	13	MAX
	Through	200	54	6	287	12	MAX
	Right Turn						
EB	Left Turn	300	97	19	405	15	MAX
	Through	300	97	19	405	15	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	7	1	121	18	NO
	Through	200	13	2	168	25	NO
	Right Turn						
SB	Left Turn						
	Through	200	26	6	241	60	MAX
	Right Turn	200	26	6	241	60	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	40	4	236	51	NO
	Through	1,000	32	5	279	179	NO
	Right Turn	150	1	0	135	63	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	10	2	170	20	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	84	82	NO
	Right Turn	500	0	0	98	84	NO
EB	Left Turn	1,000	26	2	130	19	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	10	1	190	38	NO
EB	Left Turn	600	21	4	490	82	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	33	13	217	12	MAX
	Through	200	33	13	217	12	MAX
	Right Turn						
SB	Left Turn						
	Through	200	4	1	128	29	NO
	Right Turn	200	4	1	128	29	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	33	1	161	20	NO
	Through	200	33	1	161	20	NO
	Right Turn	220	34	1	164	20	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	47	3	285	8	MAX
	Right Turn	210	47	3	285	8	MAX
SB	Left Turn	170	28	4	168	49	NO
	Through	170	28	4	168	49	NO
	Right Turn						
EB	Left Turn	180	49	6	311	20	MAX
	Through	180	49	6	311	20	MAX
	Right Turn	180	52	6	317	20	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	20	2	275	11	MAX
	Through	180	20	2	275	11	MAX
	Right Turn						
SB	Left Turn						
	Through	200	5	1	146	33	NO
	Right Turn	200	5	1	146	33	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	27	2	153	21	NO
	Through	300	30	1	156	20	NO
	Right Turn	300	31	1	158	20	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	15	2	164	51	NO
	Right Turn	180	26	2	198	51	MAX
NE	Left Turn	670	47	3	210	27	NO
	Through						
	Right Turn	670	47	3	210	27	NO
EB	Left Turn	380	56	2	173	17	NO
	Through	380	56	2	173	17	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	17	3	175	22	NO
	Through	190	17	3	175	22	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	81	2	292	17	MAX
	Right Turn	250	81	2	292	17	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	2	1	209	63	NO
	Through						
	Right Turn	1,000	1	1	136	56	NO
SB	Left Turn						
	Through	1,000	0	0	95	10	NO
	Right Turn	1,000	1	0	59	8	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	95	11	NO
	Through	350	14	1	84	8	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **4 PM to 5 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	22	1	219	8	MAX
	Through	200	22	1	219	8	MAX
	Right Turn	200	23	1	223	8	MAX
EB	Left Turn						
	Through	500	41	2	194	30	NO
	Right Turn	500	53	2	224	30	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	28	4	224	33	MAX
	Right Turn	200	28	3	226	33	MAX
SB	Left Turn	200	38	4	220	13	MAX
	Through	200	38	4	220	13	MAX
	Right Turn						
EB	Left Turn	800	99	28	578	73	NO
	Through	800	99	28	578	73	NO
	Right Turn	800	98	28	580	73	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	15	2	112	26	NO
	Through	1,000	102	16	687	93	NO
	Right Turn	1,000	101	16	687	93	NO
SB	Left Turn						
	Through	185	6	1	81	15	NO
	Right Turn	185	6	1	83	15	NO
EB	Left Turn	800	17	2	131	25	NO
	Through	800	25	3	169	29	NO
	Right Turn	800	0	0	32	10	NO
WB	Left Turn	580	43	4	196	18	NO
	Through	580	21	4	171	28	NO
	Right Turn	580	18	4	172	28	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	57	3	410	104	NO
	Through	1,000	57	3	410	104	NO
	Right Turn	1,000	60	3	416	104	NO
SB	Left Turn	500	43	6	270	30	NO
	Through	500	43	6	270	30	NO
	Right Turn	500	33	4	275	30	NO
EB	Left Turn	1,000	13	2	186	46	NO
	Through	1,000	13	2	186	46	NO
	Right Turn	1,000	14	2	189	46	NO
WB	Left Turn	1,000	23	3	287	49	NO
	Through	1,000	23	3	287	49	NO
	Right Turn	1,000	23	3	288	49	NO

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	19	5	176	58	NO
	Through	510	31	3	277	67	NO
	Right Turn						
SB	Left Turn	180	29	3	158	27	NO
	Through	200	30	3	159	27	NO
	Right Turn	200	26	2	158	23	NO
EB	Left Turn						
	Through	600	104	10	393	54	NO
	Right Turn	600	105	10	396	54	NO
WB	Left Turn	400	60	16	319	61	NO
	Through	1,000	12	4	183	42	NO
	Right Turn	1,000	11	4	183	42	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	500	117	8	481	43	NO
	Right Turn						
SB	Left Turn						
	Through	190	61	7	222	12	MAX
	Right Turn	190	66	8	229	12	MAX
EB	Left Turn						
	Through	1,000	67	8	427	93	NO
	Right Turn	1,000	67	8	429	93	NO
WB	Left Turn						
	Through	200	26	3	292	14	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	22	8	247	33	MAX
	Right Turn	210	33	10	280	33	MAX
SB	Left Turn						
	Through	220	29	11	366	2	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	220	19	5	150	28	NO
	Through						
	Right Turn	220	19	5	150	28	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	162	8	315	15	MAX
	Right Turn	210	164	8	318	15	MAX
SB	Left Turn	100	27	6	261	60	MAX
	Through	150	30	7	285	48	MAX
	Right Turn						
EB	Left Turn	1,000	89	4	364	49	NO
	Through	1,000	89	4	364	49	NO
	Right Turn	1,000	88	4	366	49	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	94	10	281	14	MAX
	Through	170	94	10	281	14	MAX
	Right Turn						
SB	Left Turn						
	Through	140	23	3	246	32	MAX
	Right Turn	140	0	0	32	12	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	102	5	396	37	MAX
	Through	800	102	5	396	37	NO
	Right Turn	200	7	2	119	24	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	19	6	266	7	MAX
	Through	145	49	11	273	2	MAX
	Right Turn	145	50	11	274	2	MAX
SB	Left Turn	80	25	14	157	50	MAX
	Through	240	22	3	162	39	NO
	Right Turn	80	2	0	65	22	NO
EB	Left Turn	160	31	4	212	70	MAX
	Through	500	107	11	427	84	NO
	Right Turn	500	108	11	430	84	NO
WB	Left Turn	190	51	2	224	32	MAX
	Through	400	28	2	199	23	NO
	Right Turn	400	26	2	199	23	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	1	0	53	15	NO
SB	Left Turn	180	75	5	277	24	MAX
	Through	180	75	5	278	24	MAX
	Right Turn						
EB	Left Turn						
	Through	270	28	18	299	79	MAX
	Right Turn	270	25	18	301	76	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	3	1	127	45	NO
	Right Turn	200	2	1	127	45	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	5	2	81	16	NO
	Through	310	3	1	50	14	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	72	8	480	122	NO
	Through	1,000	73	9	480	122	NO
	Right Turn	1,000	73	9	482	122	NO
EB	Left Turn						
	Through	390	61	13	414	40	MAX
	Right Turn	390	61	13	414	40	MAX
WB	Left Turn	130	5	2	98	23	NO
	Through	380	16	2	129	19	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	143	17	332	7	MAX
	Right Turn	220	148	17	338	7	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	81	19	420	18	MAX
	Through	315	81	19	420	18	MAX
	Right Turn	315	81	19	424	18	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	41	3	188	45	NO
	Through	200	41	3	188	45	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	33	6	431	30	MAX
	Right Turn						
WB	Left Turn						
	Through	240	8	1	121	13	NO
	Right Turn						

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	26	18	349	27	MAX
	Right Turn						
SB	Left Turn						
	Through	200	9	2	202	29	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	45	21	260	40	MAX
SB	Left Turn Through Right Turn	200	19	2	256	25	MAX
EB	Left Turn Through Right Turn	300	15	4	183	50	NO
WB	Left Turn Through Right Turn	300 300	104 105	50 50	373 373	51 51	MAX MAX

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	84	15	270	34	MAX
SB	Left Turn Through Right Turn	200	12	3	209	47	MAX
EB	Left Turn Through Right Turn	300	51	9	275	9	NO
WB	Left Turn Through Right Turn	300	51	12	232	56	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	82	8	244	30	MAX
	Right Turn	200	81	8	243	30	MAX
SB	Left Turn	210	34	3	209	20	NO
	Through	210	34	3	209	20	NO
	Right Turn						
EB	Left Turn	300	112	26	404	16	MAX
	Through	300	112	26	404	16	MAX
	Right Turn	300	112	26	406	16	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	41	9	NO
	Through						
	Right Turn	200	1	0	43	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	2	1	115	34	NO
	Right Turn	310	2	1	117	34	NO
WB	Left Turn	300	6	1	114	19	NO
	Through	300	6	1	114	19	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	60	5	362	78	NO
SB	Left Turn Through Right Turn	200	21	2	176	17	NO
EB	Left Turn Through Right Turn	600	31	3	306	50	NO
WB	Left Turn Through Right Turn	800	22	5	487	82	NO

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	3	1	68	20	NO
	Through						
	Right Turn	200	3	1	68	20	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	9	1	147	21	NO
	Right Turn	300	9	1	147	21	NO
WB	Left Turn	290	5	1	122	35	NO
	Through	290	5	1	122	35	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	6	1	125	33	NO
	Through	200	6	1	125	33	NO
	Right Turn	200	6	1	127	33	NO
SB	Left Turn	200	24	5	232	34	MAX
	Through	200	24	5	232	34	MAX
	Right Turn	200	26	5	236	34	MAX
EB	Left Turn	290	52	3	250	30	NO
	Through	290	52	3	250	30	NO
	Right Turn	290	55	3	256	30	NO
WB	Left Turn	300	0	0	44	10	NO
	Through	300	1	1	90	12	NO
	Right Turn	300	0	0	38	10	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	228	53	729	122	AVG
	Right Turn	200	228	53	729	122	AVG
SB	Left Turn	200	110	9	296	16	MAX
	Through	200	79	11	293	14	MAX
	Right Turn						
EB	Left Turn	300	175	17	408	14	MAX
	Through	300	175	17	408	14	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	10	2	150	44	NO
	Through	200	18	3	181	23	NO
	Right Turn						
SB	Left Turn						
	Through	200	60	15	363	42	MAX
	Right Turn	200	60	15	363	42	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	45	3	275	68	NO
	Through	1,000	31	3	364	133	NO
	Right Turn	150	1	1	142	43	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	7	1	176	8	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	97	98	NO
	Right Turn	500	0	0	52	36	NO
EB	Left Turn	1,000	20	2	101	17	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	11	1	179	13	NO
EB	Left Turn	600	36	13	578	142	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	52	15	240	45	MAX
	Through	200	52	15	240	45	MAX
	Right Turn						
SB	Left Turn						
	Through	200	6	1	140	29	NO
	Right Turn	200	6	1	140	29	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	35	1	167	18	NO
	Through	200	35	1	167	18	NO
	Right Turn	220	35	1	171	18	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	50	8	279	17	MAX
	Right Turn	210	50	8	279	17	MAX
SB	Left Turn	170	26	2	205	63	MAX
	Through	170	26	2	205	63	MAX
	Right Turn						
EB	Left Turn	180	59	8	324	5	MAX
	Through	180	59	8	324	5	MAX
	Right Turn	180	62	8	330	5	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	27	4	261	26	MAX
	Through	180	27	4	261	26	MAX
	Right Turn						
SB	Left Turn						
	Through	200	6	1	170	51	NO
	Right Turn	200	6	1	171	51	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	29	2	157	28	NO
	Through	300	34	1	168	26	NO
	Right Turn	300	36	1	171	26	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	27	10	229	64	MAX
	Right Turn	180	43	12	263	64	MAX
NE	Left Turn	670	55	3	259	36	NO
	Through						
	Right Turn	670	55	3	259	36	NO
EB	Left Turn	380	67	2	210	20	NO
	Through	380	67	2	210	20	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	38	26	217	54	MAX
	Through	190	38	26	217	54	MAX
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	81	6	299	27	MAX
	Right Turn	250	81	6	299	27	MAX

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	7	3	341	91	NO
	Through						
	Right Turn	1,000	3	1	235	84	NO
SB	Left Turn						
	Through	1,000	0	0	96	14	NO
	Right Turn	1,000	1	0	64	9	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	3	0	93	18	NO
	Through	350	11	3	71	11	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **5 PM to 6 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	31	2	226	11	MAX
	Through	200	31	2	226	11	MAX
	Right Turn	200	32	2	230	11	MAX
EB	Left Turn						
	Through	500	50	2	257	68	NO
	Right Turn	500	62	2	288	68	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	43	6	266	37	MAX
	Right Turn	200	44	6	267	37	MAX
SB	Left Turn	200	41	2	223	10	MAX
	Through	200	41	2	223	10	MAX
	Right Turn						
EB	Left Turn	800	369	144	769	96	NO
	Through	800	369	144	769	96	NO
	Right Turn	800	370	144	771	96	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	12	2	102	18	NO
	Through	1,000	60	8	618	106	NO
	Right Turn	1,000	59	8	618	106	NO
SB	Left Turn						
	Through	185	3	1	44	2	NO
	Right Turn	185	3	1	45	2	NO
EB	Left Turn	800	16	2	151	57	NO
	Through	800	22	3	173	54	NO
	Right Turn	800	0	0	27	12	NO
WB	Left Turn	580	33	2	155	22	NO
	Through	580	17	3	158	35	NO
	Right Turn	580	14	3	159	35	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	28	3	229	37	NO
	Through	1,000	28	3	229	37	NO
	Right Turn	1,000	29	2	234	37	NO
SB	Left Turn	500	33	3	205	49	NO
	Through	500	33	3	205	49	NO
	Right Turn	500	21	2	196	49	NO
EB	Left Turn	1,000	5	1	128	22	NO
	Through	1,000	5	1	128	22	NO
	Right Turn	1,000	5	1	131	22	NO
WB	Left Turn	1,000	8	1	220	59	NO
	Through	1,000	8	1	220	59	NO
	Right Turn	1,000	9	1	221	59	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	1	114	25	NO
	Through	510	18	2	175	25	NO
	Right Turn						
SB	Left Turn	180	22	3	174	31	NO
	Through	200	23	3	176	30	NO
	Right Turn	200	18	1	170	39	NO
EB	Left Turn						
	Through	600	78	7	375	47	NO
	Right Turn	600	78	7	377	47	NO
WB	Left Turn	400	30	7	223	58	NO
	Through	1,000	9	3	186	32	NO
	Right Turn	1,000	8	3	186	32	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	500	58	6	310	71	NO
	Right Turn						
SB	Left Turn						
	Through	190	81	9	222	7	MAX
	Right Turn	190	85	9	229	7	MAX
EB	Left Turn						
	Through	1,000	34	5	285	39	NO
	Right Turn						
WB	Left Turn						
	Through	200	17	2	242	50	MAX
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	6	6	172	88	NO
	Right Turn	210	8	7	204	88	NO
SB	Left Turn						
	Through	220	58	18	366	2	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn	220	4	2	84	23	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	77	6	304	1	MAX
	Right Turn	210	79	6	308	1	MAX
SB	Left Turn	100	44	12	274	71	MAX
	Through	150	38	15	305	15	MAX
	Right Turn						
EB	Left Turn	1,000	75	5	357	58	NO
	Through	1,000	75	5	357	58	NO
	Right Turn	1,000	74	5	359	58	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	60	9	275	4	MAX
	Through	170	60	9	275	4	MAX
	Right Turn						
SB	Left Turn						
	Through	140	95	27	288	2	MAX
	Right Turn	140	0	0	56	59	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	135	20	446	25	MAX
	Through	800	135	20	446	25	NO
	Right Turn	200	7	3	138	89	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	20	5	256	14	MAX
	Through	145	46	5	267	7	MAX
	Right Turn	145	46	5	268	7	MAX
SB	Left Turn	80	7	1	87	30	MAX
	Through	240	26	3	171	30	NO
	Right Turn	80	1	0	58	37	NO
EB	Left Turn	160	19	3	145	22	NO
	Through	500	69	9	282	41	NO
	Right Turn	500	72	9	285	41	NO
WB	Left Turn	190	94	22	387	101	MAX
	Through	400	20	2	163	22	NO
	Right Turn	400	18	2	163	22	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	26	8	NO
SB	Left Turn	180	66	4	256	40	MAX
	Through	180	66	4	257	40	MAX
	Right Turn						
EB	Left Turn						
	Through	270	8	2	224	80	NO
	Right Turn	270	7	2	231	80	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	2	1	113	26	NO
	Right Turn	200	1	1	114	26	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	2	1	57	14	NO
	Through	310	4	1	59	10	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	71	5	442	87	NO
	Through	1,000	73	5	442	87	NO
	Right Turn	1,000	72	5	444	87	NO
EB	Left Turn						
	Through	390	27	3	330	41	NO
	Right Turn	390	27	3	330	41	NO
WB	Left Turn	130	3	2	90	15	NO
	Through	380	15	3	152	28	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	83	9	323	14	MAX
	Right Turn	220	87	9	329	14	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	39	6	378	40	MAX
	Through	315	39	6	378	40	MAX
	Right Turn	315	39	6	381	40	MAX
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	35	2	183	39	NO
	Through	200	35	2	183	39	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	19	3	265	82	NO
	Right Turn						
WB	Left Turn						
	Through	240	7	1	121	15	NO
	Right Turn	240	5	1	121	15	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	18	11	329	43	MAX
	Right Turn						
SB	Left Turn						
	Through	200	11	3	212	44	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	26	13	234	44	MAX
SB	Left Turn Through Right Turn	200	22	2	278	22	MAX
EB	Left Turn Through Right Turn	300	14	2	142	38	NO
WB	Left Turn Through Right Turn	300 300	30 30	15 15	239 239	83 83	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	65	12	272	32	MAX
SB	Left Turn Through Right Turn	200	21	3	254	29	MAX
EB	Left Turn Through Right Turn	300	12	2	132	54	NO
WB	Left Turn Through Right Turn	300	55	3	231	20	NO

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	79	7	265	2	MAX
	Right Turn	200	78	7	264	2	MAX
SB	Left Turn	210	44	5	244	25	MAX
	Through	210	44	5	244	25	MAX
	Right Turn						
EB	Left Turn	300	75	8	376	32	MAX
	Through	300	75	8	376	32	MAX
	Right Turn	300	76	8	377	32	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	34	9	NO
	Through						
	Right Turn	200	1	0	36	9	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	1	0	71	18	NO
	Right Turn	310	1	0	72	18	NO
WB	Left Turn	300	13	2	159	23	NO
	Through	300	13	2	159	23	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	34	2	218	28	NO
SB	Left Turn Through Right Turn	200	27	2	152	18	NO
EB	Left Turn Through Right Turn	600	32	4	360	108	NO
WB	Left Turn Through Right Turn	800	59	6	576	98	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	2	0	73	15	NO
	Through						
	Right Turn	200	2	0	73	15	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	2	0	83	21	NO
	Right Turn	300	2	0	83	21	NO
WB	Left Turn	290	11	1	156	30	NO
	Through	290	11	1	156	30	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	6	1	125	27	NO
	Through	200	6	1	125	27	NO
	Right Turn	200	6	1	126	27	NO
SB	Left Turn	200	33	6	260	22	MAX
	Through	200	33	6	260	22	MAX
	Right Turn	200	35	6	264	22	MAX
EB	Left Turn	290	17	2	146	35	NO
	Through	290	17	2	146	35	NO
	Right Turn	290	19	3	152	35	NO
WB	Left Turn	300	1	0	43	16	NO
	Through	300	1	1	91	13	NO
	Right Turn	300	1	0	36	16	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	124	10	527	51	MAX
	Right Turn	200	124	10	527	51	MAX
SB	Left Turn	200	83	4	290	10	MAX
	Through	200	69	7	290	10	MAX
	Right Turn						
EB	Left Turn	300	115	20	400	26	MAX
	Through	300	115	20	400	26	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	8	2	135	36	NO
	Through	200	16	1	169	17	NO
	Right Turn						
SB	Left Turn						
	Through	200	59	16	340	87	MAX
	Right Turn	200	59	16	340	87	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	39	3	239	48	NO
	Through	1,000	53	9	573	195	NO
	Right Turn	150	1	1	154	83	MAX

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	4	0	169	14	NO
	Right Turn						
SB	Left Turn						
	Through	500	2	2	269	218	NO
	Right Turn	500	1	2	173	198	NO
EB	Left Turn	1,000	13	1	70	13	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	14	1	217	24	NO
EB	Left Turn	600	20	10	359	92	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	28	4	220	29	MAX
	Through	200	28	4	220	29	MAX
	Right Turn						
SB	Left Turn						
	Through	200	14	3	213	44	MAX
	Right Turn	200	14	3	213	44	MAX
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	43	2	181	22	NO
	Through	200	43	2	181	22	NO
	Right Turn	220	43	2	184	22	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	38	3	280	17	MAX
	Right Turn	210	38	3	280	17	MAX
SB	Left Turn	170	19	2	178	45	MAX
	Through	170	19	2	178	45	MAX
	Right Turn						
EB	Left Turn	180	47	4	309	20	MAX
	Through	180	47	4	309	20	MAX
	Right Turn	180	50	4	316	20	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	23	2	246	38	MAX
	Through	180	23	2	246	38	MAX
	Right Turn						
SB	Left Turn						
	Through	200	5	1	149	44	NO
	Right Turn	200	5	1	149	44	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	30	1	143	19	NO
	Through	300	23	2	140	20	NO
	Right Turn	300	24	2	142	20	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	23	2	198	26	MAX
	Right Turn	180	39	2	232	26	MAX
NE	Left Turn	670	102	8	366	27	NO
	Through						
	Right Turn	670	102	8	366	27	NO
EB	Left Turn	380	60	2	187	14	NO
	Through	380	60	2	187	14	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **6 PM to 7 PM**

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	13	2	177	29	NO
	Through	190	13	2	177	29	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	62	2	239	18	NO
	Right Turn	250	62	2	239	18	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	2	1	245	68	NO
	Through						
	Right Turn	1,000	2	1	169	49	NO
SB	Left Turn						
	Through	1,000	0	0	97	17	NO
	Right Turn	1,000	1	0	62	11	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	2	0	73	13	NO
	Through	350	6	1	67	19	NO
	Right Turn						

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	21	1	202	7	MAX
	Through	200	21	1	202	7	MAX
	Right Turn	200	21	1	206	7	MAX
EB	Left Turn						
	Through	500	36	3	185	36	NO
	Right Turn	500	48	3	215	36	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	52	8	280	14	MAX
	Right Turn	200	52	8	281	14	MAX
SB	Left Turn	200	45	4	220	9	MAX
	Through	200	45	4	220	9	MAX
	Right Turn						
EB	Left Turn	800	175	72	655	117	NO
	Through	800	175	72	655	117	NO
	Right Turn	800	175	72	657	117	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 1 **Union St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	230	7	2	82	15	NO
	Through	1,000	23	3	324	69	NO
	Right Turn	1,000	23	3	324	69	NO
SB	Left Turn						
	Through	185	3	0	44	9	NO
	Right Turn	185	3	1	46	9	NO
EB	Left Turn	800	7	1	74	14	NO
	Through	800	23	2	182	32	NO
	Right Turn	800	0	0	21	10	NO
WB	Left Turn	580	27	3	140	18	NO
	Through	580	9	1	107	40	NO
	Right Turn	580	6	2	108	40	NO

Intersection 2 **Adeline St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	1,000	24	2	223	25	NO
	Through	1,000	24	2	223	25	NO
	Right Turn	1,000	24	2	228	25	NO
SB	Left Turn	500	26	2	197	33	NO
	Through	500	26	2	197	33	NO
	Right Turn	500	20	1	198	27	NO
EB	Left Turn	1,000	3	1	105	28	NO
	Through	1,000	3	1	105	28	NO
	Right Turn	1,000	3	1	108	28	NO
WB	Left Turn	1,000	4	1	165	38	NO
	Through	1,000	4	1	165	38	NO
	Right Turn	1,000	4	1	166	38	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 3 **Adeline St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	8	2	114	22	NO
	Through	510	11	3	198	36	NO
	Right Turn						
SB	Left Turn	180	13	1	104	20	NO
	Through	200	14	1	105	20	NO
	Right Turn	200	8	2	108	20	NO
EB	Left Turn						
	Through	600	45	4	311	28	NO
	Right Turn	600	45	4	314	28	NO
WB	Left Turn	400	40	6	284	63	NO
	Through	1,000	5	1	122	22	NO
	Right Turn	1,000	4	1	122	22	NO

Intersection 4 **Market St/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	500	36	2	332	44	NO
	Right Turn						
SB	Left Turn						
	Through	190	46	4	220	9	MAX
	Right Turn	190	49	4	227	9	MAX
EB	Left Turn						
	Through	1,000	23	4	233	71	NO
	Right Turn	1,000	22	4	236	71	NO
WB	Left Turn						
	Through	200	15	2	177	44	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 5 **Market St/4th St** **Side-street Stop**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	1	1	97	40	NO
	Right Turn	210	2	1	126	43	NO
SB	Left Turn						
	Through	220	26	6	365	1	MAX
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn	220	1	0	40	9	NO

Intersection 6 **Market St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	47	3	301	4	MAX
	Right Turn	210	48	3	304	4	MAX
SB	Left Turn	100	49	15	286	26	MAX
	Through	150	19	7	279	32	MAX
	Right Turn						
EB	Left Turn	1,000	57	6	267	29	NO
	Through	1,000	57	6	267	29	NO
	Right Turn	1,000	56	7	270	29	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 7 **Market St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	170	32	4	225	62	MAX
	Through	170	32	4	225	62	MAX
	Right Turn						
SB	Left Turn						
	Through	140	21	3	208	36	MAX
	Right Turn	140	0	0	38	43	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	93	7	390	34	MAX
	Through	800	93	7	390	34	NO
	Right Turn	200	4	0	91	22	NO

Intersection 8 **Market St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	145	5	1	167	57	MAX
	Through	145	18	2	239	18	MAX
	Right Turn	145	18	2	240	18	MAX
SB	Left Turn	80	2	1	47	14	NO
	Through	240	11	1	104	19	NO
	Right Turn	80	1	0	41	11	NO
EB	Left Turn	160	15	2	123	31	NO
	Through	500	38	2	183	39	NO
	Right Turn	500	40	2	186	39	NO
WB	Left Turn	190	37	3	183	50	NO
	Through	400	20	2	151	11	NO
	Right Turn	400	17	3	151	11	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 9 **Brush St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn	200	0	0	28	9	NO
SB	Left Turn	180	55	3	195	24	MAX
	Through	180	55	3	195	24	MAX
	Right Turn						
EB	Left Turn						
	Through	270	3	1	130	32	NO
	Right Turn	270	2	0	130	29	NO
WB	Left Turn						
	Through						
	Right Turn						

Intersection 10 **Brush St/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through	200	1	0	115	21	NO
	Right Turn	200	1	0	116	21	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	310	3	1	62	13	NO
	Through	310	4	1	64	10	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 11 **Brush St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	1,000	58	2	297	36	NO
	Through	1,000	59	2	297	36	NO
	Right Turn	1,000	58	2	299	36	NO
EB	Left Turn						
	Through	390	10	1	214	43	NO
	Right Turn	390	10	1	214	43	NO
WB	Left Turn	130	1	0	87	21	NO
	Through	380	4	1	100	21	NO
	Right Turn						

Intersection 12 **Castro St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	220	41	5	301	9	MAX
	Right Turn	220	45	6	307	9	MAX
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn	315	14	2	228	51	NO
	Through	315	14	2	228	51	NO
	Right Turn	315	14	2	232	51	NO
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 13 **Castro St/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	23	3	143	46	NO
	Through	200	23	3	143	46	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	370	7	1	118	20	NO
	Right Turn						
WB	Left Turn						
	Through	240	4	1	91	18	NO
	Right Turn	240	1	0	80	16	NO

Intersection 14 **Martin Luther King Jr Way/2nd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	1	0	71	26	NO
	Right Turn						
SB	Left Turn						
	Through	200	11	3	179	20	NO
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 15 **Martin Luther King Jr Way/3rd St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	210	4	2	129	63	NO
SB	Left Turn Through Right Turn	200	22	4	243	42	MAX
EB	Left Turn Through Right Turn	300	7	2	86	23	NO
WB	Left Turn Through Right Turn	300 300	15 15	2 2	148 148	50 50	NO NO

Intersection 16 **Martin Luther King Jr Way/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn Through Right Turn	200	13	2	207	18	MAX
SB	Left Turn Through Right Turn	200	10	4	217	43	MAX
EB	Left Turn Through Right Turn	300	3	0	52	8	NO
WB	Left Turn Through Right Turn	300	23	2	149	25	NO

Intersection 17 **Martin Luther King Jr Way/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	29	3	212	29	MAX
	Right Turn	200	29	3	210	29	MAX
SB	Left Turn	210	16	3	197	31	NO
	Through	210	16	3	197	31	NO
	Right Turn						
EB	Left Turn	300	60	5	348	52	MAX
	Through	300	60	5	348	52	MAX
	Right Turn	300	60	5	350	52	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 18 **Jefferson St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	0	0	21	1	NO
	Through						
	Right Turn	200	0	0	23	1	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	310	0	0	29	10	NO
	Right Turn	310	0	0	31	10	NO
WB	Left Turn	300	5	1	93	24	NO
	Through	300	5	1	93	24	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 33 **Market St/Martin Luther King Jr Way** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft)		Maximum Queue (ft)		Exceeds Storage?
			Average	Std. Dev.	Average	Std. Dev.	
NB	Left Turn Through Right Turn	1,000	28	4	276	68	NO
SB	Left Turn Through Right Turn	200	13	1	177	11	NO
EB	Left Turn Through Right Turn	600	19	2	217	57	NO
WB	Left Turn Through Right Turn	800	21	4	480	94	NO

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 19 **Clay St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	1	0	42	10	NO
	Through						
	Right Turn	200	1	0	42	10	NO
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through	300	0	0	31	10	NO
	Right Turn	300	0	0	31	10	NO
WB	Left Turn	290	3	0	87	5	NO
	Through	290	3	0	87	5	NO
	Right Turn						

Intersection 20 **Washington St/4th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	5	1	97	29	NO
	Through	200	5	1	97	29	NO
	Right Turn	200	5	1	98	29	NO
SB	Left Turn	200	11	3	186	38	NO
	Through	200	11	3	186	38	NO
	Right Turn	200	13	3	190	38	NO
EB	Left Turn	290	3	1	70	35	NO
	Through	290	3	1	70	35	NO
	Right Turn	290	4	1	76	35	NO
WB	Left Turn	300	0	0	45	21	NO
	Through	300	1	1	90	14	NO
	Right Turn	300	1	0	39	21	NO

Intersection 21 **Broadway/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	45	3	241	63	MAX
	Right Turn	200	45	3	241	63	MAX
SB	Left Turn	200	40	2	260	35	MAX
	Through	200	23	4	228	55	MAX
	Right Turn						
EB	Left Turn	300	89	13	375	28	MAX
	Through	300	89	13	375	28	MAX
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 22 **Broadway/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	5	1	108	33	NO
	Through	200	8	1	147	20	NO
	Right Turn						
SB	Left Turn						
	Through	200	11	2	165	19	NO
	Right Turn	200	11	2	165	19	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	1,000	25	4	184	49	NO
	Through	1,000	22	2	130	43	NO
	Right Turn	150	0	0	84	47	NO

Intersection 23 **Market St/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	12	1	165	17	NO
	Right Turn						
SB	Left Turn						
	Through	500	0	0	87	87	NO
	Right Turn	500	0	0	65	66	NO
EB	Left Turn	1,000	12	2	77	17	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 24 **Martin Luther King Jr Way/Embarcadero West** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn	450	15	2	178	17	NO
EB	Left Turn	600	26	7	460	112	NO
	Through						
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

Queue Length **7 PM to 8 PM**

Intersection 25 **Martin Luther King Jr Way/6th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	200	11	2	135	41	NO
	Through	200	11	2	135	41	NO
	Right Turn						
SB	Left Turn						
	Through	200	4	1	127	26	NO
	Right Turn	200	4	1	127	26	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	200	27	1	152	26	NO
	Through	200	27	1	152	26	NO
	Right Turn	220	26	2	155	26	NO

Intersection 26 **Martin Luther King Jr Way/7th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	210	10	1	208	19	NO
	Right Turn	210	10	1	208	19	NO
SB	Left Turn	170	7	1	90	20	NO
	Through	170	7	1	90	20	NO
	Right Turn						
EB	Left Turn	180	35	2	181	11	MAX
	Through	180	35	2	181	11	MAX
	Right Turn	180	39	2	187	11	MAX
WB	Left Turn						
	Through						
	Right Turn						

Intersection 27 **Martin Luther King Jr Way/8th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	180	4	1	167	55	NO
	Through	180	4	1	167	55	NO
	Right Turn						
SB	Left Turn						
	Through	200	2	0	73	18	NO
	Right Turn	200	2	0	74	18	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	300	20	2	117	15	NO
	Through	300	20	1	117	9	NO
	Right Turn	300	21	1	119	9	NO

Intersection 28 **Castro St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	180	5	1	89	37	NO
	Right Turn	180	11	2	123	37	NO
NE	Left Turn	670	43	3	222	55	NO
	Through						
	Right Turn	670	43	3	222	55	NO
EB	Left Turn	380	39	2	138	17	NO
	Through	380	39	2	138	17	NO
	Right Turn						
WB	Left Turn						
	Through						
	Right Turn						

Intersection 29 **Castro St/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn	190	5	1	119	19	NO
	Through	190	5	1	119	19	NO
	Right Turn						
SB	Left Turn						
	Through						
	Right Turn						
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn						
	Through	250	48	2	196	22	NO
	Right Turn	250	48	2	196	22	NO

Intersection 30 **Brush St-I-980 Westbound Off-Ramp/12th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
SW	Left Turn	1,000	0	0	34	60	NO
	Through						
	Right Turn	1,000	0	0	12	27	NO
SB	Left Turn						
	Through	1,000	0	0	91	11	NO
	Right Turn	1,000	0	0	52	10	NO
EB	Left Turn						
	Through						
	Right Turn						
WB	Left Turn	350	2	0	99	21	NO
	Through	350	4	1	52	14	NO
	Right Turn						

Vissim Post-Processor **A's Ballpark**

Average Results from 10 Runs **Existing & FB Non-Ballpark Development & Evening Game**

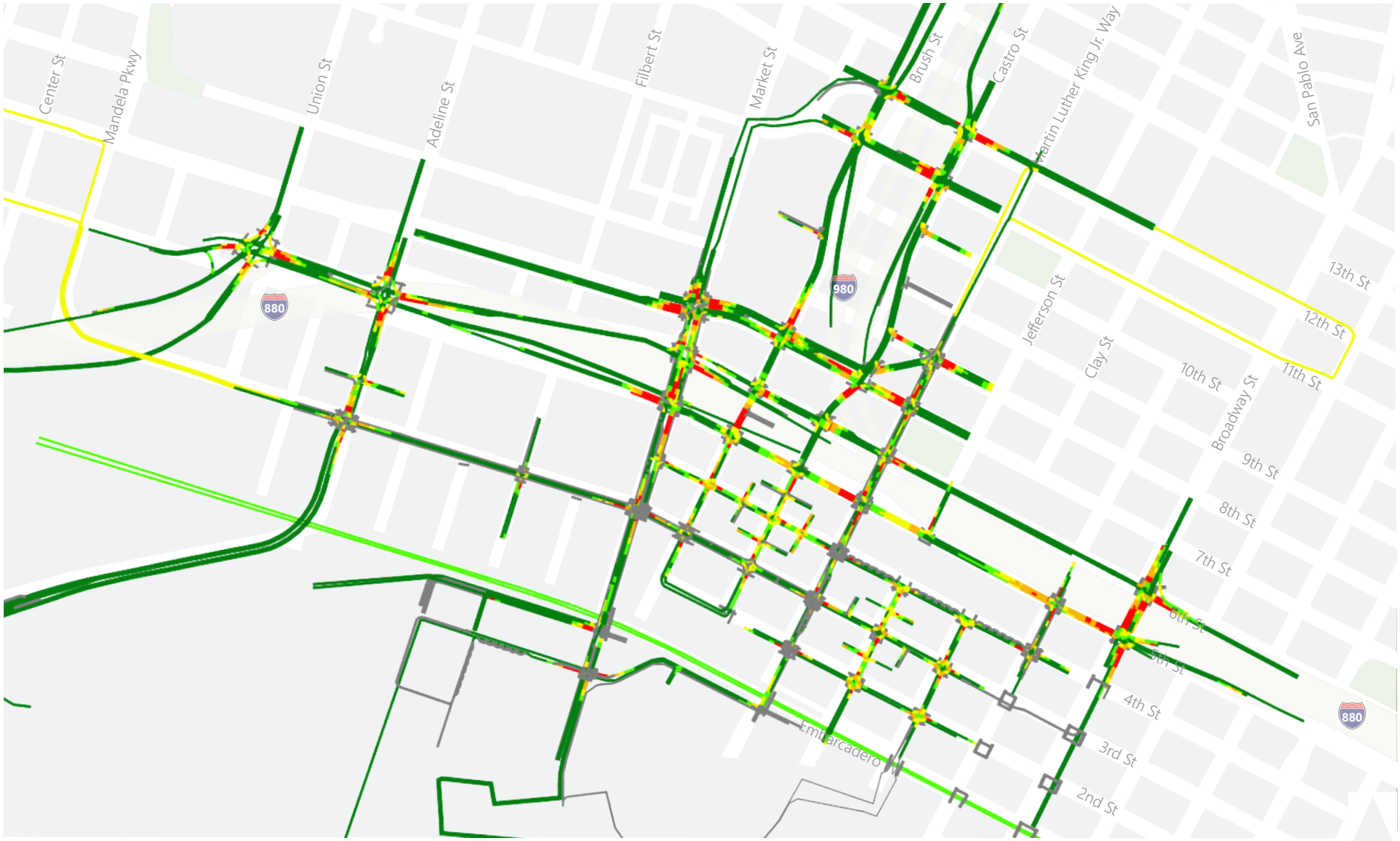
Queue Length **7 PM to 8 PM**

Intersection 31 **Brush St/11th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through						
	Right Turn						
SB	Left Turn	200	9	1	173	27	NO
	Through	200	9	1	173	27	NO
	Right Turn	200	9	1	177	27	NO
EB	Left Turn						
	Through	500	24	2	122	15	NO
	Right Turn	500	34	2	153	15	NO
WB	Left Turn						
	Through						
	Right Turn						

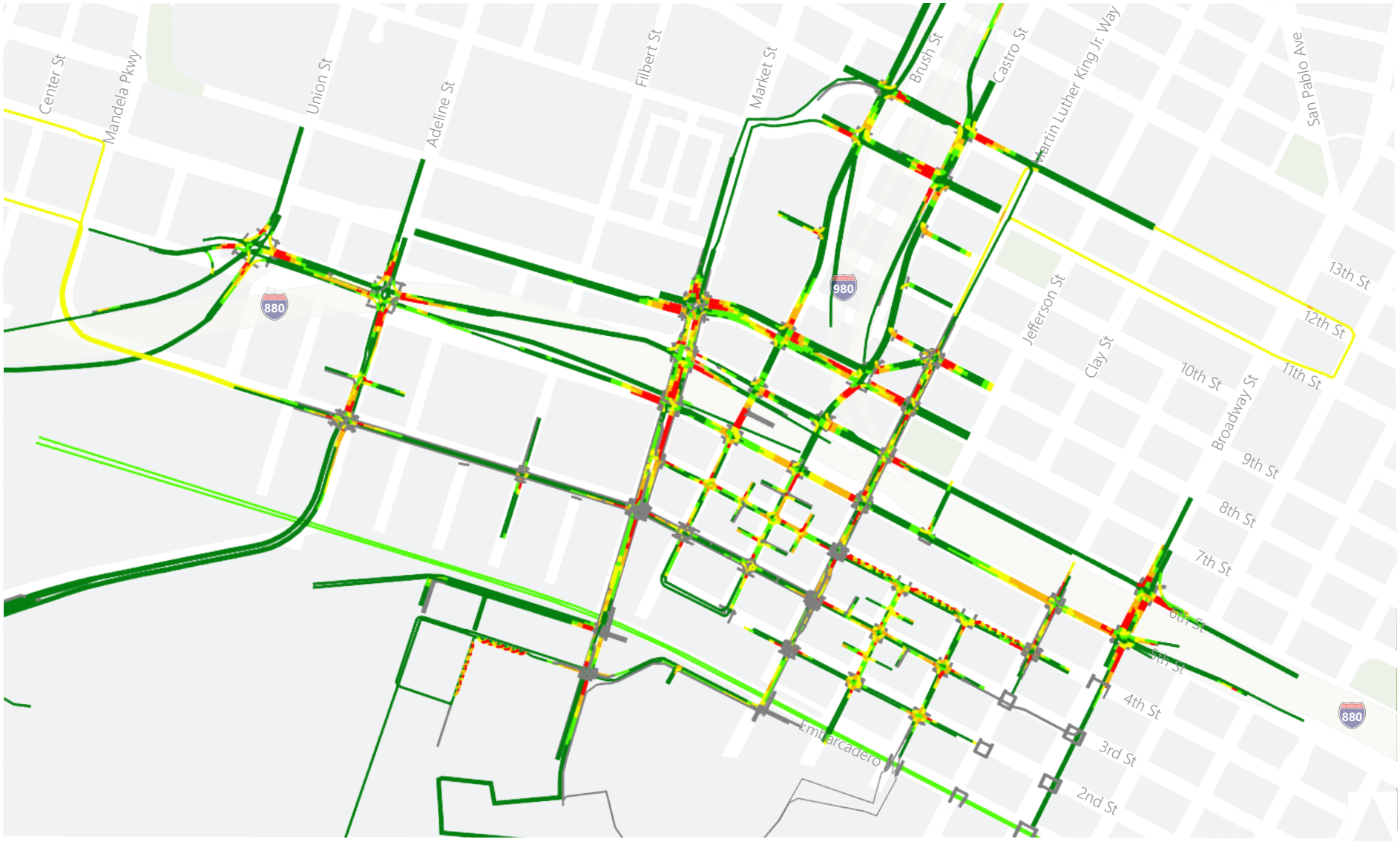
Intersection 32 **Washington St/5th St** **Signal**

Direction	Movement	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Exceeds Storage?
NB	Left Turn						
	Through	200	7	2	122	21	NO
	Right Turn	200	7	2	123	21	NO
SB	Left Turn	200	13	2	137	36	NO
	Through	200	13	2	137	36	NO
	Right Turn						
EB	Left Turn	800	46	10	385	41	NO
	Through	800	46	10	385	41	NO
	Right Turn	800	44	10	386	41	NO
WB	Left Turn						
	Through						
	Right Turn						



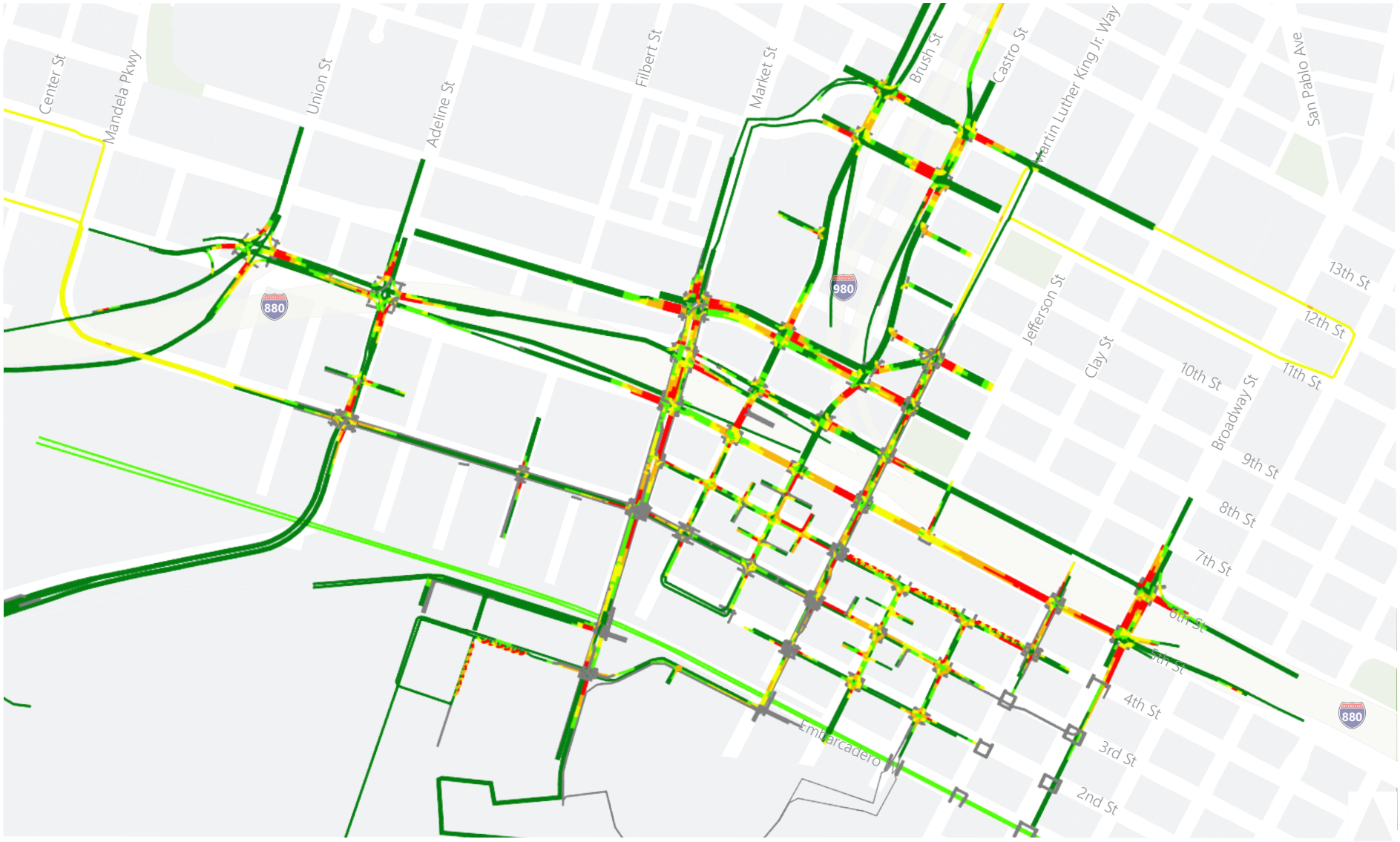
Full Build Out, Evening Ballgame - Average Motor Vehicle Speeds
3PM - 4PM

Figure J-9



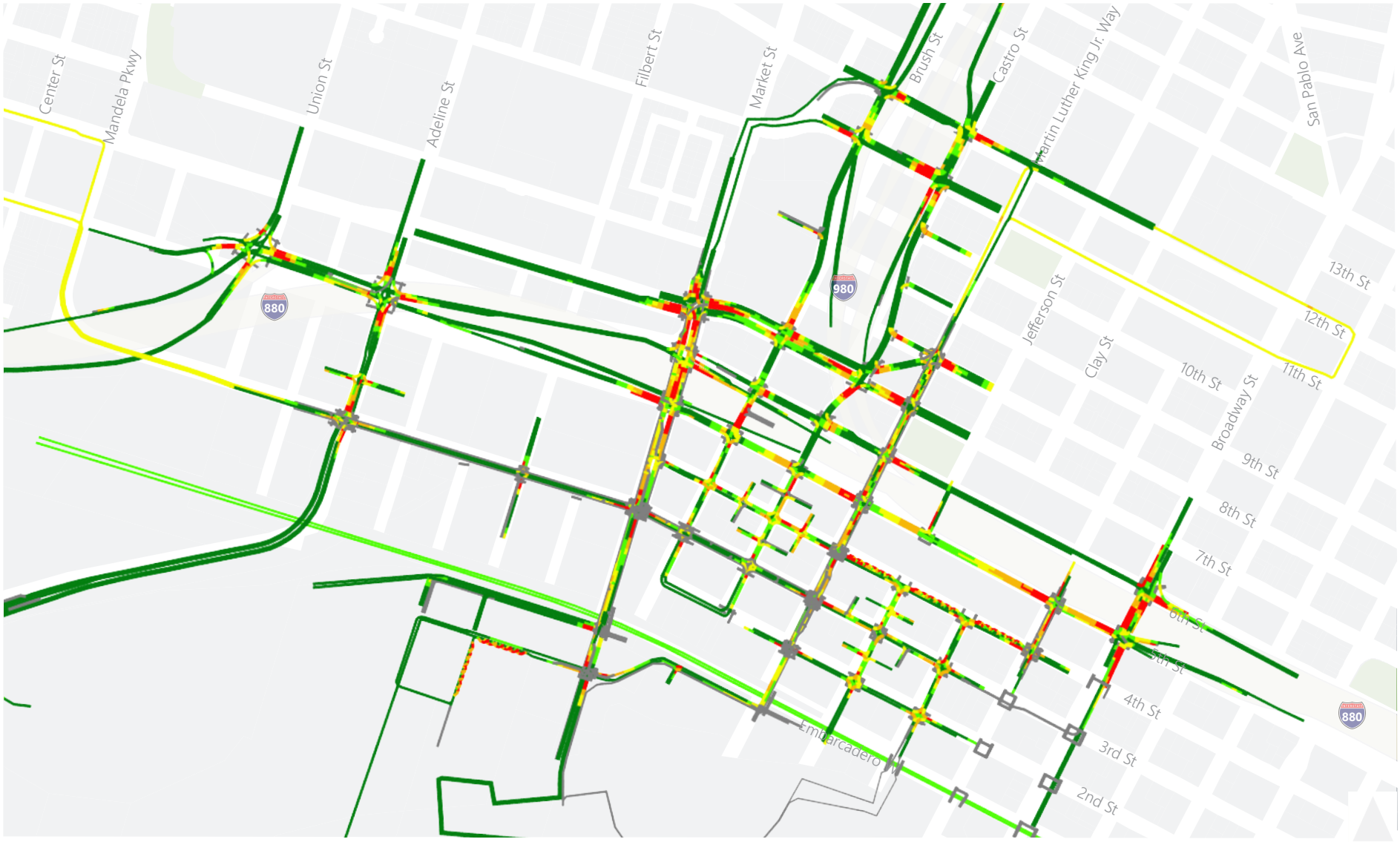
Full Build Out, Evening Ballgame - Average Motor Vehicle Speeds
4PM - 5PM

Figure J-10

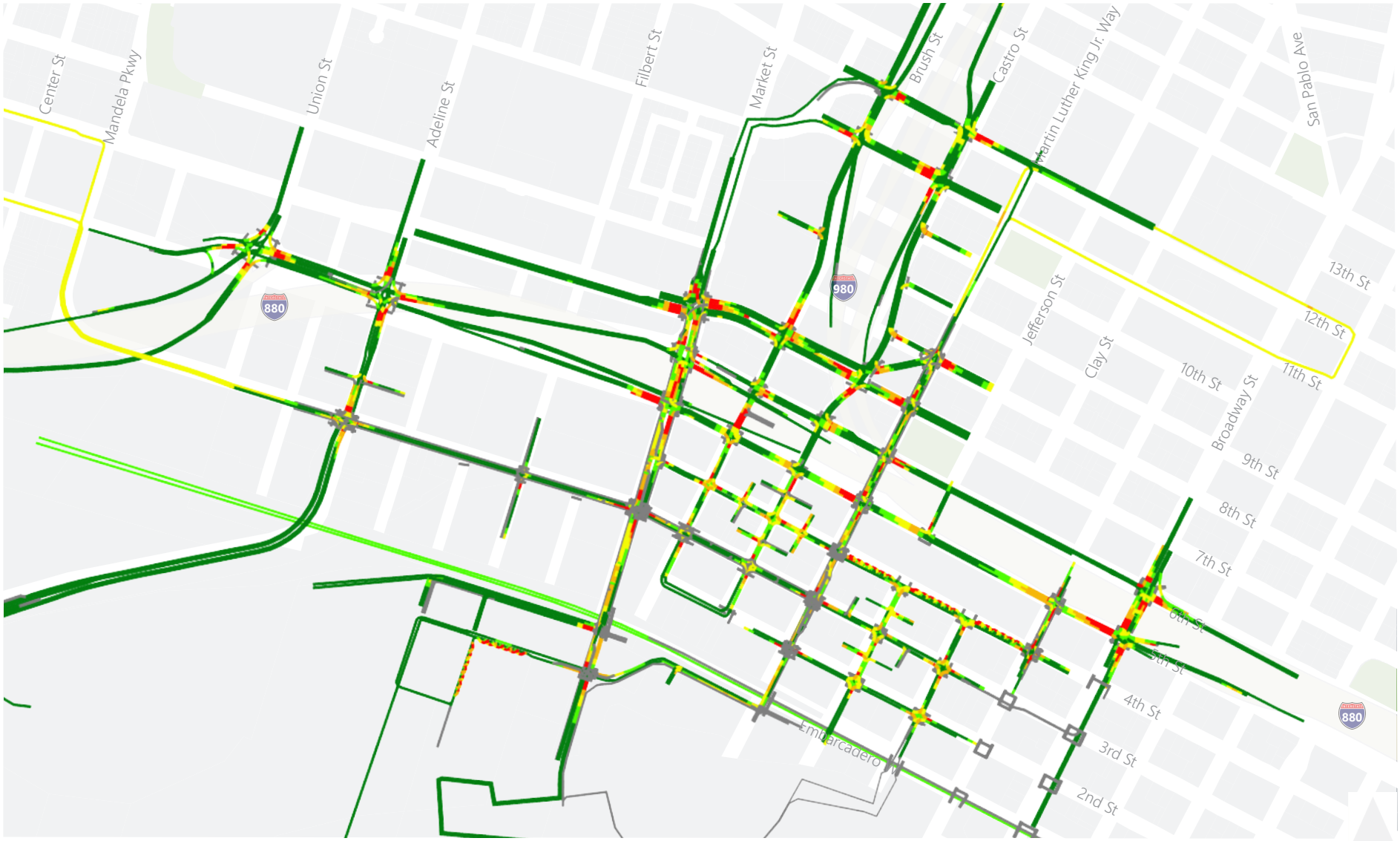


Full Build Out, Evening Ballgame - Average Motor Vehicle Speeds
5PM - 6PM

Figure J-11



Full Build Out, Evening Ballgame - Average Motor Vehicle Speeds
6PM - 7PM



Full Build Out, Evening Ballgame - Average Motor Vehicle Speeds
7PM - 8PM

Figure J-13

FEHR PEERS

Appendix K:

Freeway Lane Configuration & Volumes Summary

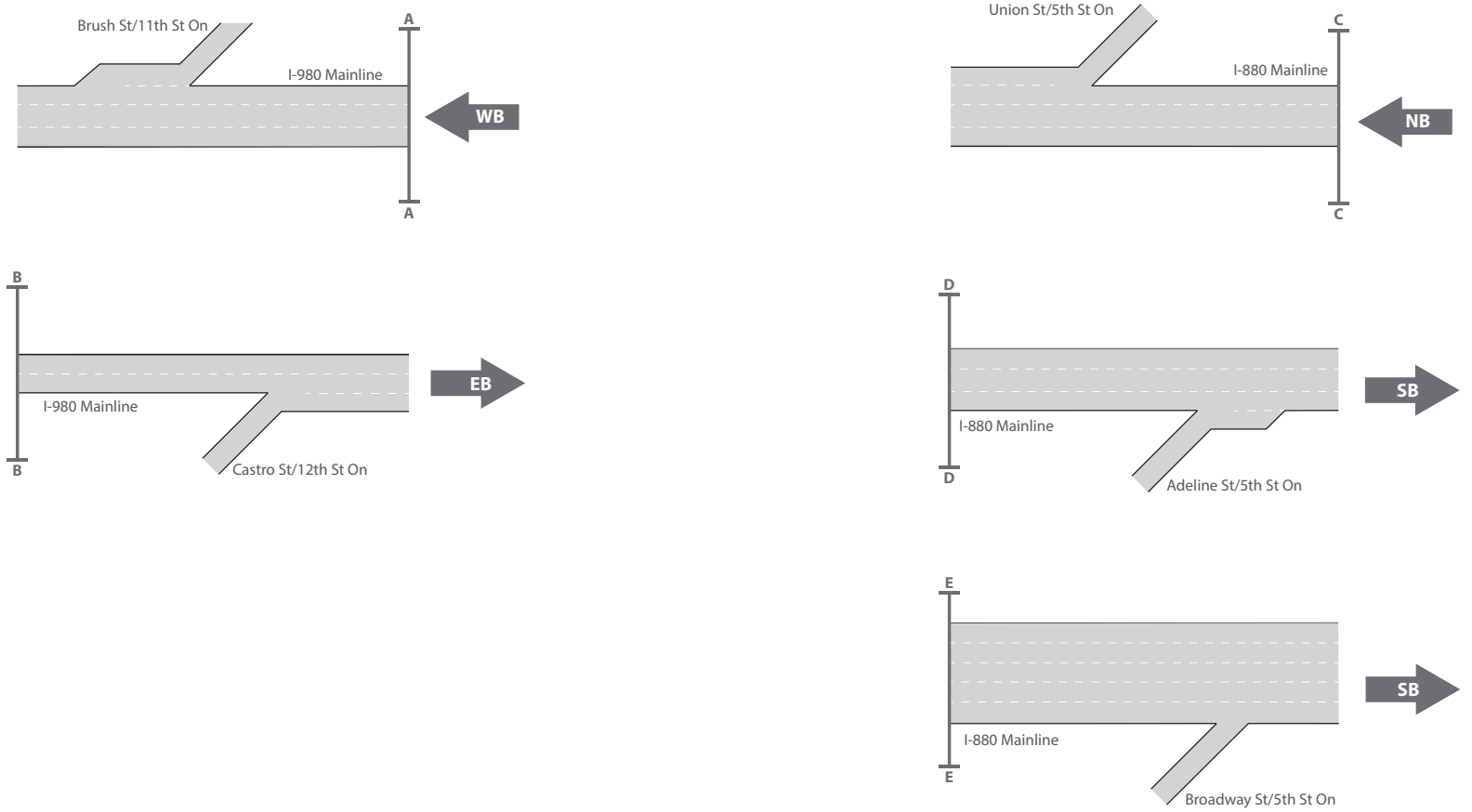


Figure K-1

Existing Merge Segments Lane Configurations for I-980 and I-880

Freeway and Ramp Volumes under Three Senarios

Segments	3-4PM		4-5PM		5-6PM		6-7PM		7-8PM	
	Ramp	Freeway	Ramp	Freeway	Ramp	Freeway	Ramp	Freeway	Ramp	Freeway
Existing Conditions										
I-980 Eastbound on-ramp from 12th Street	1,277	3,091	1,481	3010	1,567	2,852	1,222	2,637	1,222	2,637
I-980 Westbound on-ramp from 11th Street	202	2,491	232	2709	198	2,839	168	2,346	168	2,346
I-880 Northbound from Union Street to 7th Street	253	3,461	268	3268	299	2,938	212	2,636	212	2,636
I-880 Southbound on-ramp from Adeline Street	251	2,413	311	2305	257	1,756	222	2,323	222	2,323
I-880 Southbound on-ramp from Broadway	540	4,611	514	4457	484	3,870	342	4,063	342	4,063
Existing Plus Full Buildout Plus Midday Game										
I-980 Eastbound on-ramp from 12th Street	2,054	3,091	2,048	3010	1,848	2,852	1,464	2,637	1,396	2,637
I-980 Westbound on-ramp from 11th Street	347	2,491	363	2709	215	2,839	168	2,346	168	2,346
I-880 Northbound from Union Street to 7th Street	547	3,461	654	3268	543	2,938	262	2,636	308	2,636
I-880 Southbound on-ramp from Adeline Street	315	2,413	379	2305	300	1,756	245	2,323	241	2,323
I-880 Southbound on-ramp from Broadway	999	4,820	1,068	4656	762	3,930	493	4,086	455	4,082
Existing Plus Full Buildout Plus Evening Game										
I-980 Eastbound on-ramp from 12th Street	1,556	3,091	1,831	3010	1,794	2,852	1,464	2,637	1,397	2,637
I-980 Westbound on-ramp from 11th Street	202	2,491	232	2709	198	2,839	168	2,346	168	2,346
I-880 Northbound from Union Street to 7th Street	398	3,461	501	3268	525	2,938	262	2,636	308	2,636
I-880 Southbound on-ramp from Adeline Street	279	2,413	342	2305	291	1,756	245	2,323	241	2,323
I-880 Southbound on-ramp from Broadway	697	4,639	719	4488	708	3,904	493	4,086	456	4,082

FEHR PEERS

Appendix L:

Freeway Detailed LOS Calculation Sheets

HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4368	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1615
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.3
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2491	202
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2815	220
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.43	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.305
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1143
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1672	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	1892	Average Density (D), pc/mi/ln	16.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4611	540
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	4.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.962
Flow Rate (vi),pc/h	5466	610
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.31

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.332
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1279
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.142	Outer Lanes Freeway Speed (SO), mi/h	62.2
Flow in Lanes 1 and 2 (v12), pc/h	1705	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2315	Average Density (D), pc/mi/ln	20.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3714	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1100
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2413	251
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	34.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.746
Flow Rate (vi),pc/h	2860	366
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.18

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.283
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1127
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1733	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2099	Average Density (D), pc/mi/ln	18.0
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4491	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1660
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2709	232
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3061	255
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.13

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.310
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1243
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1818	Ramp Junction Speed (S), mi/h	59.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2073	Average Density (D), pc/mi/ln	18.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.8

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4457	514
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	5283	575
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.29

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.329
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1236
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.146	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1648	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2223	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.1

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3536	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1048
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	16.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2305	311
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	57.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.637
Flow Rate (vi),pc/h	2732	531
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.286
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1656	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2187	Average Density (D), pc/mi/ln	18.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.1

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4419	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1634
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.2
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	25.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2839	198
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3208	217
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.312
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1302
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.1
Flow in Lanes 1 and 2 (v12), pc/h	1906	Ramp Junction Speed (S), mi/h	59.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2123	Average Density (D), pc/mi/ln	19.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.2

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3870	484
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	4587	542
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.321
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1073
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.150	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1431	Ramp Junction Speed (S), mi/h	60.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	1973	Average Density (D), pc/mi/ln	17.0
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.2

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3237	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	959
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.41
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	14.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1756	257
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	17.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.855
Flow Rate (vi),pc/h	2081	327
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.34	0.16

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.270
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	820
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	63.8
Flow in Lanes 1 and 2 (v12), pc/h	1261	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	1588	Average Density (D), pc/mi/ln	13.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	11.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3859	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1427
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4063	342
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4816	379
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.19

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.319
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1127
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.170	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1503	Ramp Junction Speed (S), mi/h	60.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	1882	Average Density (D), pc/mi/ln	17.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2848	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	844
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.36
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2323	222
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	28.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.781
Flow Rate (vi),pc/h	2754	309
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.43	0.15

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.279
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	1978	Average Density (D), pc/mi/ln	17.0
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.6

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3859	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1427
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	22.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4063	342
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4816	379
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.19

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.319
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1127
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.170	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1503	Ramp Junction Speed (S), mi/h	60.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	1882	Average Density (D), pc/mi/ln	17.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2848	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	844
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.36
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2323	222
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	22.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.820
Flow Rate (vi),pc/h	2754	294
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.43	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.279
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	1963	Average Density (D), pc/mi/ln	16.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5145	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1902
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	31.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2491	347
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2815	377
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.19

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.309
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1143
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1672	Ramp Junction Speed (S), mi/h	59.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2049	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.6

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4820	999
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	4.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.962
Flow Rate (vi),pc/h	5713	1129
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.56

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.362
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1302
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.077	Outer Lanes Freeway Speed (SO), mi/h	62.1
Flow in Lanes 1 and 2 (v12), pc/h	1737	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2866	Average Density (D), pc/mi/ln	23.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.9

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4008	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1188
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	18.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2413	315
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	34.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.746
Flow Rate (vi),pc/h	2860	459
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.23

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.286
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1127
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1733	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2192	Average Density (D), pc/mi/ln	18.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.2

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5058	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1870
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	61.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	30.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2709	363
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3061	399
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.20

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.315
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1243
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1818	Ramp Junction Speed (S), mi/h	59.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2217	Average Density (D), pc/mi/ln	19.4
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.9

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4656	1068
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	5519	1196
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.57	0.60

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.362
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1258
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.068	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1678	Ramp Junction Speed (S), mi/h	59.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2874	Average Density (D), pc/mi/ln	22.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.9

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3922	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1162
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2305	379
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	57.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.637
Flow Rate (vi),pc/h	2732	647
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.48	0.32

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.290
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1656	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2303	Average Density (D), pc/mi/ln	18.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.9

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4700	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1738
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.4
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2839	215
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3208	236
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.12

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.312
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1302
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.1
Flow in Lanes 1 and 2 (v12), pc/h	1906	Ramp Junction Speed (S), mi/h	59.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2142	Average Density (D), pc/mi/ln	19.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3930	762
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	4658	853
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.43

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.332
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1090
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.111	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1453	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2306	Average Density (D), pc/mi/ln	18.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.6

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3481	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1032
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1756	300
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	17.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.855
Flow Rate (vi),pc/h	2081	381
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.35	0.19

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.271
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	820
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	63.8
Flow in Lanes 1 and 2 (v12), pc/h	1261	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	1642	Average Density (D), pc/mi/ln	13.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	11.9

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4101	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1516
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4086	493
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4843	547
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.324
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1133
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.149	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1511	Ramp Junction Speed (S), mi/h	60.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2058	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2898	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	859
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2323	245
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	28.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.781
Flow Rate (vi),pc/h	2754	341
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.44	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.280
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2010	Average Density (D), pc/mi/ln	17.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4033	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1491
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4082	455
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4839	505
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.25

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.322
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1132
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.155	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1510	Ramp Junction Speed (S), mi/h	60.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2015	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2944	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	872
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2323	241
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	22.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.820
Flow Rate (vi),pc/h	2754	319
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.44	0.16

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.279
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	1988	Average Density (D), pc/mi/ln	17.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.6

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4647	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1718
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2491	202
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2815	220
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.43	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.305
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1143
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1672	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	1892	Average Density (D), pc/mi/ln	16.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4639	697
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	4.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.962
Flow Rate (vi),pc/h	5499	788
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.54	0.39

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.341
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1287
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.119	Outer Lanes Freeway Speed (SO), mi/h	62.2
Flow in Lanes 1 and 2 (v12), pc/h	1716	Ramp Junction Speed (S), mi/h	59.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2504	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.2

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3859	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1144
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.49
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	3-4PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2413	279
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	34.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.746
Flow Rate (vi),pc/h	2860	407
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.20

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.284
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1127
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1733	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2140	Average Density (D), pc/mi/ln	18.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4841	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1790
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	62.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	28.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2709	232
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3061	255
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.13

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.310
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1243
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1818	Ramp Junction Speed (S), mi/h	59.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2073	Average Density (D), pc/mi/ln	18.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.8

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4488	719
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	5320	805
Capacity (c), pc/h	11750	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.40

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.339
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1245
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.117	Outer Lanes Freeway Speed (SO), mi/h	62.3
Flow in Lanes 1 and 2 (v12), pc/h	1660	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2465	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.9

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3769	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1117
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	17.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	4-5PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2305	342
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	57.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.637
Flow Rate (vi),pc/h	2732	584
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.29

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.288
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1656	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2240	Average Density (D), pc/mi/ln	18.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4646	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1718
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.73
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	63.6
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	27.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2839	198
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	1.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.990
Flow Rate (vi),pc/h	3208	217
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.11

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.312
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1302
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.1
Flow in Lanes 1 and 2 (v12), pc/h	1906	Ramp Junction Speed (S), mi/h	59.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2123	Average Density (D), pc/mi/ln	19.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.2

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	3904	708
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.971
Flow Rate (vi),pc/h	4628	793
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.40

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.330
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1083
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.119	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1444	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2237	Average Density (D), pc/mi/ln	18.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.1

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	3463	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1026
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	15.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	1756	291
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	17.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.855
Flow Rate (vi),pc/h	2081	370
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.35	0.19

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.271
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	820
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	63.8
Flow in Lanes 1 and 2 (v12), pc/h	1261	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	1631	Average Density (D), pc/mi/ln	13.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	11.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4101	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1516
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.8
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	5-6PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4086	493
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4843	547
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.27

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.324
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1133
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.149	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1511	Ramp Junction Speed (S), mi/h	60.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2058	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2898	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	859
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	6-7PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2323	245
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	28.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.781
Flow Rate (vi),pc/h	2754	341
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.44	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.280
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2010	Average Density (D), pc/mi/ln	17.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.8

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Eastbound at 12th Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4034	Heavy Vehicle Adjustment Factor (f_{HV})	0.980
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	1491
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	23.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-980/CA-24 Westbound at 11th Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	600
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2346	168
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	4.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.962	1.000
Flow Rate (vi),pc/h	2651	183
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.40	0.09

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	950	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1076
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.594	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1575	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	1758	Average Density (D), pc/mi/ln	15.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	15.4

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at Broadway	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	5	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	4082	456
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	2.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.980
Flow Rate (vi),pc/h	4839	506
Capacity (c), pc/h	11000	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.25

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.322
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1132
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.155	Outer Lanes Freeway Speed (SO), mi/h	62.7
Flow in Lanes 1 and 2 (v12), pc/h	1510	Ramp Junction Speed (S), mi/h	60.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2016	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	18.5

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HCS7 Basic Freeway Report

Project Information

Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Northbound at 5th Street/ Union Street	Unit	United States Customary

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	2944	Heavy Vehicle Adjustment Factor (f_{HV})	0.917
Peak Hour Factor	0.92	Flow Rate (V_p), pc/h/ln	872
Total Trucks, %	9.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37
Passenger Car Equivalent (E_T)	2.000		

Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (f_{RLC})	0.0	Density (D), pc/mi/ln	13.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFS_{adj}), mi/h	65.0		

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HCS7 Freeway Merge Report

Project Information			
Analyst	Fehr & Peers	Date	9/13/2019
Agency		Analysis Year	2019
Jurisdiction		Time Period Analyzed	7-8PM
Project Description	BallPark_I-880 Southbound at 5th Street Adeline Street	Unit	United States Customary

Geometric Data		
	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	1000
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors		
Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity		
Demand Volume (Vi)	2323	241
Peak Hour Factor (PHF)	0.92	0.92
Total Trucks, %	9.00	22.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.917	0.820
Flow Rate (vi),pc/h	2754	319
Capacity (c), pc/h	7050	2000
Volume-to-Capacity Ratio (v/c)	0.44	0.16

Speed and Density			
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.279
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1085
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.606	Outer Lanes Freeway Speed (SO), mi/h	62.9
Flow in Lanes 1 and 2 (v12), pc/h	1669	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	1988	Average Density (D), pc/mi/ln	17.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	14.6

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TRA.4 Air and Noise Forecasts

FEHR PEERS

MEMORANDUM

Date: December 1, 2020

To: Pete Vollmann, City of Oakland
Nicole Ferrara, City of Oakland

From: Lee Reis and Rob Rees, Fehr & Peers

Subject: Howard Terminal – Air, Noise, and Greenhouse Gas Forecast Inputs

OK16-0125.06

Road segment and Vehicle Miles Travelled (VMT) forecasts are required for the air, noise, and greenhouse gas assessments for the Howard Terminal project. Trips generated by the ballpark and non-ballpark development are assigned to the roadway network to determine volumes on both freeway and local roadway segments in 2020 and 2040. The forecasted 2040 segment volumes consider the Howard Terminal development in addition to development described in the Downtown Oakland Specific Plan (DOSP) and other major projects. Aligned with SB 743 guidance, the VMT analysis considers VMT due to the project's various land uses including residential, office, restaurant, retail, the ballpark, and the performance venue. This memorandum summarizes the process for developing the road segment and VMT forecasts.

1. Volume Forecasting

Volume forecasting consists of adding project vehicle volumes to existing and 2040 roadway segment volumes. These forecasts also consider the effects of known major projects as described in the City of Oakland's Major Projects list and the Downtown Oakland Specific Plan (DOSP).

The Alameda CTC Countywide Travel Demand Model released in May 2018 was used to forecast baseline vehicle volumes growth due to anticipated development in Oakland. The travel demand model reflects updated roadway network and land use projections as described in Plan Bay Area 2040. Validated to 2010 conditions, the model predicts traffic volumes for the 2020 and 2040 scenario years.

Volumes were observed at 150 downtown Oakland roadway segments in 2018 to inform the 2018 base year model. These roadway segment counts were compared to counts collected between 2010 and 2015 to form a more robust set of base year counts. We found the volumes to have remained largely constant between 2010-2015 and 2018, decreasing around two percent on average; therefore, the 2010-2015 data supplemented the base year model for the segments that were not collected in 2018. All new 2018 roadway segment counts were used in the base year model. **Table 1** compares the 2018 counts to those collected between 2010 and 2015.

Table 1: Dates of Data Collection

Project	Count Year	# Overlapping Counts		% Diff to DOSP Counts (2010-2015)		# New Counts	
		AM	PM	AM	PM	AM	PM
Howard Terminal Full Buildout	2019	80	80	-4%	-3%	38	38
Kaiser Center	2018	4	4	15%	18%	6	6
Howard Terminal Microsimulation	2018	0	24	0%	-18%	0	0
412 Madison	2018	5	5	-4%	-4%	1	1
1750 Broadway	2017	8	8	-3%	0%	2	2
1431 Jefferson	2017	0	0	0%	0%	3	3
1721 Webster	2016	5	5	3%	-1%	0	0
2015 Telegraph	2016	1	1	-16%	-3%	7	7
1314 Franklin	2016	6	6	6%	-6%	8	8
2201 Valley	2016	4	4	-9%	-8%	1	1
2 Kaiser Plaza	2016	8	8	3%	6%	10	10
2100 Telegraph	2016	5	5	5%	7%	6	6
Total		**126**	**150**	**-2%**	**-2%**	**82**	**82**

Source: Fehr & Peers, 2020.

A growth rate of approximately five percent is assumed between 2018 and 2020 to account for near-term planned developments that are under construction. The 2020 model scenario was then used as a pivot, forecasting future background growth. When comparing the 2040 No Project scenario—which assumes no additional development in downtown Oakland aside from those

outlined in the Lake Merritt Specific Plan—to the 2020 model scenario, the background growth rate is approximately 30 percent and reflects the anticipated land use changes from Plan Bay Area 2040 outside downtown Oakland.

The City of Oakland Major Project[1] land uses from April 2018 were then incorporated into the 2040 No Project model; the estimated automobile trip generation for the Major Projects equal approximately 37 percent of the DOSP auto trips. The land uses described in the DOSP were then added, corresponding to a growth rate of approximately 25 percent. We assumed the same trip assignment for DOSP and Major Project trips. To obtain the 2040 Plus Project scenario, Howard Terminal volumes were added to the 2040 model including the Major Project and DOSP land uses. The Howard Terminal volumes were distributed according to the base year Alameda CTC Travel Demand Model and assigned to the roadway network following standard routes of travel.

To forecast roadway segment volumes, two scenarios are considered. The first scenario is full buildout of the ballpark and non-ballpark development without the implementation of the TMP for the ballpark nor the TDM for the non-ballpark development; the 20 percent Vehicle Trip Reduction (VTR) is not achieved in this case. The second scenario considers full buildout with both the TDM and TMP implemented, reaching the 20 percent VTR. For further information regarding the TDM and TMP, consult the memorandum titled *Howard Terminal – Transportation and Parking Demand* (January 2020).

Table 2 shows the daily automobile trip generation for the non-ballpark development both with and without the TDM reaching the 20 percent VTR. **Table 3** shows the daily trip generation for the ballpark with and without the TMP. Automobile trips are listed for weekday evening, weekday day, and weekend games as well as concerts; as the greatest number of non-ballpark trips occur during the weekday PM peak period, analyzing roadway segment forecasts for the weekday evening scenario presents the most conservative estimate of vehicle volumes.

The following tables list the segment volumes; the road segment evaluation informs the air, noise, and greenhouse gas assessments and is provided for informational purposes only. **Appendix A** lists the daily freeway volumes with the 20 percent VTR after implementation of the TMP and TDM. **Appendix B** lists the local roadway segment volumes with both the TMP and TDM implemented for the ballpark and non-ballpark development, respectively.

[1] The City of Oakland Major Project List may be retrieved at: https://www.oaklandca.gov/resources/download-the-city-of-oakland-major-development-projects-list

Table 2: Automobile Trip Generation – Non-Ballpark Development

Land Use, ITE Code [1]	Units [2]	Daily Volume
Residential, 222 [3]	3,000 du	12,040
Office, 710 [4]	1,564 ksf	15,290
Retail, 820 [5]	180 ksf	8,970
Restaurant, 932 [6]	90 ksf	10,100
Hotel, 310 [7]	400 rooms	4,090
ITE Trip Generation Subtotal		50,490
Non-Auto Reduction (-36.7%) [8]		-18,530
Total Vehicle Trips without TDM		31,960
TDM Vehicle Trip Reduction (-20%)		-6,390
Total Vehicle Trips with TDM		25,570

Notes:

1. The performance venue was not included in this trip generation because it is expected to have about 50 events per year, many of which would occur on weekends. Additionally, it would be expected to generate negligible weekday AM peak hour trips and few PM peak hour trips due to the likely event schedules.
2. DU = Dwelling Units, KSF = 1,000 square feet.
3. ITE Trip Generation (10th Edition) land use category 222 (High Rise Housing):
   Daily: T = 3.94 * X + 211.81
   AM Peak Hour: T = 0.28 * X + 12.86 (24% in, 76% out)
   PM Peak Hour: T = 0.34 * X + 8.56 (61% in, 39% out)
4. ITE Trip Generation (10th Edition) land use category 710 (General Office)
   Daily: Ln(T) = 0.97 * ln(X) + 2.5
   AM Peak Hour: T = 0.94 * X + 26.49 (86% in, 14% out)
   PM Peak Hour: Ln(T) = 0.95 * ln(X) +0.36 (60% in, 40% out)
5. ITE Trip Generation (10th Edition) land use category 820 (Shopping Center)
   Daily: Ln(T) = 0.68 * ln(X) + 5.57
   AM Peak Hour: T = 0.5 * X + 151.78 (62% in, 38% out)
   PM Peak Hour: Ln(T) = 0.74 * ln(X) + 2.89 (48% in, 52% out)
6. ITE Trip Generation (10th Edition) land use category 820 (High-Turnover Sit-Down Restaurant)
   Daily: T = 112.18 * X
   AM Peak Hour: T = 9.94 * X (55% in, 45% out)
   PM Peak Hour: Ln(T) = 9.77 * X (62% in, 38% out)
7. ITE Trip Generation (10th Edition) land use category 310 (Hotel)
   Daily: T = 11.29 * X - 426.97
   AM Peak Hour: T = 0.5 * X - 5.34 (59% in, 41% out)
   PM Peak Hour: T = 0.75 * X - 26.02 (51% in, 49% out)
8. The 36.7% reduction is based on data from the April 2017 TIRG for development in an urban environment between 0.5 and 1.0 mile of a BART Station, Ferry or Rail Terminal, or major transit corridor.

Source: Fehr & Peers, 2020.

Table 3: Automobile Trip Generation – Ballpark

	Weekday Evening [1]		Weekday Day [1]		Weekend [1]		Concert [2]	
	Attendee Mode Share	Total Vehicle Trips [3]	Attendee Mode Share	Total Vehicle Trips [3]	Attendee Mode Share	Total Vehicle Trips [3]	Attendee Mode Share	Total Vehicle Trips [3]
Drive	57%	20,590	57%	20,360	62%	22,230	58%	20,610
Ride-sourcing [4]	18%	11,850	19%	12,600	18%	11,590	19%	12,840
Total Auto Trips w/out TMP		32,440		32,960		33,820		33,450
TMP Vehicle Trip Reduction (-20%)		-6,490		-6,590		-6,760		-6,690
Total Auto Trips with TMP		25,950		26,370		26,060		26,760

Notes:
1. Assume a 35,000-attendee game with 1,320 employees. DU = Dwelling Units, KSF = 1,000 square feet.
2. Assume a 35,000-attendee event with 1,200 employees.
3. Auto occupancy of 2.12 attendees per vehicle used for both drive and ride-sourcing trips without the TMP. Per TIRG, 63.3% of employees estimated to drive, with single occupant vehicles assumed for calculation purposes.
4. Ride sourcing involves two vehicle trips for each leg—one to pick up the passenger and one to drive to the passenger's destination.

Source: Fehr & Peers, 2020.

2. Intersection Operations Analysis

This section documents intersection operations results which were used to estimate truck idling on non-gamedays and gamedays as part of the air, noise, and greenhouse gas analysis. Intersection operations were analyzed for seven intersections near the project site using a microsimulation model that includes pedestrians to provide recommendations for pedestrian and automobile infrastructure. For further details of this analysis, reference the *Howard Terminal – Operations Analysis* (January 2020) memorandum. The existing AM truck volumes at each intersection are summarized in **Table 4** and the PM truck volumes are in **Table 5**; these volumes informed the truck idling analysis.

Table 4: Existing AM Truck Volumes for Truck Idling Analysis

Intersection	7-8 AM	8-9 AM	9-10 AM	10-11 AM	11-12 AM
Adeline Street and 3rd Street	262	448	494	512	581
Adeline Street and 5th Street	282	307	399	422	451
Market Street and 3rd Street	193	219	Vehicle volumes at these times are not available		
Market Street and 5th Street	83	104			
Martin Luther King Jr. Way and 3rd Street	105	100			
Martin Luther King Jr. Way and 5th Street	57	65			
Broadway and 5th Street	123	143			

Source: Fehr & Peers, 2020.

Table 5: Existing PM Truck Volumes for Truck Idling Analysis

Intersection	3-4 PM	4-5 PM	5-6 PM	6-7 PM	7-8 PM
Adeline Street and 3rd Street	361	472	241	171	201
Adeline Street and 5th Street	226	267	161	141	137
Market Street and 3rd Street	260	319	171	102	100
Market Street and 5th Street	93	133	97	56	41
Martin Luther King Jr. Way and 3rd Street	124	166	97	59	65
Martin Luther King Jr. Way and 5th Street	52	92	63	35	25
Broadway and 5th Street	112	140	117	79	57

Source: Fehr & Peers, 2020.

The Levels of Service (LOS) of each intersection for hours throughout the day were obtained from the microsimulation model. LOS is a qualitative description of traffic operating conditions from the vehicle driver perspective and is determined by the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays. Reference **Appendix C** for the LOS results for each intersection.

3. VMT Analysis

3.1. Non-Ballpark Development VMT Estimate Approach

This analysis estimates VMT using travel demand models to capture the length of trips on the transportation network as well as the changes in driving behavior that may occur with the introduction of the project. This analysis uses two travel demand models to analyze the VMT impacts of the project. The VMT analysis for the residential and commercial components of the project use the MTC Travel Model while the VMT analysis for the retail component uses the Alameda CTC Countywide Travel Demand Model. The following describes how the two models estimate VMT.

3.1.1. MTC Travel Model

Neighborhoods within Oakland are expressed geographically in transportation analysis zones, or TAZs. The MTC Travel Model includes approximately 120 TAZs within Oakland that vary in size from a few city blocks in the downtown core, to multiple blocks in outer neighborhoods, to even larger geographic areas in lower density areas in the hills. TAZs are used in transportation planning models for transportation analysis and other planning purposes.

Based on the MTC Travel Model, the regional average daily VMT per capita is 15.0 under 2020 conditions and 13.8 under 2040 conditions, and the regional average daily VMT per worker is 21.8 under 2020 conditions and 20.3 under 2040 conditions. MTC has calculated these same metrics for every TAZ in the nine-county Bay Area.

3.1.2. Alameda CTC Travel Model

The MTC model does not calculate retail-based service population VMT where service population is defined as workers plus residential population, so the Alameda CTC travel model was used to estimate VMT for the retail component of the project. Like the MTC Model, neighborhoods within Oakland are expressed geographically in TAZs. The Alameda CTC Travel Model includes approximately 370 TAZs within Oakland that vary in size. Generally, Oakland TAZs in the Alameda CTC model are smaller than those in the MTC model. The Alameda CTC Model was used for the VMT analysis to capture city-level scale VMT impacts for the retail component of the project using service population, while still maintaining consistency with the MTC Model and regional planning.

3.2. Non-Ballpark VMT Analysis

3.2.1. Residential and Commercial VMT Analysis Screening

Table 6 describes the 2020 and 2040 residential and commercial VMT for the TAZs that make up the project site as well as applicable VMT thresholds of 15 percent below the regional average. As shown in Table 6, the 2020 and 2040 average daily VMT per capita and VMT per worker in the project TAZs are more than 15 percent below the regional averages. The project would generate less VMT than 15 percent below the regional averages and its impact would be less than significant for the residential and commercial portions of the project. Accordingly, the project would not result in a significant transportation impact with respect to the VMT criteria for residential and commercial development.

Table 6: Daily Vehicle Miles Travelled per Capita

Land Use	2020		2040		Weighted Average TAZ 966 and 967 [3]	
	Regional Average	Regional Average Minus 15%	Regional Average	Regional Average Minus 15%	2020	2040
Residential (VMT per capita) [1]	15.0	12.8	13.8	11.7	6.4	6.6
Commercial (VMT per worker) [2]	21.8	18.5	20.3	17.3	16.5	14.2

Notes:
1. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita and accessed in December 2018.
2. MTC Model results at analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerWorker and accessed in December 2018.
3. VMT per resident weighted by TAZ population; VMT per worker weighted by TAZ employment.

Source: Fehr & Peers, 2020.

3.2.2. Regional Retail VMT Analysis Screening

The project proposes 270,000 square feet of retail uses which are considered regional-serving retail because it is over 80,000 square feet. A full VMT analysis is recommended for regional serving retail because larger retail projects typically reroute travel from other destinations potentially increasing total VMT in the area under consideration.

To assess the VMT generated by the retail component of the project, the total accounting method was used to understand the development's influence on overall city-wide travel behavior. As

opposed to analyzing only project trips, analyzing the project's retail VMT impacts requires understanding how the proposed development would interact with the outside world, as adding housing to a jobs-rich area could reduce average vehicle trip length on a per capita basis, while adding jobs to an area with limited residential population could increase average trip length. This is consistent with OPR guidance that recommends that "agencies should analyze the effects of a retail project by assessing the change in total VMT, because retail projects typically re-route travel from other destinations." This analysis was completed using the Alameda CTC travel demand model.

The base 2020- and 2040-year Alameda CTC Models were run for the project. Results are shown in **Table 7** for the Total Accounting Method[2] (or Origin-Destination Method) for the retail component of the project. The city of Oakland VMT per service population (defined as total number of residents plus workers within the city) is approximately 17.3 miles in 2020 and 17.1 miles in 2040 with or without the retail component of the project. While the VMT per service population would experience a slight reduction, the project would result in a marginal (i.e., less than 1 percent) overall increase in total VMT.

Table 7: City of Oakland VMT per Service Population – Full Accounting

	2020			2040		
	No Project	Plus Project	Difference	No Project	Plus Project	Difference
Population	487,700	487,700	0	678,400	678,400	0
Employment	243,600	244,140	540	335,630	336,170	540
Service Population	731,300	731,840	540	1,014,030	1,014,570	540
VMT [1]	12,643,000	12,659,000	16,000	17,369,000	17,394,000	25,000
VMT/Service Population	17.3	17.3	0.0	17.1	17.1	0.0

Notes:
Citywide VMT generated by City of Oakland as estimated by the Alameda CTC Model
Source: Alameda CTC Model and Fehr & Peers, 2020.

[2] The total account method, also known as origin-destination method, tracks all vehicle trips generated by the city of Oakland (including the proposed Project) across the entire regional network. These trips are then multiplied by the distance traveled to determine the total VMT, and this total is then divided by the total residential and employment populations to establish the VMT per service population.

3.2.3. Performance Venue VMT Analysis Screening

Due to its relatively unique use, VMT per attendee for the 3,500-seat performance venue component of the project cannot be assessed using the screening criteria or the regional travel demand models used for the other components of the project. The threshold this study uses for assessing substantial additional VMT is if the VMT per attendee at the performance venue exceeds the existing VMT per attendee at similar events, as represented by concerts at Oakland Arena, minus 15 percent.

Data from Oakland Arena was used to estimate the travel mode characteristics for the project's performance venue. **Table 8** presents the Oakland Arena travel characteristics which differs from the baseball games at the Oakland-Alameda Coliseum. The geographic distribution of the arena attendees also differs from baseball game attendees. Concert attendees use the San Francisco BART stations and drive from San Francisco in greater numbers than the baseball attendees while there are fewer arena attendees using BART or driving from the Castro Valley and Dublin/Pleasanton areas.

Table 8: Existing Oakland-Alameda Coliseum Ballpark Mode of Access

Mode	Weekday Evening [1]	Weekday Day [1]	Weekend [1]	Oakland Arena Event [2]
Drive	70%	72%	75%	74%
TNC [3]	6%	6%	6%	6%
BART	24%	22%	19%	20%
Walk/Bike/Other Transit [4]	*	*	*	*

Notes:
1. Reflects average mode of travel during 2017 baseball season. The most recent set of data prior to the Notice of Preparation.
2. Based on BART and Billboard data for the following high demand concerts at Oakland Arena in 2017:
    - Red Hot Chili Peppers (3/12)
    - Panic! At the Disco (3/25)
    - Roger Waters (6/10)
    - Arcade Fire (10/21)
    - Enrique Iglesias and Pitbull (10/28)
    - Jay-Z (12/16)
3. Based on driveway count data.
4. Negligible use of other modes observed during field visits.

Source: BART and Fehr & Peers, 2020.

Average trip lengths for the studied events were calculated using shortest network distance between trip origin/destination locations and Oakland Arena established from location-based

services cell phone data. Estimated trip lengths for the performance venue were calculated using shortest network distance between these trip origin/destination locations and the project site for the studied events, with the trip distribution modified to account for a changed geographic composition of attendees and a shifted travel mode for attendees near the project site. **Table 9** presents the existing travel characteristics and VMT of concerts at Oakland Arena and the estimated travel characteristics and VMT of events at the project's performance venue.

Table 9: Travel Characteristics of Oakland Arena and the Performance Venue

Mode	Travel Mode			Average Trip Length (mi)	VMT per Attendee
	Drive	TNC	Other Modes		
Concerts at Oakland Arena (existing) [1]	74%	6%	20%	12	10.5
Events at Project Performance Venue (estimated)	58%	19%	23%	11	9.0
				VMT per Attendee Reduction	**-14%**

Notes:
1. Represented by high-demand concerts at Oakland Arena in 2017: Red Hot Chili Peppers (3/12), Panic! At the Disco (3/25), Roger Waters (6/10), Arcade Fire (10/21), Enrique Iglesias and Pitbull (10/28), and Jay-Z (12/16).

Source: Fehr & Peers, 2020.

Although attendees to events at the performance center are expected to have lower average VMT than attendees at concerts at Oakland Arena, the estimated VMT per attendee reduction does not meet the threshold used in this analysis which is to reduce VMT to a level of 15 percent below similar existing uses. Implementation of the TDM plan discussed previously would substantially reduce VMT for the entire development, of which the performance venue is one component. **Table 10** presents the total daily VMT of the at-capacity performance venue on event days and calculates the percentage reduction in VMT.

Table 10: TDM Plan VMT Reduction for Performance Venue Event Days

Event Type	Daily Trips	Average Trip Length (mi)	Total VMT
Without TDM Plan			
Performance Venue	2,860	11.4	32,700
With TDM Plan			
Performance Venue	2,290	11.8	27,000
		TDM Plan VMT Reduction (mi)	**-5,700**
		TDM Plan VMT Reduction (%)	**-17%**

Source: Fehr & Peers, 2020.

3.2.4. VMT Reduction with TDM Plan for Non-Ballpark Development

Per AB 734, the project would be required to incorporate a TDM Plan that would reduce vehicle trip generation by at least 20 percent. By reducing vehicle trips, the VMT would also be reduced by approximately the same amount because the average trip length for the non-ballpark development trips is assumed to not change when reducing vehicle trips. This means that reducing vehicle trips would reduce VMT to a level of at least 15 percent below similar existing uses. As stated previously, the TDM Plan incorporates a wide variety of measures to reduce vehicle demand and other transportation-related impacts of the non-ballpark development. The TDM programs illustrate a mix of strategies that could be employed with a TDM Plan that would reduce vehicle trips and the associated VMT to below the VMT screening criteria threshold.

Table 11 presents the total daily VMT of the non-ballpark development during Phase 1, which does not include the performance venue. The table lists VMT both with and without the TDM. **Table 12** shows the daily VMT for each of the project's land uses at Full Buildout of the non-ballpark development, both with and without the TDM. The TDM Plan was assumed to reduce vehicle trips by 20 percent consistent with requirements of AB 734. Total VMT for the development on both weekdays and weekends would be reduced by 20 percent compared to without the TDM Plan. The VMT reduction from the TDM Plan is in addition to the VMT reductions attributable to the project's location.

Table 11: Non-Ballpark Development Phase 1 Daily VMT

Land Use	Without TDM				With TDM			
	Weekday		Weekend		Weekday		Weekend	
	Trips	VMT	Trips	VMT	Trips	VMT	Trips	VMT
Residential	1,500	18,000	1,400	16,800	1,200	14,400	1,100	13,200
Office	2,100	25,200	300	3,600	1,700	20,400	300	3,600
Retail	1,300	15,600	1,600	19,200	1,100	13,200	1,300	15,600
Restaurant	800	9,600	900	10,800	600	7,200	700	8,400
Hotel	2,600	31,200	2,100	25,200	2,100	25,200	1700	20,400
Performance Venue	-	-	-	-	-	-	-	-
Total with Venue	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total Without Venue	**8,300**	**99,600**	**6,300**	**75,600**	**6,700**	**80,400**	**5,100**	**61,200**

Source: Fehr & Peers, 2020.

Table 12: Non-Ballpark Development Full Buildout Daily VMT

Land Use	Without TDM				With TDM			
	Weekday		Weekend		Weekday		Weekend	
	Trips	VMT	Trips	VMT	Trips	VMT	Trips	VMT
Residential	7,700	92,500	7,100	85,300	6,100	73,300	5,700	68,500
Office	9,700	116,600	1,500	18,000	7,800	93,700	1,200	14,400
Retail	5,700	68,500	6,000	72,100	4,600	55,300	4,800	57,700
Restaurant	6,400	76,900	7,500	90,100	5,200	62,500	6,000	72,100
Hotel	2,600	31,200	2,100	25,200	2,100	25,200	1,700	20,400
Performance Venue	2,900	34,200	2,900	34,200	2,400	28,300	2,400	28,300
Total with Venue	**35,000**	**419,900**	**27,100**	**324,900**	**28,200**	**338,300**	**21,800**	**261,400**
Total Without Venue	**32,100**	**385,700**	**24,200**	**290,700**	**25,800**	**310,000**	**19,400**	**233,100**

Source: Fehr & Peers, 2020.

3.3. Ballpark VMT Analysis

Due to its unique use and size, VMT per attendee for the 35,000-attendee capacity ballpark component of the project cannot be assessed using the screening criteria or the regional travel demand models used for the other components of the project.

The project would replace the existing 47,100-attendee[3] capacity ballpark at the Oakland-Alameda Coliseum as the home field of the Oakland A's. For Oakland A's home games, trips that previously would have begun or ended at the Oakland-Alameda Coliseum would instead be replaced with trips to or from the project site, to the extent that the ballpark's smaller seating capacity would be able to accommodate them. The project's ballpark would also compete with Oakland Arena for some special events. As such, the threshold this study uses for assessing substantial additional VMT is if the VMT per attendee at the project's ballpark exceeds the existing VMT per attendee at similar events at the Oakland-Alameda Coliseum or Oakland Arena minus 15 percent.

Average trip lengths for the Oakland-Alameda Coliseum were calculated using shortest network distance between each trip origin/destination and the Oakland-Alameda Coliseum for baseball games in 2017. The estimated trip lengths from these origins and destinations were then recalculated for the project site using the shortest network distance for the same games, with the trip distribution modified to account for a changed geographic composition of attendees and a shifted travel mode for attendees near the project site. Similar methods were used for Oakland Arena.

Table 13 presents the existing travel characteristics of attendees of baseball games at the Oakland-Alameda Coliseum and concerts at Oakland Arena; it also presents NFL games, Monster Jam, and moto-cross at the Oakland-Alameda Coliseum. Table 13 also lists the total vehicle trips and VMT based on maximum attendance at the proposed Howard Terminal Ballpark. **Table 14** presents these estimates for the project's ballpark without a TDM Plan, along with a comparison of the VMT per attendee to the equivalent existing conditions at the Oakland-Alameda Coliseum or Oakland Arena. Baseball games at the project site are expected to have a lower VMT per attendee than games at the Oakland-Alameda Coliseum, and concerts at the ballpark are expected to have a lower VMT per attendee than similar events at Oakland Arena.

[3] Capacity can expand to 63,000 for Raider games and other larger events – generally 10 events per year.

Table 13: Existing Travel Characteristics at the Oakland-Alameda Coliseum and Oakland Arena (Howard Terminal Ballpark Capacity Attendance)

Event Type	Travel Mode			Attendees [1]	Total Vehicle Trips[2,3]	Average Trip Length (mi)[4]	Vehicle-Miles Traveled
	Drive	TNC	Other Modes				
Baseball Games							
Weekday Evening	70%	6%	24%	35,000	28,900	13.3	359,000
Weekday Day	71%	6%	23%	35,000	29,300	13.8	377,000
Weekend	75%	6%	19%	35,000	30,600	14.2	405,000
Large Concerts [5]	74%	6%	20%	35,000	30,000	12.1	339,000
NFL Games	69%	6%	25%	54,664	33,000	16.6	495,000
Monster Jam	78%	7%	15%	47,500	32,200	18.5	546,000
Moto-Cross [6]	78%	7%	15%	47,500	32,200	18.5	546,000

Notes:
1. Ballpark attendance equivalent to maximum attendance at Howard Terminal. NFL, Monster Jam, and Moto-Cross attendance based on average attendance for 2017.
2. Average vehicle occupancy of 2.12. Attendee use of a TNC results in two vehicle trips—one one-mile trip to pick up attendee and one at the average trip length to take them to their destination.
3. Vehicle trips include trips by event staff of 760 for ballgames and 1,200 for large concerts, with an assumed mode share of 53.1% driving in single-occupancy vehicles, per the TIRG.
4. Does not include TNC trips to pick up attendees.
5. Represented by high-demand concerts at Oakland Arena in 2017: Red Hot Chili Peppers (3/12), Panic! At the Disco (3/25), Roger Waters (6/10), Arcade Fire (10/21), Enrique Iglesias and Pitbull (10/28), and Jay-Z (12/16).
6. Moto-Cross travel characteristics based on Monster Jam travel characteristics because moto-cross travel characteristics were not available.

Source: Fehr & Peers, 2020.

Table 14: Project Ballpark Travel Characteristics – Without TMP

Event Type	Travel Mode			Attendees (Capacity)[1]	Total Vehicle Trips[2, 3]	Average Trip Length (mi)[4]	Vehicle-Miles Traveled	VMT per Attendee	VMT per Attendee Reduction[5]
	Drive	TNC	Other Modes						
Baseball Games									
Weekday Evening	57%	18%	25%	35,000	32,400	13.3	358,000	10.2	-3%
Weekday Day	57%	19%	24%	35,000	33,000	13.3	360,000	10.3	-10%
Weekend	62%	18%	20%	35,000	33,800	14.1	400,000	11.4	-1%
Large Concerts [6]	58%	19%	23%	35,000	33,500	11.4	315,000	9.0	-14%
Other Events [7, 8]	58%	19%	23%	7,500	7,500	11.4	71,000	9.4	* [9]
Corporate/Community Events [7, 8]	58%	19%	23%	2,000	1,900	11.4	17,000	8.7	* [9]
Plaza Events [7, 8]	58%	19%	23%	4,000	3,700	11.4	34,000	8.6	* [9]

Notes:
1. At-capacity crowd at Howard Terminal was assumed for ballgames and concerts for purposes of these calculations.
2. Average vehicle occupancy of 2.12. Attendee use of a TNC results in two vehicle trips—one one-mile trip to pick up attendee and one at the average trip length to take them to their destination.
3. Vehicle trips include trips by event staff of 1,320 for ballgames, 1,200 for large concerts, 480 for other events, and 25 for corporate/community events and plaza events, with an assumed mode share of 63.3% driving in single-occupancy vehicles, per the TIRG.
4. The average trip lengths presented in this table represent the average length of primary trips and does not include TNC deadhead trips to pick up attendees. The deadhead trips are not included in this column to allow for a representation of the distances between origins/destinations and the Coliseum/Howard Terminal. However, one-mile deadhead trips are included for TNCs in the calculations of total VMT.
5. Compared to existing conditions at the Oakland-Alameda Coliseum and Oakland Arena.
6. There are about 9 concerts per year each with 1,200 staff
7. The VMT calculations in this table assume that there are 35 other events per year (480 staff), 100 corporate / community events per year (25 staff), and 16 plaza events (25 staff) per year. Combined these events would generate 526,000 annual visitors at maximum attendance levels and 243,400 annual visitors at average attendance levels. For purposes of analysis the maximum attendance levels are assumed. The Project's parks and open spaces would attract some visitors. Non-local visitors would presumably travel to the site by the same modes as others visiting the Project; of these, most would be linked to shared trips with other Project components or with trips to nearby neighborhoods (e.g. Jack London Square). Local visitors would travel on foot or by bike. For these reasons, VMT associated solely with park and open space uses would be minimal.
8. Large concert travel characteristics used for the smaller events proposed for the ballpark.
9. No corresponding event at the Oakland–Alameda County Coliseum or the Oakland Arena.

Source: Fehr & Peers, 2020

3.3.1. VMT Reduction with Ballpark and a Transportation Management Plan (TMP)

Per AB 734, the project would be required to incorporate a TMP that would reduce vehicle trip generation by at least 20 percent. See the *Howard Terminal Draft Transportation Management Plan*

(February 2020) document for additional detail regarding strategies for reducing ballpark-generated vehicle trips. Reducing vehicle trips leads to reduced VMT per attendee.

To achieve VMT per attendee levels less than the existing uses minus 15 percent, the project would need to incorporate a TMP that would reduce VMT per attendee compared to similar existing uses. The TMP would incorporate a wide variety of measures to reduce vehicle demand and other transportation-related impacts. These measures would change travel behavior and trip generation and eventually VMT through incentives such as bus-only lanes, high capacity transportation hub, and transit fare reductions and disincentives like reduced parking supply and parking pricing.

Table 15 presents the estimated travel characteristics and VMT per attendee for the ballpark with implementation of the strategies described in this chapter. With these TMP strategies, at full buildout, the project's ballpark would reduce the estimated VMT per attendee for all baseball game types and concerts to levels more than 15 percent below similar existing uses. The VMT per attendee reductions shown in Table 15 are applicable with both Phase 1 when 3,500 parking spaces are provided on-site for the ballpark and buildout when 2,000 parking spaces are provided because the ballpark is required to meet at least a 20 percent vehicle trip reduction.

The ballpark is expected to host up to nine concerts per year, compared to a minimum of 81 baseball games, all of which would have VMT per attendee reductions greater than the threshold level. **Table 16** presents the annualized VMT per attendee at the ballpark with the implementation of TMP strategies for all baseball games and concerts. The annual VMT per attendee with TMP strategies would also be reduced to a level more than 15 percent below similar existing uses.

Table 15: Project Ballpark Travel Characteristics – With TMP

Event Type	Travel Mode			Attendees (Capacity)[1]	Total Vehicle Trips[2, 3]	Average Trip Length (mi)[4]	Vehicle-Miles Traveled	VMT per Attendee	VMT per Attendee Reduction[5]
	Drive	TNC	Other Modes						
Baseball Games									
Weekday Evening	50%	16%	34%	35,000	25,900	13.7	290,000	8.3	-22%
Weekday Day	49%	16%	35%	35,000	26,400	13.7	291,000	8.3	-27%
Weekend	54%	15%	31%	35,000	27,100	14.5	323,000	9.2	-20%
Large Concerts [6]	50%	17%	33%	35,000	26,800	11.8	254,000	7.3	-31%
Other Events [7, 8]	50%	17%	33%	7,500	6,000	11.8	58,000	7.7	* [9]
Corporate/Community Events [7, 8]	50%	17%	33%	2,000	1,500	11.8	14,000	7.0	* [9]
Plaza Events [7, 8]	50%	17%	33%	4,000	2,900	11.8	27,000	6.9	* [9]

Notes:

1. At-capacity crowd at Howard Terminal was assumed for ballgames and concerts for purposes of these calculations.
2. Average vehicle occupancy of 2.3. Attendee use of a TNC results in two vehicle trips—one one-mile trip to pick up attendee and one at the average trip length to take them to their destination.
3. Vehicle trips include trips by event staff of 1,320 for ballgames, 1,200 for large concerts, 480 for other events, and 25 for corporate/community events and plaza events, with an assumed mode share of 63.3% driving in single-occupancy vehicles, per the TIRG.
4. The average trip lengths presented in this table represent the average length of primary trips and does not include TNC deadhead trips to pick up attendees. The deadhead trips are not included in this column to allow for a representation of the distances between origins/destinations and the Coliseum/Howard Terminal. However, one-mile deadhead trips are included for TNCs in the calculations of total VMT.
5. Compared to existing conditions at the Oakland-Alameda Coliseum and Oakland Arena.
6. There are about 9 concerts per year each with 1,200 staff
7. The VMT calculations in this table assume that there are 35 other events per year (480 staff), 100 corporate / community events per year (25 staff), and 16 plaza events (25 staff) per year. Combined these events would generate 526,000 annual visitors at maximum attendance levels and 243,400 annual visitors at average attendance levels. For purposes of analysis the maximum attendance levels are assumed. The Project's parks and open spaces would attract some visitors. Non-local visitors would presumably travel to the site by the same modes as others visiting the Project; of these, most would be linked to shared trips with other Project components or with trips to nearby neighborhoods (e.g. Jack London Square). Local visitors would travel on foot or by bike. For these reasons, VMT associated solely with park and open space uses would be minimal.
8. Large concert travel characteristics used for the smaller events proposed for the ballpark.
9. No corresponding event at the Oakland–Alameda County Coliseum or the Oakland Arena.

Source: Fehr & Peers, 2020.

Table 16: Project Ballpark – Annual VMT per Attendee

Event Type	Events per Year at Howard Terminal	VMT per Attendee	
		Existing at Coliseum/ Oakland Arena	Howard Terminal with TMP
Baseball Games			
Weekday Evening	41	10.6	8.3
Weekday Day	13	11.4	8.3
Weekend	27	11.6	9.2
Concerts	9	10.5	7.3
Annualized VMT per Attendee [1]		**11.0**	**8.4**
Annualized VMT per Attendee Reduction		**-23%**	

Note:
1. Annualized number based on equal attendance at the number of events presented in this table.
Source: Fehr & Peers, 2020.

3.3.2. VMT Reductions due to the Gondola

The A's are considering a gondola between the 12th Street Oakland City Center BART station and the Howard Terminal to improve access between the Ballpark and the BART station, which, if implemented, will reduce the need for shuttle service to the 12th Street station. A gondola would overcome the existing infrastructure barriers that separate Downtown Oakland and the Ballpark and Jack London District, including railroad tracks, BART tracks, and the I-880 elevated freeway. Trip and VMT reductions with the gondola are summarized in **Table 17**.

3.3.3. Ballpark VMT Analysis Conclusions

Projects that reduce VMT to a level 15 percent below similar existing uses are considered to have a less-than-significant impact on VMT. The combination of a TMP as well as the project sponsor's decision to incorporate parking maximums for ballpark parking (up to 3,500 spaces with Phase 1 and 2,000 spaces at buildout) would result in VMT reductions for ballpark attendees that would result in a less-than-significant impact on VMT.

Table 17: VTR and VMT Impact of Gondola at Howard Terminal Ballpark

Event Type	VTR [1]	VMT [2]
Ballpark Events – Compared to Scenario with BART Shuttles		
Weekday Evening	3%	-8,700
Weekday Day	3%	-7,300
Weekend	2%	-4,800
Large Concerts [3]	3%	-5,900
Ballpark Events – Compared to Scenario without BART Shuttles		
Weekday Evening	4%	-12,300
Weekday Day	6%	-14,300
Weekend	3%	-7,300
Large Concerts [3]	3%	-8,800
Non-Ballpark Development [4]– Phase 1		
Weekday	13%	-10,400
Weekend	13%	-7,900
Non-Ballpark Development [4]– Full Buildout		
Weekday	13%	-40,000
Weekend	13%	-30,000

Note:
1. VTR is vehicle trip reduction and represents additional trip reduction when measure is added to current project with a TDM Plan for the non-ballpark development and a TMP for the ballpark.
2. VMT is vehicle miles traveled and represents change in total VMT when measure is added to current project with a TDM Plan for the non-ballpark development and a TMP for the ballpark.
3. For other events, scale the estimates for large concerts.
4. VTR percentage for non-ballpark development does not include performance venue.

Source: Fehr & Peers, 2020.

3.4. VMT Analysis Conclusions

Overall, the project would have a less-than-significant impact on VMT because:

- VMT per capita generated by the project would be more than 15 percent below the regional averages and would thus be less than significant for the residential and commercial components of the project.

- Citywide VMT per service population would remain the same without and with the retail component of the project which would be less than significant for the regional retail component of the project.
- VMT generated by the project for the performance venue would be more than 15 percent below existing similar uses with a comprehensive TDM Plan encompassing the entirety of the non-ballpark development including the parking maximums described in Chapter 3, *Project Description,* of the EIR.
- VMT generated by the ballpark component of the project would be more than 15 percent below existing similar uses with a comprehensive TMP for full buildout of the project including a 2,000-parking space maximum and for Phase 1 assuming a 3,500-space maximum.

Attachments:

Appendix A - Daily Freeway Volumes - Ballpark with TMP and Non-Ballpark with TDM

Appendix B - Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

Appendix C – Microsimulation Vehicle Delay and LOS at Select Intersections

Appendix A – Daily Freeway Volumes – Ballpark with TMP and Non-Ballpark with TDM

Appendix A: Daily Freeway Volumes - Ballpark with TMP and Non-Ballpark with TDM

					Year 2020		Year 2040			Ballpark	
Link Location	Segment Limits		HT Non-Ballpark Trips	No Project Volumes	No Project + HT Volumes	No Project Volume	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures
I-580 Eastbound										
Between	I-80/I-580	MacArthur Blvd	400	90,900	91,300	103,000	108,000	108,400	280	21
Between	MacArthur Blvd	I-980/SR 24	400	86,600	87,000	91,700	96,700	97,100	280	21
Between	I-980/SR 24	Oakland Avenue	1,000	78,400	79,400	90,000	96,000	97,000	730	54
Between	Oakland Avenue	Grand Avenue	700	84,700	85,400	96,700	101,200	101,900	511	38
Between	Grand Avenue	Lakeshore Avenue	900	73,900	74,800	89,800	95,300	96,200	669	50
Between	Lakeshore Avenue	Park Blvd	700	87,200	87,900	105,600	111,600	112,300	511	38
Between	Park Blvd	Fruitvale Avenue	700	83,100	83,800	109,600	115,600	116,300	511	38
Between	Fruitvale Avenue	35th Avenue	600	74,400	75,000	100,900	105,400	106,000	438	33
Between	35th Avenue	High Street	500	67,000	67,500	86,500	91,000	91,500	365	28
Between	High Street	MacArthur Blvd	400	60,700	61,100	78,900	82,400	82,800	292	22
Between	MacArthur Blvd	SR 13	300	57,200	57,500	71,000	74,000	74,300	365	28
I-580 Westbound										
Between	SR 13	MacArthur Blvd	600	41,200	41,800	57,200	61,200	61,800	822	63
Between	MacArthur Blvd	High Street	800	42,900	43,700	60,800	64,800	65,600	881	67
Between	High Street	35th Avenue	1,000	45,500	46,500	63,700	68,700	69,700	940	71
Between	35th Avenue	Fruitvale Avenue	1,100	51,000	52,100	69,400	74,400	75,500	999	75
Between	Fruitvale Avenue	Park Blvd	1,200	59,500	60,700	78,300	83,300	84,500	1,058	79
Between	Park Blvd	Lakeshore Avenue	1,200	61,200	62,400	80,800	85,800	87,000	1,058	79
Between	Lakeshore Avenue	Grand Avenue	1,200	57,600	58,800	72,800	76,800	78,000	1,058	79
Between	Grand Avenue	Oakland Avenue	1,250	64,700	65,950	81,000	86,000	87,250	1,117	83
Between	Oakland Avenue	I-980/SR 24	1,300	62,000	63,300	73,100	80,100	81,400	1,270	94
Between	I-980/SR 24	I-580/I-880	800	41,100	41,900	47,200	59,200	60,000	740	55
I-980 Eastbound										
Between	I-880	12th Street	0	27,200	27,200	32,000	38,500	38,500	374	50
Between	12th Street	27th Street	4,000	37,500	41,500	41,800	63,300	67,300	2,811	209
Between	27th Street	I-580	4,000	49,900	53,900	62,500	84,000	88,000	2,811	209
I-980 Westbound										
Between	I-580	27th Street	3,100	30,900	34,000	35,500	50,500	53,600	2,965	221
Between	27th Street	12th Street	3,100	22,400	25,500	33,100	45,100	48,200	1,755	177
Between	12th Street	I-880	0	26,500	26,500	38,300	42,300	42,300	1,115	52

Appendix A: Daily Freeway Volumes - Ballpark with TMP and Non-Ballpark with TDM

					Year 2020		Year 2040			Ballpark	
Link Location	Segment Limits			HT Non-Ballpark Trips	No Project Volumes	No Project + HT Volumes	No Project Volume	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures
I-880 Northbound											
Between	42nd Avenue	29th Avenue		1,850	70,100	71,950	80,100	91,100	92,950	3,609	271
Between	29th Avenue	23rd Avenue		1,850	64,500	66,350	70,400	81,400	83,250	3,609	271
Between	23rd Avenue	Embarcadero		1,850	70,200	72,050	78,800	89,800	91,650	3,609	271
Between	Embarcadero	Oak Street		1,850	68,500	70,350	75,400	86,400	88,250	3,609	271
Between	Oak Street	Broadway		1,850	63,200	65,050	70,700	77,700	79,550	3,081	179
Between	Broadway	I-980		1,300	61,900	63,200	70,700	81,700	83,000	1,851	71
Between	I-980	Market Street		1,300	48,900	50,200	53,400	61,400	62,700	1,477	21
Between	Market Street	Union Street		0	46,200	46,200	48,700	54,700	54,700	77	21
Between	Union Street	7th Street		2,150	47,500	49,650	52,900	61,900	64,050	1,443	107
Between	7th Street	I-80		2,200	42,000	44,200	40,800	51,800	54,000	1,443	107
I-880 Southbound											
Between	I-80	7th Street		1,650	42,600	44,250	50,600	59,100	60,750	1,066	74
Between	7th Street	Union Street		1,650	46,300	47,950	56,800	65,300	66,950	1,066	74
Between	Union Street	Market Street		0	39,400	39,400	56,300	61,300	61,300	0	0
Between	Market Street	I-980		950	41,500	42,450	47,800	52,800	53,750	0	0
Between	I-980	Broadway		1,700	26,500	28,200	38,300	46,800	48,500	1,115	52
Between	Broadway	Oak Street		2,400	62,700	65,100	75,000	86,000	88,400	2,985	197
Between	Oak Street	Embarcadero		2,400	73,700	76,100	88,600	104,600	107,000	3,538	263
Between	Embarcadero	23rd Avenue		2,400	74,300	76,700	82,500	100,500	102,900	3,538	263
Between	23rd Avenue	42nd Avenue		2,400	73,200	75,600	89,600	107,600	110,000	3,538	263
SR 24 Eastbound											
Between	I-580	MLK Jr. Way		2,200	46,300	48,500	69,800	80,800	83,000	1,340	100
Between	MLK Jr. Way	Claremont Avenue		2,200	65,300	67,500	84,800	95,800	98,000	1,340	100
Between	Claremont Avenue	Broadway		1,700	73,100	74,800	93,000	104,000	105,700	1,035	77
Between	Broadway	SR 13		1,400	78,000	79,400	98,700	108,450	109,850	852	63
Between	SR 13	Tunnel Lane		1,200	87,400	88,600	113,300	121,800	123,000	730	54
Between	Tunnel Lane	Caldecott Tunnel		1,200	90,700	91,900	120,800	129,300	130,500	730	54
SR 24 Westbound											
Between	Caldecott Tunnel	Tunnel Lane		700	58,600	59,300	69,900	78,400	79,100	659	49
Between	Tunnel Lane	SR 13		700	58,400	59,100	64,700	73,200	73,900	659	49
Between	SR 13	Broadway		700	40,500	41,200	47,800	55,300	56,000	659	49
Between	Broadway	Telegraph Avenue		1,000	38,100	39,100	46,100	53,600	54,600	941	70
Between	Telegraph Avenue	I-580		1,400	43,900	45,300	52,700	60,200	61,600	1,412	105

Source: Alameda CTC Travel Demand Model for No Project Volumes, Fehr & Peers, 2020.

Appendix B – Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020			Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
Brush Street	3rd Street	5th Street	1,015	2,070	3,050	3,100	4,100	4,750	0	0	0	0	0
Brush Street	5th Street	6th Street	1,195	5,780	6,950	8,850	10,050	11,950	1,149	0	165	330	228
Brush Street	6th Street	7th Street	1,275	5,820	7,100	8,750	10,050	11,900	959	0	133	265	203
Brush Street	7th Street	11th Street	3,535	13,980	17,500	21,200	24,750	29,300	1,202	0	264	529	0
Brush Street	11th Street	12th Street	3,635	21,170	24,800	32,050	35,700	42,600	2,031	229	405	810	108
Brush Street	12th Street	14th Street	1,315	5,690	7,000	8,600	9,950	11,750	826	0	182	363	0
Brush Street	14th Street	17th Street	1,255	10,160	11,400	15,300	16,550	19,850	985	44	217	433	0
Brush Street	17th Street	19th Street	1,255	21,560	22,800	32,700	33,950	41,000	962	44	212	423	0
Brush Street	19th Street	20th Street	0	0	0	0	0	0					
Brush Street	20th Street	21st Street	0	0	0	0	0	0					
Brush Street	21st Street	Grand Avenue	0	0	0	0	0	0					
Castro Street	3rd Street	5th Street	760	1,560	2,350	2,350	3,100	3,550	0	0	0	0	0
Castro Street	5th Street	6th Street	885	1,720	2,600	2,700	3,600	4,150	798	0	81	162	245
Castro Street	6th Street	7th Street	885	2,770	3,650	4,200	5,100	5,950	1,266	0	72	144	535
Castro Street	7th Street	8th Street	1,260	5,240	6,500	7,950	9,250	10,850	1,719	44	85	171	759
Castro Street	8th Street	11th Street	1,135	8,800	9,950	13,300	14,450	17,150	2,005	99	78	157	940
Castro Street	11th Street	12th Street	1,645	10,610	12,300	16,050	17,700	21,000	2,352	91	49	98	1,214
Castro Street	12th Street	14th Street	260	2,610	2,900	3,950	4,200	5,000	950	92	49	98	414
Castro Street	14th Street	17th Street	810	7,170	8,000	10,800	11,600	13,850	637	62	0	0	363
Castro Street	17th Street	19th Street	680	12,640	13,350	19,000	19,700	23,650	681	62	0	0	388
Castro Street	19th Street	20th Street	545	0	0	0	0	0					
Castro Street	20th Street	San Pablo Avenue	545	0	0	0	0	0					
MLK	Embarcadero	3rd Street	4,830	1,630	6,450	2,450	7,300	7,800	3,200	0	352	704	912
MLK	3rd Street	5th Street	5,110	2,420	7,550	3,650	8,750	9,500	3,214	0	355	710	912
MLK	5th Street	6th Street	3,725	2,230	5,950	3,500	7,200	7,950	3,388	39	360	719	999
MLK	6th Street	7th Street	3,275	1,730	5,000	2,700	5,950	6,500	3,648	66	441	882	937
MLK	7th Street	8th Street	3,175	2,080	5,250	3,150	6,350	7,000	3,384	83	370	740	971
MLK	8th Street	11th Street	2,820	2,060	4,900	3,200	6,000	6,700	3,403	146	393	786	921
MLK	11th Street	12th Street	2,200	2,980	5,150	4,500	6,700	7,650	3,267	185	372	744	898
MLK	12th Street	14th Street	1,660	3,200	4,850	4,900	6,600	7,600	2,141	90	367	733	270
MLK	14th Street	17th Street	1,235	3,340	4,600	5,000	6,250	7,300	644	0	66	133	195
MLK	17th Street	19th Street	995	2,390	3,350	3,600	4,600	5,350	626	0	66	133	185
MLK	19th Street	20th Street	0	0	0	0	0	0	626	0	66	133	185
MLK	20th Street	San Pablo Avenue	0	0	0	0	0	0	626		66	133	185
Jefferson Street	Embarcadero	3rd Street	380	460	850	750	1,100	1,250	0	0	0	0	0
Jefferson Street	5th Street	6th Street	0	1,730	1,700	2,600	2,600	3,150	562	66	75	150	126
Jefferson Street	6th Street	7th Street	0	1,730	1,700	2,600	2,600	3,150	562	66	75	150	126
Jefferson Street	7th Street	8th Street	0	1,740	1,750	2,650	2,650	3,200	339	68	31	62	112
Jefferson Street	8th Street	11th Street	0	1,810	1,800	2,750	2,750	3,350	284	68	31	62	81
Jefferson Street	11th Street	12th Street	0	0	0	0	0	0	142	34	16	31	40
Jefferson Street	12th Street	14th Street	0	2,850	2,850	4,350	4,350	5,250	107	26	12	23	30
Jefferson Street	14th Street	17th Street	0	3,200	3,200	4,900	4,900	5,950	107	26	12	23	30
Jefferson Street	17th Street	San Pablo Avenue	0	1,510	1,500	2,300	2,300	2,800					
Clay Street	Embarcadero	3rd Street	0	2,240	2,250	3,500	3,500	4,200	0	0	0	0	0
Clay Street	7th Street	8th Street	0	1,340	1,350	2,050	2,050	2,500	327	40	48	97	61
Clay Street	8th Street	11th Street	0	1,900	1,900	2,850	2,850	3,450	836	132	84	168	259
Clay Street	11th Street	12th Street	0	4,030	4,050	6,100	6,100	7,350	752	119	75	151	233
Clay Street	12th Street	14th Street	0	3,470	3,450	5,200	5,200	6,300	376	59	38	75	117
Clay Street	14th Street	17th Street	0	4,110	4,100	6,300	6,300	7,650	376	59	38	75	117
San Pablo Avenue	17th Street	19th Street	0	4,430	4,450	6,650	6,650	8,000					
San Pablo Avenue	19th Street	20th Street	0	6,180	6,200	9,400	9,400	11,350					

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020		Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
San Pablo Avenue	20th Street	21st Street	0	9,470	9,500	14,350	14,350	17,400					
San Pablo Avenue	21st Street	Grand Avenue	0	8,950	8,950	13,550	13,550	16,350	125	0	13	27	37
Washington Street	Embarcadero	3rd Street	0	1,330	1,350	2,100	2,100	2,500	1,353	0	149	297	386
Washington Street	3rd Street	5th Street	0	2,520	2,500	3,850	3,850	4,650	1,355	0	143	286	402
Washington Street	5th Street	6th Street	0	2,450	2,450	3,700	3,700	4,450	816	0	93	187	223
Washington Street	6th Street	7th Street	0	2,320	2,350	3,550	3,550	4,300	297	0	65	131	0
Washington Street	7th Street	8th Street	0	1,740	1,750	2,650	2,650	3,200	297	0	65	131	0
Washington Street	8th Street	10th Street	0	1,340	1,350	2,100	2,100	2,500	10	0	2	4	0
Telegraph Avenue	15th Street	17th Street	0	4,170	4,150	6,300	6,300	7,600					
Telegraph Avenue	17th Street	19th Street	0	3,870	3,850	5,900	5,900	7,150					
Telegraph Avenue	19th Street	20th Street	0	5,100	5,100	7,650	7,650	9,250					
Telegraph Avenue	20th Street	21st Street	0	8,570	8,600	13,000	13,000	15,750					
Telegraph Avenue	21st Street	Grand Avenue	0	9,270	9,250	13,950	13,950	16,900					
Telegraph Avenue	Grand Avenue	27th Street	0	8,770	8,750	13,300	13,300	16,100					
Telegraph Avenue	27th Street	29th Street	0	11,340	11,350	17,200	17,200	20,800					
Telegraph Avenue	29th Street	34th Street	0	0	0	0	0	0					
Broadway	Embarcadero	3rd Street	0	2,810	2,800	4,300	4,300	5,200	249	0	5	11	128
Broadway	3rd Street	5th Street	345	7,380	7,700	11,050	11,400	13,700	1,712	0	182	364	504
Broadway	5th Street	6th Street	0	8,130	8,150	12,300	12,300	14,850	1,638	66	159	318	522
Broadway	6th Street	7th Street	0	10,960	10,950	16,550	16,550	20,050	1,580	120	167	334	468
Broadway	7th Street	8th Street	0	9,510	9,550	14,450	14,450	17,500	1,886	120	255	510	414
Broadway	8th Street	11th Street	0	9,860	9,850	14,900	14,900	18,000	2,481	144	252	504	762
Broadway	11th Street	12th Street	0	11,220	11,250	16,950	16,950	20,500					
Broadway	12th Street	14th Street	0	10,710	10,700	16,200	16,200	19,600					
Broadway	14th Street	17th Street	0	8,250	8,300	12,450	12,450	15,050					
Broadway	17th Street	19th Street	0	8,910	8,900	13,500	13,500	16,350					
Broadway	19th Street	20th Street	0	9,550	9,600	14,400	14,400	17,450					
Broadway	20th Street	21st Street	0	9,540	9,550	14,400	14,400	17,450					
Broadway	21st Street	Grand Avenue	0	9,980	10,000	15,100	15,100	18,250					
Broadway	Grand Avenue	27th Street	0	11,250	11,250	16,950	16,950	20,500					
Broadway	27th Street	29th Street	0	16,600	16,600	25,100	25,100	30,350					
Broadway	29th Street	34th Street	0	0	0	0	0	0					
Franklin Street	Embarcadero	3rd Street	0	0	0	0	0	0	497	0	109	219	0
Franklin Street	3rd Street	5th Street	0	0	0	0	0	0	840	0	123	247	159
Franklin Street	6th Street	7th Street	0	740	700	1,200	1,200	1,450	0	0	0	0	0
Franklin Street	7th Street	8th Street	0	1,770	1,750	2,650	2,650	3,200	0	0	0	0	0
Franklin Street	8th Street	11th Street	0	3,000	3,000	4,500	4,500	5,450	121	34	27	53	0
Franklin Street	11th Street	12th Street	0	2,980	3,000	4,450	4,450	5,400	121	34	27	53	0
Franklin Street	12th Street	14th Street	0	3,560	3,600	5,400	5,400	6,550	121	34	27	53	0
Franklin Street	14th Street	17th Street	0	2,530	2,550	3,800	3,800	4,600	121	34	27	53	0
Franklin Street	17th Street	19th Street	0	5,980	6,000	9,050	9,050	10,950	121	34	27	53	0
Franklin Street	19th Street	20th Street	0	5,430	5,400	8,150	8,150	9,850	121	34	27	53	0
Franklin Street	20th Street	21st Street	0	3,530	3,500	5,350	5,350	6,450	121	34	27	53	0
Franklin Street	21st Street	Broadway	0	4,190	4,150	6,350	6,350	7,650	121	34	27	53	0
Webster Street	Embarcadero	3rd Street	0	0	0	0	0	0	38	0	0	0	22
Webster Street	3rd Street	5th Street	0	0	0	0	0	0	34	0	0	0	19
Webster Street	5th Street	6th Street	0	0	0	0	0	0	34	0	0	0	19
Webster Street	6th Street	7th Street	535	13,960	14,500	21,150	21,700	26,100	333	17	0	0	190
Webster Street	7th Street	8th Street	35	9,110	9,150	13,800	13,850	16,750	95	17	0	0	54
Webster Street	8th Street	11th Street	0	7,430	7,400	11,250	11,250	13,600	302	10	7	15	153
Webster Street	11th Street	12th Street	0	5,980	6,000	9,100	9,100	11,000	302	10	7	15	153

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020		Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
Webster Street	12th Street	14th Street	0	4,940	4,950	7,450	7,450	9,000	302	10	7	15	153
Webster Street	14th Street	17th Street	0	6,890	6,900	10,450	10,450	12,650	302	10	7	15	153
Webster Street	17th Street	19th Street	0	5,270	5,300	7,950	7,950	9,600	302	10	7	15	153
Webster Street	19th Street	20th Street	0	6,070	6,050	9,200	9,200	11,100	302	10	7	15	153
Webster Street	20th Street	21st Street	0	4,490	4,500	6,750	6,750	8,150	302	10	7	15	153
Webster Street	21st Street	Grand Avenue	0	5,410	5,400	8,200	8,200	9,950	302	10	7	15	153
Webster Street	Grand Avenue	Broadway	0	3,850	3,850	5,850	5,850	7,100					
Lakeside Drive	14th Street	17th Street	0	0	0	0	0	0					
Lakeside Drive	17th Street	19th Street	0	7,380	7,400	11,200	11,200	13,550					
Lakeside Drive	19th Street	20th Street	0	8,890	8,900	13,450	13,450	16,250					
Harrison Street	2nd Street	3rd Street	0	0	0	0	0	0	15	0	3	7	0
Harrison Street	3rd Street	5th Street	0	0	0	0	0	0	15	0	3	7	0
Harrison Street	6th Street	7th Street	700	7,530	8,200	11,450	12,150	14,600	647	47	142	285	0
Harrison Street	7th Street	8th Street	700	9,920	10,600	15,050	15,750	18,950	740	45	142	283	55
Harrison Street	8th Street	10th Street	0	8,640	8,650	13,050	13,050	15,850	223	34	28	56	55
Harrison Street	10th Street	11th Street	0	7,930	7,950	12,000	12,000	14,550	223	34	28	56	55
Harrison Street	11th Street	12th Street	0	6,850	6,850	10,400	10,400	12,600	223	34	28	56	55
Harrison Street	12th Street	14th Street	0	6,360	6,350	9,600	9,600	11,600	223	34	28	56	55
Harrison Street	14th Street	17th Street	0	7,870	7,850	11,950	11,950	14,500	223	34	28	56	55
Harrison Street	17th Street	19th Street	0	0	0	0	0	0	223	34	28	56	55
Harrison Street	19th Street	20th Street	0	8,480	8,500	12,800	12,800	15,500	223	34	28	56	55
Harrison Street	20th Street	21st Street	0	21,910	21,950	33,250	33,250	40,250	223	34	28	56	55
Harrison Street	21st Street	Grand Avenue	0	19,300	19,300	29,150	29,150	35,250	223	34	28	56	55
Harrison Street	Grand Avenue	27th Street	0	13,570	13,600	20,600	20,600	24,950	223	34	28	56	55
Alice Street	2nd Street	5th Street	0	0	0	0	0	0	0	0	0	0	0
Alice Street	6th Street	7th Street	0	0	0	0	0	0	0	0	0	0	0
Alice Street	7th Street	8th Street	0	0	0	0	0	0	24	0	5	11	0
Alice Street	8th Street	10th Street	0	0	0	0	0	0	24	0	5	11	0
Alice Street	11th Street	12th Street	0	0	0	0	0	0					
Alice Street	12th Street	14th Street	0	0	0	0	0	0					
Alice Street	14th Street	17th Street	0	0	0	0	0	0					
Alice Street	17th Street	19th Street	0	0	0	0	0	0					
Jackson Street	2nd Street	3rd Street	0	0	0	0	0	0	304	0	0	0	173
Jackson Street	3rd Street	5th Street	0	8,080	8,100	12,150	12,150	14,700	363	0	0	0	207
Jackson Street	5th Street	6th Street	0	7,450	7,450	11,250	11,250	13,600	363	0	0	0	207
Jackson Street	6th Street	7th Street	0	4,570	4,600	6,950	6,950	8,450	850	108	66	131	315
Jackson Street	7th Street	8th Street	0	5,530	5,550	8,400	8,400	10,200	839	108	46	92	359
Jackson Street	8th Street	11th Street	0	5,290	5,300	8,050	8,050	9,750	827	142	55	109	330
Jackson Street	11th Street	12th Street	0	0	0	0	0	0					
Jackson Street	12th Street	14th Street	0	0	0	0	0	0					
Jackson Street	14th Street	17th Street	0	0	0	0	0	0					
Jackson Street	17th Street	19th Street	0	0	0	0	0	0					
Jackson Street	19th Street	Lakeside Drive	0	0	0	0	0	0					
Madison Street	2nd Street	3rd Street	0	0	0	0	0	0	0	0	0	0	0
Madison Street	3rd Street	5th Street	0	1,350	1,350	2,000	2,000	2,400	0	0	0	0	0
Madison Street	5th Street	6th Street	0	6,600	6,600	10,000	10,000	12,100					
Madison Street	6th Street	7th Street	0	9,310	9,300	14,050	14,050	17,000	0	0	0	0	0
Madison Street	7th Street	8th Street	0	8,600	8,600	12,900	12,900	15,600	0	0	0	0	0
Madison Street	8th Street	11th Street	0	7,810	7,800	11,750	11,750	14,200	35	10	0	0	20
Madison Street	11th Street	12th Street	0	6,710	6,700	10,200	10,200	12,350					
Madison Street	12th Street	14th Street	0	5,490	5,500	8,350	8,350	10,100					

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020		Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
Madison Street	14th Street	17th Street	0	5,330	5,300	8,050	8,050	9,750					
Madison Street	17th Street	19th Street	0	4,820	4,800	7,350	7,350	8,900					
Oak Street	Embarcadero	3rd Street	0	0	0	0	0	0	0	0	0	0	0
Oak Street	3rd Street	5th Street	0	6,230	6,200	9,450	9,450	11,450	24	0	0	0	14
Oak Street	5th Street	6th Street	0	7,010	7,050	10,600	10,600	12,800	24	0	0	0	14
Oak Street	6th Street	7th Street	0	10,930	10,900	16,550	16,550	20,050	906	134	194	388	14
Oak Street	7th Street	8th Street	0	8,890	8,850	13,350	13,350	16,150	898	138	198	395	0
Oak Street	8th Street	11th Street	0	8,710	8,750	13,250	13,250	16,050	137	38	30	60	0
Oak Street	11th Street	12th Street	0	8,240	8,200	12,500	12,500	15,150					
Oak Street	12th Street	14th Street	0	5,920	5,900	8,950	8,950	10,850					
Embarcadero	Market Street	MLK	-445	430	0	0	0	0	0	0	0	0	0
Embarcadero	MLK	Clay Street	-805	1,030	0	0	0	0	0	0	0	0	0
Embarcadero	Clay Street	Washington Street	0	1,860	0	0	0	0	0	0	0	0	0
Embarcadero	Washington Street	Broadway	0	2,120	0	0	0	0	0	0	0	0	0
Embarcadero	Broadway	Franklin Street	0	2,680	2,650	4,050	4,050	4,900	15	0	3	7	0
Embarcadero	Franklin Street	Webster Street	0	0	0	0	0	0	15	0	3	7	0
Embarcadero	Webster Street	Oak Street	0	0	0	0	0	0	15	0	3	7	0
3rd Street	Brush Street	Castro Street	455	5,040	5,850	7,650	8,450	10,000	0	0	0	0	0
3rd Street	Castro Street	MLK	375	4,780	5,450	7,250	7,950	9,450	0	0	0	0	0
3rd Street	MLK	Jefferson Street	860	4,220	5,250	6,400	7,400	8,700	14	0	3	6	0
3rd Street	Jefferson Street	Clay Street	475	4,070	4,700	6,250	6,900	8,200	14	0	3	6	0
3rd Street	Clay Street	Washington Street	475	3,700	4,350	5,600	6,250	7,400	90	0	7	14	33
3rd Street	Washington Street	Broadway	475	3,410	4,050	5,150	5,800	6,850	398	0	58	116	76
3rd Street	Broadway	Franklin Street	135	3,120	3,300	4,750	5,000	6,000	901	0	111	222	226
3rd Street	Franklin Street	Webster Street	135	0	0	0	0	0	293	0	39	77	67
3rd Street	Webster Street	Harrison	135	0	0	0	0	0	258	0	39	77	47
3rd Street	Harrison	Alice Street	95	0	0	0	0	0	258	0	39	77	47
3rd Street	Alice Street	Jackson Street	95	0	0	0	0	0	258	0	39	77	47
3rd Street	Jackson Street	Madison Street	95	0	0	0	0	0	24	0	0	0	14
3rd Street	Madison Street	Oak Street	95	0	0	0	0	0	24	0	0	0	14
5th Street	Brush Street	Castro Street	1,490	11,110	13,000	16,850	18,750	22,300	2,751	0	279	558	845
5th Street	Castro Street	MLK	1,365	10,510	12,200	15,900	17,600	20,950	1,953	0	198	396	600
5th Street	MLK	Jefferson Street	1,315	9,580	11,250	14,450	16,150	19,200	2,425	39	144	289	1,008
5th Street	Jefferson Street	Clay Street	1,315	9,800	11,500	14,800	16,500	19,600	2,567	79	144	289	1,089
5th Street	Clay Street	Washington Street	1,315	9,800	11,500	14,800	16,500	19,600	2,567	79	144	289	1,089
5th Street	Washington Street	Broadway	1,315	10,360	12,050	15,700	17,400	20,700	2,669	79	98	195	1,268
5th Street	Broadway	Franklin Street	1,575	4,050	6,050	6,150	8,150	9,450	2,196	145	0	0	1,252
5th Street	Franklin Street	Webster Street	0	0	0	0	0	0					
5th Street	Webster Street	Harrison	0	0	0	0	0	0					
5th Street	Harrison	Alice Street	0	0	0	0	0	0					
5th Street	Alice Street	Jackson Street	0	12,530	12,550	19,000	19,000	23,050					
5th Street	Jackson Street	Madison Street	0	6,730	6,750	10,250	10,250	12,400					
5th Street	Madison Street	Oak Street	0	11,970	12,000	18,100	18,100	21,900	553	66	0	0	315
6th Street	Brush Street	Castro Street	230	320	600	550	900	1,000	845	0	48	96	357
6th Street	Castro Street	MLK	230	1,370	1,650	2,050	2,400	2,800	1,313	0	39	79	646
6th Street	MLK	Jefferson Street	455	1,120	1,750	1,700	2,300	2,650	2,007	27	230	459	549
6th Street	Jefferson Street	Washington Street	455	1,680	2,300	2,450	3,050	3,550	1,928	54	230	459	504
6th Street	Washington Street	Broadway	455	2,120	2,750	3,200	3,800	4,450	1,516	54	225	451	280
6th Street	Broadway	Jackson Street	0	0	0	0	0	0					
6th Street	Jackson Street	Madison Street	0	4,010	4,000	6,050	6,050	7,300					
6th Street	Madison Street	Oak Street	0	7,050	7,050	10,600	10,600	12,850					

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020		Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
7th Street	Brush Street	Castro Street	1,105	13,730	15,150	20,850	22,250	26,550	3,529	186	351	702	1,102
7th Street	Castro Street	MLK	460	9,440	10,050	14,200	14,800	17,700	1,171	46	191	381	174
7th Street	MLK	Jefferson Street	535	10,270	10,950	15,500	16,150	19,350	1,595	55	228	456	319
7th Street	Jefferson Street	Clay Street	535	10,850	11,500	16,450	17,100	20,450	1,189	53	164	329	252
7th Street	Clay Street	Washington Street	535	10,850	11,500	16,450	17,100	20,450	1,189	53	164	329	252
7th Street	Washington Street	Broadway	535	10,050	10,750	15,200	15,850	18,950	1,076	72	116	232	313
7th Street	Broadway	Franklin Street	535	13,560	14,250	20,600	21,250	25,500	580	19	28	55	259
7th Street	Franklin Street	Webster Street	535	12,350	13,050	18,700	19,350	23,150	580	19	28	55	259
7th Street	Webster Street	Harrison	215	6,730	7,000	10,200	10,450	12,550	342	2	28	55	123
7th Street	Harrison	Alice Street	215	19,470	19,750	29,550	29,800	36,000	249	4	28	57	68
7th Street	Alice Street	Jackson Street	215	10,380	10,650	15,650	15,900	19,150	225	4	23	46	68
7th Street	Jackson Street	Madison Street	215	11,290	11,550	17,100	17,350	20,900	58	4	4	7	24
7th Street	Madison Street	Oak Street	215	10,580	10,800	16,000	16,250	19,550	58	4	4	7	24
8th Street	Castro Street	MLK	60	2,570	2,650	3,850	3,950	4,750	767	84	28	55	366
8th Street	MLK	Jefferson Street	615	3,820	4,600	5,850	6,650	7,900	2,060	113	154	308	776
8th Street	Jefferson Street	Clay Street	855	3,890	4,900	5,900	6,900	8,150	2,022	113	154	308	754
8th Street	Clay Street	Washington Street	855	3,890	4,900	5,900	6,900	8,150	2,022	113	154	308	754
8th Street	Washington Street	Broadway	615	4,260	5,000	6,450	7,250	8,600	2,063	93	239	478	556
8th Street	Broadway	Franklin Street	615	5,090	5,900	7,700	8,500	10,150	1,393	47	226	452	209
8th Street	Franklin Street	Webster Street	615	6,370	7,150	9,550	10,350	12,350	1,514	82	253	505	209
8th Street	Webster Street	Harrison	700	8,050	8,950	12,150	13,050	15,650	1,306	88	245	491	109
8th Street	Harrison	Alice Street	0	6,770	6,750	10,200	10,200	12,350	790	77	132	263	109
8th Street	Alice Street	Jackson Street	0	5,980	5,950	9,000	9,000	10,900	791	77	132	264	109
8th Street	Jackson Street	Madison Street	0	5,370	5,400	8,150	8,150	9,850	837	111	176	353	20
8th Street	Madison Street	Oak Street	0	6,620	6,650	10,000	10,000	12,100	803	101	177	353	0
11th Street	Brush Street	Castro Street	760	8,080	9,000	12,150	13,100	15,700	1,141	177	141	282	286
11th Street	Castro Street	MLK	250	7,840	8,150	11,850	12,200	14,700	891	211	191	383	12
11th Street	MLK	Jefferson Street	630	7,390	8,200	11,100	11,900	14,250	1,012	171	213	425	26
11th Street	Jefferson Street	Clay Street	630	0	0	0	0	0	1,012	171	213	425	26
11th Street	Clay Street	Broadway	630	6,510	7,300	9,800	10,600	12,650	1,012	171	213	425	26
11th Street	Broadway	Franklin Street	630	6,150	6,950	9,300	10,100	12,050	1,012	171	213	425	26
11th Street	Franklin Street	Webster Street	630	7,170	7,950	10,900	11,700	13,950	1,012	171	213	425	26
11th Street	Webster Street	Harrison	630	7,280	8,050	11,050	11,850	14,150	1,012	171	213	425	26
11th Street	Harrison	Alice Street	630	8,750	9,550	13,200	14,000	16,750	1,012	171	213	425	26
11th Street	Alice Street	Jackson Street	630	0	0	0	0	0	1,012	171	213	425	26
11th Street	Jackson Street	Madison Street	630	5,580	6,350	8,450	9,250	11,000	1,012	171	213	425	26
11th Street	Madison Street	Oak Street	630	4,770	5,550	7,300	8,100	9,600	1,012	171	213	425	26
12th Street	Brush Street	Castro Street	120	1,930	2,100	2,850	3,000	3,600	265	57	0	0	151
12th Street	Castro Street	MLK	780	5,780	6,800	8,800	9,850	11,650	716	181	0	0	408
12th Street	MLK	Jefferson Street	0	6,020	6,000	9,050	9,050	10,900	1,842	277	5	11	1,036
12th Street	Jefferson Street	Clay Street	0	6,160	6,150	9,400	9,400	11,350	1,842	277	5	11	1,036
12th Street	Clay Street	Broadway	0	6,550	6,550	9,950	9,950	12,050	1,842	277	5	11	1,036
12th Street	Broadway	Franklin Street	0	7,160	7,150	10,800	10,800	13,100	1,842	277	5	11	1,036
12th Street	Franklin Street	Webster Street	0	6,710	6,700	10,050	10,050	12,150	1,842	277	5	11	1,036
12th Street	Webster Street	Harrison	0	7,730	7,700	11,700	11,700	14,200	1,842	277	5	11	1,036
12th Street	Harrison	Alice Street	0	7,210	7,250	10,850	10,850	13,150	1,842	277	5	11	1,036
12th Street	Alice Street	Jackson Street	0	0	0	0	0	0	1,842	277	5	11	1,036
12th Street	Jackson Street	Madison Street	0	7,020	7,000	10,700	10,700	13,000	1,842	277	5	11	1,036
12th Street	Madison Street	Oak Street	0	8,260	8,250	12,500	12,500	15,150	1,842	277	5	11	1,036
14th Street	Brush Street	Castro Street	740	11,450	12,350	17,350	18,300	21,950	430	53	71	141	62
14th Street	Castro Street	MLK	190	11,230	11,500	16,950	17,200	20,750	743	83	120	239	113

Appendix B: Two-Way Road Segment Traffic Volume Forecasts - Ballpark with TMP and Non-Ballpark with TDM

				Year 2020			Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
14th Street	MLK	Jefferson Street	615	10,730	11,500	16,200	16,950	20,400	2,276	173	420	840	209
14th Street	Jefferson Street	Clay Street	615	10,440	11,250	15,850	16,600	19,950	2,276	173	420	840	209
14th Street	Clay Street	Broadway	615	0	0	0	0	0	2,276	173	420	840	209
14th Street	Broadway	Franklin Street	615	9,050	9,850	13,650	14,400	17,250	2,276	173	420	840	209
14th Street	Franklin Street	Webster Street	615	8,950	9,750	13,550	14,300	17,150	2,276	173	420	840	209
14th Street	Webster Street	Harrison	615	9,060	9,800	13,650	14,400	17,250	2,276	173	420	840	209
14th Street	Harrison	Alice Street	615	9,040	9,800	13,650	14,400	17,300	2,276	173	420	840	209
14th Street	Alice Street	Jackson Street	615	0	0	0	0	0	2,276	173	420	840	209
14th Street	Jackson Street	Madison Street	615	6,070	6,850	9,150	9,900	11,800	2,276	173	420	840	209
14th Street	Madison Street	Oak Street	615	6,380	7,150	9,550	10,300	12,300	2,276	173	420	840	209
17th Street	Brush Street	Castro Street	0	9,680	9,650	14,700	14,700	17,900	62	0	0	0	35
17th Street	Castro Street	MLK	130	8,800	8,950	13,250	13,400	16,250	18	0	0	0	10
17th Street	MLK	Jefferson Street	130	7,640	7,800	11,600	11,750	14,250	0	0	0	0	0
17th Street	Jefferson Street	San Pablo Avenue	130	7,450	7,600	11,250	11,400	13,850	0	0	0	0	0
17th Street	San Pablo Avenue	Telegraph Avenue	130	5,930	6,100	8,950	9,100	11,000	0	0	0	0	0
17th Street	Telegraph Avenue	Broadway	130	5,090	5,250	7,750	7,900	9,550	0	0	0	0	0
17th Street	Broadway	Franklin Street	130	5,620	5,800	8,500	8,650	10,450	0	0	0	0	0
17th Street	Franklin Street	Webster Street	130	5,040	5,200	7,600	7,750	9,350	0	0	0	0	0
17th Street	Webster Street	Harrison Street	130	3,420	3,600	5,150	5,300	6,400	0	0	0	0	0
17th Street	Harrison Street	Alice Street	130	0	0	0	0	0	0	0	0	0	0
17th Street	Alice Street	Jackson Street	130	0	0	0	0	0	0	0	0	0	0
17th Street	Jackson Street	Madison Street	130	1,160	1,300	1,800	1,950	2,300	0	0	0	0	0
17th Street	Madison Street	Lakeside Drive	130	710	850	1,150	1,300	1,550	0	0	0	0	0
19th Street	Castro Street	MLK	0	0	0	0	0	0	0	0	0	0	0
19th Street	San Pablo Avenue	Telegraph Avenue	0	4,110	4,150	6,150	6,150	7,450					
19th Street	Telegraph Avenue	Broadway	0	4,080	4,050	6,300	6,300	7,600					
19th Street	Broadway	Franklin Street	0	5,020	5,000	7,700	7,700	9,300					
19th Street	Franklin Street	Webster Street	0	5,650	5,650	8,550	8,550	10,350					
19th Street	Webster Street	Harrison Street	0	3,320	3,300	5,050	5,050	6,100					
19th Street	Harrison Street	Alice Street	0	0	0	0	0	0					
19th Street	Alice Street	Jackson Street	0	0	0	0	0	0					
19th Street	Jackson Street	Madison Street	0	0	0	0	0	0					
20th Street	Castro Street	San Pablo Avenue	0	1,310	1,300	2,050	2,050	2,500					
20th Street	San Pablo Avenue	Telegraph Avenue	0	4,280	4,250	6,500	6,500	7,850					
20th Street	Telegraph Avenue	Broadway	0	5,800	5,800	8,800	8,800	10,650					
20th Street	Broadway	Franklin Street	0	5,430	5,450	8,300	8,300	10,050					
20th Street	Franklin Street	Webster Street	0	6,800	6,800	10,250	10,250	12,400					
20th Street	Webster Street	Harrison Street	0	6,240	6,250	9,500	9,500	11,500					
21st Street	San Pablo Avenue	Telegraph Avenue	0	1,050	1,050	1,600	1,600	1,950					
21st Street	Telegraph Avenue	Broadway	0	1,090	1,100	1,750	1,750	2,150					
21st Street	Broadway	Franklin Street	0	2,320	2,350	3,500	3,500	4,200					
21st Street	Franklin Street	Webster Street	0	3,500	3,500	5,250	5,250	6,350					
21st Street	Webster Street	Harrison Street	0	5,080	5,100	7,650	7,650	9,250					
Grand Avenue	Brush Street	San Pablo Avenue	0	12,250	12,250	18,500	18,500	22,400	0	0	0	0	0
Grand Avenue	San Pablo Avenue	MLK	0	13,120	13,100	19,850	19,850	24,000					
Grand Avenue	MLK	Telegraph Avenue	0	17,660	17,650	26,700	26,700	32,350					
Grand Avenue	Telegraph Avenue	Broadway	0	13,750	13,750	20,750	20,750	25,100					
Grand Avenue	Broadway	Webster Street	0	13,090	13,050	19,750	19,750	23,900					
Grand Avenue	Webster Street	Harrison/Lakeside	0	11,820	11,800	17,900	17,900	21,650					
27th Street	MLK	Telegraph Avenue	0	13,020	13,050	19,700	19,700	23,850					
27th Street	Telegraph Avenue	Broadway	0	9,870	9,900	14,950	14,950	18,100					

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				Year 2020			Year 2040			Ballpark				
Street	From	To	HT Non-Ballpark Trips with Rerouting	No Project Volumes	No Project + HT Volumes	No Project Volumes	No Project + HT Volumes	No Project + DOSP + HT Volumes	Ballpark Attendee Trips Arrivals + Departures	Ballpark Employee Trips Arrivals + Departures	5-6 PM Attendee Arrivals	6-7 PM Attendee Arrivals	10-11 PM Attendee Departures
27th Street	Broadway	Harrison/Lakeside	0	8,870	8,850	13,400	13,400	16,200					
29th Street	MLK	Telegraph Avenue	0	0	0	0	0	0					
29th Street	Telegraph Avenue	Broadway	0	0	0	0	0	0					
34th Street	MLK	Telegraph Avenue	0	0	0	0	0	0					
34th Street	Telegraph Avenue	Broadway	0	0	0	0	0	0					
International Boulevard	1st Avenue	5th Avenue	0	8,130	8,150	12,250	12,250	14,850					
E. 12th Street	1st Avenue	5th Avenue	0	0	0	0	0	0					
Lake Merritt Boulevard	Oak Street	12th Street	0	8,780	8,800	13,350	13,350	16,150					
1st Avenue	E. 12th Street	International Boulevard	0	19,170	19,200	28,950	28,950	35,050					
7th Street	Fallon Street	5th Avenue	0	13,420	13,450	20,350	20,350	24,600					
E. 8th Street	5th Avenue	E. 12th Street	0	10,880	10,900	16,400	16,400	19,850					
Posey Tube NB	Willie Stargell Avenue	6th Street	700	24,440	25,300	36,950	37,850	45,750	647	47	142	285	0
Posey Tube SB	6th Street	Willie Stargell Avenue	535	26,350	27,000	39,800	40,450	48,750	496	17	0	0	283
Webster Street	Atlantic Avenue	Willie Stargell Avenue	535	18,660	19,350	28,300	28,950	34,900					
Constitution Way	Atlantic Avenue	Marina Village Parkway	700	15,560	16,450	23,500	24,400	29,300					
3rd Street	Adeline Street	Market Street	-795	6,770	6,050	10,250	9,550	11,700	5	0	1	2	0
3rd Street	Market Street	Brush Street	720	5,940	7,050	9,000	10,150	12,000	0	0	0	0	0
7th Street	Union Street	Adeline Street	640	14,510	15,250	22,000	22,750	27,350	968	166	111	223	263
7th Street	Adeline Street	Market Street	510	15,930	16,550	24,050	24,650	29,700	1,434	173	131	262	478
7th Street	Market Street	Brush Street	3,550	15,370	19,750	23,200	27,650	32,550	3,364	186	393	786	899
Market Street	Embarcadero	3rd Street	13,805	1,300	18,750	2,000	19,450	19,850	7,001	0	770	1,540	1,996
Market Street	3rd Street	7th Street	13,150	3,530	19,950	5,350	21,800	22,950	6,996	0	769	1,538	1,995
Middle Harbor Road	Maritime Street	3rd Street	655	5,940	6,600	9,000	9,650	11,550	0	0	0	0	0
Adeline Street	3rd Street	7th Street	1,300	4,880	6,250	7,400	8,800	10,350	0	0	0	0	0
5th Street	Union Street	Adeline Street	3,260	11,040	15,150	16,600	20,700	24,200	1,646	0	138	277	580
5th Street	Adeline Street	Market Street	3,285	12,440	16,500	18,800	22,850	26,850	1,333	0	138	277	401
5th Street	Market Street	Brush Street	1,305	6,760	8,400	10,300	11,950	14,100	1,602	0	114	229	617
Market Street	7th Street	12th Street	3,795	5,390	10,100	9,500	14,250	18,850	2,942	13	286	571	937
Market Street	12th Street	18th Street	2,630	6,000	9,250	8,900	12,200	13,650	1,073	18	144	287	239
Market Street	18th Street	Grand Avenue	1,835	6,340	8,650	10,950	13,250	17,900	487	22	54	108	137
Market Street	Grand Avenue	Grand North	1,490	4,660	6,500	7,400	9,300	11,500	430	22	47	95	123

Source: Alameda CTC Travel Demand Model for No Project Volumes, Fehr & Peers, 2020.

Appendix C – Microsimulation Vehicle Delay and LOS at Select Intersections

Appendix C: Microsimulation Vehicle Delay and LOS at Select Intersections

Intersection	3-4 PM		4-5 PM		5-6 PM		6-7 PM		7-8 PM	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Existing										
Adeline Street and 3rd Street	6	A	17	C	36	E	5	A	4	A
Adeline Street and 5th Street	18	B	20	B	23	C	16	B	14	B
Market Street and 3rd Street	4 (14)	A (B)	4 (16)	A (C)	3 (19)	A (C)	2 (10)	A (B)	3 (10)	A (B)
Market Street and 5th Street	11	B	11	B	12	B	10	B	9	A
Martin Luther King Jr. Way and 3rd Street	7	A	14	B	30	D	9	A	6	A
Martin Luther King Jr. Way and 5th Street	7	A	9	A	14	B	14	B	7	A
Broadway and 5th Street	37	D	44	D	67	E	54	D	38	D
Existing Plus Full Buildout Non-Ballpark Development										
Adeline Street and 3rd Street	10	A	19	B	16	B	9	A	8	A
Adeline Street and 5th Street	27	C	36	D	36	D	24	C	20	C
Market Street and 3rd Street	15	B	20	B	22	C	15	B	14	B
Market Street and 5th Street	11	B	21	C	25	C	21	C	10	A
Martin Luther King Jr. Way and 3rd Street	9	A	12	B	15	B	11	B	10	A
Martin Luther King Jr. Way and 5th Street	11	B	17	B	21	C	18	B	10	A
Broadway and 5th Street	35	D	35	D	73	E	48	D	30	C

Appendix C: Microsimulation Vehicle Delay and LOS at Select Intersections

Intersection	3-4 PM		4-5 PM		5-6 PM		6-7 PM		7-8 PM	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Existing Plus Full Buildout Non-Ballpark Development Plus Weekday Day Game										
Adeline Street and 3rd Street	15	B	27	C	18	B	13	B	11	B
Adeline Street and 5th Street	27	C	32	C	29	C	19	B	16	B
Market Street and 3rd Street	24	C	44	D	40	D	19	B	22	C
Market Street and 5th Street	17	B	30	C	34	C	24	C	14	B
Martin Luther King Jr. Way and 3rd Street	7	A	15	B	23	C	14	B	13	B
Martin Luther King Jr. Way and 5th Street	25	C	23	C	26	C	24	C	24	C
Broadway and 5th Street	33	C	27	C	45	D	41	D	29	C
Existing Plus Full Buildout Non-Ballpark Development Plus Weekday Evening Game										
Adeline Street and 3rd Street	18	B	25	C	22	C	19	B	17	B
Adeline Street and 5th Street	20	C	26	C	23	C	17	B	15	B
Market Street and 3rd Street	13	B	24	C	25	C	25	C	23	C
Market Street and 5th Street	25	C	30	C	27	C	24	C	24	C
Martin Luther King Jr. Way and 3rd Street	9	A	9	A	20	C	12	B	10	B
Martin Luther King Jr. Way and 5th Street	22	C	20	B	26	C	21	C	20	B
Broadway and 5th Street	36	D	33	C	49	D	37	D	30	C

Source: Fehr & Peers, 2020

TRA.5 Site Assessment and Construction Assessment

FEHR PEERS

MEMORANDUM

Date: December 1, 2020

To: Pete Vollmann, City of Oakland
Nicole Ferrara, City of Oakland

From: Rob Rees and Lee Reis, Fehr & Peers

Subject: Howard Terminal – Site Assessment and Construction Assessment

OK16-0125.06

The Oakland A's are proposing a ballpark and non-ballpark development on the Howard Terminal site. The City of Oakland Transportation Impact Review Guidelines (TIRG) dated April 14, 2017 requires a Site Access Assessment and Construction Assessment for all new developments. This memorandum provides a site assessment and construction assessment.

1. Project Description

The proposed project is located at Howard Terminal in the Jack London District. The project would include a 35,000-attendee capacity ballpark, as well as non-ballpark development that includes a 3,500-seat performance theater, 3,000 residential units, 1.5 million square feet of office space, 400 hotel rooms, and 270,000 square feet of commercial space. In addition, for the transportation analysis it was assumed that the A's could have up to 65,000 square feet allocated to ballpark and team employment.

Howard Terminal is currently used for truck parking, container storage, and longshoreman training and administration, all of which would likely relocate to other areas of the Port of Oakland.

2. Site Assessment

The site assessment is kept at a high level and is intended to guide the refinement of the site plan and preparation of design guidelines for the site. Topics covered in this site assessment and railroad crossings. The site assessments include topics on emergency vehicles, commercial vehicles,

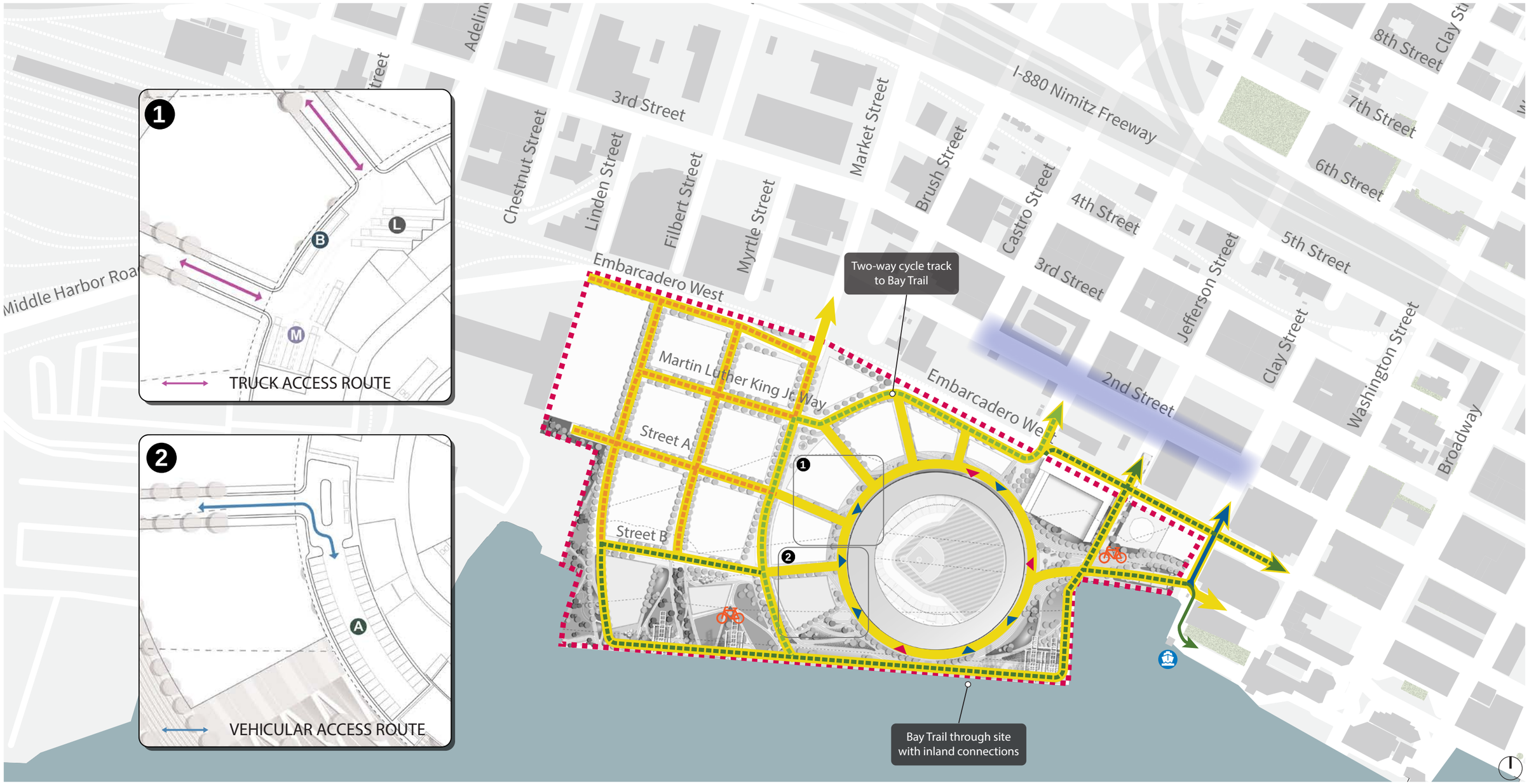
pedestrian facilities, bike facilities, and vehicle street cross sections. Pedestrian circulation within Athletics Way and access between Athletics Way and the ballpark has not been reviewed as part of this documentation and is expected to be addressed in subsequent design guidelines to be provided by the project applicant. The discussion in this section is based on the review of the site plan shown on **Figure 1** and **Figure 2.**

The final detailed design for the project would be reviewed during the City's Design Review Process to ensure consistency with applicable design standards, such as adequate sight distance for pedestrians and vehicles at project driveways and bicycle and motor vehicle parking. The final design for the project, if consistent with the City's Design Review Process, would minimize potential conflicts between various modes and provide safe and efficient pedestrian, bicycle, and vehicle circulation within the project site and between the project and the surrounding circulation systems. Based on the project's site plan and the City's policies and design requirements, the following general recommendations are made.

2.1. Site Access

The project shown on Figure 1 would continue to be served by Market Street and Martin Luther King Jr. Way both of which have at-grade railroad crossings prior to entering the site. Market Street would provide the primary vehicular crossing and serve Schnitzer Steel via Embarcadero West. Martin Luther King Jr. Way crossing would also serve vehicular access but few trucks, although should be designed to accommodate trucks. Vehicular grade separations at Market Street or Brush Street are being considered as alternatives and a pedestrian and bicycle over-crossing is being considered as a mitigation measure at either Jefferson or Clay Streets. The non-ballpark development would occur in development blocks throughout the project site generally west of the ballpark. These blocks would be formed by an extension of the City street grid in the west area of the site, and no new at-grade vehicle railroad crossing would be provided.

The 35,000-attendee capacity ballpark, shown on Figure 1, would be in the eastern half of the site and oriented east toward Water Street and Jack London Square. Water Street is expected to be the primary pedestrian connection to the ballpark with five secondary pedestrian connections along Martin Luther King Jr. Way and Market Street. The ballpark would have seven access points distributed around the ballpark for attendees; two on Water Street and five on Athletics' Way. There would be three access opportunities to the ballpark's rooftop park if it were provided. Special event bicycle and scooter parking has been identified on the east and west sides of the ballpark



LEGEND

EXISTING BIKE NETWORK
PROPOSED BIKE NETWORK

- Multi-Use Path
- Protected Bikeway
- Buffered/Non-Buffered Bike Lanes
- Neighborhood Bike Route/ Bike Route
- Special Event Bike Parking
- Pedestrian Routing
- Gameday Pedestrian Ballpark Access
- Gameday and Non-Gameday Roof Park Pedestrian Access
- Project Boundary
- Ferry
- A Player Parking
- B Team Buses
- L Loading Docks
- M Media Trucks

Transportation Hub (up to 120 buses per hour)

West Oakland Shuttle (if provided)
2 Loading Zones (up to 24 buses per hour)

Lake Merritt BART Shuttle (if provided)
2 or 3 Loading Zones (24 to 36 buses per hour)

AC Transit Line Extensions (10 to 12 buses per hour)

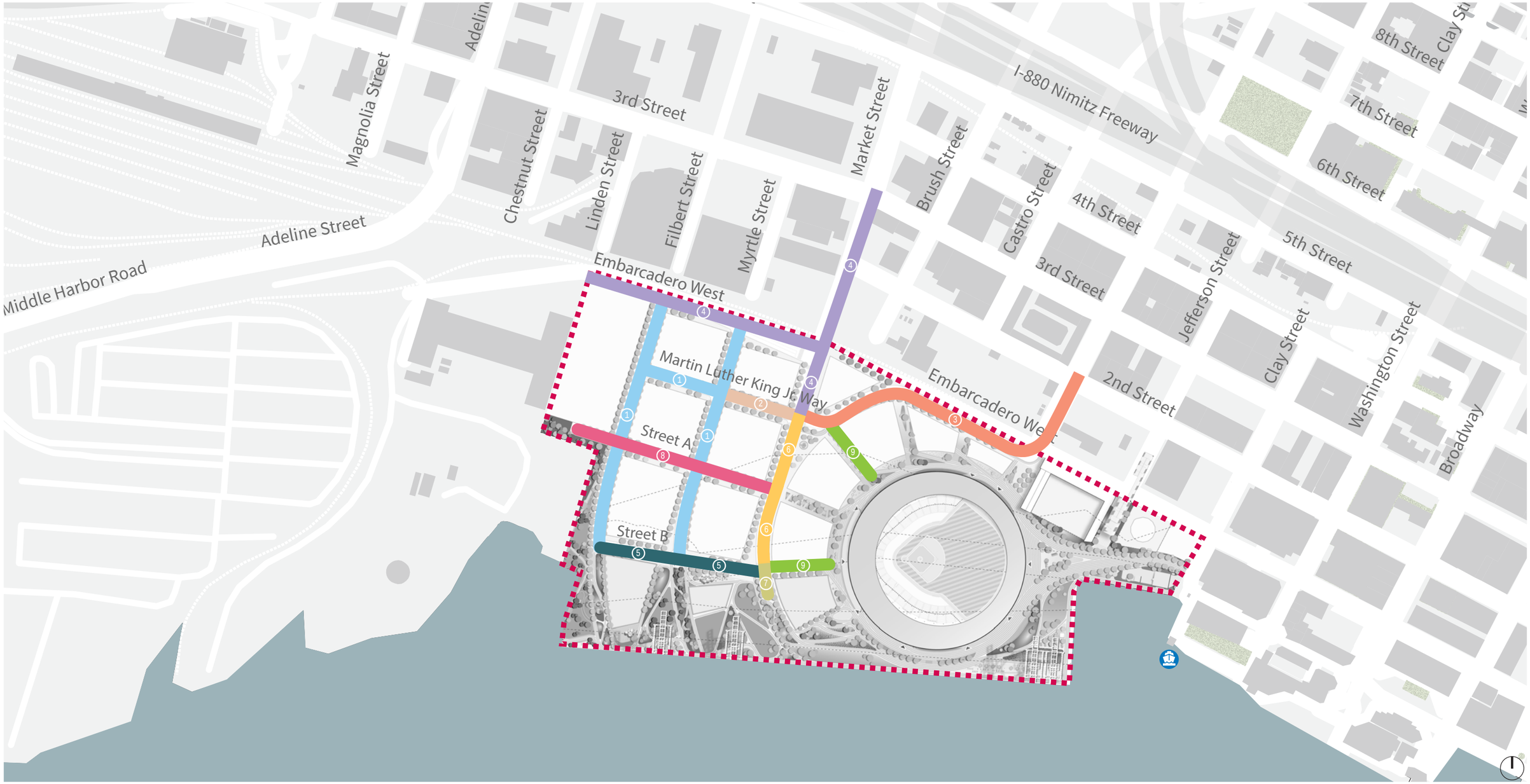
12th St BART Shuttle (up to 36 buses per hour)

AC Transit Line Rerouting (6 to 8 buses per hour)

Rerouting AC Transit Lines requires approval by AC Transit.
Shuttle use of bus stops requires approval by AC Transit.

Figure 1

On-Site Mobility Access Plan



LEGEND

- Project Boundary
- Ferry
- 1 One lane and one parking lane each way
- 2 One parking lane and one lane each way plus one eastbound left turn lane
- 3 One lane each way with two way cycle track plus left turn lane
- 4 Two lanes each way
- 5 One lane each way and parking lane on one side
- 6 One parking lane, one lane each way plus two-way cycle track
- 7 One lane each way plus two-way cycle track
- 8 One lane each way
- 9 Driveway

Figure 2

On-Site Street Types Plan

with pedestrian connections to the ballpark and Athletics' Way without crossing motor vehicle streets.

Emergency Vehicles

All streets within the site should be accessible to emergency vehicles which would generally access the site from either Market Street or Martin Luther King Jr. Way, crossing the at-grade railroad tracks or potentially via an EVA connecting the site via Embarcadero West to Adeline Street at Middle Harbor Road. The EVA to Adeline Street would provide emergency vehicle access even when a train is blocking one of the at-grade railroad crossings but is subject to the Port of Oakland and the CPUC approval. Emergency vehicles would also be able to access the site via Water Street through Jack London Square and as currently proposed the Bay Trail through the site and Athletics Way circling the ballpark would also be accessible to emergency vehicles. Fire Station No. 2 at the Water Street/Clay Street intersection would remain and have direct access to the Project site via the extension of Water Street into the site. The emergency access routes would not change if Fire Station No. 2 is closed at some point in the future. Water Street is rated for fire apparatus and serves the buildings in Jack London Square.

> **Recommendation:** While not required to address a CEQA impact, as part of the project development consider:
>
> - Conducting an analysis at preliminary engineering to ensure that emergency vehicles have access to Athletics Way, the Bay Trail through the site, and the development blocks west of Market Street.
> - Obtaining Port of Oakland and CPUC approval for an EVA connecting the site via Embarcadero West to Adeline Street at Middle Harbor Road.

2.1.1. Commercial Vehicles

Market Street would provide the primary commercial vehicle access to the site for both the development blocks as well as the ballpark. Delivery trucks from northbound I-880 would exit the freeway at Market Street while trucks from southbound I-880 would exit the freeway and use 5th Street to access Market Street. Trucks exiting the site to northbound I-880 would use Market Street and 6th Street to access the freeway at Union Street while trucks destined for southbound I-880 would use Market and 5th Street accessing the freeway at Broadway. Trucks from Howard Terminal's existing operations currently use these corridors to access I-880 and no further changes are necessary to facilitate these truck movements.

The truck traffic to and from Schnitzer Steel would continue with redevelopment at Howard Terminal. These trucks would continue to use Market Street and Embarcadero West to access the Schnitzer Steel site and would need to be accommodated in the road design and intersection operations. The site plan shows Embarcadero West to be four lanes which allows for separating the trucks destined to Schnitzer Steel from the automobiles destined to the development blocks. Schnitzer Steel traffic would use the vehicle grade separation to the site if it were incorporated into the site plan.

Truck loading zones / areas have not been identified on-site for the non-ballpark development blocks west of Market Street although the Filbert and Myrtle Street corridors are expected to provide delivery and parking access to the development blocks. Truck deliveries to the ballpark would be via Market Street. As currently proposed (see Figure 1) the service functions for the ballpark would occur under Athletics Way and include four loading docks sized for STAA trucks with up to 53-foot trailers, four 65-foot media truck spaces, and overflow for one or two team buses. Player and coach parking (up to 46 spaces) would also be provided under Athletics Way and should be made available to buses and similarly sized vehicles for concerts and other non-baseball events. Preliminary turning analysis studies indicate that the loading docks can accommodate STAA trucks and that the parking area can accommodate buses and similarly sized vehicles.

> **Recommendation:** While not required to address a CEQA impact, as part of the non-ballpark development of the project consider:
>
> - Conducting a truck turning analysis at preliminary engineering to ensure that the Market Street/Embarcadero West intersection and Embarcadero West itself accommodates STAA Standard Design vehicles to and from Schnitzer Steel.
> - Conducting a truck and bus turning analysis at preliminary engineering to ensure that the STAA trucks to the ballpark can maneuver in and out of the service area and the loading docks and that buses and similarly sized vehicles can maneuver in and out of the player and coach parking.
> - Allowing trucks to encroach into the adjacent lane of traffic when turning to and from the site's local two-lane streets to maintain compact intersection and street cross sections.

2.1.2. Pedestrians

Figure 1 highlights pedestrian routing within and adjacent to the site. Sidewalks and paths would be provided throughout the site connecting the development blocks on all sides, the ballpark, the

streets crossing the railroad tracks, Water Street, and the Bay Trail. Sidewalks would be provided on both sides of Market Street crossing the at-grade railroad tracks connecting to the surrounding neighborhood. Sidewalks would be provided on the east and south side of Martin Luther King Jr. Way crossing the at-grade railroad tracks to concentrate the pedestrian flows from the ballpark using the corridor to a single crossing thereby minimizing the number of conflicts with the railroad. Both crossings would have pedestrian gates and fencing along with traffic signals providing additional protection crossing the railroad.

The development blocks form over one mile of curb space throughout the site and this space should be considered for curb management such as parking, passenger and commercial loading, staging, and other uses as well as for enhanced pedestrian circulation to accommodate the pedestrian loads (between 4,000 and 5,000 pedestrians) walking between the development blocks and the ballpark. At this early stage of site development, Street A is expected to be the primary pedestrian connection between the development and the ballpark and should be designed without curb functions to provide wider sidewalks and potentially a multi-use path to handle the anticipated pedestrian loads on event days and neighborhood bike riders on non-event days. The north / south streets, Filbert and Myrtle Streets, are expected to serve each development block's parking and delivery functions.

Recommendation: While not required to address a CEQA impact, as part of the site development, consider:

- Incorporating a traffic signal at the Market Street/Martin Luther King Jr Way intersection to facilitate ballpark pedestrian flows and coordinating the traffic signal with the one at the Market Street/Embarcadero West intersection.
- Designing A Street, west of Market Street, with a minimum 10-foot sidewalk width at obstacles to accommodate the anticipated pedestrian demands between the development including ballpark parking and the ballpark.
- Maintaining a minimum 6-foot effective sidewalk width at obstacles on all non-ballpark development blocks with low to moderate pedestrian activities. Where sidewalks front active land uses such as stores and restaurants, maintain a minimum 8-foot clear pedestrian path of travel.
- Providing 12-foot wide high visibility crosswalks at each intersection within the site to facilitate pedestrian street crossings with 20-foot wide crosswalks along the major pedestrian corridor(s) connecting to the ballpark.

2.1.3. Bikes

Bike riders are expected to use several corridors to access the area including Mandela Parkway, Market Street, Martin Luther King Jr. Way, Washington Street, and 2nd Street. There is insufficient street width to provide bike facilities on Market Street, south of 3rd Street, to the project site. So, buffered bike lanes are proposed for 7th Street connecting Market Street and Martin Luther King Jr. Way where bike riders could use the Class 4 Bike Lanes on Martin Luther King Jr. Way to access the site. Key bike features on the site include:

- Class 4 Bike Lanes (two-way) would be provided along Martin Luther King Jr. Way from 2nd Street through the site to Market Street where the facility would turn south and extend to the water and the Bay Trail. North of 2nd Street bike lanes consistent with the bike plan would continue to 8th Street as part of the CEQA Mitigation Measure where they would continue to San Pablo Avenue through a grant-funded project that will be implemented by the City. The Martin Luther King Jr. Way facilities would serve as a primary artery connecting the other planned and existing bike facilities in West Oakland, Jack London District, and Downtown.
- The Bay Trail would extend from its current terminus at Clay Street along the project's water edge with inland connections along the Jefferson Street alignment and then a loop connecting Market Street west of the ballpark.
- Embarcadero, south of the railroad tracks, would be redeveloped to a multi-use path connecting Martin Luther King Jr. Way to Broadway, replacing the vehicular street that exists today.
- Bikes would share the street with vehicular traffic on the streets west of Market Street except Street A where a multi-use path may be provided.

Figure 1 illustrates select bike mobility features on the project site.

Recommendation: While not required to address a CEQA impact, as part of the site development, consider:

- Designing one of the east/west streets, west of Market Street, within the site for a multi-use path to enhance bike riding connectivity to the two-way cycle track along Market Street.

2.1.4. Motor Vehicle Lane Cross Sections

Figure 2 illustrates the street vehicular cross-section characteristics. Market Street, as the primary vehicular access, would provide two lanes in each direction across the railroad tracks and then

narrow through the site eventually to a single lane in each direction at Street B. Martin Luther King Jr. Way would cross the railroad tracks with one lane in each direction and then widen to a three-lane cross-section with the third lane deemed a flexible space serving as left-turn access, curb side passenger loading, staging, deliveries, or other function to support the site's mobility needs during event and non-event days. The portion of Embarcadero West that is west of Market Street would provide two lanes in each direction to minimize mixing of the development's traffic and the trucks accessing Schnitzer Steel. The remaining streets on the site would provide one lane in each direction.

> **Recommendation:** While not required to address a CEQA impact, as part of the site development, consider:
>
> - Designing the streets with 10- or 11-foot lanes while maintaining minimum 26-foot clear on select streets identified by the City of Oakland Fire Department.
> - Designing the on-site vehicular streets for 20 or 25 mph speed limits as determined by the City of Oakland.

2.2. Railroad Crossings

Union Pacific Railroad (UPRR) is a freight-hauling railroad company that owns and operates two mainline railroad tracks through the Jack London District. These rail lines are used both for passenger transportation by Amtrak and CCJPA (Capital Corridor) and freight transport by UPRR.

There are currently special event activities at Jack London Square that attract large crowds including the Art & Wine Event (10,000 attendees), Wine Walks (5,000 attendees), Pedalfest (15 to 30,000 attendees), A's Fan Fest (30,000 attendees), 4th of July (15,000 attendees), and the Eat Real Festival (90,000 attendees over three days). There is no formal TMP for managing event traffic including across the railroad tracks. The transportation experience during these events, particularly larger events, is characterized by fully utilized parking garages and on-street parking, at-capacity B-Shuttle and AC Transit buses, people walking from the 12th Street and Lake Merritt BART Stations, and biking. The multimodal traffic crossing the railroad tracks under existing conditions is unmanaged with no protections between intersecting streets with the railroad and the at-grade crossing intersections themselves are generally only controlled by one 9A warning device (a railroad gate with flashing lights) in each direction.

2.2.1. Existing Railroad Characteristics

Table 1 summarizes the gate down times during the week of July 22nd to July 28th, 2019 between the hours of 11 AM to 11 PM when ballpark activities are likely to occur. During this time each day on average 6 freight trains and 36 passenger trains passed through the area. The data for the Market Street crossing in the table includes one train event that caused the gate to be down 87 minutes from about 9:13 PM to 10:40 PM Sunday evening. The event is considered extraordinary because the next longest freight gate down time observation was 29 minutes. The Martin Luther King Jr. Way crossing gate was down for 29 minutes across eight down times during the 87-minute period, with the longest being 16 minutes. There were 13 observed instances during the seven-day study period where gate down times at the Market Street crossing exceeded seven minutes, and there were seven similar instances at the Martin Luther King Jr. Way crossing. All these observations were associated with freight trains. There were six instances during the week when the gates were down at both crossings for freight trains with the longest being about 19 minutes and the shortest being about seven minutes.

Table 1: Gate Down Times at Howard Terminal

Train Type	Median Gate Down Time (Minutes)	Minimum Gate Down Time (Minutes)	Maximum Gate Down Time (Minutes)
Market Street			
Passenger	1.0	0.8	14.0
Freight	4.3 [1]	0.8	87.0 [1]
Martin Luther King Jr. Way			
Passenger	1.0	0.8	3.5
Freight	4.4	0.7	19.0

Notes:
1. Data summary includes one extraordinary event. The Market Street at-grade crossing gates were down for 87 minutes Sunday evening between about 9:13 PM and 10:40 PM. The Martin Luther King Jr. Way crossing gates were down for 29 minutes across eight times during this period, with the longest being 16 minutes.

Source: Fehr & Peers, 2020. Data collection from July 22nd to July 28th, 2019.

There are at-grade crossings at Market Street and Martin Luther King Junior Way as well as Clay, Washington, Broadway, Franklin, Webster, and Oak Streets. There are two UPRR mainline tracks through all the at-grade crossings except at Market Street and Oak Street where there are three tracks. In addition, Amtrak has a maintenance yard adjacent to UPRR's West Oakland Yard, located

west of Adeline Street and south of I-880. The at-grade railroad crossing characteristics are described below, including a summary of train crashes (any collision involving a train at the at-grade crossing) between 2014 and 2018, as reported in Federal Railroad Administration Office of Safety Analysis Highway-Rail Grade Crossing Accident/Incident Reports. The five years of crash data is consistent with the City's guidelines for evaluating crash history.

- Market Street on the north side of the railroad is a 4-lane road with sidewalks on both sides. The crossing surface has been improved for motor vehicles, but the sidewalks terminate prior to the crossing. Bike lanes on Market Street terminate one block prior to the crossing at 3rd Street. The crossing serves truck access to the project site and Schnitzer Steel. The crossing has two 9A warning devices (flashing light signals with automated gate arms and additional flashing lights on a cantilevers), one in each direction, and is a designated truck route. There was a train/vehicle crash in 2019 at the Market Street crossing with an unoccupied vehicle that resulted in no injuries.

- Martin Luther King Jr. Way on the north side of the railroad is a 4-lane road with on-street parking and sidewalks on both sides. South of the tracks it is a 2-lane road with no sidewalks. The crossing surface has been improved for motor vehicles, but the sidewalks terminate prior to the crossing. The crossing serves motor vehicle access to the project site, the Vistra Power Plant, and other uses. The crossing has two 9A warning devices, one in each direction, and is a designated truck route. There have been no train crashes at this crossing within the last five years.

- Clay Street is a 2-lane road with on-street parking / loading and sidewalks on both sides of the railroad tracks, there is a striped crosswalk across the railroad tracks on the east side of the crossing, and there are bike lanes on Clay Street north of the crossing. The crossing surface has been improved for all users and extends from west of Clay Street through Jack London Square to Webster Street. The crossing serves commercial uses on both sides of the track, provides access to the Ferry Terminal, and is the designated Bay Trail route. The crossing has two 9A warning devices, one in each direction. There have been no train crashes at this crossing within the last five years.

- Washington Street is a 2-lane road with on-street parking / loading and sidewalks on both sides of the railroad tracks, there are striped crosswalks across the railroad tracks, and there are bike lanes on Washington Street one block north of the crossing at 3rd Street. The crossing surface has been improved for all users. The crossing serves commercial uses on both sides of the track and provides access to the Ferry Terminal. The crossing has two 9A warning devices, one in each direction. There have been no train crashes at this crossing within the last five years. However, there was a train / pedestrian crash in 2017 between the Washington Street and Clay Street crossings when two pedestrians were injured as they went beyond the gate into the rail right of way. This was a multiple threat crash where the pedestrians started crossing the tracks after the train passed (before the gate arm was up) and were hit by a train on the other track passing in the opposite direction.

- Broadway is a 4-lane road with on-street parking / loading and sidewalks on both sides of the railroad tracks, there are striped crosswalks across the railroad tracks. The crossing surface has been improved for all users. The crossing serves commercial uses on both sides of the track and provides access to Jack London Square. The crossing has two 9A warning devices, one in each direction. There was a train/vehicle crash in 2019 at the Broadway crossing with the rear end of an occupied semi-trailer that went around the gates but resulted in no injuries.

- Franklin Street is a one way one lane road with on-street parking / loading and sidewalks on both sides of the railroad tracks and there are striped crosswalks across the railroad tracks. The crossing surface has been improved for all users. The crossing serves commercial uses on both sides of the track. The crossing has two 9A warning devices, one in each direction. There was a train/pedestrian crash in 2015 at the Franklin Street crossing that resulted in a pedestrian fatality.

- Webster Street is a 2-lane road with on-street parking / loading and sidewalks on both sides of the railroad tracks and there is a striped crosswalk across the east side of the railroad tracks. The crossing surface has been improved for all users. The crossing serves commercial uses on both sides of the track. The crossing has three 9A warning devices. There was a train / pedestrian crash in 2015 at the Webster Street crossing when one pedestrian was killed.

- Oak Street is a 2-lane road with on-street parking, bike lanes, and sidewalks on both sides of the railroad tracks except on the east side of the tracks where there is no sidewalk on the south side of the tracks. The crossing surface has been improved for all users. The crossing serves commercial uses on both sides of the track. The crossing has two 9A warning devices. There have been no train crashes at this crossing within the last five years.

Because there were so few train crashes in the last five reporting years, a review of crash data dating back to the 1970s is summarized. There was a cluster of collisions (18) at the at-grade crossings and Embarcadero West in the 1970s followed by an extended period, 1980 through 1998, where there were only five collisions. Between 1999 and 2009 there was another cluster of collisions (13); only four collision have occurred since 2009.

2.2.2. Project Railroad Characteristics

Substantial residential and commercial development is contemplated as part of the project which would be expected to generate multimodal demand for services on both sides of the railroad tracks along Embarcadero and recreational demand for the Bay Trail which crosses the railroad tracks at Clay Street. **Table 2** documents the project's anticipated pedestrian, bicycle, and vehicle forecasts crossing the railroad tracks at site buildout before a 35,000-attendee weekday evening baseball game. Similar crossing demand would occur for weekday day games as well as weekend games. The Market Street crossing would realize the greatest project demand for motor vehicle crossings

as this would be the primary access to the project site with hourly demands expected to peak at over 2,200 vehicles with an at-capacity baseball game and buildout development. The Washington Street crossing would realize the greatest demand for pedestrians with hourly demands expected to peak at over 4,300 crossings. These demands are substantially higher than day-to-day crossing activities except during the large special events at Jack London Square when thousands of people are attracted to the area and cross the railroad tracks as pedestrians.

Table 2: Project Railroad Crossing Volumes Buildout Plus Weekday Evening Ballgame

Crossing	3 to 4 PM	4 to 5 PM	5 to 6 PM	6 to 7 PM	7 to 8 PM
Market Street					
Pedestrian	310	720	830	1,160	560
Bicycle	--	--	--	--	--
Vehicle	1,140	1,830	2,050	2,220	1,290
Martin Luther King Jr. Way					
Pedestrian	440	2,000	2,390	4,070	1,700
Bicycle	140	230	250	280	160
Vehicle	530	880	980	1,090	620
Clay Street					
Pedestrian	20	110	130	240	90
Bicycle	50	80	80	90	50
Vehicle	--	--	--	--	--
Washington Street					
Pedestrian	280	1,970	2,390	4,350	1,730
Bicycle	50	80	80	90	50
Vehicle	--	--	--	--	--
Broadway					
Pedestrian	230	1,290	1,550	2,750	1,120
Bicycle	--	--	--	--	--
Vehicle	--	--	--	--	--

Note: "--" indicates that the project is not adding trips to the at-grade crossing for that mode at that location.
Source: Fehr & Peers, 2020.

The project sponsor commissioned a study, *Oakland A's Howard Terminal Project – Railroad Corridor and Grade Crossing Improvements*. The study identified at-grade railroad crossing

improvements based on a review of existing site conditions, the forecasted increase in vehicular, pedestrian and bicycle traffic, as well as potential increases in rail service. According to the study, the project currently proposes a comprehensive suite of at-grade railroad crossing enhancements including:

- Install fencing along both sides of the railroad corridor extending along the project's frontage starting at the Schnitzer Steel boundary and continuing to Broadway. This change would alter Embarcadero West circulation as follows:
    - Between Market Street and Schnitzer Steel Embarcadero West would remain two-way with a signalized intersection at Market Street.
    - Between Market Street and Martin Luther King Jr. Way the street would be abandoned such that there would no longer be a motor vehicle intersection at Martin Luther King Jr. Way.
    - Between Martin Luther King Jr. Way and Broadway, the street on the south side of the railroad tracks would be converted to a shared use path with pedestrians and bicycles. On the north side of the railroad Embarcadero West would remain one-way westbound with forced right turns at Jefferson, Clay, and Washington Streets as well as at Broadway.
- Upgrade the existing at-grade railroad crossings at Market Street, Martin Luther King Jr. Way, Clay Street, Washington Street and Broadway with quad gates for motor vehicles and separate signals and gates for pedestrians and bicyclists. Provide improved pedestrian and bicycle surfaces at each crossing as well as ADA features and clearly defined staging areas for pedestrians and bicyclists to wait as a train passes by.
- Install a traffic signal at the Market Street at-grade crossing and the Market Street/Embarcadero West intersection as well as a traffic signal on Market Street at 3rd Street. These signals would be part of the railroad preemption system and include queue cutter loops on Market Street that would be tied to both traffic signals to minimize the potential for motor vehicles to queue across the railroad tracks. A railroad preemption system provides an opportunity for vehicles to clear the track area before the train arrives at the crossing. A traffic signal with a queue cutter loop is installed at a high-vehicle volume at-grade rail crossings in a manner similar to a pre-signal; its function is to provide a means to prevent vehicles from stopping on the tracks or within the railroad right-of-way as a result of traffic queuing from a downstream signalized intersection.
- While there is no motor vehicle intersection at the Martin Luther King Jr. Way at-grade crossing, install a traffic signal at the at-grade crossing as well as traffic signals at 2nd Street where left turns would be prohibited and at 3rd Street where a left-turn lane would be provided to separate left turning and through movement traffic. These signals would be

part of the railroad preemption system and include a queue cutter loop on Martin Luther King Jr. Way that would be tied to all three traffic signals to minimize the potential for motor vehicles to queue across the railroad tracks.

These changes are a Mitigation Measure in the CEQA document. Even with these changes the impact to safety is considered significant because the CPUC has ultimate jurisdiction over whether the improvements are constructed. As a result, the following recommendation should be considered.

Recommendation: Prior to issuance of a demolition, grading, or building permit require the project applicant to submit for City review and approval a Diagnostic Review to evaluate potential impacts to at-grade railroad crossings resulting from project-related traffic and implement the suite of improvements to enhance multimodal safety along the railroad tracks including elements necessary for a Quiet Zone through Jack London District. Funding for the Diagnostic Study and implementation of any resulting recommendations would be the responsibility of the Project Applicant.

In general, the major types of impacts to consider in the Diagnostic Review are collisions between trains and vehicles, trains and pedestrians, and trains and bicyclists. The Diagnostic Review shall include specific traffic elements, such as roadway and rail description, accident history, traffic volumes (all modes, including pedestrian and bicyclist crossing movements), train volumes, vehicular speeds, train speeds, and existing rail and traffic control.

Where the Diagnostic Review identifies potentially substantially dangerous crossing conditions at at-grade railroad crossings caused by the project, measures relative to the project's traffic contribution to the crossings shall be applied through project redesign and/or incorporation of the appropriate measures to reduce potential adverse impacts at the crossings. These measures may include, without limitation, the following:

- Installation of grade separations at crossings, i.e., physically separating roads and railroad tracks by constructing overpasses or underpasses.
- Improvements to warning devices at existing highway rail crossings that are impacted by project traffic.
- Installation of additional warning signage.
- Improvements to traffic signaling at intersections adjacent to crossings, e.g., signal preemption.
- Installation of median separation to prevent vehicles from driving around railroad crossing gates.
- Where sound walls, landscaping, buildings, etc. would be installed near crossings, maintaining the visibility of warning devices and approaching trains.

- Prohibition of parking within 100 feet of the crossings to improve the visibility of warning devices and approaching trains.
- Construction of pull-out lanes for buses and vehicles transporting hazardous materials.
- Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way.
- Elimination of driveways near crossings.
- Increased enforcement of traffic laws at crossings.
- Rail safety awareness programs to educate the public about the hazards of highway-rail grade crossings

Any proposed improvements must be coordinated with California Public Utility Commission (CPUC) and affected railroads and all necessary permits/approvals obtained, including a GO 88-B Request (Authorization to Alter Highway Rail Crossings). The project applicant shall implement the approved measures during construction of the project.

3. Construction Assessment

During construction of each of the development or infrastructure projects under the project, temporary and intermittent transportation impacts may result from truck movements as well as construction worker vehicles to and from the construction site. The construction-related traffic may temporarily reduce capacities of roadways in the vicinity because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. For the most part these construction truck trips would use the same routes as the existing truck trips generated by the Howard Terminal site with its activities using either Market Street or Martin Luther King Jr. Way corridors.

Truck traffic that occurs during the peak commute hours (weekdays, 7:00 to 9:00 AM and 4:00 to 6:00 PM) may result in higher delays during the construction period than at other times of the day because of the combination of commute traffic plus truck trips. If parking of construction workers' vehicles cannot be accommodated within the construction site, it too would temporarily increase parking occupancy levels in the area.

Potential construction activity of off-site transportation improvements in the public right-of-way, could result in temporary closure of sidewalks, prohibition of on-street parking, and potentially vehicle travel lane closures. A set of comprehensive traffic control measures for motor vehicles,

transit, bicycle, and pedestrian access and circulation would minimize the impact of off-site transportation improvements on the traveling public.

Given the site's location temporary closure of sidewalks during construction are likely to be limited to off-site locations where sidewalk improvements are made, such as the east side of Martin Luther King Jr. Way where the project proposes a two-way cycle track and sidewalk. Nevertheless, sidewalk improvements may affect pedestrian circulation; similarly, potential closure of bicycle lanes may affect bicycle circulation. The nearest bus transit facilities, along 2nd Street approaching Washington Street, are unlikely to be impacted by the project's construction.

Recommendation: As part of the project, consider incorporating a Construction Management Plan including:

- The project applicant and his/her general contractor shall submit a Construction Management Plan (CMP) for review and approval by the Bureau of Planning, Bureau of Building, and other relevant City departments such as the Fire Department, Department of Transportation, and the Public Works Department as directed. The CMP shall contain measures to minimize potential construction impacts including measures to comply with all construction-related Conditions of Approval (and mitigation measures if applicable) such as dust control, construction emissions, hazardous materials, construction days/hours, construction traffic control, waste reduction and recycling, stormwater pollution prevention, noise control, complaint management, and cultural resource management (see applicable Conditions below). The CMP shall provide project-specific information including descriptive procedures, approval documentation, and drawings (such as a site logistics plan, fire safety plan, construction phasing plan, proposed truck routes, traffic control plan, complaint management plan, construction worker parking plan, and litter/debris clean-up plan) that specify how potential construction impacts will be minimized and how each construction-related requirement will be satisfied throughout construction of the project.
- The project applicant shall obtain approval of a set of comprehensive traffic control measures for motor vehicle, transit, bicycles, and pedestrians during each phase of construction.
- The project applicant shall prepare a construction period parking management plan to ensure that parking demands for construction workers, site employees, and customers are accommodated during each phase of construction.
- The project applicant shall obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets, sidewalks, bicycle facilities, and bus stops.

- In the event of obstructions to vehicle or bicycle travel lanes, bus stops, or sidewalks, the project applicant shall submit a Traffic Control Plan to the City for review and approval prior to obtaining an obstruction permit. The project applicant shall submit evidence of City approval of the Traffic Control Plan with the application for an obstruction permit. The Traffic Control Plan shall contain a set of comprehensive traffic control measures for auto, transit, bicycle, and pedestrian accommodations (or detours, if accommodations are not feasible), including detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. The Traffic Control Plan shall be in conformance with the City's Supplemental Design guidance for Accommodating Pedestrians, Bicycles, and Bus Facilities in Construction Zones. The project applicant shall implement the approved Plan during construction.

- The project applicant shall repair any damage to the public right-of way, including streets and sidewalks caused by project construction at his/her expense within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to approval of the final inspection of the construction-related permit. All damage that is a threat to public health or safety shall be repaired immediately.

TRA.6 Transit Analysis

FEHR PEERS

MEMORANDUM

Date:	December 1, 2020
To:	Pete Vollmann, City of Oakland Nicole Ferrara, City of Oakland
From:	Rob Rees and Lee Reis, Fehr & Peers
Subject:	**Howard Terminal – Transit Analysis**

OK16-0125.06

The Oakland A's are proposing a ballpark and non-ballpark development at Howard Terminal in Oakland, California. This memorandum discusses the existing transit services and the project related transit characteristics for the proposed development at Howard Terminal. The document concludes by highlighting the recommendations to accommodate the additional transit usage from the project. In all cases, existing conditions are those that existed at the time the NOP was issued and do not reflect conditions during the COVID-19 pandemic. The pandemic has resulted in changes in human behavior and transit service, however many of these changes are thought to be short term and it would be speculative to identify those changes that will turn out to be long-term consequences of the pandemic at this time.

1 Existing Transit Services

AC Transit provides local bus service in the East Bay and Transbay bus service to the Transbay Terminal in San Francisco. Bay Area Rapid Transit (BART) provides regional rail service connecting San Francisco, northern San Mateo county, and the East Bay. Amtrak also provides regional rail within the San Francisco Bay Area and beyond while WETA provides ferry service. The following sections provide more details regarding existing transit services.

1.1. Bus Services

AC Transit is the primary bus service provider in 13 cities and adjacent unincorporated areas in Alameda and Contra Costa Counties, with Transbay service to destinations in San Francisco, San Mateo and Santa Clara Counties. Eighteen AC Transit local lines, one Transbay line, and six all-nighter lines pass through or terminate in downtown Oakland. On a typical day AC Transit serves about 18,000 riders in downtown.

There are twelve AC Transit local lines, two Transbay lines and a Broadway shuttle which operate within a 15- minute walk from Howard Terminal. **Table 1** summarizes the bus lines serving the vicinity of the project site.

The Broadway "B" Shuttle also operates along Broadway and is administered by the City of Oakland and operated by AC Transit, connecting Jack London District and Uptown. The free shuttle provides service along the Broadway corridor, between Jack London Square and Grand Avenue. The shuttle connects major destinations such as Jack London Square, City Center, and Uptown with major transportation services including BART, AC Transit, Amtrak, the Oakland Ferry Terminal, and the Greyhound station. The shuttle operates day service Monday through Friday from 7:00 a.m. to 7:00 p.m. every 11 minutes during commute hours and lunchtime and every 12 to 15 minutes at other times. Night service is provided Monday through Friday with shuttles running every 12 minutes.

Table 2 shows the capacity and passenger loads for the AC Transit routes serving the project area and vicinity. Load factor is defined as the ratio of occupied seats to the number of seats on the bus. A load factor of 1.0 or more indicates that the bus operates at or above its seated capacity. The 85th percentile load factor represents the load at or below which 85 percent of the buses operated in the analysis period. During the weekday PM peak period (4:00 PM to 6:00 PM) the buses in the project vicinity generally operate below bus capacities. Line 51A at the 7th Street/Franklin stop and Route O at the Market Street/5th Street stop are the most heavily used routes operating near the project with 85th percentile load factors exceeding 1.0.

Table 1: AC Transit Service Summary

Line	Description	Nearest Bus Stop	Weekday		Weekend	
			Hours	Peak Headway	Hours	Peak Headway
6	Downtown Berkeley to Downtown Oakland	10th Street at Washington	5:00 AM to 12:30 AM	12 Minutes	5:00 AM to 12:30 AM	15 minutes
12	West Berkeley to Oakland Amtrak at Jack London Square	Embarcadero West / Broadway	6:00 AM to 12:00 AM	20 Minutes	6:00 AM to 12:00 AM	30 Minutes
18	University Village, Albany, to Lake Merritt BART	8th Street / Broadway (NB) 7th Street / Franklin (SB)	5.15 AM to 1:00 AM	15 Minutes	6:00 AM to 1:00 AM	20 Minutes
19	Downtown Oakland to Fruitvale BART	11th Street / Jefferson	6:00 AM to 10:30 PM	20 Minutes	6:00 AM to 10:30 PM	30 Minutes
20	Dimond District, Oakland, to Downtown Oakland	Martin Luther King Jr. Way / 11th Street	5:00 AM to 12:30 AM	30 Minutes	5:00 AM to 12:30 AM	30 Minutes
29	Public Market Emeryville to West Oakland BART to Lakeshore Ave	Martin Luther King Jr. Way / 12th Street (WB) 11th Street / Jefferson (EB)	6:00 AM to 10:45 PM	20 Minutes	6:00 AM to 10:45 PM	30 Minutes
36	Bancroft Way & Piedmont Ave., Berkeley to West Oakland BART	7th Street / Adeline	6:00 AM to 12:45 AM	30 Minutes	6:00 AM to 12:45 AM	30 Minutes
62	West Oakland BART to Fruitvale BART	7th Street / Market	5:30 AM to 12.45 AM	15 Minutes	6:00 AM to 12.45 AM	30 Minutes
72	Hilltop Mall to Jack London Square	2nd Street / Washington	5:00 AM to 1:00 AM	15 Minutes	5:00 AM to 1:00 AM	15 Minutes
96	Alameda Point to Dimond District	8th Street / Broadway (EB) 7th Street / Franklin (WB)	6:00 AM to 11:00 PM	30 Minutes	6:00 AM to 11:00 PM	30 Minutes
51A	Rockridge BART to Fruitvale BART	8th Street / Broadway (NB) 7th Street / Franklin (SB)	5:00 AM to 12:30 AM	10 -12 Minutes	5:30 AM to 12:45 AM	15 Minutes
72M	Point Richmond to Jack London Square	2nd Street / Washington	5:00 AM to 1:00 AM	15 Minutes	5:00 AM to 1:00 AM	15 Minutes

Table 1: AC Transit Service Summary

Line	Description	Nearest Bus Stop	Weekday		Weekend	
			Hours	Peak Headway	Hours	Peak Headway
72R	Contra Costa College to Jack London Square	2nd Street / Washington	6:00 AM to 8:00 PM	12 Minutes	7:00 AM to 8:00 PM	15 Minutes
O	Fruitvale BART to Salesforce Transit Center, San Francisco	5th Street / Market (EB)[1]	6:00 AM to 10:00 PM	10 Minutes	5:00 AM to 10:00 PM	60 Minutes
W	Broadway & Blanding Ave., Alameda, to Salesforce Transit Center, San Francisco	5th Street / Market (EB)[1]	4:30 PM to 8:30 PM (EB)	20 Minutes	-	-
BSD/BSN	Shuttle connecting Jack London Square and Uptown Oakland	3rd Street / Broadway (NB) Embarcadero / Broadway (SB)	7:00 AM to 10:00 PM	11 Minutes	-	-

Notes:
1. Lines O and W don't have a westbound stop within 0.5 miles of walking distance within the project vicinity

Source: AC Transit, March 2019; Fehr & Peers, 2020.

Table 2: AC Transit Passenger Load Characteristics (Weekday 4 PM To 6 PM)

Line	Route and Stop Location[1]	Direction	Average Capacity (Seats)	Average Load (Passengers)	85th Percentile Load (Passengers)	85th Percentile Load Factor
6	Route 6 on 10th Street at Washington Street	NB	36	3	5	0.14
		SB	36	0	0	0.00
12	Route 12 Broadway at Embarcadero West	NB	36	2	4	0.11
	Route 12 Embarcadero at Broadway	SB	36	3	6	0.17
18	Route 18 on Broadway at 8th St	NB	36	5	8	0.22
	Route 18 on 7th St at Franklin	SB	36	4	6	0.17
19	Route 19 on 11th St at Jefferson St	EB	25	2	5	0.18
	Route 19 on 11th St at Jefferson St	WB	25	1	0	0
20	Route 20 on MLK at 11th St	EB	36	2	2	0.06
	Route 20 on MLK at 11th St	WB	36	2	1	0.03
29	Route 29 on 11th St at Jefferson St	EB	25	4	8	0.32
	Route 29 on 12th St at MLK	WB	25	8	13	0.52
36	Route 36 on Adeline at 7th St	NB	29	9	14	0.48
	Route 36 on Adeline at 7th St	SB	32	6	9	0.28
62	Route 62 on 7th at Market St	EB	36	6	10	0.28
	Route 62 on 7th at Market St	WB	36	6	9	0.25
72	Route 72 on Washington at 2nd St	NB	36	3	4	0.11
	Route 72 on Washington at 2nd St	SB	36	0	0	0.00
96	Route 96 on Broadway at 8th St	NB	25	7	13	0.51
	Route 96 on 7th at Franklin St	SB	25	8	13	0.51
72M	Route 72M on Washington at 2nd St	NB	36	2	4	0.11
	Route 72M on Washington at 2nd St	SB	36	0	0	0.00
51A	Route 51A on Broadway at 8th St	NB	36	16	24	0.67
	Route 51A on 7th at Franklin St	SB	36	37	55	**1.53**
72R	Route 72R on Washington at 2nd St	NB	33	2	4	0.11
	Route 72R on Washington at 2nd St	SB	33	1	0	0.00
BSD	Route BSD on Broadway at 3rd St	NB	25	9	13	0.52
	Route BSD on Embarcadero at Broadway	SB	25	6	9	0.36
O	Route O on Market at 5th St [2]	EB	38	36	48	**1.27**

Table 2: AC Transit Passenger Load Characteristics (Weekday 4 PM To 6 PM)

Line	Route and Stop Location[1]	Direction	Average Capacity (Seats)	Average Load (Passengers)	85th Percentile Load (Passengers)	85th Percentile Load Factor
W	Route W on Market at 5th St [2]	EB	38	29	36	0.95

Notes:
1. Bus stop chosen is the closest to project site with data available.
2. Lines O and W don't have a westbound stop within 0.5 miles of walking distance within the project vicinity.

Source: AC Transit, October 2018; Fehr & Peers, 2020.

1.2. Bay Area Rapid Transit (BART)

BART provides regional rail service between San Francisco, northern San Mateo county, and the East Bay. The average weekday ridership in 2018 was about 414,000 systemwide. The BART stations most likely to serve the Howard Terminal site are the 12th Street Oakland City Center station, Lake Merritt station and the West Oakland station.

- 12th Street Oakland City Center station is located under Broadway in Downtown Oakland, with station entrances between 11th Street and 14th Street, about 0.9 miles from Howard Terminal. The station is served by the Richmond-Daly City/Millbrae, Richmond-Warm Springs/South Fremont, and Antioch-SFO/ Millbrae lines.

- Lake Merritt station is in Oakland's Chinatown, with an entrance at the Oak Street/8th Street intersection about 1.1 miles from Howard Terminal. The station is served by the Dublin/Pleasanton-Daly City, Richmond-Warm Springs/South Fremont, and Warm Springs/South Fremont-Daly City lines.

- West Oakland station is in West Oakland, about 0.9 miles from Howard Terminal, bounded by 7th Street, Chester Street, 5th Street, and Mandela Parkway. The station is served by all four transbay lines: Richmond-Daly City/Millbrae, Antioch-SFO/Millbrae, Dublin/ Pleasanton-Daly City, and Warm Springs/South Fremont-Daly City.

These stations are served by about 20 trains per hour, per direction, during the peak periods. In October 2018, weekday average entries plus exits at the 12th Street, Lake Merritt, and West Oakland Stations were 28,600, 15,100 and 15,700 passengers, respectively.

The 12th Street station is underground with multiple access points including stairs, escalators, and elevators. There are several bus stops located near BART access points. The Lake Merritt BART station, also located underground, has four access points primarily including stairs, an escalator, and one elevator. Bus stops and passenger loading zones are located on Oak Street between 8th and 9th Streets adjacent to the station access points. The West Oakland station is above ground, including on-site passenger pick-up/drop off facilities as well as bus stops. There are currently small parking lots located at both the Lake Merritt and West Oakland BART stations, but these lots are slated for redevelopment.

The 12th Street BART station serves the most passengers of the three stations serving up to 4,300 riders during the PM peak hour while the West Oakland and Lake Merritt BART stations serve up to 2,000 riders each during that time.

Load factors are another way to understand BART's service and where the system is serving the greatest ridership. **Table 3** summarizes peak-hour loads near the 12th Street BART Station based on the October 2018 weekday data (Tuesday – Thursday) provided by BART. Currently, the SFO to Antioch yellow line, Daly City/Millbrae-Richmond red line, Daly City-Warm Springs green line and Daly City-Dublin/Pleasanton blue line are the most heavily utilized routes during PM peak hour, which is generally between 5 to 6 PM. During the PM peak hour, average load factors are above BART's planning capacity (107 passengers per train car). All lines during the AM peak hour that are destined for San Francisco have maximum load factors above BART's planning capacity.

Table 3: BART Weekday Ridership

Line	Peak Hour	Trains in Peak Hour	Average Cars per Peak Hour Train	Average Maximum Load (Passengers/Car)	Load Factor[1]
AM Peak Period					
Antioch – SFO/Millbrae	7:45 AM–8:45 AM	10	9	110	**1.03**
SFO/Millbrae – Antioch	8:30 AM–9:30 AM	4	10	81	0.76
Richmond – Daly City/Millbrae	8:00 AM–9:00 AM	4	10	124	**1.16**
Daly City/Millbrae –Richmond	8:15 AM–9:15 AM	4	9	40	0.37
Richmond – Warm Springs	7:45 AM-8:45 AM	4	6	53	0.50
Warm Springs – Richmond	7:45 AM-8:45 AM	4	7	82	0.76
Warm Springs – Daly City	8:15 AM-9:15 AM	4	10	142	**1.32**
Daly City – Warm Springs	7:45 AM-8:45 AM	4	10	9	0.09
Dublin/Pleasanton – Daly City	8:00 AM-9:00 AM	4	9	134	**1.25**
Daly City – Dublin/Pleasanton	7:30 AM-8:30 AM	4	9	15	0.14
PM Peak Period					
Antioch – SFO/Millbrae	5:15 PM-6:15 PM	7	10	34	0.31
SFO/Millbrae – Antioch	5:15 PM-6:15 PM	10	9	123	**1.15**
Richmond – Daly City/Millbrae	5:00 PM-6:00 PM	4	9	43	0.41
Daly City/Millbrae –Richmond	5:30 PM-6:30 PM	4	10	109	**1.02**
Richmond – Warm Springs	4:45 PM-5:45 PM	4	7	82	0.76
Warm Springs – Richmond	5:00 PM-6:00 PM	4	6	90	0.85
Warm Springs – Daly City	5:00 PM-6:00 PM	4	10	17	0.16
Daly City – Warm Springs	5:00 PM-6:00 PM	4	10	132	**1.24**
Dublin/Pleasanton – Daly City	5:15 PM-6:15 PM	4	9	20	0.19
Daly City – Dublin/Pleasanton	5:00 PM-6:00 PM	4	9	145	**1.35**

Notes:
1. Load Factor defined as average load over the assumed design capacity (47 seats and 60 standing)

Sources: October 2018 Tuesday-Thursday data provided by BART in February 2019; Fehr & Peers, 2020.

1.3. Regional Rail Service

Amtrak operates regional and interregional rail service through the Oakland Jack London Square Station on 2nd Street between Harrison Street and Jackson Street, about 0.6 miles from the Howard Terminal site. Regional rail connecting at Jack London Square Station includes Capitol Corridor, an intercity heavy rail service operated between the Sierra Foothills, Sacramento, the East Bay, and San Jose. The following interregional rail service operates on routes that stop at the Jack London Square Station: San Joaquin, which runs between the San Francisco Bay Area, Sacramento, and Bakersfield; and the Coast Starlight, which runs between Los Angeles, the San Francisco Bay Area, Portland, and Seattle. Average weekday ridership at Jack London Station was about 600 boarding per day in 2016 and the station operates from 5:15 AM to 11:00 PM seven days per week.

The lines providing service to the station are described in detail below:

Capitol Corridor connects Sacramento and San Jose through Oakland. The service runs 15 trains per direction on weekdays and 11 trains per direction on weekends, with hourly headways during peak periods. All trains connect Sacramento and Oakland, with around half also serving San Jose. Scheduled trip time between Oakland Jack London Square Station and Sacramento is about two hours, and trip time between Oakland Jack London Square Station and San Jose is about one hour.

Coast Starlight connects Vancouver and Los Angeles through Sacramento, Oakland, and San Jose. The service runs one train in each direction daily. The southbound train arrives at Oakland Jack London Square Station at 8:35 AM and therefore would not be used for game day arrivals. The northbound train departs Oakland Jack London Square Station at 9:39 PM.

San Joaquin connects Oakland and Bakersfield through Stockton. The service runs five trains in each direction using Oakland Jack London Square Station daily. Scheduled trip time between Oakland and Stockton is about one hour and forty-five minutes. Because the last southbound train departs Oakland at 5:55 PM, this service would not be used to depart evening games.

Availability of northbound and southbound rail service for ballgames is summarized in **Table 4**.

Table 4: Amtrak Availability by Game Time

Game Time	Arrivals	Departures
To/From North (Sacramento)		
Weekday Day Game (12:30 PM start)	Train arrives within one hour before game start	Train departs within one hour after typical game end time
Weekday Evening Game (7:00 PM start)	Train arrives within 30 minutes before game start	No trains depart after typical game end time; latest train departs at 10:08 PM
Weekend Game (1:00 PM or 6:00 PM start)	Train arrives within one hour before game start	Train departs within one hour after typical game end time.[1]
To/From South (San Jose)		
Weekday Day Game (12:30 PM start)	No train arrives within one hour before game start; a train arrives within two hours before game start	Train departs within one hour after typical game end time
Weekday Evening Game (7:00 PM start)	Train arrives within 30 minutes before game start	No trains depart after typical game end time; latest train departs at 9:00 PM
Weekend Game (1:00 PM or 6:00 PM start)	Train arrives within one hour before game start	No trains depart after typical game end time.[2]

Notes:
1. Coast Starlight departs at 9:39 PM and Capitol Corridor departs at 10:13 PM from Oakland to Sacramento on weekends. Times are within one hour after typical weekend game end time, since many games start at 6 PM.
2. A Capitol Corridor bus departs from Oakland to San Jose at 10:00 PM on weekends, but this summary only considers trains.

Source: Amtrak schedules as of March 2019; Fehr & Peers, 2020.

1.4. Ferry Service

The Water Emergency Transportation Authority (WETA) operates weekday and weekend ferry service between Oakland Jack London Square Ferry Terminal (located less than 1,000 feet from Howard Terminal) and Alameda Main Street Ferry Terminal, San Francisco Ferry Building, San Francisco Pier 41, and South San Francisco. Ferries depart Oakland Jack London Square Ferry Terminal on weekdays between 6:30 AM and 8:45 PM with headways of 30 to 45 minutes, and on weekends between 8:55 AM and 9:25 PM with headways of 45 to 60 minutes. In 2018, average weekday ridership for Oakland Jack London Square Ferry Terminal was approximately 1,500

passengers. Ferry riders transfer for free to AC transit buses and are eligible for free parking in the 101 Washington parking garage.

WETA also provides event service between the Oakland Jack London Square Ferry Terminal and Oracle Park for San Francisco Giants weekday evening and holiday and weekend midday games. Ferries depart Oakland at 6:10 PM on weekday evening game days and 11:30 AM on weekend and holiday game days, departing Oracle Park 30 minutes after the last out or fireworks display on weekdays, and 20 minutes after the last out or fireworks display on weekend and holidays.

2 Planned Transit Improvements

The following section describes previously planned improvements to transit services that are proposed or being implemented regardless of the Howard Terminal project.

2.1. AC Transit

In August of 2020, AC Transit completed the East Bay Bus Rapid Transit (BRT) Project, also known as the Tempo Line, between the Uptown Transit Center and the San Leandro BART Station. AC Transit has no additional planned and funded infrastructure improvements for bus service through Oakland.

2.2. BART

BART completed the *BART/SVRT Core Stations Modifications Study* as part of the Santa Clara Valley Transportation Authority (VTA) 16-mile BART extension to San Jose. The study completed in April 2011 was a comprehensive study examining station passenger capacity needs with the BART extension project. The capacity analysis and recommendations, based on peak hour ridership for year 2030, considered platform width as well as the vertical circulation and fare gates at BART stations throughout the system. Detailed studies were undertaken for many BART stations including the three nearest Howard Terminal - 12th Street, Lake Merritt, and West Oakland. Station improvements included a combination of new stairways, escalators, fare gates and expanded platforms and were established based on normal, delay, and emergency conditions. The specific improvements identified in the study include:

- 12th Street station – Expand platform size by adding platform doors, modifying utility rooms, and excavate shallow alcoves; adding two emergency stairs; and adding 8 fare gates.
- Lake Merritt station – Add two daily stairs.
- West Oakland station – Widen the ends of the platform, add four emergency stairs, and two daily escalators.

Funding for these station improvements has not been allocated. BART has allocated funds for its top three capital projects: a new fleet of train cars which will reduce the time it takes people to exit / enter train cars by up to 50%, a new maintenance facility, and a new train control system which is expected to increase system capacity through the Transbay Tube from 24 to 30 trains per hour per direction and be implemented by 2028. These three BART programs are expected to serve BART ridership growth through about 2040. BART is also taking steps towards a second Transbay Tube, which would expand systemwide capacity beyond 2040. Initial studies are expected to start in 2019, and while funding is available for those studies no capital funds have been allocated for the project.

2.3. Ferry

WETA completed a new Seaplane Lagoon ferry terminal on Alameda in October 2020, but service from the terminal is on hold due to the COVID-19 pandemic. Once operational, it is expected that Alameda riders will shift to this new service during weekdays. This will open more capacity for Oakland and the service pattern will be changed to Alameda – Oakland – San Francisco, providing a shorter trip for Oakland riders.

2.4. Regional Rail Service

Based on stakeholder discussions, Amtrak is planning to increase service frequency for rail service through Oakland. Fehr & Peers will coordinate with Amtrak to determine the anticipated future service frequency. Amtrak has no new planned and funded infrastructure improvements for rail service through Oakland.

3 Project Transit Characteristics

Consistent with City of Oakland TIRG, **Table 5** presents the estimates of project trip generation with the TDM Plan for all travel modes for the non-ballpark development, based on the mode split estimates from the TIRG. With the TDM Plan, total trips were assumed to remain constant, and vehicle trip reductions due to the TDM Plan elements were assumed to cause mode shifts towards transit, bicycling, or walking trips in proportion to the ratios provided in the TIRG. Transit trips were assigned to BART, bus, ferry, and Amtrak based on Census data regarding the relative commute mode share of those options for residents of the Jack London District.

Table 5: Howard Terminal Non-Ballpark Development Trip Generation by Travel Mode

Mode	Without TDM Plan			With TDM Plan		
	Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Automobile	31,960	2,335	2,896	25,570	1,868	2,317
BART	8,550	625	775	11,500	840	1,042
Bus	2,140	156	194	2,880	210	260
Ferry	1,400	102	127	1,880	138	171
Amtrak	520	38	47	690	51	63
Bike	2,620	191	237	3,520	257	319
Walk	3,310	242	300	4,450	325	403
Total Trips	**50,490**	**3,689**	**4,575**	**50,490**	**3,689**	**4,575**

Source: City of Oakland, U.S. Census Bureau; Fehr & Peers, 2020.

3.1. Project Transit Improvements

Based on mitigation measures and non-CEQA recommendations, the Project will include several permanent transit elements listed below.

- Provide bus-only lanes on Broadway between Embarcadero West and 11th Street to connect the Project site and Jack London District with the 12th Street BART station, and associated signal improvements.
- Provide a Transportation Hub and associated features primarily on the south side of 2nd Street between Martin Luther King Jr. Way and Washington Streets.

In addition to the features listed above, the City is considering a permanent bus-only lane transit improvement for 7th Street between the West Oakland BART station and the Lake Merritt BART station. The City is considering this project as part of a larger effort to connect West Oakland, Old Oakland, and Chinatown with high quality bus facilities. If the City constructs this facility buses could use the bus-only lane and Brush and Castro Streets to access the Transportation Hub on 2nd Street.

4 Implications for Transit Operations

4.1. AC Transit

Table 6 shows the passenger loads of the AC Transit routes serving the project area and vicinity with added project trips from the non-ballpark development. The load factors generally remain the same with the added project passengers, which equate to one to four additional riders on each bus serving the project vicinity. For routes with higher frequencies, such as the Line 72R, this corresponds to nearly 20 additional passengers per hour.

Based on this analysis, Howard Terminal daily ridership from non-ballpark development can generally be accommodated on existing bus routes near the project site. However, the Downtown Oakland Specific Plan (DOSP) Plan is expected to add close to 1,500 additional bus riders in the PM peak hour to AC Transit based on development assumptions in the plan.

Table 6: AC Transit Existing Plus Project Non-Ballpark Development Load Factors (Weekday 4 PM To 6 PM)

Line	Route and Stop Location[1]	Direction	Existing Conditions		Existing Plus Project	
			Average Load	85th Percentile Load	Average Load	85th Percentile Load
6	Route 6 on 10th Street at Washington Street	NB	0.08	0.14	0.13	0.19
		SB	0.00	0.00	0.07	0.07
12	Route 12 Broadway at Embarcadero West	NB	0.06	0.11	0.11	0.16
	Route 12 Embarcadero at Broadway	SB	0.08	0.17	0.15	0.24
18	Route 18 on Broadway at 8th St	NB	0.14	0.22	0.19	0.27
	Route 18 on 7th St at Franklin	SB	0.11	0.17	0.18	0.24
19	Route 19 on 11th St at Jefferson St	EB	0.08	0.18	0.15	0.26
	Route 19 on 11th St at Jefferson St	WB	0.04	0.00	0.14	0.10
20	Route 20 on MLK at 11th St	EB	0.06	0.06	0.12	0.12
	Route 20 on MLK at 11th St	WB	0.06	0.03	0.14	0.11
29	Route 29 on 11th St at Jefferson St	EB	0.16	0.32	0.22	0.38
	Route 29 on 12th St at MLK	WB	0.32	0.52	0.40	0.60
36	Route 36 on Adeline at 7th St	NB	0.31	0.48	0.39	0.56
	Route 36 on Adeline at 7th St	SB	0.19	0.28	0.28	0.38
62	Route 62 on 7th at Market St	EB	0.17	0.28	0.24	0.36
	Route 62 on 7th at Market St	WB	0.17	0.25	0.27	0.35
72	Route 72 on Washington at 2nd St	NB	0.08	0.11	0.15	0.18
	Route 72 on Washington at 2nd St	SB	0.00	0.00	0.08	0.08
96	Route 96 on Broadway at 8th St	NB	0.28	0.51	0.37	0.61
	Route 96 on 7th at Franklin St	SB	0.32	0.51	0.44	0.63
72M	Route 72M on Washington at 2nd St	NB	0.06	0.11	0.11	0.17
	Route 72M on Washington at 2nd St	SB	0.00	0.00	0.07	0.07
51A	Route 51A on Broadway at 8th St	NB	0.44	0.67	0.51	0.73
	Route 51A on 7th at Franklin St	SB	**1.03**	**1.53**	**1.11**	**1.61**
72R	Route 72R on Washington at 2nd St	NB	0.06	0.11	0.14	0.19
	Route 72R on Washington at 2nd St	SB	0.03	0.00	0.13	0.10
BSD	Route BSD on Broadway at 3rd St	NB	0.36	0.52	0.44	0.60
	Route BSD on Embarcadero at Broadway	SB	0.24	0.36	0.35	0.47
O	Route O on Market at 5th St [2]	EB	0.95	**1.27**	0.98	**1.31**
W	Route W on Market at 5th St [2]	EB	0.76	0.95	0.80	0.99

Notes:
1. Bus stop chosen is the closest to project site with data available.
2. Lines O and W don't have a westbound stop within 0.5 miles of walking distance within the project vicinity.

Sources: AC Transit, October 2018; summarized by Fehr & Peers, 2020.

Recommendation #1: While not required to address a CEQA impact, as part of the project, consider opportunities to extend local bus routes into Jack London District to serve Howard Terminal development. As examples, Lines 6 and/or 40 could be extended to the Transportation Hub area, and Lines 29 and 36 could be rerouted to serve the Transportation Hub while travelling between the West Oakland and Lake Merritt BART stations. Lines 72, 72M and 72R already serve the Transportation Hub area but could be extended two blocks closer to the ballpark.

Discussion: Currently AC Transit has several lines that layover adjacent to Lafayette Square and one that lays over on 10th Street at the Conference Center. The walk between these lines and the ballpark is between 0.5 and 0.6 miles and some ballpark attendees will walk this distance to access one of these lines. Transit ridership could be further enhanced on these lines if one or more could be extended and lay over along 2nd Street at the Transportation Hub between Martin Luther King Junior Way and Clay Street. Relocating the layover to Jack London District would expand AC Transit's service area and increase ridership for these routes and could serve existing and future development in the area including the ballpark during events.

Relocating the layovers could have implications to AC Transit's service operations because automobile and pedestrian congestion resulting from ballpark events could delay local bus service. These delays would adversely impact AC Transit's ability to provide a cost-effective service to the area and likely be unacceptable to AC Transit. To overcome these delays, the project includes creating at least one permanent bus-only lane route on Broadway between Embarcadero West and 11th Street, as discussed in the Project Transit Improvements section above. The City, as a separate project, is also considering bus-only lanes on 7th Street connecting the West Oakland and Lake Merritt BART stations. On game days automobile traffic would be prohibited from using 2nd Street through the Transportation Hub area generally between Martin Luther King Jr. Way and Broadway to facilitate bus movements and the bus only lanes would be an effective way to extend lines closer to the ballpark.

Recommendation #2: While not required to address a CEQA impact, as part of the project, consider the recommendation for the City of Oakland in collaboration with the project applicant and other stakeholders from the development community and others to advocate for MTC and Alameda CTC to fund regional monies for more funding for bus service within Oakland to serve the downtown and Howard Terminal project.

Discussion: The combined development in Downtown Oakland associated with Howard Terminal and the Downtown Oakland Specific Plan would add several thousand riders to the AC Transit buses serving the downtown area. The Downtown Oakland Specific Plan calls for bus only lanes and additional amenities supporting bus riders which would help to improve operations but in order to accommodate the added riders, AC Transit would need to increase service into and through downtown.

4.2. BART

The non-ballpark development load was calculated for the three main BART stations located within the project vicinity. In the existing scenario, most of the BART lines going through these stations in the commute direction are heavily loaded during PM peak hours and the non-ballpark development load addition is relatively small. The number of BART trains crossing the Transbay Tube is expected to increase from 24 to 30 trains, a 25% increase in capacity. In addition, the length of the BART train cars is planned to be increased which will add even more capacity and reduce the existing load factors.

Table 7 provides the expected future growth in BART ridership due to additional development in the areas bound by the Downtown Oakland Specific Plan, West Oakland Specific Plan, and Howard Terminal. Development within the Downtown Oakland Specific Plan is expected to substantially increase ridership by 60% to 80% over existing conditions at the 12th Street and Lake Merritt BART stations while the impact of the West Oakland Specific Plan and Howard Terminal will be substantially less.

Table 8 provides the expected change in day-to-day BART line loads with additional development from the non-ballpark development at Howard Terminal. While many of the lines remain over capacity, Howard Terminal only adds approximately one or two percent to the different line loads. Given the small contribution of the project to peak ridership, we do not believe that this warrants an improvement beyond those described already. The cumulative line loads, including development

from Downtown Oakland and West Oakland Specific Plan, were not calculated because the distribution of these cumulative riders across the various BART lines could not be interpreted from the specific plan documents.

Recommendation #3: While not required to address a CEQA impact, as part of the project, consider the recommendation for the City of Oakland in collaboration with stakeholders from the development community and others to advocate for MTC and Alameda CTC to fund regional monies for BART station improvements at all Downtown and West Oakland BART stations.

Discussion: Funding for regional improvements comes from state and federal grants, tolls collected at Bay Area bridges, and countywide ½ cent sales tax dedicated to transportation funding. MTC as the transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area, administers and distributes federal, state, and regional moneys among the various regional transit operators. For example, MTC's Core Capacity Challenge Grant Program commits $7.5 billion over 15 years to fund high-priority transit capital improvements to the region's largest transit systems, including BART and AC Transit. The program will fund transit vehicle replacement fleet expansion, and key facility upgrades.

Table 7: BART Weekday Peak Hour Ridership

	AM (8 to 9 AM)			PM (5 to 6 PM)		
	Boardings	**Alightings**	**Total**	**Boardings**	**Alightings**	**Total**
12th Street						
Existing	952	3,050	4,002	3,255	1,063	4,318
DOSP	618	1,860	2,478	2,378	886	3,264
WOSP	0	0	0	0	0	0
Howard Terminal	101	302	403	311	178	489
Total	**1,671**	**5,212**	**6,883**	**5,944**	**2,127**	**8,071**
Ballpark Night Game	-	-	-	-	778	778
Ballpark Day Game	-	-	-	1,378 (4-5PM)	-	1,378
Lake Merritt						
Existing	1,294	747	2,041	727	1,132	1,859
DOSP	840	456	1,296	531	944	1,475
WOSP	0	0	0	0	0	0
Howard Terminal	16	109	125	138	26	164
Total	**2,150**	**1,312**	**3,462**	**1,396**	**2,102**	**3,498**
Ballpark Night Game	-	-	-	-	579	579
Ballpark Day Game	-	-	-	1,607 (4-5PM)	-	1,607
West Oakland						
Existing	1,595	181	1,776	400	1,339	1,739
DOSP	0	0	0	0	0	0
WOSP	190	467	657	543	252	795
Howard Terminal	211	101	312	145	243	388
Total	**1,996**	**749**	**2,745**	**1,088**	**1,834**	**2,922**
Ballpark Night Game	-	-	-	-	397	397
Ballpark Day Game	-	-	-	741 (4-5PM)	-	741

Sources: October 2018 Tuesday-Thursday data provided by BART in February 2019; Fehr & Peers, 2020.

Table 8: BART Existing Plus Project Non-Ballpark Development Line Load PM Peak (5PM – 6PM)[1]

Line		Existing Conditions			Existing Plus Project		
12th Street to West Oakland		**12th**	**12th - WOAK**	**WOAK**	**12th**	**12th - WOAK**	**WOAK**
Antioch – SFO	Median	0.18	0.25	0.26	0.19	0.25	0.27
	Maximum	0.35	0.48	0.50	0.36	0.49	0.50
Richmond - Millbrae	Median	0.32	0.41	0.42	0.32	0.41	0.43
	Maximum	0.35	0.45	0.46	0.36	0.46	0.48
West Oakland to 12th Street		**WOAK**	**WOAK – 12th**	**12th**	**WOAK**	**WOAK – 12th**	**12th**
SFO – Antioch	Median	**1.22**	**1.16**	**1.15**	**1.23**	**1.17**	**1.16**
	Maximum	**1.35**	**1.30**	**1.36**	**1.36**	**1.31**	**1.38**
Millbrae - Richmond	Median	**1.02**	0.97	0.97	**1.04**	0.98	0.98
	Maximum	**1.16**	**1.10**	**1.10**	**1.18**	**1.11**	**1.11**
Lake Merritt to 12th Street		**LAKE**	**LAKE – 12th**	**12th**	**LAKE**	**LAKE – 12th**	**12th**
Warm Springs - Richmond	Median	0.31	0.38	0.48	0.31	0.38	0.50
	Maximum	0.35	0.41	0.54	0.36	0.41	0.57
12th Street to Lake Merritt		**12th**	**12th - LAKE**	**LAKE**	**12th**	**12th - LAKE**	**LAKE**
Richmond – Warm Springs	Median	0.62	0.86	0.73	0.63	0.87	0.75
	Maximum	0.71	**1.08**	0.93	0.72	**1.09**	0.96
West Oakland to Lake Merritt		**WOAK**	**WOAK – LAKE**	**LAKE**	**WOAK**	**WOAK – LAKE**	**LAKE**
Daly City – Warm Springs	Median	**1.32**	**1.28**	**1.20**	**1.33**	**1.28**	**1.21**
	Maximum	**1.37**	**1.31**	**1.24**	**1.38**	**1.31**	**1.25**
Daly City - Dublin	Median	**1.39**	**1.35**	**1.36**	**1.41**	**1.35**	**1.37**
	Maximum	**1.45**	**1.41**	**1.39**	**1.47**	**1.41**	**1.40**
Lake Merritt to West Oakland		**LAKE**	**LAKE – WOAK**	**WOAK**	**LAKE**	**LAKE – WOAK**	**WOAK**
Warm Springs – Daly City	Median	0.14	0.16	0.17	0.14	0.16	0.18
	Maximum	0.14	0.17	0.17	0.15	0.17	0.18
Dublin – Daly City	Median	0.19	0.17	0.19	0.19	0.17	0.20
	Maximum	0.19	0.18	0.19	0.20	0.18	0.20

Notes:
1. WOAK represents West Oakland BART Station; LAKE represents Lake Merritt BART Station.

Sources: October 2018 Tuesday-Thursday data provided by BART in February 2019; Fehr & Peers, 2020.

4.3. Amtrak

The non-ballpark project development during the AM peak hour and PM peak hour will be adding 50 and 60 trips respectively, though the existing and planned train service is expected to handle these added riders associated with the non-ballpark development. The ballpark game day implications are discussed in the later game day transit operations section.

4.4. Ferry

The current ferry occupancy is much higher than they will be in 2019/20 because 60% of the riders are boarding from Alameda during peak hours, and 40% come from Oakland. Currently, the Oakland service requires a stop at Alameda which adds 15 minutes to the trip. Once the Seaplane Lagoon service is operational, the current Alameda riders will shift to this new service during weekdays. This will open more capacity for Oakland and the service pattern will be changed to Alameda – Oakland – San Francisco, providing a shorter trip for Oakland riders. The non-ballpark development riders between 5 PM to 6 PM are estimated to increase the occupancy by 19% outbound from Oakland and around 8% inbound to Oakland.

5 Game Day Transit Operations

5.1. AC Transit

Game day operations of the Ballpark may add larger numbers of riders to the AC Transit routes near Howard Terminal and will add many pedestrians and vehicles to the streets near the project. Routes that operate through the Jack London Square District, including Lines 12, 72/72M/72R, and Broadway Shuttle, will likely be delayed from this additional traffic and experience higher ridership. Routes that layover at Lafayette Square (bounded by 10th Street, 11th Street, Jefferson Street, and Martin Luther King Jr Way), including the 19, 20, and 29, could be attractive routes for Ballpark patrons since they are relatively close to the project site and would be less affected by vehicle congestion from the Ballpark.

Recommendation #4: While not required to address a CEQA impact, as part of the project, the project applicant should consider supplemental shuttle service (provided by AC Transit or a private operator) to one or more of the three BART stations including the West Oakland, 12th Street, and Lake Merritt BART stations to increase frequency and capacity of transit connections to BART stations on game days.

Discussion: Creating BART shuttle services between Howard Terminal and BART on game days will improve the attractiveness of BART service to game attendees and reduce loads on AC Transit.

5.1.1. Transportation Hub Bus Stop Sizing and Sidewalk Widths

The project applicant proposes to create a Transportation Hub on 2nd Street between Brush Street and Washington Street, with up to twelve transit stop areas serving different transit routes within the Hub. The transit stop areas will streamline Howard Terminal transit operations to provide efficient service every day, particularly on game days with high pedestrian traffic. Given the high expected pedestrian demand for the transit stop areas, the City of Oakland requested that sidewalk widths be evaluated for bus stop platform sizing. **Table 9** describes the transit stop areas within the Transportation Hub along with the number of proposed loading zones for each transit hub serving multiple routes and the existing sidewalk characteristics. This analysis considers the maximum number of shuttle routes that could operate at the Transportation Hub.

Table 9: Transit Stop Location and Loading Zones

Transit Stop[1]	Loading Zones	Buses Per Hour	Location	Existing Sidewalk Width (Feet)	Available Sidewalk ROW (Feet)
West Oakland Shuttle	2	24	2nd Street block between Brush and Castro Streets	18	26
12th Street BART Shuttle	3	36	2nd Street block between Castro Street and Martin Luther King Jr Way	18	26
Line 6, 72, 72M, 72R (Lines serve 12th Street BART station)	3	15	2nd Street block between Martin Luther King Jr. Way and Jefferson Street	18	26
Line 29 and 36 (Lines serve Lake Merritt BART station)	2	6	2nd Street block between Jefferson Street and Clay Street	5	26
Lake Merritt BART Shuttle	3	36	2nd Street block between Clay Street and Washington Street	18	26

Notes:
1. AC Transit lines listed in this table are examples of the routes that could serve the Transportation Hub.
Source: Fehr & Peers, 2020.

Calculation of sidewalk widths needed to accommodate passing pedestrians and bus stops at the Transportation Hub used the methods described in Chapter 10 of the Transit Capacity and Quality of Service Manual (TCQSM), which describes thresholds for pedestrian Level of Service (LOS) on walkways and waiting areas at transit stops. Pedestrian LOS is based on pedestrian density and is a measure of pedestrian comfort while walking or standing. Pedestrian LOS thresholds established in the TCQSM were used to determine the minimum width of walkways and waiting areas to provide a sufficient level of pedestrian comfort. Pedestrian walking and queueing volumes considered the number of loading zones, bus frequencies, average headway, maximum passenger waiting and the flow of pedestrians passing through a stop to reach another block.

This analysis uses standards of pedestrian LOS C for walkways and pedestrian LOS D for waiting areas to represent sufficient pedestrian comfort. According to the TCQSM, pedestrian LOS C for walkways requires at least 15 square feet person, with a maximum pedestrian flow of 15 people per foot of walkway width per minute. Pedestrian LOS D for the waiting areas requires at least three square feet per person. Bus capacities was assumed to be 55 passengers per bus, and the platform

waiting length was assumed to be 80 feet for each loading zone. This analysis also includes a 1.5-foot wide buffer zone between the waiting area and the curb and two feet of buffer area for the walkway.

Pedestrian demand was analyzed for departures at the end of an at-capacity baseball game, which represents the period of maximum demand. As shown in **Table 10**, the existing sidewalk width is greater than the sidewalk width needed to provide sufficient pedestrian comfort at four of the five bus stops. At the stop that could potentially serve Lines 29 and 36 (between Jefferson Street and Clay Street), the existing sidewalk width is less than the sidewalk width needed to provide sufficient pedestrian comfort. However, there is enough available right-of-way for a potential sidewalk expansion to accommodate the desired sidewalk width.

The bus stops that could potentially serve the West Oakland BART shuttle, 12th St BART shuttle, and Lines 6, 72, 72M, and 72R would provide pedestrian LOS A for passing pedestrians and queueing passengers, and the proposed bus frequencies would be sufficient to avoid long queues. The bus stop serving the Lake Merritt BART shuttle would be able to provide pedestrian LOS B for passing pedestrians and queueing passengers without widening the existing sidewalk. The proposed frequency of the Lake Merritt BART shuttles would lead to a substantial number of queueing passengers, which could be avoided by providing an additional shuttle.

Table 10: Required Bus Stop Platform Width

Bus Stop[1]	Loading Zones	Buses Per Hour	Passenger Arrival Rate per Minute	Passing Pedestrian Flow Per Hour	Maximum Waiting Passengers	Needed Sidewalk Width (Feet)[2]	Existing Sidewalk Width (Feet)	Available Sidewalk ROW (Feet)
West Oakland BART Shuttle	2	24	17	100	42	8.5	18	26
12th St BART Shuttle	3	36	31	1900	52	8	18	26
Line 6, 72, 72M, 72R	3	15	9	2400	36	8	18	26
Line 29, 36	2	6	4	2200	44	**8.5**	5	26
Lake Merritt BART Shuttle	3	36	36	100	242	10.5	18	26

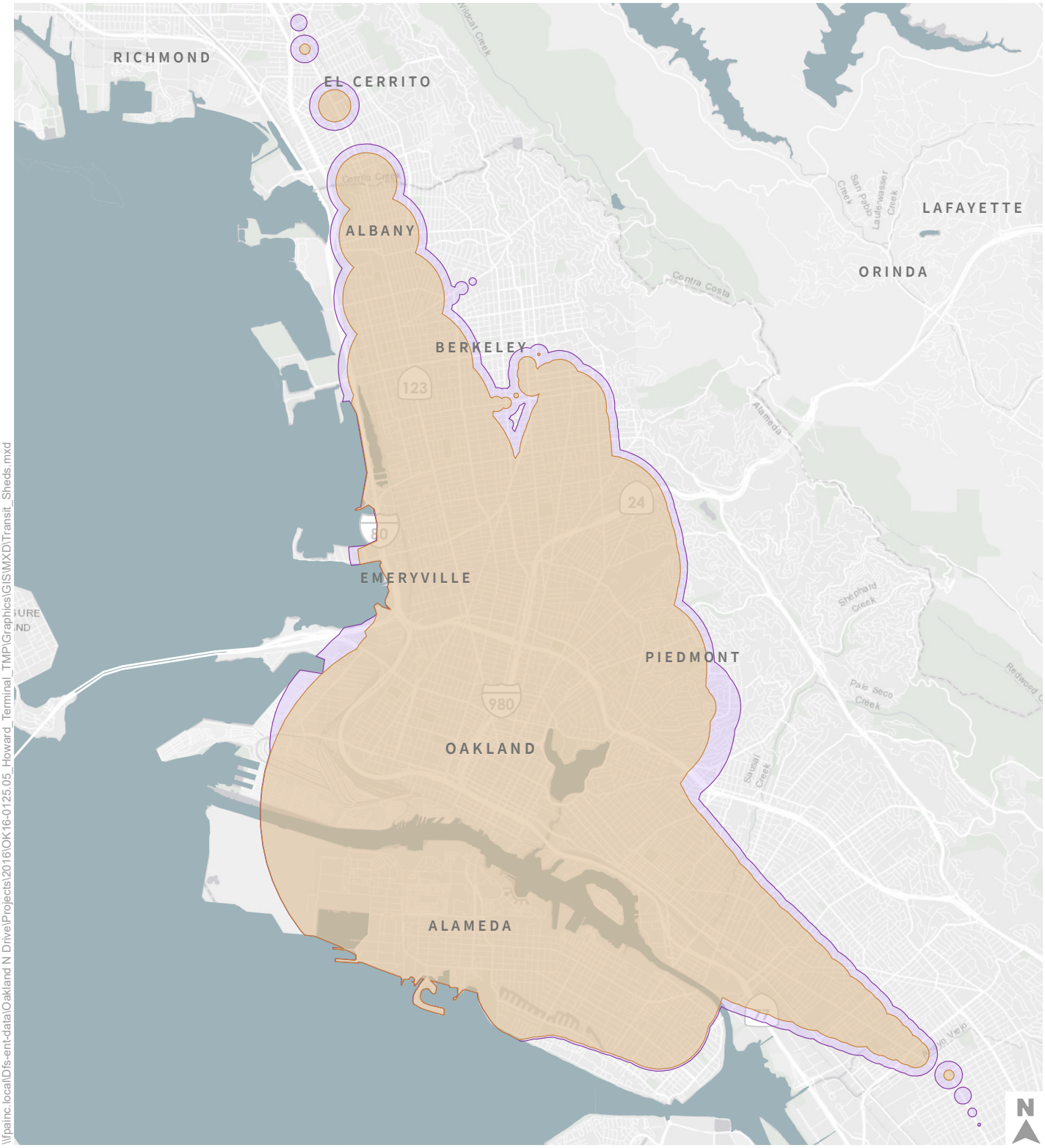
Notes:
1. AC Transit lines listed in this table are examples of the routes that could serve the Transportation Hub.
2. **Bold** indicates that the needed sidewalk width is greater than the existing sidewalk width.

Sources: TCQSM, 2013; Fehr & Peers, 2020.

The bus stop platform widths calculated for this table are incorporated into designs for the Transportation Hub included as part of the off-site improvements for the project.

5.1.2. Ballgame Market for Bus Service

The City of Oakland requested that the potential market for ballgame bus transit service with the proposed transit improvements be established. The potential market share was established using existing schedule data from AC Transit and including the proposed changes to Lines 6, 29, 36, 72, 72M, and 72R, together with adjustments to account for the proposed bus-only lanes on Broadway and 7th Street. One-hour bus transit travel sheds were created for the existing and proposed scenarios, as shown in **Figure 1**. These travel sheds were compared to the current Oakland A's attendees who drive using StreetLight Data. Based on this analysis, up to 26 percent of the current ballgame attendees would be within one hour of Howard Terminal via bus transit under existing conditions, and up to 27 percent would be within one hour of Howard Terminal with the proposed transit changes. Howard Terminal is within a quarter mile of several bus lines, which limits the increased reach of adjusting transit service, but having a consolidated Transportation Hub and bus-only lanes would still increase the attractiveness of bus transit by improving the legibility, reliability, and speed of service. This analysis serves to support the potential bus ridership for ballgames. Ridership forecasts to estimate game day ridership demand have not been prepared.



Existing Transit Shed

Proposed Transit Shed Additional Coverage

Figure 1

Existing and Proposed One-Hour Bus Transit Travel Sheds

5.2. BART

The non-ballpark development load was calculated for the three main BART stations located within the project vicinity. While the incremental change in ridership associated with Howard Terminal non-ballpark development would be relatively small the cumulative effect of development allowed under the Downtown Oakland Specific Plan and West Oakland Specific Plan will be substantial. During the hour immediately following the end of a weekday midday game (typically representing the 4:00 PM to 5:00 PM hour), an at-capacity crowd at Howard Terminal would add roughly 1,400 BART riders to the 12th Street station, about 1,600 riders to the Lake Merritt station, and about 700 riders to the West Oakland station. **Table 7** provides the expected future growth in BART ridership on game days.

> **Recommendation #6:** Weekday afternoon baseball games typically end towards the beginning of the commute period and would be added to existing commuters entering the BART station. On the 12-14 weekday game days per year, this substantial increase in BART ridership is expected to cause pedestrian congestion at the stations, especially the 12th Street station during the weekday commute period between 3 and 7 PM. The flow of these additional passengers to and from the BART station should be guided to improve throughput and manage crowding, similar to how crowding is managed today at the Coliseum station on game days. This can be achieved by the addition of station personnel on Ballpark game days during the commute period, and enough wayfinding signage to direct Ballpark patrons to the most efficient routes in and out of these stations. During evening events, Howard Terminal patrons would be exiting stations when most existing 12th Street station patrons are entering, so it is unlikely that they would impact platforms or trains. BART may schedule additional trains and provide personnel for crowd management to support exiting after evening and weekend events.
>
> In addition, wayfinding signage should be used to guide ballpark patrons between the three BART stations (West Oakland, 12th Street, and Lake Merritt) and the ballpark including mileage (or time) markers to provide certainty to ballpark patrons that they are walking along the designated route and certainty about the walking distance (or time).
>
> **Discussion:** The ballpark at Howard Terminal benefits from being located about one mile from three BART stations which will disperse ballpark attendees to three stations rather than concentrating ridership to a single station. Wayfinding signage directing riders to the

BART stations with distance markers would help to distribute riders across three stations lessening the impact at BART stations and provide confidence to patrons who walk from BART.

Currently, the Coliseum Authority provides an event schedule to BART, and BART adds additional staff to handle events at the Coliseum. Staff manage the pedestrian flow leaving and entering the station, provide information to patrons with questions, and monitor platform activity for overcrowding. During the hour before and the hour after an event at Howard Terminal the attendees have the potential to stress one or more of the local BART stations. Based on the analysis, the likely station to be impacted includes the 12th Street BART Station during the weekday commute period when BART ridership at the station is highest.

A recommendation for additional BART station personnel and wayfinding for a route to each BART station has been included in the Transportation Management Plan.

5.3. Amtrak

Howard Terminal is predicted to add approximately 700 weekday Amtrak trips, almost double the existing ridership. The effectiveness of trains to accommodate game day ridership is limited because of today's train schedule. The train operators have limited flexibility to adjust train schedules to accommodate baseball games because the schedules must go through an approval process with Union Pacific Railroad who is the track owner. To do so would also require close coordination between the train operators and the project applicant to ensure train arrivals are within 30 to 60 minutes of the first pitch and last out. The difficulty arises because the last out varies from one game to the next. According to the train operators, trains to existing A's games that are advertised as such can carry up to 200 ballpark attendees and remove up to 80 automobiles from the I-880 freeway.

Recommendation #7: While not required to address a CEQA impact, as part of the project, consider that the project applicant through collaboration with the train operators and track owners evaluate the feasibility of providing train service for ballpark attendees based on fan interest.

5.4. Ferry

The effectiveness of ferries to accommodate game day ridership today is limited because of the existing ferry schedule. While the schedule is expected to change with planned WETA service improvements, without coordination between WETA and the project applicant the ferry service is likely to only be marginally successful However, WETA has flexibility to adjust ferry schedules to accommodate baseball games. To do so would require close coordination between WETA and the project applicant to ensure ferry arrivals are within 30 to 60 minutes of the first pitch and last out. Based on ferry service to Oracle Park a well-coordinated Ferry service including three vessels could carry over 1,000 ballpark attendees who would otherwise drive or take BART depending on their origin and destination.

> **Recommendation #8:** While not required to address a CEQA impact, as part of the project, consider that the project applicant through collaboration with WETA evaluate the effectiveness of providing additional ferry service for ballpark attendees based on fan interest outside the weekday commute period when ferry service to Oakland is at capacity as it relates to available ferry vessels and dock capacity.

TRA.7 Port of Oakland Intersection Operations Sensitivity Analysis

FEHR PEERS

MEMORANDUM

Date: December 1, 2020

To: Andrea Gardner, Port of Oakland

From: Rob Rees and Lee Reis, Fehr & Peers

Subject: **Howard Terminal - Port of Oakland Intersection Operations Sensitivity Analysis**

OK16-0125.06

The Oakland A's are proposing non-ballpark and ballpark development on the Howard Terminal site. This development would cause operations to shift from Howard Terminal to other locations within the Port of Oakland. In addition, while the operations analysis to date has shown that there will be relatively small increases in delay on truck routes, there may be shifts in Port traffic on Howard Terminal event days if Port users pre-plan to avoid roads with event day traffic. At the request of the Port of Oakland, Fehr & Peers performed an analysis of eleven intersections both internal and adjacent to the Port under various scenarios. This memorandum describes the analysis methodology, sets forth criteria for evaluating the performance of each intersection according to the vehicular Level of Service (LOS) and accumulated vehicle queue lengths, and presents results for discussion. This analysis considers the following scenarios:

- Existing Conditions
- Existing Plus Project
- Sensitivity Testing
    - Existing Plus Project Plus Rerouting 25 Percent of Traffic Away from Adeline Street
    - Existing Plus Project Plus Rerouting 50 Percent of Traffic Away from Adeline Street

The Existing Conditions consider current operations at Howard Terminal. Vehicles currently access Howard Terminal at the Market Street & Embarcadero West and Martin Luther King Jr. Way & Embarcadero West intersections. Under the Plus Project scenarios, existing traffic at Howard Terminal is rerouted to other areas of the Port of Oakland, in accordance with current distributions of traffic within the Port's access at Adeline, 7th, and Maritime Streets.

The sensitivity testing scenarios consider the results if Port vehicles pre-plan to avoid roads with event day traffic by rerouting away from Adeline Street. Under the listed scenarios, intersection operations at the study intersections remain at vehicular LOS D or better, and average vehicle queuing is within the available queue storage space. Some movements at a limited number of intersections exceed the available queue storage space under the 95th percentile queuing.

The Port of Oakland has also expressed concern about non-Port traffic cutting through the Port to avoid freeway congestion. This memorandum includes an estimate of existing cut-through traffic and the potential for additional cut-through traffic with the Howard Terminal non-ballpark development. Between 11 and 20 percent of existing passenger vehicle traffic through the Port is estimated to be cut-through traffic avoiding congestion on I-880 to and from the Bay Bridge. Given the expected geographic distribution of vehicle trips to and from Howard Terminal, the non-ballpark development is expected to add 10 or fewer cut-through trips to the Port in the AM and PM peak periods.

1. Study Intersection Selection

The Port of Oakland identified eleven intersections for this analysis as shown in **Figure 1**. Intersections #1 to #5 and #8 to #11 are adjacent to the Port of Oakland and are important for Port traffic, either as a route to the freeway system or as a truck route. Intersections #6 and #7 are internal to the Port of Oakland, although they are public roads and accessible by private vehicles.

1. Union Street & 7th Street
2. Union Street/I-880 On and Off Ramp & 5th Street
3. Adeline Street & 7th Street
4. Adeline Street & 5th Street
5. Adeline Street & 3rd Street
6. Middle Harbor Road & Maritime Street
7. Maritime Street & 7th Street
8. I-880 On-Ramp & 7th Street
9. I-880 Off-Ramp/Frontage Road & 7th Street
10. Maritime Street/Wake Avenue & West Grand Avenue
11. I-80/Frontage Road & West Grand Avenue



LEGEND

- Study Area Boundary
- Study Intersection
- BART Station
- Amtrak
- Ferry

Figure 1

Study Intersections

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Several improvements to intersection geometry and signalization were included in the Plus Project scenarios based on the technical memorandum titled *Howard Terminal Project – Operations Analysis* (December 2020, Operations Analysis Memorandum). **Table 1** lists the intersection control and any updates to the lane configurations for each intersection under the Existing and Existing Plus Project scenarios.

Table 1: Intersection Stop Control Type and Geometry Updates

Intersection	Existing Control[1]	Existing Plus Project Control[1]	Existing Plus Project Geometry Changes
1. Union Street & 7th Street	Signal	Signal	Dedicated bus lanes and/or bike lanes added in both directions along 7th Street
2. Union Street/I-880 On and Off Ramp & 5th Street	Signal	Signal	NB shared through-right lane converted to dedicated right-turn lane
3. Adeline Street & 7th Street	Signal	Signal	Dedicated bus lanes and/or bike lanes added in both directions along 7th Street
4. Adeline Street & 5th Street	Signal	Signal	SB approach converted to shared through-right and dedicated left turn lanes; NB and EB through-right lanes converted to dedicated right-turn lanes
5. Adeline Street & 3rd Street[2]	AWSC	Signal	SB approach converted to dedicated left-turn, through, and through-right lanes; NB left prohibited to provide two through lanes
6. Middle Harbor Road & Maritime Street[2]	AWSC	AWSC	None
7. Maritime Street & 7th Street	Signal	Signal	None
8. I-880 On-Ramp & 7th Street	Signal	Signal	None
9. I-880 Off-Ramp/Frontage Road & 7th Street	Signal	Signal	None
10. Maritime Street/Wake Avenue & West Grand Avenue	Signal	Signal	None
11. I-80/Frontage Road & West Grand Avenue	Signal	Signal	None

Notes:
1. Signal = signalized intersection; AWSC= all-way stop-controlled intersection.
2. Signal currently operates as flashing red.

Source: Fehr & Peers, 2020.

Both the Adeline Street & 3rd Street and the Middle Harbor Road & Maritime Street intersections have existing signal infrastructure, but the signals always operate as all-way stops. Adeline Street & 3rd Street is the only intersection that is proposed to change from all-way stop control to a signalized intersection.

2. Data Collection

Weekday midday and PM peak period (11:00 AM to 1:00 PM and 4:00 to 6:00 PM) traffic counts, including counts of heavy vehicles, pedestrians and bicycles, were collected at the study intersections on the dates shown in **Table 2**. Each were collected on clear days while the Port of Oakland was under normal operations. Intersection lane configurations and signal timings were verified in the field.

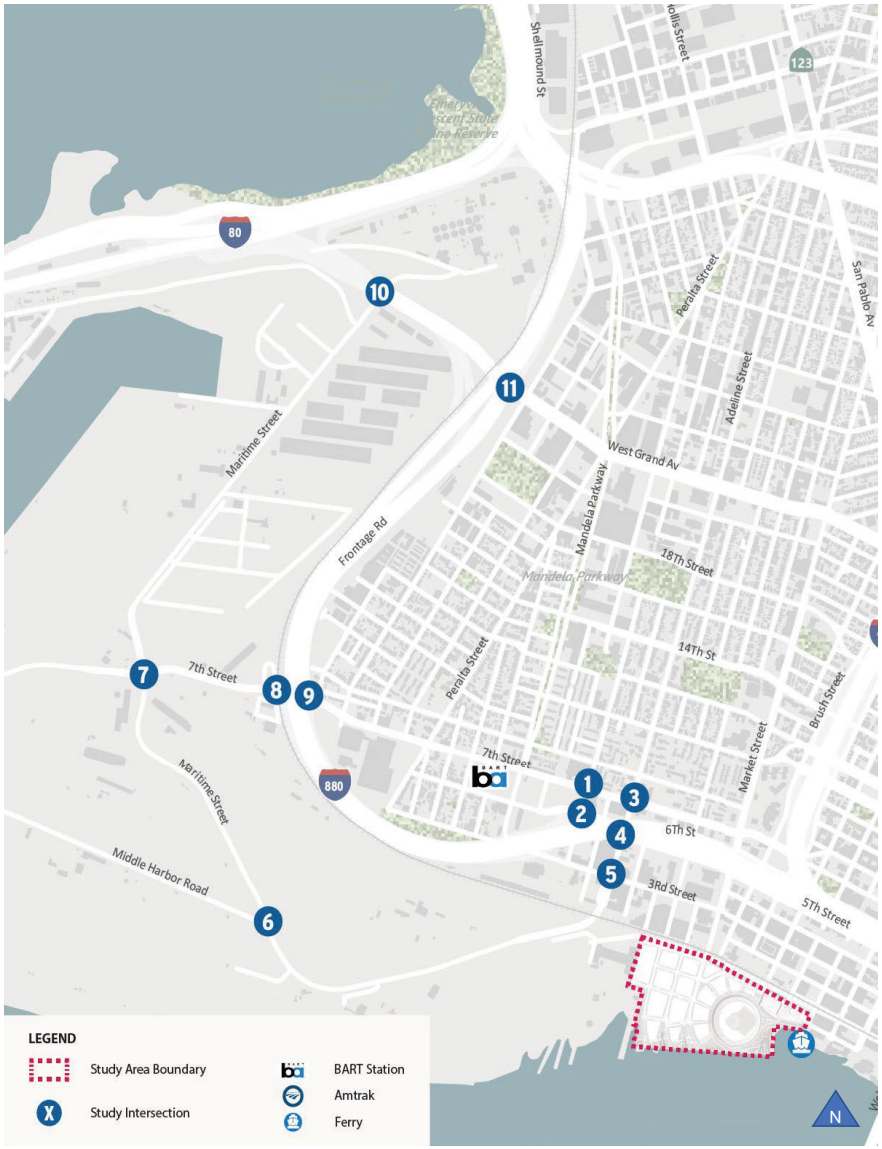
Table 2: Dates of Data Collection

Intersection	Peak Period [1]	Date of Collection
1. Union Street & 7th Street	Midday and PM	June 2019
2. Union Street/I-880 On and Off Ramp & 5th Street	Midday and PM	June 2019
3. Adeline Street & 7th Street	Midday and PM	June 2019
4. Adeline Street & 5th Street	Midday and PM	June 2019
5. Adeline Street & 3rd Street	Midday	May 2018
	PM	September 2018
6. Middle Harbor Road & Maritime Street	Midday and PM	May 2019
7. Maritime Street & 7th Street	Midday and PM	May 2019
8. I-880 On-Ramp & 7th Street	Midday and PM	May 2019
9. I-880 Off-Ramp/Frontage Road & 7th Street	Midday and PM	May 2019
10. Maritime Street/Wake Avenue & West Grand Avenue	Midday and PM	May 2019
11. I-80/Frontage Road & West Grand Avenue	Midday and PM	May 2019

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.

Source: Fehr & Peers, 2020.

The global peak periods for the study intersections during the midday and PM periods were selected for analysis. These peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening. The PM peak period is consistent with the Operations Analysis Memorandum. **Figure 2** shows the existing midday and PM peak hour traffic volumes, intersection lane configurations, and traffic control devices at the study intersections.



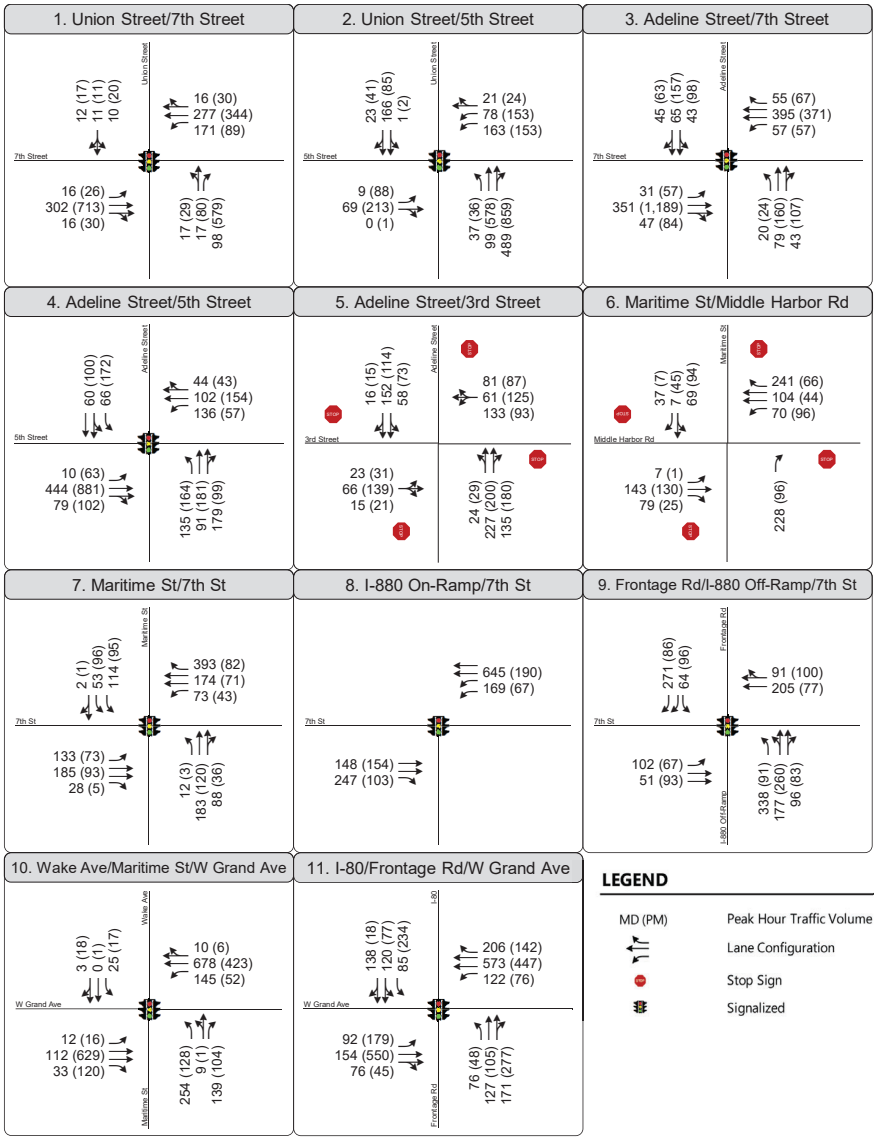


Figure 2

Existing Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations, and Traffic Controls

3. Existing Conditions Intersection Operations and Queuing Results

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic operating conditions from the vehicle driver perspective and is determined by the delay experienced by the driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delays.

Where possible, traffic conditions at signalized intersections were evaluated using methodologies proposed by the Transportation Research Board (TRB), as documented in the 2010 Highway Capacity Manual (2010 HCM) for vehicles. The HCM 2010 methods calculates control delay at an intersection based on inputs such as traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop-sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The relationship between LOS and control delay is summarized in **Table 3**. Intersections with atypical configuration or signal phasing that could not be evaluated in the 2010 HCM method were instead evaluated using the HCM 2000 method.

Table 3: Signalized Intersection LOS Criteria

Level of Service	Signalized Intersection Control Delay (sec/veh)[1]	Unsignalized Intersection Control Delay (sec/veh)[1]	General Description
A	≤10.0	≤10.0	Little to no congestion or delays.
B	>10.0 and ≤20.0	>10.0 and ≤15.0	Limited congestion. Short delays.
C	>20.0 and ≤35.0	>15.0 and ≤25.0	Some congestion with average delays.
D	>35.0 and ≤55.0	>25.0 and ≤35.0	Significant congestion and delays.
E	>55.0 and ≤80.0	>35.0 and ≤50.0	Severe congestion and delays.
F	> 80.0	> 50.0	Total breakdown with extreme delays.

Notes:
1. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay.

Source: *Highway Capacity Manual,* Chapter 18 (Signalized Intersections) and Chapters 19 and 20 (Unsignalized Intersections), Transportation Research Board, 2010.

For unsignalized (all-way stop-controlled) intersections, the 2010 HCM method for unsignalized intersections was used. With this method, operations are defined by the average control delay per vehicle (measured in seconds). The control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in queue. Table 3 also summarizes the relationship between LOS and delay for unsignalized intersections.

Table 4 lists the LOS for each study intersection from Synchro 10 under Existing Conditions for the midday and PM peak periods. Detailed intersection LOS calculation worksheets are presented in **Appendix A**. All intersections operate at LOS C or better under Existing Conditions.

Table 4: Intersection LOS for Existing Conditions

Intersection	Peak Hour [1]	Delay (sec.)	LOS
1. Union Street & 7th Street	MD PM	9 17	A B
2. Union Street/I-880 On and Off Ramp & 5th Street	MD PM	21 26	C C
3. Adeline Street & 7th Street	MD PM	8 9	A A
4. Adeline Street & 5th Street	MD PM	23 21	C C
5. Adeline Street & 3rd Street	MD PM	15 15	B C
6. Middle Harbor Road & Maritime Street	MD PM	16 12	C B
7. Maritime Street & 7th Street[2]	MD PM	31 27	C C
8. I-880 On-Ramp & 7th Street	MD PM	5 4	A A
9. I-880 Off-Ramp/Frontage Road & 7th Street[2]	MD PM	30 22	C C
10. Maritime Street/Wake Avenue & West Grand Avenue[2]	MD PM	28 29	C C
11. I-80/Frontage Road & West Grand Avenue[2]	MD PM	21 21	C C

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Delay and LOS calculated using HCM 2000 due to limitations in 2010 HCM

Source: Fehr & Peers, 2020.

Vehicle delay and LOS are the most accepted indications of the driver experience in the road network. While there is no CEQA threshold established for queue storage, queue lengths may also indicate performance of a road network. Synchro 10 was also used to estimate the average and 95th percentile vehicle queues for movements at each signalized intersection. **Appendix B** lists the queue lengths by turning movement under Existing Conditions, with detailed worksheets in **Appendix C**. For the purposes of this analysis, average queue lengths that are less than the available queue storage are considered acceptable. Average queue lengths under both midday and PM peak periods are contained within the available storage for all intersection approaches, and therefore are acceptable. However, the 95th percentile queues exceed the storage length for at least one movement at the following intersections:

1. Union Street & 7th Street (PM peak)
7. Maritime Street & 7th Street (Midday peak)

Table 5 lists the Existing Conditions queue lengths for the intersections and movements where queues exceed the available storage. The 95th percentile queues that exceed the available storage at each of the intersections in Table 5 do so for a small portion of a given hour generally only for one or two signal cycles during the peak hour and typically there are 40 signal cycles each hour. Adjusting the signal coordination is one way to minimize queues that exceed the available storage length.

Table 5: Existing Conditions Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour [1]	Queue Length Average (95th) [2]
1	Union Street & 7th Street	NBR	250	MD PM	25 (50) 200 (**350**)
7	Maritime Street & 7th Street	EBL	125	MD PM	75 (**225**) 50 (100)

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Average = average queue length. 95th = 95th percentile queue length. Queue lengths are reported in feet. Queues that exceed available storage are shown in **bold**

Source: Fehr & Peers, 2020.

4. Existing Plus Project Intersection Operations and Queuing

The Existing Plus Project scenario evaluates the combined effects of rerouting existing Howard Terminal vehicles and adding the full buildout non-ballpark development trips to the study intersections. The following sections describe rerouting existing Howard Terminal vehicles, adding the non-ballpark development trips, and the Existing Plus Project results.

4.1. Howard Terminal Existing Vehicle Rerouting

Trucks and private vehicles currently access Howard Terminal through the Market Street & Embarcadero West and Martin Luther King Jr. Way & Embarcadero West intersections. Under Plus Project conditions the trucks and cars previously entering and leaving Howard Terminal would instead be routed to other areas of the Port of Oakland, except for volumes associated with Schnitzer Steel operations. Turning movements from May 2018 were analyzed at the two entrances to Howard Terminal for the midday and PM peak hours. These hours are 11:00 AM to 12:00 PM and 4:45 to 5:45 PM. **Table 6** shows the traffic volumes entering (inbound) and exiting (outbound) Howard Terminal on the day of data collection for the two access intersections. As shown in the table, there were 230 vehicles and 196 vehicles accessing Howard Terminal during the midday and PM peak hours, respectively.

Table 6: Peak Hour Vehicles Accessing Howard Terminal

Peak Period [1]	Market Street & Embarcadero West		MLK Jr Way & Embarcadero West		Total by Movement		Total Intersection Volume
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	
Midday	44	36	78	72	122	108	230
PM	24	31	60	81	84	112	196

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
Source: Fehr & Peers, 2020.

Under Plus Project conditions, the vehicles accessing Howard Terminal are distributed throughout the Port of Oakland in accordance with current distribution of Port activity to the access points on Adeline Street, 7th Street, and Maritime Street. The vehicles are distributed within the Port to determine internal intersection volumes based on the *7th Street Grade Separation and Port Arterial*

Improvements Project Traffic Study Report (Jacobs, July 2018). Fifty percent of Port traffic enters and exits the Port along Adeline Street, 34 percent enters and exits at 7th Street, and 16 percent enters and exits at West Grand Avenue. The distribution of Port traffic is detailed in **Figure 3** as well as three trip generation zones are considered within the Port based on the locations of the two study intersections internal to the Port.

4.2. Non-Ballpark Development Project Trip Generation, Distribution, and Assignment

A detailed discussion of trip generation is provided in the technical memorandum titled *Howard Terminal Project – Transportation and Parking Demand Management for Non-Ballpark Development and Ballpark* (TDM Memorandum) which established the peak hour trip generation for the non-ballpark development. The trip generation process follows the guidance set forth in the City of Oakland Transportation Impact Review Guidelines (TIRG).

Project trip distribution percentages were determined based on existing travel patterns in the project vicinity and data from the Alameda County Transportation Commission (CTC) Countywide Travel Demand Model for residential and employment land uses. The resulting weekday PM peak hour distributions for the non-ballpark development are:

- 32 percent to/from I-980
- 17 percent to/from I-880 N
- 19 percent to/from I-880 S
- 6 percent to/from Alameda
- 11 percent to/from local streets (West and North)
- 9 percent to/from downtown
- 5 percent to/from East Oakland
- 1 percent to/from Jack London District

These same percentages were used for the midday project trips. The project trips were then assigned to the road network and added to the existing traffic volumes. **Figure 4** shows the peak hour volumes, lane configurations, and traffic control devices for the Existing Plus Project scenario. The Existing Plus Project scenario includes roadway and intersection improvements as summarized in Table 1.



LEGEND

- Study Area Boundary
- Study Intersection (X)
- Trip Distribution (XX%)
- Trip Generation/Attraction Zone (XX%)
- BART Station
- Amtrak
- Ferry

Figure 3

Rerouted Howard Terming Trip Generation and Distribution

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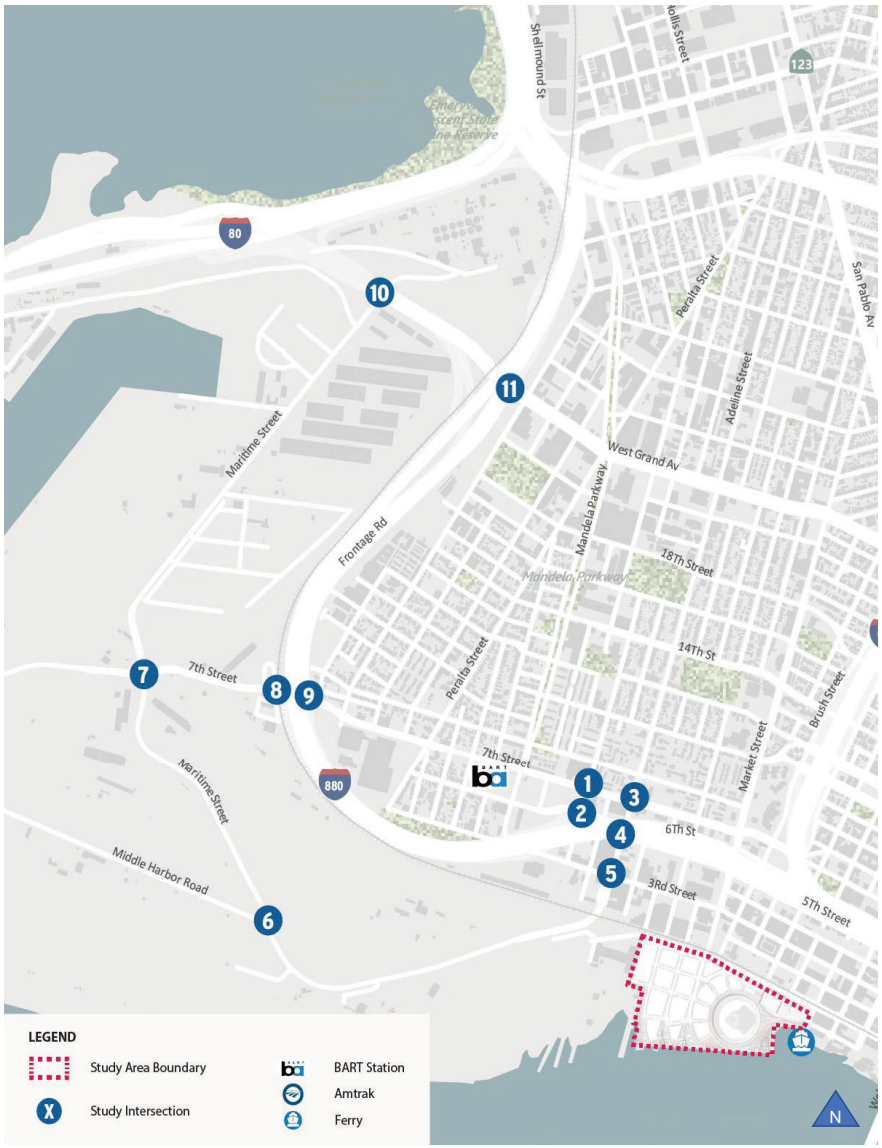


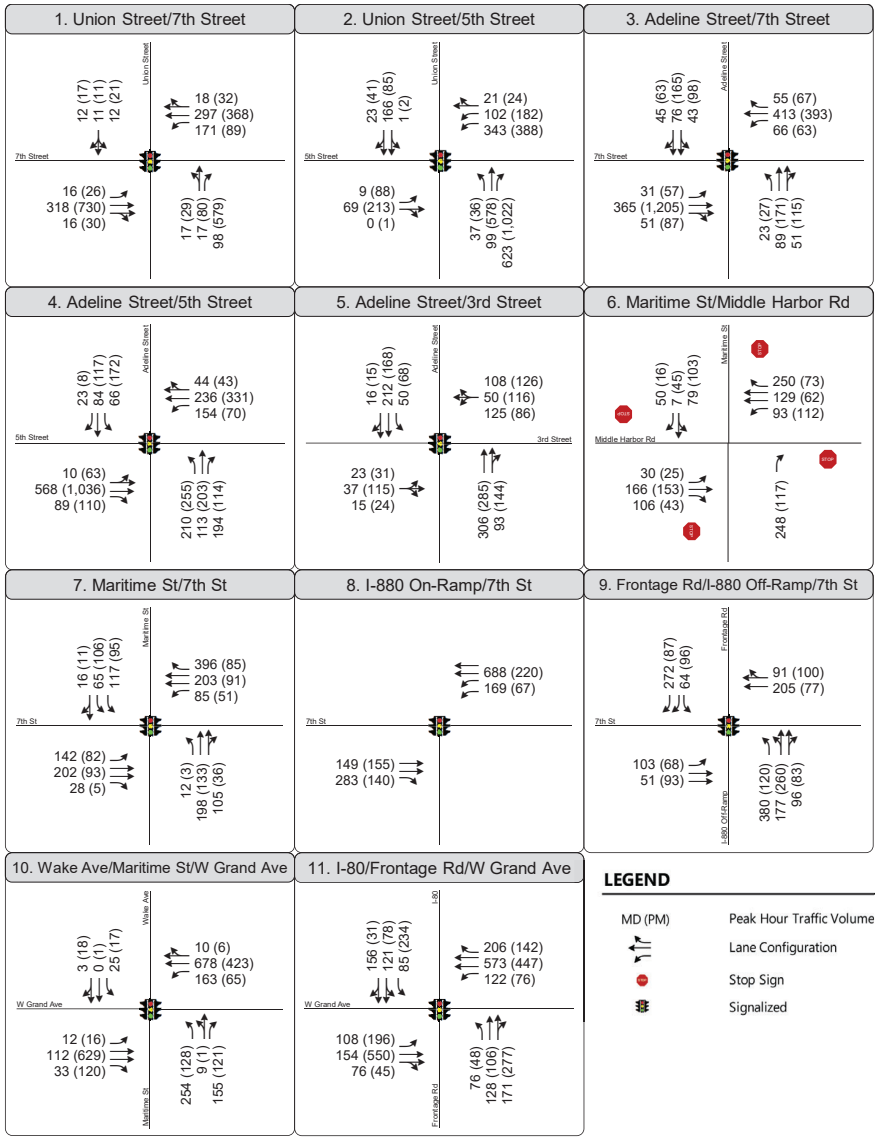


Figure 4

Existing Plus Howard Terminal Rerouting Plus Non-Ballpark Development
Peak Hour Intersection Traffic Volumes, Lane Configurations, and Traffic Controls

4.3. Existing Plus Project Results

Table 7 lists the LOS and delay for each study intersection from Synchro 10 software for the Existing Plus Project scenario in the weekday midday and weekday PM peak hours. Detailed intersection LOS calculation worksheets are included in Appendix A. During the midday peak hour, the intersection Adeline Street & 5th Street (#4) is expected to operate at LOS D. All other intersections operate at LOS C or better. Typically, LOS E is considered acceptable for peak hour intersection operations.

Table 7: Intersection LOS for Existing Plus Project Scenario

Intersection	Peak Hour [1]	Existing Conditions		Existing Plus Project	
		Delay (sec.)	LOS	Delay (sec.)	LOS
1. Union Street & 7th Street	MD PM	9 17	A B	9 17	A B
2. Union Street/I-880 On and Off Ramp & 5th Street	MD PM	21 26	C C	22 28	C C
3. Adeline Street & 7th Street	MD PM	8 9	A A	9 9	A A
4. Adeline Street & 5th Street	MD PM	23 21	C C	38 32	D C
5. Adeline Street & 3rd Street	MD PM	15 15	B C	17 18	C B
6. Middle Harbor Road & Maritime Street	MD PM	16 12	C B	19 14	C B
7. Maritime Street & 7th Street[2]	MD PM	31 27	C C	33 26	C C
8. I-880 On-Ramp & 7th Street	MD PM	5 4	A A	4 4	A A
9. I-880 Off-Ramp/Frontage Road & 7th Street[2]	MD PM	30 22	C C	29 22	C C
10. Maritime Street/Wake Avenue & West Grand Avenue[2]	MD PM	28 29	C C	26 29	C C
11. I-80/Frontage Road & West Grand Avenue[2]	MD PM	21 21	C C	21 21	C C

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Delay and LOS calculated using HCM 2000 due to limitations in 2010 HCM

Source: Fehr & Peers, 2020.

Appendix B lists the vehicle queue lengths by turning movement for the Existing Plus Project scenario, with detailed worksheets in Appendix C. Average vehicle queue lengths during both midday and PM periods are contained within the available storage for all intersection approaches. 95th percentile vehicle queues exceed the storage length for at least one movement at the following intersections:

1. At the Union Street & 7th Street intersection, the 95th percentile queue in the PM peak increases from 350 to 375 feet for the northbound right movement, compared to 250 feet of storage.
7. At the Maritime Street & 7th Street intersection, the 95th percentile queue in the Midday peak for the eastbound left movement increases from 225 to 250 feet, compared to 125 feet of storage. The 95th percentile queue in the Midday peak for the westbound left movement increases from 100 to 125 feet, compared to 100 feet of storage.

Table 8 lists the queue lengths for the intersections in which queues exceed the available storage under Existing and Existing Plus Project conditions. In both scenarios, average queues do not exceed the available storage and thus are considered acceptable. This is an indication that the added traffic from the Project would have no noticeable effect on vehicle queue characteristics from the driver perspective over the course of one hour. The differences in 95th percentile queues between Existing and Existing Plus Project scenarios are no greater than 25 feet which is within the expected day-to-day variability in traffic operations. Traffic signal retiming and coordination are tools used to minimize maximum queue characteristics and should be implemented with regular monitoring. Note that the queue at I-880 off-ramp at Union Street improves with the Project's right-turn lane

> **Recommendation #1:** While not required to address a CEQA impact, as part of the project, include annual non-event day monitoring of queues at the two intersections identified as locations where the project trips may result in 95th percentile queues either exceeding the available storage or exacerbate existing queue storage constraints. This monitoring should occur on at least two non-event days during the midday and PM peak periods. Based on the monitoring results, adjust signal timing and coordination to manage the maximum queues observed during the monitoring.
>
> **Discussion:** As discussed in the Existing Conditions section, vehicle delay and LOS are the most accepted indications of the driver experience in the road network. While there is no CEQA threshold established for queue storage, queue lengths may also indicate performance of a road network. All the study intersections in this memorandum are expected to operate at acceptable LOS levels which indicates that drivers will not notice

the changes from the added non-ballpark development traffic. This is further supported by the finding that all vehicle queues will be within the available storage lengths. Even so, the 95th percentile queue is expected to increase by 25 feet at some locations and exceed the available storage. This indicates that these movements should be monitored and tools such as signal timing and coordination applied to ensure optimal operations.

Table 8: Critical Vehicle Queues for Existing and Existing Plus Project Conditions

#	Study Intersection	Movement	Storage (ft)	Peak Hour [1]	Queue Length Average (95th) [2]	
					Existing	Existing Plus Project
1	Union Street & 7th Street	NBR	250	MD PM	25 (50) 200 (**350**)	25 (50) 200 (**375**)
7	Maritime Street & 7th Street	EBL	125	MD PM	75 (**225**) 50 (100)	100 (**250**) 50 (100)
		WBL	100	MD PM	50 (100) 25 (75)	50 (**125**) 25 (75)

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Average = average queue length. 95th = 95th percentile queue length. Queue lengths are reported in feet. Queues that exceed available storage are shown in **bold**

Source: Fehr & Peers, 2020.

5. Sensitivity Testing Intersection Operations and Vehicle Queuing

While the Operations Analysis Memorandum shows that there will be relatively small increases in delay on truck routes, there may be shifts in Port traffic on event days if Port users pre-plan to avoid roads with event day traffic. Port of Oakland staff requested a sensitivity test assuming vehicles reroute away from the Adeline Street & 3rd Street intersection (#5) to enter and exit the Port. Two additional scenarios were selected for study:

- Existing Plus Project Plus Rerouting 25 Percent of Traffic Away from Adeline Street
- Existing Plus Project Plus Rerouting 50 Percent of Traffic Away from Adeline Street

For each scenario, the stated percentage of traffic using Adeline Street to enter or exit the Port was rerouted to the Port access intersections along 7th Street and West Grand Avenue. This rerouting followed the distribution determined previously but excluding Adeline, with 32 percent routed to the north access intersections along West Grand Avenue and the remaining 68 percent to 7th Street.

Table 9 details the distribution of traffic to the three access locations to the Port of Oakland today and how the distribution would change if the Adeline traffic were rerouted to the other gates. **Table 10** shows the volume of vehicles routed to the 7th Street and West Grand Avenue access intersections in the 25 and 50 percent sensitivity analyses. The distribution of vehicles to these accesses follows that percentages given in Table 9.

Table 9: Vehicle Distribution Percentage to Port Access Locations

Port Access Location	Base Distribution to Port of Oakland Accesses	Distribution of Rerouted Vehicles Away from Adeline
Adeline Street	50%	0%
7th Street	34%	68%
West Grand Avenue	16%	32%
Total	**100%**	**100%**

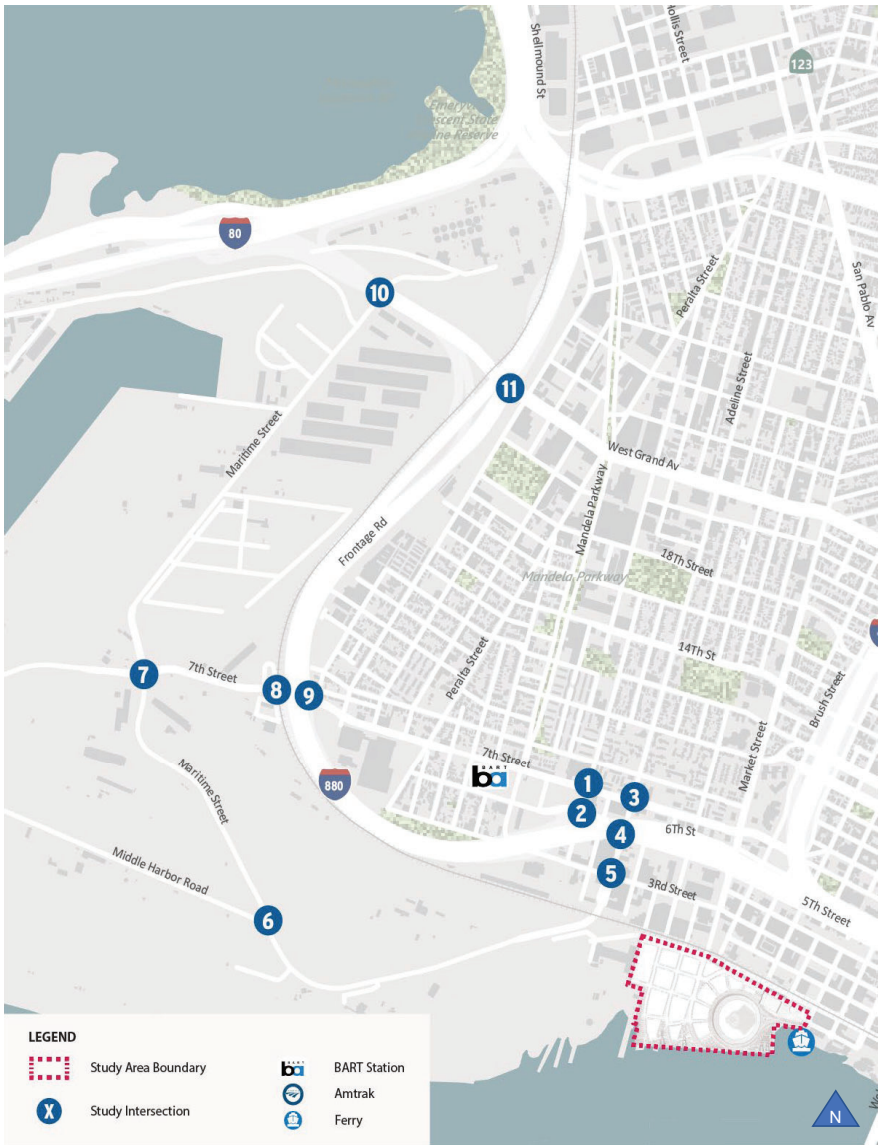
Source: Fehr & Peers, 2020.

Table 10: Vehicle Volumes Rerouted to Port Access Intersections

Peak Period	Port Access Location	25 Percent Rerouted from Adeline Street		50 Percent Rerouted from Adeline Street	
		Inbound	Outbound	Inbound	Outbound
Midday	Adeline	-88	-100	-176	-200
	7th Street	60	68	120	136
	West Grand Avenue	28	32	56	64
PM	Adeline	-64	-108	-128	-216
	7th Street	44	73	88	146
	West Grand Avenue	20	35	40	70

Source: Fehr & Peers, 2020.

Figure 5 and **Figure 6** show intersection volumes for Existing Plus Project Plus 25 Percent and 50 Percent Rerouting away from the Adeline Street access, respectively. Note that the Plus Project scenario includes full buildout of the Howard Terminal non-ballpark development as well as rerouted Howard Terminal traffic to the Port of Oakland.



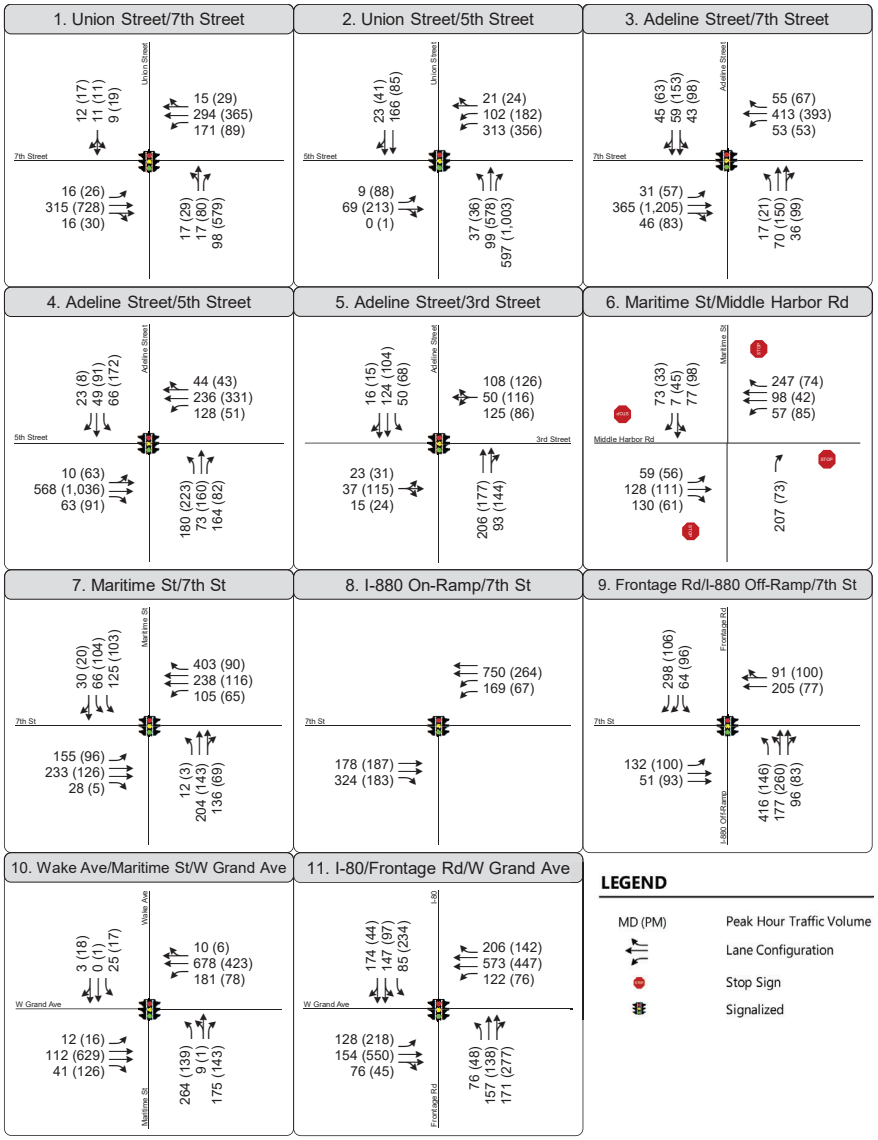
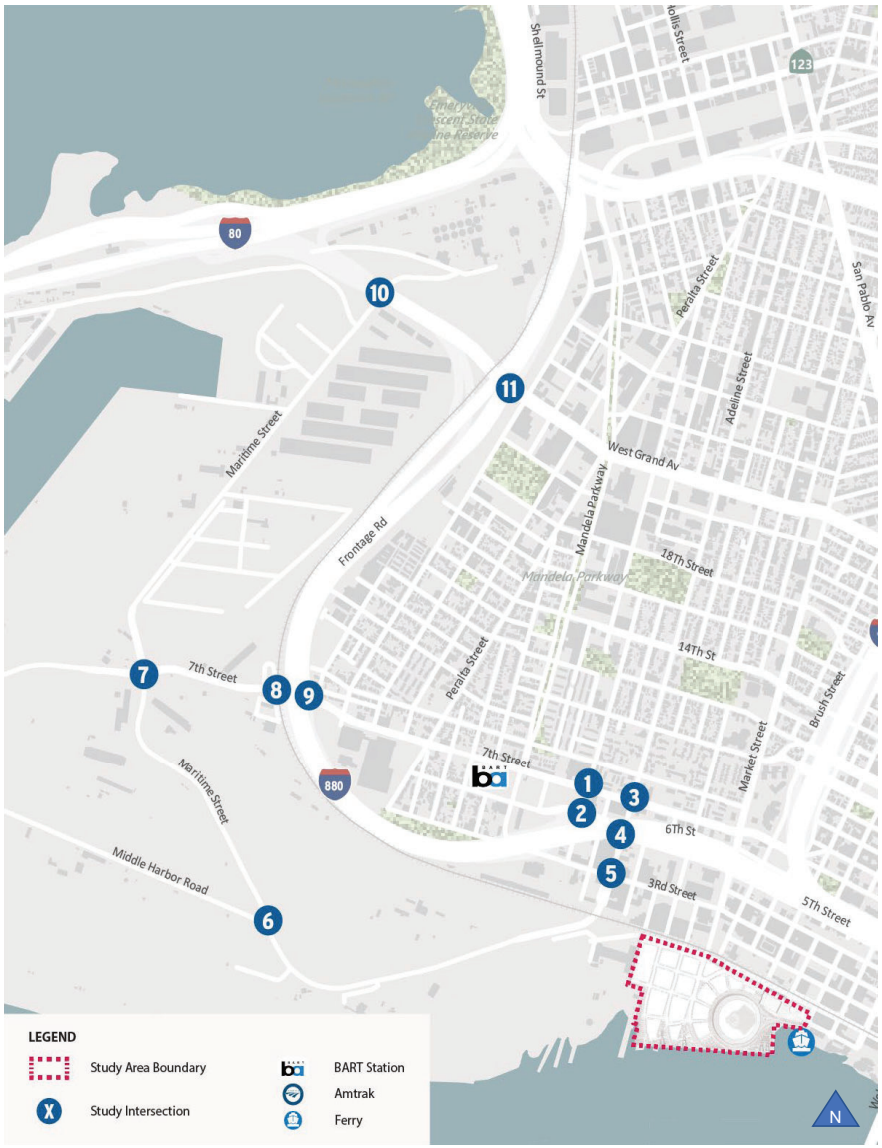


Figure 5

Existing Plus Project Plus Rerouting 25% of Traffic Away from Adeline
Peak Hour Intersection Traffic Volumes, Lane Configurations, and Traffic Controls



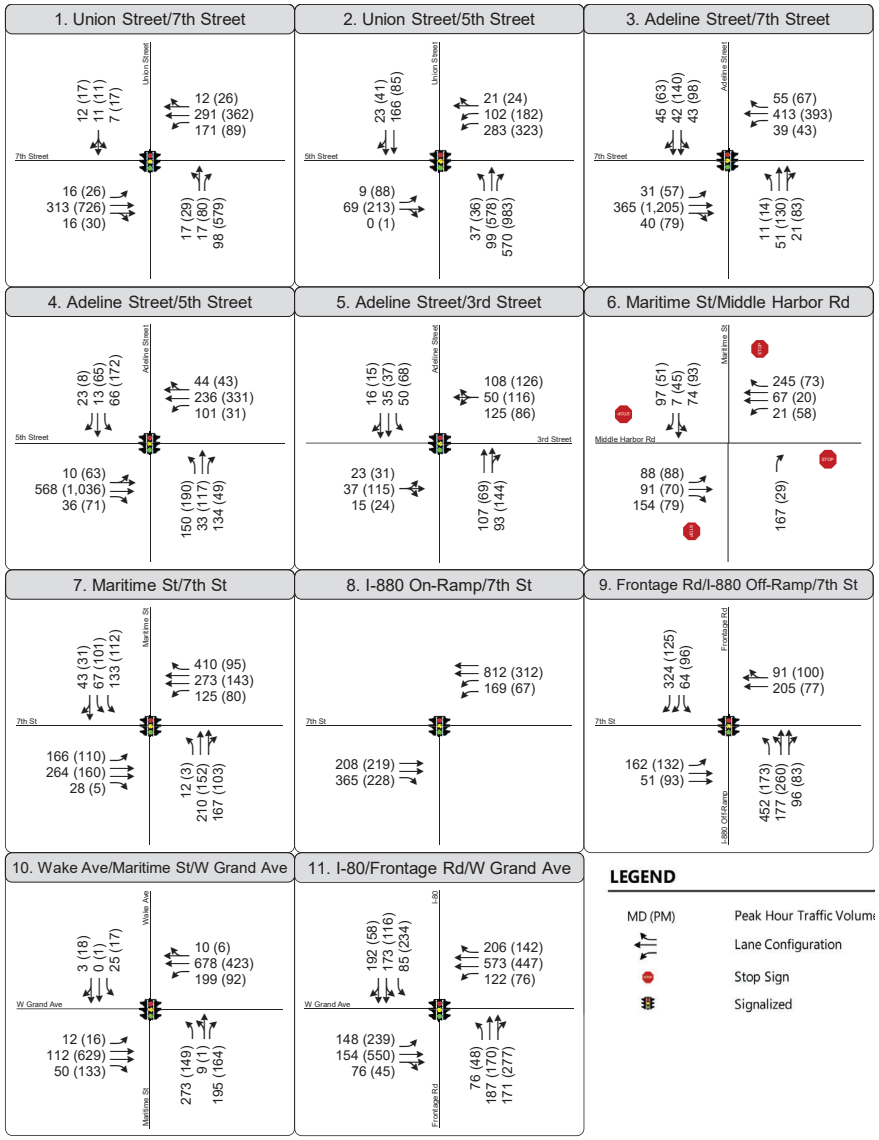


Figure 6

Existing Plus Project Plus Rerouting 50% of Traffic Away from Adeline
Peak Hour Intersection Traffic Volumes, Lane Configurations, and Traffic Controls

5.1. Sensitivity Testing Results

Table 11 lists the delay and LOS for each intersection from the analysis for the rerouting of 25 and 50 percent of traffic away from the Adeline Street & 3rd Street intersection (#5). Under both scenarios, the intersection of Maritime Street & 7th Street (#7) operates at LOS D during the midday. All other intersections during both the midday and PM peak hours would operate at LOS C or better.

Table 11: Intersection LOS for Sensitivity Analysis

Intersection	Peak Hour [1]	Rerouting 25% Away from Adeline & 3rd		Rerouting 50% Away from Adeline & 3rd	
		Delay (sec.)	LOS	Delay (sec.)	LOS
1. Union Street & 7th Street	MD PM	Intersections not evaluated because operating assumption is that drivers to and from the Port avoid these intersections because of Howard Terminal events.			
2. Union Street/I-880 On and Off Ramp & 5th Street	MD PM				
3. Adeline Street & 7th Street	MD PM				
4. Adeline Street & 5th Street	MD PM				
5. Adeline Street & 3rd Street	MD PM				
6. Middle Harbor Road & Maritime Street	MD PM	17 12	C B	16 11	C B
7. Maritime Street & 7th Street[2]	MD PM	41 27	D C	46 28	D C
8. I-880 On-Ramp & 7th Street	MD PM	5 4	A A	5 4	A A
9. I-880 Off-Ramp/Frontage Road & 7th Street[2]	MD PM	33 24	C C	36 27	C C
10. Maritime Street/Wake Avenue & West Grand Avenue[2]	MD PM	29 29	C C	29 29	C C
11. I-80/Frontage Road & West Grand Avenue[2]	MD PM	23 22	C C	25 23	C C

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Delay and LOS calculated using HCM 2000 due to limitations in 2010 HCM

Source: Fehr & Peers, 2020.

Delay and LOS have not been reported for Intersections 1 through 5 because the operating assumption is that drivers to the Port avoid these intersections because the event day traffic congestion is unacceptable to the drivers. The results show that overall traffic conditions within the midday and PM one-hour periods will be acceptable and drivers will not notice the change in traffic patterns.

Table 12 lists the sensitivity analysis queue for intersections in which queues exceed storage. The Union Street & 7th Street (#1) and Union Street/I-880 On and Off Ramp & 5th Street (#2) queues are not evaluated under rerouting scenarios because drivers are rerouted away from these intersections. Average queue lengths are acceptable as they do not exceed the available storage at any intersection and under any scenario and all intersections are expected to operate at LOS C or better except Maritime at 7th which is expected to operate at LOS D for the midday. These results are indicators that drivers traveling through the study intersections will not notice the change in traffic with a 25% or 50% shift in vehicle traffic away from the Adeline Street Seaport access point.

The 25% and 50% shift in vehicle traffic will be noticeable for people observing the entire midday and PM one-hour periods and may be noticeable to some drivers compared to existing conditions particularly if 50% of the Adeline traffic reroutes away from the Adeline Street corridor.

Appendix B lists the vehicle queue lengths by turning movement for the sensitivity analysis scenarios, with detailed worksheets in Appendix C. The 95th percentile queues exceed the storage length for at least one movement at the following intersections:

- At the Maritime Street & 7th Street intersection (#7), 95th percentile queues for the eastbound left movement during the Midday peak increase from 250 to 275 feet under the 25 percent rerouting scenario, and from 250 to 300 feet under 50 percent rerouting; both exceed the eastbound left 125-foot storage length. In the PM peak, 95th percentile queues for this movement remain within storage under 25 percent rerouting conditions, but exceed storage under 50 percent rerouting, increasing from 100 to 150 feet. For the westbound left movement, 95th percentile queues increase during the Midday peak from 125 to 175 feet and from 125 to 200 feet for the 25 percent and 50 percent rerouting scenarios, respectively; both exceed the westbound left 100-foot available storage length.

Table 12: Sensitivity Analysis Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour[1]	Queue Length Average (95th)[2]		
					Existing Plus Project	25% Rerouted Away from Adeline	50% Rerouted Away from Adeline
1	Union Street & 7th Street	NBR	250	MD PM	25 (50) 200 (**375**)	Intersections not evaluated because operating assumption is that drivers to and from the Port avoid these intersections because of Howard Terminal events.	
7	Maritime Street & 7th Street	EBL	125	MD PM	100 (**250**) 50 (100)	100 (**275**) 50 (125)	125 (**300**) 75 (**150**)
		WBL	100	MD PM	50 (**125**) 25 (75)	75 (**175**) 50 (100)	75 (**200**) 50 (100)

Notes:
1. Peak hours are 11:00 AM to 12:00 PM during the midday and 4:45 to 5:45 PM during the evening.
2. Average = average queue length. 95th = 95th percentile queue length. Queue lengths are reported in feet. Queues that exceed available storage are shown in **bold**

Source: Fehr & Peers, 2020.

Recommendation #2: While not required to address a CEQA impact, as part of the project, include annual event day monitoring of queues at the one intersection identified as a location where the sensitivity analysis shows that the 95th percentile queues either exceeding the available storage or exacerbate existing queue storage constraints. This monitoring should occur on at least one weekday afternoon, weekday evening, and weekend baseball game in the two hours before and after the game. Based on monitoring adjust traffic signal timings to minimize maximum queue lengths.

In addition, introduce traffic management before and after Howard Terminal events that direct event-related traffic away from the Adeline Street access point to the Seaport. The purpose for the traffic management is to direct all event attendee traffic away from the Adeline Seaport access point so that port-related traffic will be incentivized to continue using the Adeline Street access point. Management tools would include:

- Traffic control officers at the Mandela Parkway / 5th Street intersection to direct event attendees toward the 7th Street corridor. Officers at the Adeline Street / 5th Street intersection to direct attendees to continue straight on 5th Street. Last, locate officers

at the Adeline Street / 3rd Street to manage non-motorized traffic through this intersection if it occurs.

- Personnel at the West Oakland BART station to direct BART riders destined to the Howard Terminal event to use the 7th Street corridor.
- Permanent signing on eastbound 5th Street approaching Adeline Street directing drivers to Jack London District and the ballpark to continue straight on 5th Street.
- Permanent and game day turn restrictions at the Market Street / 3rd Street intersection so event day drivers cannot use 3rd Street between Adeline and Market Street. These turn prohibitions are supported by the California Vehicle Code and would be input into the navigational applications so drivers would be directed through the application to avoid the turn restrictions.
- Game day blank-out signs directing drivers on eastbound 5th Street to continue straight through the Adeline Street intersection to access the ballpark.

Discussion: This intersection is recommended for monitoring under non-event day conditions, and this monitoring should also be conducted under event day conditions to understand the effects of event attendees and any rerouting of Port traffic that occurs due to events.

6. Cut-Through Analysis

There are two distinct types of vehicles that use the Port's internal road network: trucks (described as transport trucks in the West Oakland Truck Management Plan) and passenger vehicles. While trucks are the main users of the Port's roads, some cut-through traffic exists from passenger vehicles whose drivers are trying to avoid I-880 to travel between I-80 at the Bay Bridge and Jack London District. The following sections evaluate existing cut-through traffic and estimate additional cut-through traffic with the Howard Terminal non-ballpark development.

6.1. Cut-through Volumes

Drivers who use the Port as a cut-through route on their way to another destination may have a limited understanding of truck operations in the Port, potentially disrupting those operations. For the purposes of this traffic analysis, cut-through traffic is defined as passenger vehicles that use one of the Seaport accesses but spend less than 20 minutes traveling through the Seaport. Cut-through travel patterns for the Howard Terminal area were analyzed by using location-based services origin-destination data between the Bay Bridge and the western portion of the Jack London District, bounded by Adeline Street, 5th Street, and Broadway, with middle filters set at the Adeline

and 7th Street Seaport entrances. Some drivers travel between the Howard Terminal neighborhood and the Bay Bridge; destinations other than the Bay Bridge were negligible.

The study considered all passenger vehicle drivers entering the Seaport via Adeline, 7th, and Maritime Streets. **Table 13** shows the average AM and PM peak commute period volumes of existing cut-through traffic using the Seaport's internal road network. To develop a conservative estimate of the number of cut-through passenger vehicles, it was assumed that all vehicles observed to cut through the Seaport were passenger vehicles.

Table 13: Existing Weekday Cut-Through Average Volumes Through the Port of Oakland and Total Passenger Vehicle Volumes

Cut-Through Route	AM Hourly Average (7 to 9 a.m.)		PM Hourly Average (4 to 6 p.m.)	
	Passenger Vehicle Cut-Throughs	Total Passenger Vehicle Volume Using Entrance	Passenger Vehicle Cut-Throughs	Total Passenger Vehicle Volume Using Entrance
Northbound – Maritime Street Exit				
7th Street to Maritime Street	33	387	27	175
Adeline Street to Maritime Street	32	315	13	124
Total	**65**	**702**	**40**	**299**
Southbound – Maritime Street Entrance				
Maritime Street to 7th Street	33	205	35	105
Maritime Street to Adeline Street	13	80	14	44
Total	**46**	**285**	**49**	**149**
Combined Total (Northbound + Southbound)	**111**	**987**	**89**	**448**

Source: Fehr & Peers, StreetLight Data, 2020.

111 passenger vehicles of the 987 entering the Seaport during the AM commute period (7 to 9 a.m.) are traveling through the Port without stopping. During the PM peak period (4 to 6 p.m.) 89 of the 448 passenger vehicles are passing through the Port. While the PM peak period percentage cut-through traffic is higher than the AM peak period, the total number of vehicles cutting through in the PM peak period is about 80 percent of that in the AM peak period. In terms of time, there is

about one passenger vehicle per 60 seconds driving through the Port during the AM period and about one passenger vehicle per 90 seconds driving through the Port during the PM period.

Based on observations, the southbound route between the Bay Bridge and neighborhood adjacent to Howard Terminal is uncongested during both the AM and PM commute peak periods with the freeway and local streets both operating well. As such, drivers crossing the Bay Bridge and destined for the local neighborhood would remain on I-880 and exit the freeway at the Union Street interchange.

Northbound freeway congestion is extensive during the AM commute period because vehicle queues from I-880, I-80, and I-580 converge at the Bay Bridge. Because of the congestion extending back onto northbound I-880 some drivers from the neighborhood at Howard Terminal choose to drive through the Port via Adeline or 7th Streets to Maritime Street rather than accessing the freeway at Union Street. Location-based service origin-destination data shows that about 21 percent of the neighborhood traffic destined to the Bay Bridge uses either 7th Street to avoid northbound I-880. The remaining 79% of trips originating in the neighborhood access the freeway at Union Street to connect to the Bay Bridge during the morning commute period. Based on the Howard Terminal development program roughly 10 AM peak hour vehicle trips from the site would use Port streets to access the Bay Bridge. PM peak hour vehicle trips would be approximately 20 trips. The project trip assignment sends 12 AM peak hour vehicles and 21 PM peak hour vehicles west of Union Street on 7th Street, which is consistent with that estimate.

Although the results from the location-based services data suggests that there may be a small amount of existing demand for an Adeline Street cut-through route during the AM peak, no project trips were assigned to this route. As this route would have a longer travel distance and travel time than the 7th Street cut-through route, observed existing demand was assumed to be idiosyncratic (perhaps related to port operations) and therefore not applicable to the development at Howard Terminal.

If performance goals are not met related to rerouted vehicles through the Seaport, prohibiting eastbound and westbound through movements of private vehicles at the intersection of I-880/Frontage Road & 7th Street (intersections #8 and #9 in the operations analysis in previous sections) may reduce cut-through volumes. This potential design has not been analyzed because it would not increase the capacity of the roadway system and so would not cause a significant transportation impact per the significance criteria as described in the City's Transportation Impact Report Guidelines (TIRG).

Attachments:

Appendix A – Detailed LOS Calculation Worksheets

Appendix B – Existing Conditions, Plus Project, and Sensitivity Testing Queue Tables

Appendix C – Detailed Queue Calculation Worksheets

Appendix A – Detailed LOS Calculation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	302	16	171	277	16	17	17	98	10	11	12
Future Volume (veh/h)	16	302	16	171	277	16	17	17	98	10	11	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	0.99		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1727	1900	1759	1759	1900	1900	1759	1759	1900	1743	1900
Adj Flow Rate, veh/h	16	302	16	171	277	16	17	17	98	10	11	12
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	10	10	8	8	8	8	8	8	9	9	9
Cap, veh/h	526	1425	75	479	1442	83	385	362	669	229	247	239
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	992	3167	167	993	3205	184	706	804	1487	379	549	531
Grp Volume(v), veh/h	16	156	162	171	144	149	34	0	98	33	0	0
Grp Sat Flow(s),veh/h/ln	992	1641	1693	993	1671	1718	1509	0	1487	1460	0	0
Q Serve(g_s), s	0.7	4.6	4.7	4.6	0.8	0.8	0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	4.6	4.7	9.2	0.8	0.8	0.9	0.0	3.1	0.9	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.11	0.50		1.00	0.30		0.36
Lane Grp Cap(c), veh/h	526	738	762	479	752	773	747	0	669	715	0	0
V/C Ratio(X)	0.03	0.21	0.21	0.36	0.19	0.19	0.05	0.00	0.15	0.05	0.00	0.00
Avail Cap(c_a), veh/h	526	738	762	479	752	773	747	0	669	715	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	13.4	13.4	3.4	2.2	2.2	12.3	0.0	13.0	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.6	2.1	0.6	0.6	0.1	0.0	0.5	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(50%),veh/ln	0.2	2.2	2.3	1.4	0.4	0.5	0.4	0.0	1.4	0.4	0.0	0.0
LnGrp Delay(d),s/veh	12.9	14.0	14.0	5.5	2.8	2.8	12.5	0.0	13.4	12.5	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		B	B		
Approach Vol, veh/h		334			464			132			33	
Approach Delay, s/veh		14.0			3.8			13.2			12.5	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		5.1		6.7		2.9		11.2
Green Ext Time (p_c), s		0.5		2.0		0.1		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	69	0	163	78	21	37	99	489	1	166	23
Future Volume (veh/h)	9	69	0	163	78	21	37	99	489	1	166	23
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1900	1387	1387	1900	1681	1681	1900	1900	1776	1900
Adj Flow Rate, veh/h	9	69	0	163	78	12	37	99	166	1	166	11
Adj No. of Lanes	1	1	0	2	1	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	37	37	37	13	13	13	7	7	7
Cap, veh/h	367	601	0	309	286	44	73	482	430	59	618	40
Arrive On Green	0.22	0.34	0.00	0.12	0.24	0.24	0.05	0.30	0.30	0.20	0.20	0.20
Sat Flow, veh/h	1660	1743	0	2562	1172	180	1601	1597	1427	4	3142	206
Grp Volume(v), veh/h	9	69	0	163	0	90	37	99	166	94	0	84
Grp Sat Flow(s),veh/h/ln	1660	1743	0	1281	0	1352	1601	1597	1427	1773	0	1579
Q Serve(g_s), s	0.3	1.7	0.0	3.7	0.0	3.4	1.4	2.9	5.7	0.0	0.0	2.8
Cycle Q Clear(g_c), s	0.3	1.7	0.0	3.7	0.0	3.4	1.4	2.9	5.7	2.8	0.0	2.8
Prop In Lane	1.00		0.00	1.00		0.13	1.00		1.00	0.01		0.13
Lane Grp Cap(c), veh/h	367	601	0	309	0	330	73	482	430	407	0	311
V/C Ratio(X)	0.02	0.11	0.00	0.53	0.00	0.27	0.51	0.21	0.39	0.23	0.00	0.27
Avail Cap(c_a), veh/h	373	1007	0	329	0	673	154	897	802	824	0	684
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	13.9	0.0	25.7	0.0	19.1	29.0	16.2	17.2	21.2	0.0	21.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	1.4	0.0	0.3	4.0	0.3	0.8	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.8	0.0	1.4	0.0	1.3	0.7	1.3	2.4	1.4	0.0	1.2
LnGrp Delay(d),s/veh	19.0	14.0	0.0	27.1	0.0	19.4	33.1	16.5	18.0	21.3	0.0	21.4
LnGrp LOS	B	B		C		B	C	B	B	C		C
Approach Vol, veh/h		78			253			302			178	
Approach Delay, s/veh		14.6			24.4			19.3			21.4	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.5	19.4	6.5	17.9	12.2	25.7		24.4
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 31	6.0	* 27	* 8	* 36		35.0
Max Q Clear Time (g_c+I1), s	2.3	5.4	3.4	4.8	5.7	3.7		7.7
Green Ext Time (p_c), s	0.0	0.4	0.0	0.6	0.1	0.3		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.9
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	351	47	57	395	55	20	79	43	43	65	45
Future Volume (veh/h)	31	351	47	57	395	55	20	79	43	43	65	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1759	1759	1759	1759	1759	1900	1900	1776	1900
Adj Flow Rate, veh/h	31	351	47	57	395	55	20	79	43	43	65	45
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	7	7	7
Cap, veh/h	522	1625	216	598	1838	818	470	749	378	312	443	314
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	882	2955	392	923	3343	1487	1204	2139	1081	695	1265	898
Grp Volume(v), veh/h	31	197	201	57	395	55	20	60	62	81	0	72
Grp Sat Flow(s),veh/h/ln	882	1671	1676	923	1671	1487	1204	1671	1548	1419	0	1440
Q Serve(g_s), s	0.3	0.0	0.0	2.4	4.8	1.4	0.9	1.9	2.2	0.9	0.0	2.7
Cycle Q Clear(g_c), s	5.2	0.0	0.0	2.4	4.8	1.4	3.7	1.9	2.2	3.1	0.0	2.7
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.70	0.53		0.62
Lane Grp Cap(c), veh/h	522	919	922	598	1838	818	470	585	542	566	0	504
V/C Ratio(X)	0.06	0.21	0.22	0.10	0.21	0.07	0.04	0.10	0.11	0.14	0.00	0.14
Avail Cap(c_a), veh/h	522	919	922	598	1838	818	470	585	542	566	0	504
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.3	0.0	0.0	8.6	9.2	8.4	19.0	17.5	17.6	17.8	0.0	17.8
Incr Delay (d2), s/veh	0.2	0.5	0.5	0.3	0.3	0.2	0.2	0.4	0.4	0.5	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(50%),veh/ln	0.1	0.1	0.1	0.7	2.3	0.6	0.3	0.9	1.0	1.3	0.0	1.2
LnGrp Delay(d),s/veh	0.5	0.5	0.5	9.0	9.5	8.6	19.2	17.9	18.0	18.3	0.0	18.4
LnGrp LOS	A	A	A	A	A	A	B	B	B	B		B
Approach Vol, veh/h		429			507			142			153	
Approach Delay, s/veh		0.5			9.3			18.1			18.4	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		5.7		7.2		5.1		6.8
Green Ext Time (p_c), s		0.7		2.8		0.8		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	444	79	136	102	44	135	91	179	66	60	23
Future Volume (veh/h)	10	444	79	136	102	44	135	91	179	66	60	23
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1900	1329	1329	1900	1195	1195	1900	1696	1696	1900
Adj Flow Rate, veh/h	10	444	79	136	102	44	135	91	179	50	83	23
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	14	14	14	43	43	43	59	59	59	12	12	12
Cap, veh/h	16	624	110	161	622	253	266	265	236	214	342	91
Arrive On Green	0.01	0.23	0.23	0.13	0.36	0.36	0.23	0.23	0.23	0.13	0.13	0.13
Sat Flow, veh/h	1587	2688	475	1265	1738	706	1138	1135	1012	1616	2579	687
Grp Volume(v), veh/h	10	260	263	136	72	74	135	91	179	50	53	53
Grp Sat Flow(s),veh/h/ln	1587	1583	1580	1265	1262	1181	1138	1135	1012	1616	1696	1570
Q Serve(g_s), s	0.4	8.8	8.9	6.1	2.3	2.5	6.0	3.9	9.6	1.6	1.6	1.8
Cycle Q Clear(g_c), s	0.4	8.8	8.9	6.1	2.3	2.5	6.0	3.9	9.6	1.6	1.6	1.8
Prop In Lane	1.00		0.30	1.00		0.60	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	16	368	367	161	452	423	266	265	236	214	225	208
V/C Ratio(X)	0.61	0.71	0.72	0.84	0.16	0.17	0.51	0.34	0.76	0.23	0.24	0.25
Avail Cap(c_a), veh/h	489	813	812	498	540	506	448	447	398	636	668	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	20.6	20.6	24.9	12.8	12.8	19.5	18.6	20.8	22.7	22.7	22.7
Incr Delay (d2), s/veh	13.1	0.9	1.0	8.5	0.2	0.2	1.6	0.8	5.3	0.6	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.9	4.0	2.5	0.8	0.8	2.0	1.3	3.0	0.8	0.8	0.8
LnGrp Delay(d),s/veh	41.9	21.6	21.6	33.4	12.9	13.0	21.1	19.5	26.1	23.2	23.2	23.4
LnGrp LOS	D	C	C	C	B	B	C	B	C	C	C	C
Approach Vol, veh/h		533			282			405			156	
Approach Delay, s/veh		22.0			22.8			23.0			23.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.1	24.9		17.6	11.5	17.6		11.7
Change Period (Y+Rc), s	3.5	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	25.0		23.0	23.0	30.0		23.0
Max Q Clear Time (g_c+I1), s	2.4	4.5		11.6	8.1	10.9		3.8
Green Ext Time (p_c), s	0.0	0.8		1.8	0.2	2.2		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Notes

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	66	15	133	61	81	24	227	135	58	152	16
Future Vol, veh/h	23	66	15	133	61	81	24	227	135	58	152	16
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
Heavy Vehicles, %	22	22	22	51	51	51	69	69	69	68	68	68
Mvmt Flow	23	66	15	133	61	81	24	227	135	58	152	16
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	11.7	17.1	15.5	13.3
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	17%	0%	22%	48%	43%	0%
Vol Thru, %	83%	46%	63%	22%	57%	83%
Vol Right, %	0%	54%	14%	29%	0%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	138	249	104	275	134	92
LT Vol	24	0	23	133	58	0
Through Vol	114	114	66	61	76	76
RT Vol	0	135	15	81	0	16
Lane Flow Rate	138	248	104	275	134	92
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.289	0.49	0.198	0.521	0.296	0.194
Departure Headway (Hd)	7.57	7.093	6.85	6.82	7.946	7.601
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	507	520	525	450	470
Service Time	5.342	4.865	4.944	4.891	5.729	5.384
HCM Lane V/C Ratio	0.292	0.489	0.2	0.524	0.298	0.196
HCM Control Delay	13.4	16.6	11.7	17.1	14.1	12.2
HCM Lane LOS	B	C	B	C	B	B
HCM 95th-tile Q	1.2	2.7	0.7	3	1.2	0.7

Intersection	
Intersection Delay, s/veh	16
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	143	79	70	104	241	0	1	228	69	7	37
Future Vol, veh/h	7	143	79	70	104	241	0	1	228	69	7	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
Heavy Vehicles, %	82	82	82	88	88	88	97	97	97	83	83	83
Mvmt Flow	7	143	79	70	104	241	0	1	228	69	7	37
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	13.9	16.3	18.8	13.2
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	5%	0%	40%	0%	91%	0%
Vol Thru, %	0%	95%	0%	60%	0%	9%	0%
Vol Right, %	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	229	150	79	174	241	76	37
LT Vol	0	7	0	70	0	69	0
Through Vol	1	143	0	104	0	7	0
RT Vol	228	0	79	0	241	0	37
Lane Flow Rate	229	150	79	174	241	76	37
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.503	0.339	0.163	0.391	0.481	0.192	0.081
Departure Headway (Hd)	7.91	8.147	7.408	8.098	7.181	9.106	7.925
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	440	482	444	499	392	450
Service Time	5.985	5.932	5.192	5.872	4.954	6.9	5.719
HCM Lane V/C Ratio	0.506	0.341	0.164	0.392	0.483	0.194	0.082
HCM Control Delay	18.8	15.1	11.6	16	16.5	14.1	11.4
HCM Lane LOS	C	C	B	C	C	B	B
HCM 95th-tile Q	2.8	1.5	0.6	1.8	2.6	0.7	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	185	28	73	174	393	12	183	88	114	53	2
Future Volume (vph)	133	185	28	73	174	393	12	183	88	114	53	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1008	2017	902	1188	2375	1062	992	1877		2175	1174	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1008	2017	902	1188	2375	1062	992	1877		2175	1174	
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)	133	185	28	73	174	393	12	183	88	114	53	2
RTOR Reduction (vph)	0	0	17	0	0	256	0	66	0	0	1	0
Lane Group Flow (vph)	133	185	11	73	174	137	12	205	0	114	54	0
Confl. Peds. (#/hr)									4	4		
Heavy Vehicles (%)	79%	79%	79%	52%	52%	52%	82%	82%	82%	61%	61%	61%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	12.8	34.1	34.1	7.8	29.1	29.1	1.5	16.8		7.8	23.1	
Effective Green, g (s)	12.8	34.1	34.1	7.8	29.1	29.1	1.5	16.8		7.8	23.1	
Actuated g/C Ratio	0.15	0.41	0.41	0.09	0.35	0.35	0.02	0.20		0.09	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	823	368	110	827	370	17	377		203	324	
v/s Ratio Prot	c0.13	0.09		0.06	0.07		0.01	c0.11		c0.05	0.05	
v/s Ratio Perm			0.01			c0.13						
v/c Ratio	0.86	0.22	0.03	0.66	0.21	0.37	0.71	0.54		0.56	0.17	
Uniform Delay, d1	34.5	16.1	14.8	36.6	19.1	20.3	40.8	29.9		36.2	22.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.1	0.6	0.2	14.1	0.1	0.6	84.0	1.6		3.5	0.2	
Delay (s)	70.6	16.7	15.0	50.6	19.3	21.0	124.7	31.5		39.7	23.1	
Level of Service	E	B	B	D	B	C	F	C		D	C	
Approach Delay (s)		37.3			23.9			35.5			34.3	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

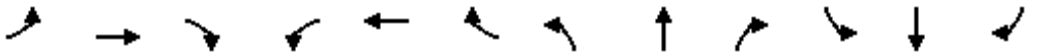
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	148	247	169	645	0	0
Future Volume (veh/h)	148	247	169	645	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1138	1138	1284	1284		
Adj Flow Rate, veh/h	148	247	169	645		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	67	67	48	48		
Cap, veh/h	1400	626	384	2207		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	2219	967	2372	2503		
Grp Volume(v), veh/h	148	247	169	645		
Grp Sat Flow(s),veh/h/ln	1081	967	1186	1220		
Q Serve(g_s), s	1.3	6.0	3.2	1.7		
Cycle Q Clear(g_c), s	1.3	6.0	3.2	1.7		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1400	626	384	2207		
V/C Ratio(X)	0.11	0.39	0.44	0.29		
Avail Cap(c_a), veh/h	1400	626	1440	2207		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.3	4.1	18.7	0.3		
Incr Delay (d2), s/veh	0.2	1.9	0.8	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	1.9	1.1	0.5		
LnGrp Delay(d),s/veh	3.4	6.0	19.5	0.3		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	395			814		
Approach Delay, s/veh	5.0			4.3		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		3.7			5.2	8.0		
Green Ext Time (p_c), s		2.0			0.6	1.5		

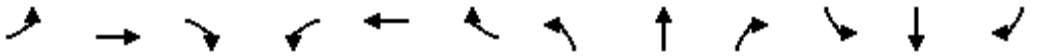
Intersection Summary	
HCM 2010 Ctrl Delay	4.5
HCM 2010 LOS	A

Notes



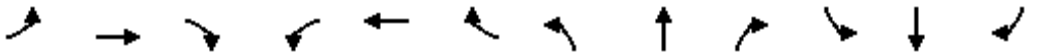
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	51	0	0	205	91	338	177	96	64	0	271
Future Volume (vph)	102	51	0	0	205	91	338	177	96	64	0	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frt	1.00	1.00			0.95		1.00	0.96		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (prot)	1135	2270			2994		1117	2232		1299		2045
Flt Permitted	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (perm)	1135	2270			2994		1117	2232		1299		2045
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)	102	51	0	0	205	91	338	177	96	64	0	271
RTOR Reduction (vph)	0	0	0	0	49	0	0	24	0	0	0	225
Lane Group Flow (vph)	102	51	0	0	247	0	206	381	0	64	0	46
Heavy Vehicles (%)	59%	59%	59%	15%	15%	15%	47%	47%	47%	39%	39%	39%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	10.6	31.8			17.0		20.5	20.5		13.5		13.5
Effective Green, g (s)	10.6	31.8			17.0		20.5	20.5		13.5		13.5
Actuated g/C Ratio	0.13	0.40			0.21		0.26	0.26		0.17		0.17
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	151	909			641		288	576		220		347
v/s Ratio Prot	c0.09	0.02			c0.08					c0.05		
v/s Ratio Perm							c0.18	0.17				0.02
v/c Ratio	0.68	0.06			0.39		0.72	0.66		0.29		0.13
Uniform Delay, d1	32.8	14.6			26.7		26.8	26.3		28.8		28.0
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	9.0	0.0			0.3		7.6	2.6		0.5		0.1
Delay (s)	41.8	14.6			27.0		34.4	28.9		29.3		28.1
Level of Service	D	B			C		C	C		C		C
Approach Delay (s)		32.7			27.0			30.8			28.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	17.8
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	112	33	145	678	10	254	9	139	25	0	3
Future Volume (vph)	12	112	33	145	678	10	254	9	139	25	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
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)	12	112	33	145	678	10	254	9	139	25	0	3
RTOR Reduction (vph)	0	0	27	0	1	0	0	0	78	0	3	0
Lane Group Flow (vph)	12	112	6	145	687	0	132	131	61	25	0	0
Heavy Vehicles (%)	16%	16%	16%	11%	11%	11%	25%	25%	25%	57%	57%	57%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	14.9	14.9	10.9	24.8		36.4	36.4	36.4	2.2	2.2	
Effective Green, g (s)	1.0	14.9	14.9	10.9	24.8		36.4	36.4	36.4	2.2	2.2	
Actuated g/C Ratio	0.01	0.18	0.18	0.13	0.30		0.44	0.44	0.44	0.03	0.03	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	18	559	250	213	970		602	605	567	30	51	
v/s Ratio Prot	0.01	0.04		c0.09	c0.21		c0.10	0.09	0.05	c0.02	0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.67	0.20	0.02	0.68	0.71		0.22	0.22	0.11	0.83	0.00	
Uniform Delay, d1	40.8	28.9	28.0	34.3	25.8		14.4	14.4	13.7	40.2	39.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	54.1	0.1	0.0	6.9	1.9		0.1	0.1	0.0	93.0	0.0	
Delay (s)	94.9	29.0	28.0	41.3	27.8		14.5	14.5	13.7	133.1	39.3	
Level of Service	F	C	C	D	C		B	B	B	F	D	
Approach Delay (s)		33.8			30.1			14.2			123.1	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	154	76	122	573	206	76	127	171	85	120	138
Future Volume (vph)	92	154	76	122	573	206	76	127	171	85	120	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1357	2569		1656	3312	1482	1357	2481		1190	2308	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1357	2569		1656	3312	1482	1357	2481		1190	2308	
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)	92	154	76	122	573	206	76	127	171	85	120	138
RTOR Reduction (vph)	0	56	0	0	0	149	0	147	0	0	118	0
Lane Group Flow (vph)	92	174	0	122	573	57	76	151	0	76	149	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	33%	33%	33%	9%	9%	9%	33%	33%	33%	38%	38%	38%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	6.2	14.4		6.4	15.5	15.5	7.7	7.7		8.0	8.0	
Effective Green, g (s)	6.2	14.4		6.4	15.5	15.5	7.7	7.7		8.0	8.0	
Actuated g/C Ratio	0.11	0.26		0.11	0.28	0.28	0.14	0.14		0.14	0.14	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	150	660		189	916	410	186	341		170	329	
v/s Ratio Prot	0.07	0.07		c0.07	c0.17		0.06	c0.06		0.06	c0.06	
v/s Ratio Perm						0.04						
v/c Ratio	0.61	0.26		0.65	0.63	0.14	0.41	0.44		0.45	0.45	
Uniform Delay, d1	23.8	16.6		23.7	17.7	15.2	22.1	22.2		22.0	22.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	0.1		5.6	1.0	0.1	0.5	0.3		0.7	0.4	
Delay (s)	28.9	16.6		29.3	18.7	15.3	22.6	22.5		22.7	22.4	
Level of Service	C	B		C	B	B	C	C		C	C	
Approach Delay (s)		20.1			19.3			22.5			22.4	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	713	30	89	344	30	29	80	579	20	11	17
Future Volume (veh/h)	26	713	30	89	344	30	29	80	579	20	11	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.99		0.91	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1810	1810	1900	1900	1863	1863	1900	1792	1900
Adj Flow Rate, veh/h	26	713	30	89	344	30	29	80	579	20	11	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	2	2	2	6	6	6
Cap, veh/h	502	1523	64	298	1428	123	229	603	707	251	141	180
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	945	3385	142	685	3174	274	383	1341	1572	416	313	400
Grp Volume(v), veh/h	26	365	378	89	185	189	109	0	579	48	0	0
Grp Sat Flow(s),veh/h/ln	945	1736	1792	685	1719	1729	1724	0	1572	1128	0	0
Q Serve(g_s), s	1.3	11.7	11.7	5.5	1.1	1.1	0.0	0.0	25.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.4	11.7	11.7	17.3	1.1	1.1	2.7	0.0	25.7	1.3	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.16	0.27		1.00	0.42		0.35
Lane Grp Cap(c), veh/h	502	781	806	298	774	778	833	0	707	572	0	0
V/C Ratio(X)	0.05	0.47	0.47	0.30	0.24	0.24	0.13	0.00	0.82	0.08	0.00	0.00
Avail Cap(c_a), veh/h	502	781	806	298	774	778	833	0	707	572	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	15.3	15.3	6.2	2.3	2.3	12.9	0.0	19.2	12.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.0	2.0	2.6	0.7	0.7	0.3	0.0	10.2	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(50%),veh/ln	0.4	6.0	6.2	1.2	0.6	0.6	1.5	0.0	13.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	13.3	17.3	17.3	8.7	3.0	3.0	13.2	0.0	29.4	12.7	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		C	B		
Approach Vol, veh/h		769			463			688			48	
Approach Delay, s/veh		17.2			4.1			26.8			12.7	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		27.7		13.7		3.3		19.3
Green Ext Time (p_c), s		2.1		5.0		0.3		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	213	1	153	153	24	36	578	859	2	85	41
Future Volume (veh/h)	88	213	1	153	153	24	36	578	859	2	85	41
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1776	1776	1900	1845	1845	1900	1900	1696	1900
Adj Flow Rate, veh/h	88	213	0	153	153	19	36	578	601	2	85	16
Adj No. of Lanes	1	1	0	2	1	0	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	7	7	7	3	3	3	12	12	12
Cap, veh/h	293	509	0	301	309	38	71	812	725	50	993	181
Arrive On Green	0.17	0.27	0.00	0.09	0.20	0.20	0.04	0.46	0.46	0.38	0.38	0.38
Sat Flow, veh/h	1774	1863	0	3281	1547	192	1757	1752	1565	15	2619	478
Grp Volume(v), veh/h	88	213	0	153	0	172	36	578	601	54	0	49
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1640	0	1739	1757	1752	1565	1653	0	1459
Q Serve(g_s), s	3.7	7.9	0.0	3.8	0.0	7.4	1.7	22.4	28.3	0.0	0.0	1.8
Cycle Q Clear(g_c), s	3.7	7.9	0.0	3.8	0.0	7.4	1.7	22.4	28.3	1.7	0.0	1.8
Prop In Lane	1.00		0.00	1.00		0.11	1.00		1.00	0.04		0.33
Lane Grp Cap(c), veh/h	293	509	0	301	0	348	71	812	725	671	0	553
V/C Ratio(X)	0.30	0.42	0.00	0.51	0.00	0.49	0.51	0.71	0.83	0.08	0.00	0.09
Avail Cap(c_a), veh/h	335	509	0	775	0	513	332	952	850	671	0	553
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	25.2	0.0	36.6	0.0	30.1	39.8	18.2	19.8	16.9	0.0	16.9
Incr Delay (d2), s/veh	0.2	0.4	0.0	1.3	0.0	0.8	4.1	2.4	6.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.1	0.0	1.8	0.0	3.7	0.9	11.3	13.5	0.8	0.0	0.7
LnGrp Delay(d),s/veh	31.3	25.7	0.0	38.0	0.0	30.9	43.9	20.6	26.4	16.9	0.0	16.9
LnGrp LOS	C	C		D		C	D	C	C	B		B
Approach Vol, veh/h		301			325			1215			103	
Approach Delay, s/veh		27.3			34.2			24.2			16.9	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	21.1	7.1	37.7	12.5	27.4		44.9
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 16	* 25	16.0	* 22	* 20	* 20		46.0
Max Q Clear Time (g_c+I1), s	5.7	9.4	3.7	3.8	5.8	9.9		30.3
Green Ext Time (p_c), s	0.1	0.6	0.0	0.3	0.4	0.7		8.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1189	84	57	371	67	24	160	107	98	157	63
Future Volume (veh/h)	57	1189	84	57	371	67	24	160	107	98	157	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1827	1827	1827	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	1189	84	57	371	67	24	160	107	98	157	63
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	4	4	4	2	2	2
Cap, veh/h	551	1822	129	323	1909	830	400	710	444	310	504	214
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	930	3314	234	424	3471	1509	1127	2029	1268	676	1439	611
Grp Volume(v), veh/h	57	628	645	57	371	67	24	135	132	156	0	162
Grp Sat Flow(s),veh/h/ln	930	1752	1795	424	1736	1509	1127	1736	1562	1155	0	1571
Q Serve(g_s), s	0.5	0.0	0.0	5.6	4.3	1.7	1.3	4.4	4.8	5.8	0.0	6.0
Cycle Q Clear(g_c), s	4.8	0.0	0.0	5.6	4.3	1.7	7.2	4.4	4.8	10.6	0.0	6.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.81	0.63		0.39
Lane Grp Cap(c), veh/h	551	964	987	323	1909	830	400	607	547	478	0	550
V/C Ratio(X)	0.10	0.65	0.65	0.18	0.19	0.08	0.06	0.22	0.24	0.33	0.00	0.29
Avail Cap(c_a), veh/h	551	964	987	323	1909	830	400	607	547	478	0	550
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.2	0.0	0.0	9.4	9.1	8.5	21.5	18.3	18.5	21.0	0.0	18.8
Incr Delay (d2), s/veh	0.4	3.4	3.4	1.2	0.2	0.2	0.3	0.8	1.0	1.8	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.9	0.9	0.8	2.1	0.7	0.4	2.2	2.2	2.9	0.0	2.8
LnGrp Delay(d),s/veh	0.6	3.4	3.4	10.5	9.3	8.7	21.8	19.2	19.5	22.8	0.0	20.2
LnGrp LOS	A	A	A	B	A	A	C	B	B	C		C
Approach Vol, veh/h		1330			495			291			318	
Approach Delay, s/veh		3.3			9.4			19.5			21.5	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		9.2		6.8		12.6		7.6
Green Ext Time (p_c), s		1.6		12.1		1.7		4.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	881	102	57	154	43	164	181	99	172	100	8
Future Volume (veh/h)	63	881	102	57	154	43	164	181	99	172	100	8
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1583	1583	1900	1667	1667	1900	1845	1845	1900
Adj Flow Rate, veh/h	63	881	96	57	154	24	164	181	33	188	77	5
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	2	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	20	20	20	14	14	14	3	3	3
Cap, veh/h	79	1113	121	67	941	144	277	467	83	542	264	17
Arrive On Green	0.05	0.35	0.35	0.04	0.36	0.36	0.17	0.17	0.17	0.15	0.15	0.15
Sat Flow, veh/h	1740	3157	344	1508	2615	400	1587	2678	478	3514	1712	111
Grp Volume(v), veh/h	63	484	493	57	87	91	164	105	109	188	0	82
Grp Sat Flow(s),veh/h/ln	1740	1736	1765	1508	1504	1511	1587	1583	1573	1757	0	1823
Q Serve(g_s), s	2.1	14.6	14.6	2.2	2.3	2.4	5.5	3.4	3.6	2.8	0.0	2.3
Cycle Q Clear(g_c), s	2.1	14.6	14.6	2.2	2.3	2.4	5.5	3.4	3.6	2.8	0.0	2.3
Prop In Lane	1.00		0.19	1.00		0.26	1.00		0.30	1.00		0.06
Lane Grp Cap(c), veh/h	79	612	622	67	541	544	277	276	274	542	0	281
V/C Ratio(X)	0.80	0.79	0.79	0.86	0.16	0.17	0.59	0.38	0.40	0.35	0.00	0.29
Avail Cap(c_a), veh/h	538	894	909	596	646	649	627	625	621	1388	0	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.5	16.9	16.9	27.6	12.7	12.7	22.1	21.3	21.3	22.0	0.0	21.8
Incr Delay (d2), s/veh	6.7	1.7	1.7	19.9	0.1	0.1	2.2	0.9	1.0	0.4	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(50%),veh/ln	1.1	7.2	7.3	1.3	1.0	1.0	2.6	1.6	1.6	1.4	0.0	1.2
LnGrp Delay(d),s/veh	34.2	18.6	18.6	47.5	12.8	12.8	24.3	22.2	22.3	22.4	0.0	22.4
LnGrp LOS	C	B	B	D	B	B	C	C	C	C		C
Approach Vol, veh/h		1040			235			378			270	
Approach Delay, s/veh		19.6			21.2			23.2			22.4	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	25.0		14.2	6.6	24.5		13.0
Change Period (Y+Rc), s	3.5	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	25.0		23.0	23.0	30.0		23.0
Max Q Clear Time (g_c+I1), s	4.1	4.4		7.5	4.2	16.6		4.8
Green Ext Time (p_c), s	0.0	1.0		1.6	0.1	3.9		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		20.9
HCM 2010 LOS		C

Notes

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	139	21	93	125	87	29	200	180	73	114	15
Future Vol, veh/h	31	139	21	93	125	87	29	200	180	73	114	15
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
Heavy Vehicles, %	8	8	8	16	16	16	39	39	39	31	31	31
Mvmt Flow	31	139	21	93	125	87	29	200	180	73	114	15
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	13.3	16.9	15.7	12.8
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	22%	0%	16%	30%	56%	0%
Vol Thru, %	78%	36%	73%	41%	44%	79%
Vol Right, %	0%	64%	11%	29%	0%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	280	191	305	130	72
LT Vol	29	0	31	93	73	0
Through Vol	100	100	139	125	57	57
RT Vol	0	180	21	87	0	15
Lane Flow Rate	129	280	191	305	130	72
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.266	0.534	0.353	0.544	0.282	0.147
Departure Headway (Hd)	7.436	6.861	6.65	6.419	7.805	7.367
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	529	541	561	460	487
Service Time	5.136	4.561	4.695	4.457	5.552	5.114
HCM Lane V/C Ratio	0.265	0.529	0.353	0.544	0.283	0.148
HCM Control Delay	12.8	17.1	13.3	16.9	13.6	11.4
HCM Lane LOS	B	C	B	C	B	B
HCM 95th-tile Q	1.1	3.1	1.6	3.2	1.1	0.5

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	130	25	96	44	66	2	46	96	94	45	7
Future Vol, veh/h	1	130	25	96	44	66	2	46	96	94	45	7
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
Heavy Vehicles, %	26	26	26	69	69	69	93	93	93	60	60	60
Mvmt Flow	1	130	25	96	44	66	2	46	96	94	45	7
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	10.6	12	13.1	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	1%	0%	69%	0%	68%	0%
Vol Thru, %	32%	99%	0%	31%	0%	32%	0%
Vol Right, %	67%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	131	25	140	66	139	7
LT Vol	2	1	0	96	0	94	0
Through Vol	46	130	0	44	0	45	0
RT Vol	96	0	25	0	66	0	7
Lane Flow Rate	144	131	25	140	66	139	7
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.287	0.232	0.039	0.286	0.115	0.282	0.012
Departure Headway (Hd)	7.176	6.384	5.67	7.347	6.292	7.31	6.261
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	501	563	632	490	571	492	572
Service Time	5.205	4.113	3.399	5.075	4.019	5.04	3.99
HCM Lane V/C Ratio	0.287	0.233	0.04	0.286	0.116	0.283	0.012
HCM Control Delay	13.1	11	8.6	13	9.8	12.9	9.1
HCM Lane LOS	B	B	A	B	A	B	A
HCM 95th-tile Q	1.2	0.9	0.1	1.2	0.4	1.1	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	93	5	43	71	82	3	120	36	95	96	1
Future Volume (vph)	73	93	5	43	71	82	3	120	36	95	96	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	3008	1346	1271	2542	1137	1056	2032		2398	1299	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1504	3008	1346	1271	2542	1137	1056	2032		2398	1299	
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)	73	93	5	43	71	82	3	120	36	95	96	1
RTOR Reduction (vph)	0	0	3	0	0	45	0	30	0	0	1	0
Lane Group Flow (vph)	73	93	2	43	71	37	3	126	0	95	96	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	20%	20%	20%	42%	42%	42%	71%	71%	71%	46%	46%	46%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	5.6	35.8	35.8	5.1	35.3	35.3	1.1	14.2		7.0	20.1	
Effective Green, g (s)	5.6	35.8	35.8	5.1	35.3	35.3	1.1	14.2		7.0	20.1	
Actuated g/C Ratio	0.07	0.45	0.45	0.06	0.45	0.45	0.01	0.18		0.09	0.25	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	106	1361	609	81	1134	507	14	364		212	330	
v/s Ratio Prot	c0.05	0.03		0.03	0.03		0.00	c0.06		c0.04	0.07	
v/s Ratio Perm			0.00			c0.03						
v/c Ratio	0.69	0.07	0.00	0.53	0.06	0.07	0.21	0.35		0.45	0.29	
Uniform Delay, d1	35.9	12.2	11.9	35.8	12.5	12.5	38.6	28.4		34.2	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.0	0.1	0.0	6.5	0.0	0.1	7.6	0.6		1.5	0.5	
Delay (s)	52.9	12.3	11.9	42.4	12.5	12.6	46.1	29.0		35.7	24.3	
Level of Service	D	B	B	D	B	B	D	C		D	C	
Approach Delay (s)		29.6			19.1			29.3			29.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

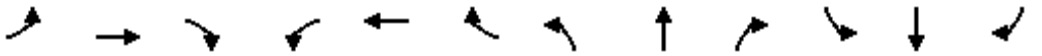
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	154	103	67	190	0	0
Future Volume (veh/h)	154	103	67	190	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1610	1610	1407	1407		
Adj Flow Rate, veh/h	154	103	67	190		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	18	18	35	35		
Cap, veh/h	1982	868	421	2420		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	3140	1340	2600	2744		
Grp Volume(v), veh/h	154	103	67	190		
Grp Sat Flow(s),veh/h/ln	1530	1340	1300	1337		
Q Serve(g_s), s	0.9	1.4	1.1	0.4		
Cycle Q Clear(g_c), s	0.9	1.4	1.1	0.4		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1982	868	421	2420		
V/C Ratio(X)	0.08	0.12	0.16	0.08		
Avail Cap(c_a), veh/h	1982	868	1579	2420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.2	3.3	17.8	0.2		
Incr Delay (d2), s/veh	0.1	0.3	0.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.4	0.1		
LnGrp Delay(d),s/veh	3.3	3.6	18.0	0.2		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	257			257		
Approach Delay, s/veh	3.4			4.9		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		2.4			3.1	3.4		
Green Ext Time (p_c), s		0.5			0.2	1.0		

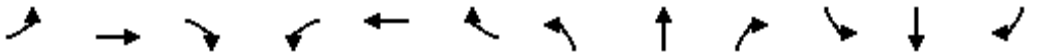
Intersection Summary	
HCM 2010 Ctrl Delay	4.1
HCM 2010 LOS	A

Notes



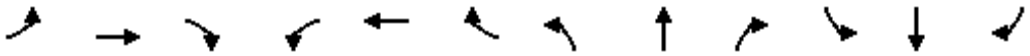
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	93	0	0	77	100	91	260	83	96	0	86
Future Volume (vph)	67	93	0	0	77	100	91	260	83	96	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Frt	1.00	1.00			0.92		1.00	0.96		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1671	3343			2922		1416	2872		1504		2369
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (perm)	1671	3343			2922		1416	2872		1504		2369
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)	67	93	0	0	77	100	91	260	83	96	0	86
RTOR Reduction (vph)	0	0	0	0	73	0	0	25	0	0	0	73
Lane Group Flow (vph)	67	93	0	0	104	0	82	327	0	96	0	13
Confl. Peds. (#/hr)	10					10						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	8%	8%	8%	12%	12%	12%	16%	16%	16%	20%	20%	20%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	6.1	28.2			17.9		14.0	14.0		9.8		9.8
Effective Green, g (s)	6.1	28.2			17.9		14.0	14.0		9.8		9.8
Actuated g/C Ratio	0.09	0.43			0.27		0.21	0.21		0.15		0.15
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	155	1437			797		302	612		224		353
v/s Ratio Prot	c0.04	0.03			c0.04					c0.06		
v/s Ratio Perm							0.06	0.11				0.01
v/c Ratio	0.43	0.06			0.13		0.27	0.53		0.43		0.04
Uniform Delay, d1	28.1	11.0			18.0		21.5	22.9		25.4		23.9
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.7	0.0			0.1		0.4	0.7		1.0		0.0
Delay (s)	28.8	11.0			18.0		21.9	23.6		26.3		23.9
Level of Service	C	B			B		C	C		C		C
Approach Delay (s)		18.5			18.0			23.3			25.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	17.8
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



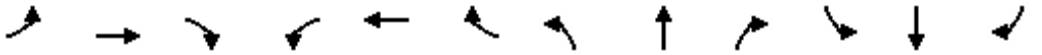
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	629	120	52	423	6	128	1	104	17	1	18
Future Volume (vph)	16	629	120	52	423	6	128	1	104	17	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
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)	16	629	120	52	423	6	128	1	104	17	1	18
RTOR Reduction (vph)	0	0	92	0	1	0	0	0	56	0	19	0
Lane Group Flow (vph)	16	629	28	52	428	0	64	65	48	17	0	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	6%	6%	8%	8%	8%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	18.9	18.9	4.7	22.6		37.6	37.6	37.6	2.1	2.1	
Effective Green, g (s)	1.0	18.9	18.9	4.7	22.6		37.6	37.6	37.6	2.1	2.1	
Actuated g/C Ratio	0.01	0.23	0.23	0.06	0.28		0.46	0.46	0.46	0.03	0.03	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	20	786	347	96	921		710	712	668	41	71	
v/s Ratio Prot	0.01	c0.18		c0.03	c0.13		0.04	c0.04	0.03	c0.01	0.00	
v/s Ratio Perm			0.02									
v/c Ratio	0.80	0.80	0.08	0.54	0.46		0.09	0.09	0.07	0.41	0.01	
Uniform Delay, d1	40.3	29.7	24.6	37.5	24.6		12.5	12.5	12.3	39.2	38.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	105.9	5.5	0.0	3.3	0.1		0.0	0.0	0.0	2.5	0.0	
Delay (s)	146.2	35.2	24.7	40.8	24.7		12.5	12.5	12.4	41.7	38.8	
Level of Service	F	D	C	D	C		B	B	B	D	D	
Approach Delay (s)		35.9			26.5			12.4			40.2	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	550	45	76	447	142	48	105	277	234	77	18
Future Volume (vph)	179	550	45	76	447	142	48	105	277	234	77	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.89		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1719	3395		1703	3406	1524	1671	2979		1535	3105	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1719	3395		1703	3406	1524	1671	2979		1535	3105	
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)	179	550	45	76	447	142	48	105	277	234	77	18
RTOR Reduction (vph)	0	6	0	0	0	107	0	243	0	0	6	0
Lane Group Flow (vph)	179	589	0	76	447	35	48	139	0	117	206	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	9.4	17.7		5.1	14.3	14.3	7.0	7.0		8.2	8.2	
Effective Green, g (s)	9.4	17.7		5.1	14.3	14.3	7.0	7.0		8.2	8.2	
Actuated g/C Ratio	0.16	0.31		0.09	0.25	0.25	0.12	0.12		0.14	0.14	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	281	1045		151	847	379	203	362		218	442	
v/s Ratio Prot	c0.10	c0.17		0.04	0.13		0.03	c0.05		c0.08	0.07	
v/s Ratio Perm						0.02						
v/c Ratio	0.64	0.56		0.50	0.53	0.09	0.24	0.38		0.54	0.47	
Uniform Delay, d1	22.5	16.7		25.0	18.7	16.6	22.8	23.3		22.9	22.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.4		1.0	0.3	0.0	0.2	0.2		1.3	0.3	
Delay (s)	25.9	17.1		26.0	19.0	16.7	23.1	23.5		24.2	22.9	
Level of Service	C	B		C	B	B	C	C		C	C	
Approach Delay (s)		19.1			19.3			23.5			23.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	19.5
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	318	16	171	297	18	17	17	98	12	11	12
Future Volume (veh/h)	16	318	16	171	297	18	17	17	98	12	11	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	0.99		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1727	1900	1759	1759	1900	1900	1759	1759	1900	1743	1900
Adj Flow Rate, veh/h	16	318	16	171	297	18	17	17	98	12	11	12
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	10	10	8	8	8	8	8	8	9	9	9
Cap, veh/h	517	1429	72	470	1438	87	385	362	669	256	231	222
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	973	3177	159	978	3195	192	706	804	1487	434	512	494
Grp Volume(v), veh/h	16	164	170	171	155	160	34	0	98	35	0	0
Grp Sat Flow(s),veh/h/ln	973	1641	1695	978	1671	1716	1509	0	1487	1441	0	0
Q Serve(g_s), s	0.8	4.9	4.9	4.8	0.9	0.9	0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	4.9	4.9	9.7	0.9	0.9	0.9	0.0	3.1	1.0	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.11	0.50		1.00	0.34		0.34
Lane Grp Cap(c), veh/h	517	738	763	470	752	772	747	0	669	709	0	0
V/C Ratio(X)	0.03	0.22	0.22	0.36	0.21	0.21	0.05	0.00	0.15	0.05	0.00	0.00
Avail Cap(c_a), veh/h	517	738	763	470	752	772	747	0	669	709	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	13.4	13.5	3.5	2.2	2.2	12.3	0.0	13.0	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.7	2.2	0.6	0.6	0.1	0.0	0.5	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(50%),veh/ln	0.2	2.3	2.4	1.5	0.5	0.5	0.4	0.0	1.4	0.5	0.0	0.0
LnGrp Delay(d),s/veh	12.9	14.1	14.1	5.7	2.9	2.9	12.5	0.0	13.4	12.5	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		B	B		
Approach Vol, veh/h		350			486			132			35	
Approach Delay, s/veh		14.1			3.9			13.2			12.5	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		5.1		6.9		3.0		11.7
Green Ext Time (p_c), s		0.5		2.1		0.2		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	69	0	343	102	21	37	99	623	1	166	23
Future Volume (veh/h)	9	69	0	343	102	21	37	99	623	1	166	23
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1900	1387	1387	1900	1681	1681	1681	1900	1776	1900
Adj Flow Rate, veh/h	9	69	-30	343	102	12	37	99	302	1	166	6
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	37	37	37	13	13	13	7	7	7
Cap, veh/h	371	527	0	424	297	35	73	505	666	59	636	23
Arrive On Green	0.22	0.30	0.00	0.17	0.24	0.24	0.05	0.30	0.30	0.20	0.20	0.20
Sat Flow, veh/h	1660	1743	0	2562	1216	143	1601	1681	1428	4	3247	116
Grp Volume(v), veh/h	9	39	0	343	0	114	37	99	302	91	0	82
Grp Sat Flow(s),veh/h/ln	1660	1743	0	1281	0	1359	1601	1681	1428	1772	0	1595
Q Serve(g_s), s	0.3	1.0	0.0	8.1	0.0	4.3	1.4	2.7	9.0	0.0	0.0	2.7
Cycle Q Clear(g_c), s	0.3	1.0	0.0	8.1	0.0	4.3	1.4	2.7	9.0	2.7	0.0	2.7
Prop In Lane	1.00		0.00	1.00		0.11	1.00		1.00	0.01		0.07
Lane Grp Cap(c), veh/h	371	527	0	424	0	332	73	505	666	405	0	313
V/C Ratio(X)	0.02	0.07	0.00	0.81	0.00	0.34	0.51	0.20	0.45	0.22	0.00	0.26
Avail Cap(c_a), veh/h	371	1025	0	504	0	762	156	978	1067	820	0	688
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	15.6	0.0	25.2	0.0	19.5	29.2	16.3	11.3	21.3	0.0	21.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	8.2	0.0	0.5	4.0	0.3	0.7	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.0	3.3	0.0	1.7	0.7	1.3	3.6	1.3	0.0	1.2
LnGrp Delay(d),s/veh	19.0	15.6	0.0	33.4	0.0	20.0	33.2	16.5	12.0	21.4	0.0	21.5
LnGrp LOS	B	B		C		B	C	B	B	C		C
Approach Vol, veh/h		48			457			438			173	
Approach Delay, s/veh		16.3			30.0			14.8			21.5	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	19.5	6.5	17.9	15.1	23.1		24.4
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	2.3	6.3	3.4	4.7	10.1	3.0		4.7
Green Ext Time (p_c), s	0.0	0.5	0.0	0.6	0.3	0.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	365	51	66	413	55	23	89	51	43	76	45
Future Volume (veh/h)	31	365	51	66	413	55	23	89	51	43	76	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1759	1759	1759	1759	1759	1900	1900	1776	1900
Adj Flow Rate, veh/h	31	365	51	66	413	55	23	89	51	43	76	45
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	7	7	7
Cap, veh/h	448	1618	224	590	968	818	463	734	390	293	486	294
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	868	2942	408	910	1759	1487	1192	2098	1115	645	1388	840
Grp Volume(v), veh/h	31	206	210	66	413	55	23	70	70	86	0	78
Grp Sat Flow(s),veh/h/ln	868	1671	1678	910	1759	1487	1192	1671	1541	1422	0	1451
Q Serve(g_s), s	0.8	0.0	0.0	2.8	11.0	1.4	1.1	2.3	2.5	0.8	0.0	2.9
Cycle Q Clear(g_c), s	11.8	0.0	0.0	2.8	11.0	1.4	4.0	2.3	2.5	3.3	0.0	2.9
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.72	0.50		0.58
Lane Grp Cap(c), veh/h	448	919	923	590	968	818	463	585	539	565	0	508
V/C Ratio(X)	0.07	0.22	0.23	0.11	0.43	0.07	0.05	0.12	0.13	0.15	0.00	0.15
Avail Cap(c_a), veh/h	448	919	923	590	968	818	463	585	539	565	0	508
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	8.7	10.6	8.4	19.2	17.6	17.7	17.9	0.0	17.9
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.4	1.4	0.2	0.2	0.4	0.5	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(50%),veh/ln	0.2	0.1	0.1	0.8	5.6	0.6	0.4	1.1	1.1	1.4	0.0	1.3
LnGrp Delay(d),s/veh	1.8	0.6	0.6	9.1	12.0	8.6	19.4	18.0	18.2	18.4	0.0	18.5
LnGrp LOS	A	A	A	A	B	A	B	B	B	B		B
Approach Vol, veh/h		447			534			163			164	
Approach Delay, s/veh		0.7			11.3			18.3			18.5	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		6.0		13.8		5.3		13.0
Green Ext Time (p_c), s		0.8		2.9		0.9		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	568	89	154	236	44	210	113	194	66	84	23
Future Volume (veh/h)	10	568	89	154	236	44	210	113	194	66	84	23
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1667	1667	1329	1329	1900	1195	1195	1195	1696	1696	1696
Adj Flow Rate, veh/h	10	568	89	154	236	44	210	113	194	66	84	23
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	14	14	14	43	43	43	59	59	59	12	12	12
Cap, veh/h	72	763	349	115	875	160	260	273	231	229	240	203
Arrive On Green	0.25	0.25	0.25	0.09	0.41	0.41	0.23	0.23	0.23	0.14	0.14	0.14
Sat Flow, veh/h	18	3076	1405	1265	2126	389	1138	1195	1012	1616	1696	1433
Grp Volume(v), veh/h	310	268	89	154	138	142	210	113	194	66	84	23
Grp Sat Flow(s),veh/h/ln	1654	1441	1405	1265	1262	1253	1138	1195	1012	1616	1696	1433
Q Serve(g_s), s	0.6	9.5	2.8	5.0	4.0	4.1	9.6	4.4	10.1	2.0	2.5	0.8
Cycle Q Clear(g_c), s	9.5	9.5	2.8	5.0	4.0	4.1	9.6	4.4	10.1	2.0	2.5	0.8
Prop In Lane	0.03		1.00	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	478	357	349	115	520	516	260	273	231	229	240	203
V/C Ratio(X)	0.65	0.75	0.26	1.34	0.27	0.27	0.81	0.41	0.84	0.29	0.35	0.11
Avail Cap(c_a), veh/h	755	603	588	115	734	729	476	500	423	676	709	599
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	19.1	16.6	25.0	10.7	10.7	20.1	18.1	20.3	21.1	21.3	20.6
Incr Delay (d2), s/veh	0.6	1.2	0.1	199.6	0.3	0.3	6.4	1.1	8.5	0.7	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	3.8	1.1	8.1	1.4	1.5	3.4	1.5	3.3	0.9	1.2	0.3
LnGrp Delay(d),s/veh	19.7	20.3	16.7	224.6	11.0	11.0	26.4	19.2	28.8	21.8	22.2	20.8
LnGrp LOS	B	C	B	F	B	B	C	B	C	C	C	C
Approach Vol, veh/h		667			434			517			173	
Approach Delay, s/veh		19.5			86.8			25.7			21.9	
Approach LOS		B			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		26.6		16.6	9.0	17.6		11.8
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		6.1		11.6	7.0	11.5		4.5
Green Ext Time (p_c), s		1.8		0.7	0.0	1.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	37	15	125	50	108	0	306	93	50	212	16
Future Volume (veh/h)	23	37	15	125	50	108	0	306	93	50	212	16
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1557	1900	1900	1258	1900	0	1124	1900	1131	1131	1900
Adj Flow Rate, veh/h	23	37	15	125	50	108	0	306	93	50	212	16
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	22	22	22	51	51	51	0	69	69	68	68	68
Cap, veh/h	179	243	84	217	82	125	0	396	118	116	939	70
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.24	0.24	0.11	0.46	0.46
Sat Flow, veh/h	290	775	266	383	261	398	0	1679	484	1077	2027	152
Grp Volume(v), veh/h	75	0	0	283	0	0	0	200	199	50	112	116
Grp Sat Flow(s),veh/h/ln	1331	0	0	1042	0	0	0	1068	1039	1077	1074	1104
Q Serve(g_s), s	0.0	0.0	0.0	11.2	0.0	0.0	0.0	9.3	9.7	2.3	3.3	3.4
Cycle Q Clear(g_c), s	1.9	0.0	0.0	13.7	0.0	0.0	0.0	9.3	9.7	2.3	3.3	3.4
Prop In Lane	0.31		0.20	0.44		0.38	0.00		0.47	1.00		0.14
Lane Grp Cap(c), veh/h	505	0	0	423	0	0	0	261	253	116	498	511
V/C Ratio(X)	0.15	0.00	0.00	0.67	0.00	0.00	0.00	0.77	0.79	0.43	0.22	0.23
Avail Cap(c_a), veh/h	968	0	0	785	0	0	0	496	483	220	839	862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	0.0	17.2	0.0	0.0	0.0	18.9	19.0	22.5	8.7	8.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.8	2.1	0.9	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	4.0	0.0	0.0	0.0	2.8	2.9	0.7	1.0	1.0
LnGrp Delay(d),s/veh	13.4	0.0	0.0	17.9	0.0	0.0	0.0	20.7	21.1	23.4	8.7	8.7
LnGrp LOS	B			B				C	C	C	A	A
Approach Vol, veh/h		75			283			399			278	
Approach Delay, s/veh		13.4			17.9			20.9			11.4	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		30.9		22.9	11.8	19.1		22.9
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		5.4		15.7	4.3	11.7		3.9
Green Ext Time (p_c), s		1.0		1.3	0.0	1.5		0.3

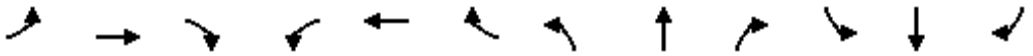
Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	166	106	93	129	250	0	1	248	79	7	50
Future Vol, veh/h	30	166	106	93	129	250	0	1	248	79	7	50
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
Heavy Vehicles, %	82	82	82	88	88	88	97	97	97	83	83	83
Mvmt Flow	30	166	106	93	129	250	0	1	248	79	7	50
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	17.2	20.1	23.2	14.5
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	15%	0%	42%	0%	92%	0%
Vol Thru, %	0%	85%	0%	58%	0%	8%	0%
Vol Right, %	100%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	196	106	222	250	86	50
LT Vol	0	30	0	93	0	79	0
Through Vol	1	166	0	129	0	7	0
RT Vol	248	0	106	0	250	0	50
Lane Flow Rate	249	196	106	222	250	86	50
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.591	0.477	0.235	0.536	0.539	0.235	0.12
Departure Headway (Hd)	8.548	8.767	7.969	8.692	7.76	9.844	8.65
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	412	452	415	465	366	415
Service Time	6.583	6.506	5.708	6.43	5.497	7.588	6.393
HCM Lane V/C Ratio	0.589	0.476	0.235	0.535	0.538	0.235	0.12
HCM Control Delay	23.2	19.3	13.2	21.1	19.2	15.6	12.6
HCM Lane LOS	C	C	B	C	C	C	B
HCM 95th-tile Q	3.7	2.5	0.9	3.1	3.1	0.9	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	202	28	85	203	396	12	198	105	117	65	16
Future Volume (vph)	142	202	28	85	203	396	12	198	105	117	65	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1008	2017	902	1188	2375	1062	992	1870		2175	1145	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1008	2017	902	1188	2375	1062	992	1870		2175	1145	
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)	142	202	28	85	203	396	12	198	105	117	65	16
RTOR Reduction (vph)	0	0	16	0	0	253	0	80	0	0	9	0
Lane Group Flow (vph)	142	202	12	85	203	143	12	223	0	117	72	0
Confl. Peds. (#/hr)									4	4		
Heavy Vehicles (%)	79%	79%	79%	52%	52%	52%	82%	82%	82%	61%	61%	61%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	12.8	34.1	34.1	8.2	29.5	29.5	1.5	17.4		8.0	23.9	
Effective Green, g (s)	12.8	35.1	35.1	8.2	30.5	30.5	1.5	17.4		8.0	23.9	
Actuated g/C Ratio	0.15	0.41	0.41	0.10	0.36	0.36	0.02	0.21		0.09	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	152	835	373	115	855	382	17	384		205	323	
v/s Ratio Prot	c0.14	0.10		0.07	0.09		0.01	c0.12		c0.05	0.06	
v/s Ratio Perm			0.01			c0.13						
v/c Ratio	0.93	0.24	0.03	0.74	0.24	0.37	0.71	0.58		0.57	0.22	
Uniform Delay, d1	35.5	16.1	14.7	37.2	19.0	20.0	41.4	30.4		36.7	23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	53.3	0.7	0.2	21.8	0.1	0.6	84.0	2.2		3.8	0.4	
Delay (s)	88.8	16.8	14.9	59.0	19.1	20.7	125.3	32.6		40.5	23.6	
Level of Service	F	B	B	E	B	C	F	C		D	C	
Approach Delay (s)		44.2			25.0			36.1			33.6	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

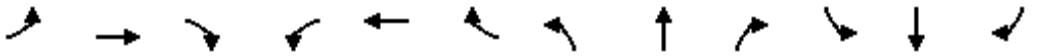
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	149	283	169	688	0	0
Future Volume (veh/h)	149	283	169	688	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1138	1138	1284	1284		
Adj Flow Rate, veh/h	149	283	169	688		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	67	67	48	48		
Cap, veh/h	1431	640	418	2242		
Arrive On Green	0.66	0.66	0.18	0.92		
Sat Flow, veh/h	2219	967	2372	2503		
Grp Volume(v), veh/h	149	283	169	688		
Grp Sat Flow(s),veh/h/ln	1081	967	1186	1220		
Q Serve(g_s), s	1.2	6.9	3.1	1.6		
Cycle Q Clear(g_c), s	1.2	6.9	3.1	1.6		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1431	640	418	2242		
V/C Ratio(X)	0.10	0.44	0.40	0.31		
Avail Cap(c_a), veh/h	1431	640	1474	2242		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.0	4.0	18.1	0.2		
Incr Delay (d2), s/veh	0.1	2.2	0.6	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	2.2	1.0	0.5		
LnGrp Delay(d),s/veh	3.2	6.2	18.7	0.3		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	432			857		
Approach Delay, s/veh	5.2			3.9		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		3.6			5.1	8.9		
Green Ext Time (p_c), s		2.2			0.6	1.6		

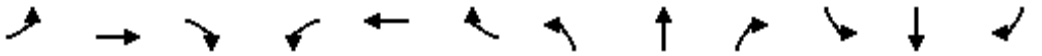
Intersection Summary	
HCM 2010 Ctrl Delay	4.3
HCM 2010 LOS	A

Notes



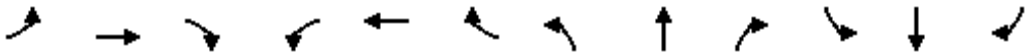
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	51	0	0	205	91	380	177	96	64	0	272
Future Volume (vph)	103	51	0	0	205	91	380	177	96	64	0	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0		4.0
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frt	1.00	1.00			0.95		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (prot)	1135	2270			2994		1117	2233		1299		2045
Flt Permitted	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (perm)	1135	2270			2994		1117	2233		1299		2045
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)	103	51	0	0	205	91	380	177	96	64	0	272
RTOR Reduction (vph)	0	0	0	0	49	0	0	21	0	0	0	226
Lane Group Flow (vph)	103	51	0	0	247	0	220	412	0	64	0	46
Heavy Vehicles (%)	59%	59%	59%	15%	15%	15%	47%	47%	47%	39%	39%	39%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	10.6	31.8			17.0		21.6	21.6		13.4		13.4
Effective Green, g (s)	10.8	32.5			17.7		22.3	22.3		13.6		13.6
Actuated g/C Ratio	0.13	0.40			0.22		0.28	0.28		0.17		0.17
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	152	917			659		309	619		219		345
v/s Ratio Prot	c0.09	0.02			c0.08					c0.05		
v/s Ratio Perm							c0.20	0.18				0.02
v/c Ratio	0.68	0.06			0.37		0.71	0.67		0.29		0.13
Uniform Delay, d1	33.1	14.6			26.6		26.2	25.7		29.2		28.4
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	9.0	0.0			0.3		7.0	2.4		0.5		0.1
Delay (s)	42.2	14.6			26.9		33.2	28.2		29.7		28.5
Level of Service	D	B			C		C	C		C		C
Approach Delay (s)		33.1			26.9			29.9			28.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	112	33	163	678	10	254	9	155	25	0	3
Future Volume (vph)	12	112	33	163	678	10	254	9	155	25	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
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)	12	112	33	163	678	10	254	9	155	25	0	3
RTOR Reduction (vph)	0	0	27	0	1	0	0	0	86	0	3	0
Lane Group Flow (vph)	12	112	6	163	687	0	132	131	69	25	0	0
Heavy Vehicles (%)	16%	16%	16%	11%	11%	11%	25%	25%	25%	57%	57%	57%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	14.8	14.8	11.5	25.3		36.4	36.4	36.4	2.2	2.2	
Effective Green, g (s)	1.2	16.3	16.3	11.7	26.8		37.0	37.0	37.0	2.4	2.4	
Actuated g/C Ratio	0.01	0.20	0.20	0.14	0.32		0.44	0.44	0.44	0.03	0.03	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	22	608	272	228	1042		608	612	573	33	56	
v/s Ratio Prot	0.01	0.04		c0.10	c0.21		c0.10	0.09	0.05	c0.02	0.00	
v/s Ratio Perm			0.00									
v/c Ratio	0.55	0.18	0.02	0.71	0.66		0.22	0.21	0.12	0.76	0.00	
Uniform Delay, d1	40.8	28.0	27.1	34.3	24.4		14.3	14.3	13.6	40.2	39.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.0	0.1	0.0	8.5	1.2		0.1	0.1	0.0	59.5	0.0	
Delay (s)	54.8	28.1	27.1	42.8	25.5		14.3	14.3	13.7	99.8	39.3	
Level of Service	D	C	C	D	C		B	B	B	F	D	
Approach Delay (s)		29.9			28.8			14.1			93.3	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	83.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	154	76	122	573	206	76	128	171	85	121	156
Future Volume (vph)	108	154	76	122	573	206	76	128	171	85	121	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.91		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1357	2569		1656	3312	1482	1357	2481		1190	2297	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1357	2569		1656	3312	1482	1357	2481		1190	2297	
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)	108	154	76	122	573	206	76	128	171	85	121	156
RTOR Reduction (vph)	0	54	0	0	0	149	0	144	0	0	131	0
Lane Group Flow (vph)	108	176	0	122	573	57	76	155	0	76	155	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	33%	33%	33%	9%	9%	9%	33%	33%	33%	38%	38%	38%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	7.0	15.1		6.5	15.5	15.5	7.8	7.8		8.1	8.1	
Effective Green, g (s)	7.2	16.2		6.7	15.7	15.7	8.9	8.9		9.2	9.2	
Actuated g/C Ratio	0.13	0.28		0.12	0.28	0.28	0.16	0.16		0.16	0.16	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	171	730		194	912	408	211	387		192	370	
v/s Ratio Prot	c0.08	0.07		0.07	c0.17		0.06	c0.06		0.06	c0.07	
v/s Ratio Perm						0.04						
v/c Ratio	0.63	0.24		0.63	0.63	0.14	0.36	0.40		0.40	0.42	
Uniform Delay, d1	23.6	15.7		24.0	18.1	15.6	21.5	21.6		21.4	21.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	0.1		4.5	1.0	0.1	0.4	0.2		0.5	0.3	
Delay (s)	29.1	15.7		28.5	19.1	15.6	21.9	21.9		21.9	21.8	
Level of Service	C	B		C	B	B	C	C		C	C	
Approach Delay (s)		20.0			19.6			21.9			21.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	730	30	89	368	32	29	80	579	21	11	17
Future Volume (veh/h)	26	730	30	89	368	32	29	80	579	21	11	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.99		0.91	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1810	1810	1900	1900	1863	1863	1900	1792	1900
Adj Flow Rate, veh/h	26	730	30	89	368	32	29	80	579	21	11	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	2	2	2	6	6	6
Cap, veh/h	492	1525	63	292	1429	123	229	603	707	255	137	174
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	924	3389	139	674	3175	274	383	1341	1572	424	304	387
Grp Volume(v), veh/h	26	374	386	89	198	202	109	0	579	49	0	0
Grp Sat Flow(s),veh/h/ln	924	1736	1793	674	1719	1729	1724	0	1572	1115	0	0
Q Serve(g_s), s	1.3	12.1	12.1	5.8	1.2	1.2	0.0	0.0	25.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	12.1	12.1	17.9	1.2	1.2	2.7	0.0	25.7	2.7	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.16	0.27		1.00	0.43		0.35
Lane Grp Cap(c), veh/h	492	781	807	292	774	778	833	0	707	566	0	0
V/C Ratio(X)	0.05	0.48	0.48	0.31	0.26	0.26	0.13	0.00	0.82	0.09	0.00	0.00
Avail Cap(c_a), veh/h	492	781	807	292	774	778	833	0	707	566	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.2	15.4	15.4	6.4	2.3	2.3	12.9	0.0	19.2	12.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.1	2.0	2.7	0.8	0.8	0.3	0.0	10.2	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(50%),veh/ln	0.4	6.2	6.4	1.3	0.6	0.6	1.5	0.0	13.1	0.7	0.0	0.0
LnGrp Delay(d),s/veh	13.4	17.5	17.5	9.1	3.1	3.1	13.2	0.0	29.4	12.8	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		C	B		
Approach Vol, veh/h		786			489			688			49	
Approach Delay, s/veh		17.3			4.2			26.8			12.8	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		27.7		14.1		4.7		19.9
Green Ext Time (p_c), s		2.1		5.1		0.3		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	213	1	388	182	24	36	578	1022	2	85	41
Future Volume (veh/h)	88	213	1	388	182	24	36	578	1022	2	85	41
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1776	1776	1900	1845	1845	1845	1900	1696	1900
Adj Flow Rate, veh/h	88	213	-29	388	182	15	36	578	701	2	85	24
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	7	7	7	3	3	3	12	12	12
Cap, veh/h	348	553	0	482	400	33	75	651	783	55	626	169
Arrive On Green	0.20	0.30	0.00	0.15	0.25	0.25	0.04	0.35	0.35	0.26	0.26	0.26
Sat Flow, veh/h	1774	1863	0	3281	1617	133	1757	1845	1565	10	2427	653
Grp Volume(v), veh/h	88	184	0	388	0	197	36	578	701	59	0	52
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1640	0	1750	1757	1845	1565	1663	0	1427
Q Serve(g_s), s	3.0	5.5	0.0	8.2	0.0	6.8	1.4	21.1	25.2	0.0	0.0	2.0
Cycle Q Clear(g_c), s	3.0	5.5	0.0	8.2	0.0	6.8	1.4	21.1	25.2	1.9	0.0	2.0
Prop In Lane	1.00		0.00	1.00		0.08	1.00		1.00	0.03		0.46
Lane Grp Cap(c), veh/h	348	553	0	482	0	433	75	651	783	481	0	368
V/C Ratio(X)	0.25	0.33	0.00	0.80	0.00	0.45	0.48	0.89	0.90	0.12	0.00	0.14
Avail Cap(c_a), veh/h	348	961	0	566	0	861	150	941	1029	665	0	540
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.2	19.6	0.0	29.4	0.0	22.8	33.4	21.8	16.2	20.3	0.0	20.4
Incr Delay (d2), s/veh	0.1	0.3	0.0	7.2	0.0	0.6	3.5	8.7	9.2	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.9	0.0	4.1	0.0	3.3	0.8	12.2	14.4	0.9	0.0	0.8
LnGrp Delay(d),s/veh	24.4	19.8	0.0	36.6	0.0	23.3	36.8	30.5	25.3	20.4	0.0	20.4
LnGrp LOS	C	B		D		C	D	C	C	C		C
Approach Vol, veh/h		272			585			1315			111	
Approach Delay, s/veh		21.3			32.1			27.9			20.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	21.9	6.8	24.0	15.2	25.4		30.8
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	5.0	8.8	3.4	4.0	10.2	7.5		23.1
Green Ext Time (p_c), s	0.1	0.9	0.0	0.4	0.3	0.8		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1205	87	63	393	67	27	171	115	98	165	63
Future Volume (veh/h)	57	1205	87	63	393	67	27	171	115	98	165	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1827	1827	1827	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	1205	87	63	393	67	27	171	115	98	165	63
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	4	4	4	2	2	2
Cap, veh/h	479	1819	131	319	1005	830	395	708	446	300	513	208
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	912	3308	238	416	1827	1509	1119	2021	1275	649	1467	594
Grp Volume(v), veh/h	57	637	655	63	393	67	27	145	141	159	0	167
Grp Sat Flow(s),veh/h/ln	912	1752	1794	416	1827	1509	1119	1736	1561	1134	0	1575
Q Serve(g_s), s	1.3	0.0	0.0	6.4	9.9	1.7	1.4	4.7	5.2	6.0	0.0	6.2
Cycle Q Clear(g_c), s	11.1	0.0	0.0	6.4	9.9	1.7	7.6	4.7	5.2	11.1	0.0	6.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.82	0.62		0.38
Lane Grp Cap(c), veh/h	479	964	987	319	1005	830	395	607	546	470	0	551
V/C Ratio(X)	0.12	0.66	0.66	0.20	0.39	0.08	0.07	0.24	0.26	0.34	0.00	0.30
Avail Cap(c_a), veh/h	479	964	987	319	1005	830	395	607	546	470	0	551
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.2	0.0	0.0	9.5	10.3	8.5	21.7	18.4	18.6	21.2	0.0	18.9
Incr Delay (d2), s/veh	0.5	3.6	3.5	1.4	1.1	0.2	0.3	0.9	1.1	1.9	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.0	1.0	0.9	5.2	0.7	0.5	2.4	2.4	3.0	0.0	2.9
LnGrp Delay(d),s/veh	1.8	3.6	3.5	10.9	11.5	8.7	22.0	19.4	19.7	23.1	0.0	20.3
LnGrp LOS	A	A	A	B	B	A	C	B	B	C		C
Approach Vol, veh/h		1349			523			313			326	
Approach Delay, s/veh		3.5			11.0			19.8			21.7	
Approach LOS		A			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		9.6		13.1		13.1		11.9
Green Ext Time (p_c), s		1.7		11.7		1.7		4.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1036	110	70	331	43	255	203	114	172	117	8
Future Volume (veh/h)	63	1036	110	70	331	43	255	203	114	172	117	8
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1827	1583	1583	1900	1667	1667	1667	1845	1845	1845
Adj Flow Rate, veh/h	63	1036	110	70	331	43	255	203	114	172	117	8
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	20	20	20	14	14	14	3	3	3
Cap, veh/h	104	1082	529	83	1225	158	337	354	297	267	281	234
Arrive On Green	0.34	0.34	0.34	0.06	0.46	0.46	0.21	0.21	0.21	0.15	0.15	0.15
Sat Flow, veh/h	131	3164	1546	1508	2680	345	1587	1667	1399	1757	1845	1540
Grp Volume(v), veh/h	576	523	110	70	185	189	255	203	114	172	117	8
Grp Sat Flow(s),veh/h/ln	1715	1579	1546	1508	1504	1522	1587	1667	1399	1757	1845	1540
Q Serve(g_s), s	15.8	21.9	3.4	3.1	5.1	5.2	10.1	7.3	4.7	6.2	3.9	0.3
Cycle Q Clear(g_c), s	22.3	21.9	3.4	3.1	5.1	5.2	10.1	7.3	4.7	6.2	3.9	0.3
Prop In Lane	0.11		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	646	540	529	83	687	695	337	354	297	267	281	234
V/C Ratio(X)	0.89	0.97	0.21	0.84	0.27	0.27	0.76	0.57	0.38	0.64	0.42	0.03
Avail Cap(c_a), veh/h	646	540	529	112	716	724	543	570	479	601	631	527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	21.7	15.7	31.5	11.3	11.3	24.8	23.7	22.7	26.8	25.8	24.3
Incr Delay (d2), s/veh	14.2	30.4	0.1	29.7	0.2	0.2	3.8	1.6	0.9	2.6	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	14.0	1.4	2.0	2.1	2.2	4.7	3.5	1.9	3.2	2.0	0.1
LnGrp Delay(d),s/veh	35.9	52.1	15.7	61.1	11.5	11.5	28.6	25.3	23.6	29.4	26.8	24.3
LnGrp LOS	D	D	B	E	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1209			444			572			297	
Approach Delay, s/veh		41.1			19.3			26.4			28.2	
Approach LOS		D			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		34.7		18.3	7.7	27.0		14.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		7.2		12.1	5.1	24.3		8.2
Green Ext Time (p_c), s		2.4		1.4	0.0	0.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	115	24	86	116	126	0	285	144	68	168	15
Future Volume (veh/h)	31	115	24	86	116	126	0	285	144	68	168	15
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1900	1900	1638	1900	0	1367	1900	1450	1450	1900
Adj Flow Rate, veh/h	31	115	24	86	116	126	0	285	144	68	168	15
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	16	16	16	0	39	39	31	31	31
Cap, veh/h	131	404	76	167	192	174	0	384	188	176	1182	104
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.23	0.23	0.13	0.46	0.46
Sat Flow, veh/h	172	1241	232	267	588	533	0	1745	822	1381	2556	226
Grp Volume(v), veh/h	170	0	0	328	0	0	0	219	210	68	90	93
Grp Sat Flow(s),veh/h/ln	1646	0	0	1388	0	0	0	1299	1200	1381	1378	1404
Q Serve(g_s), s	0.0	0.0	0.0	7.0	0.0	0.0	0.0	8.9	9.3	2.6	2.1	2.2
Cycle Q Clear(g_c), s	4.2	0.0	0.0	11.6	0.0	0.0	0.0	8.9	9.3	2.6	2.1	2.2
Prop In Lane	0.18		0.14	0.26		0.38	0.00		0.68	1.00		0.16
Lane Grp Cap(c), veh/h	611	0	0	532	0	0	0	298	275	176	637	649
V/C Ratio(X)	0.28	0.00	0.00	0.62	0.00	0.00	0.00	0.74	0.76	0.39	0.14	0.14
Avail Cap(c_a), veh/h	1084	0	0	948	0	0	0	573	529	268	1021	1040
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	0.0	16.6	0.0	0.0	0.0	20.3	20.4	22.7	8.8	8.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.0	1.3	1.7	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	4.5	0.0	0.0	0.0	3.3	3.2	1.0	0.8	0.8
LnGrp Delay(d),s/veh	14.4	0.0	0.0	17.1	0.0	0.0	0.0	21.6	22.1	23.2	8.8	8.8
LnGrp LOS	B			B				C	C	C	A	A
Approach Vol, veh/h		170			328			429			251	
Approach Delay, s/veh		14.4			17.1			21.8			12.7	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		32.2		24.5	13.2	19.0		24.5
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		4.2		13.6	4.6	11.3		6.2
Green Ext Time (p_c), s		0.7		1.5	0.0	1.6		0.7

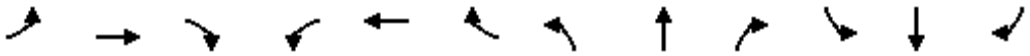
Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	153	43	112	62	73	2	46	117	103	45	16
Future Vol, veh/h	25	153	43	112	62	73	2	46	117	103	45	16
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
Heavy Vehicles, %	26	26	26	69	69	69	93	93	93	60	60	60
Mvmt Flow	25	153	43	112	62	73	2	46	117	103	45	16
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	12.2	13.6	14.7	13.8
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	14%	0%	64%	0%	70%	0%
Vol Thru, %	28%	86%	0%	36%	0%	30%	0%
Vol Right, %	71%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	178	43	174	73	148	16
LT Vol	2	25	0	112	0	103	0
Through Vol	46	153	0	62	0	45	0
RT Vol	117	0	43	0	73	0	16
Lane Flow Rate	165	178	43	174	73	148	16
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.348	0.334	0.071	0.37	0.134	0.32	0.03
Departure Headway (Hd)	7.595	6.758	5.975	7.663	6.625	7.781	6.717
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	474	530	598	470	540	462	532
Service Time	5.65	4.511	3.727	5.416	4.377	5.536	4.471
HCM Lane V/C Ratio	0.348	0.336	0.072	0.37	0.135	0.32	0.03
HCM Control Delay	14.7	12.9	9.2	14.9	10.4	14.2	9.7
HCM Lane LOS	B	B	A	B	B	B	A
HCM 95th-tile Q	1.5	1.5	0.2	1.7	0.5	1.4	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	93	5	51	91	85	3	133	36	95	106	11
Future Volume (vph)	82	93	5	51	91	85	3	133	36	95	106	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	3008	1346	1271	2542	1137	1056	2038		2398	1283	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1504	3008	1346	1271	2542	1137	1056	2038		2398	1283	
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)	82	93	5	51	91	85	3	133	36	95	106	11
RTOR Reduction (vph)	0	0	3	0	0	50	0	29	0	0	4	0
Lane Group Flow (vph)	82	93	2	51	91	35	3	140	0	95	113	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	20%	20%	20%	42%	42%	42%	71%	71%	71%	46%	46%	46%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	7.5	35.0	35.0	5.3	32.8	32.8	1.1	14.5		6.9	20.3	
Effective Green, g (s)	7.5	35.0	35.0	5.3	32.8	32.8	1.1	14.5		6.9	20.3	
Actuated g/C Ratio	0.10	0.44	0.44	0.07	0.42	0.42	0.01	0.18		0.09	0.26	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	143	1337	598	85	1059	473	14	375		210	330	
v/s Ratio Prot	c0.05	0.03		0.04	c0.04		0.00	0.07		c0.04	c0.09	
v/s Ratio Perm			0.00			0.03						
v/c Ratio	0.57	0.07	0.00	0.60	0.09	0.07	0.21	0.37		0.45	0.34	
Uniform Delay, d1	34.1	12.5	12.2	35.7	13.9	13.8	38.4	28.1		34.1	23.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	0.1	0.0	10.9	0.0	0.1	7.6	0.6		1.5	0.6	
Delay (s)	39.5	12.6	12.2	46.6	13.9	13.9	45.9	28.8		35.7	24.4	
Level of Service	D	B	B	D	B	B	D	C		D	C	
Approach Delay (s)		24.9			21.2			29.1			29.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

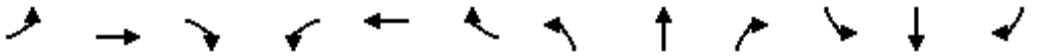
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	155	140	67	220	0	0
Future Volume (veh/h)	155	140	67	220	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1610	1610	1407	1407		
Adj Flow Rate, veh/h	155	140	67	220		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	18	18	35	35		
Cap, veh/h	1982	868	421	2420		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	3140	1340	2600	2744		
Grp Volume(v), veh/h	155	140	67	220		
Grp Sat Flow(s),veh/h/ln	1530	1340	1300	1337		
Q Serve(g_s), s	0.9	2.0	1.1	0.4		
Cycle Q Clear(g_c), s	0.9	2.0	1.1	0.4		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1982	868	421	2420		
V/C Ratio(X)	0.08	0.16	0.16	0.09		
Avail Cap(c_a), veh/h	1982	868	1579	2420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.2	3.4	17.8	0.2		
Incr Delay (d2), s/veh	0.1	0.4	0.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	0.8	0.4	0.2		
LnGrp Delay(d),s/veh	3.3	3.8	18.0	0.2		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	295			287		
Approach Delay, s/veh	3.5			4.4		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		2.4			3.1	4.0		
Green Ext Time (p_c), s		0.6			0.2	1.1		

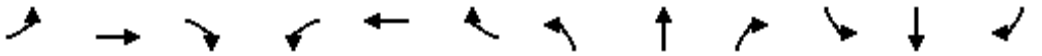
Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	93	0	0	77	100	120	260	83	96	0	87
Future Volume (vph)	68	93	0	0	77	100	120	260	83	96	0	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Frt	1.00	1.00			0.92		1.00	0.96		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1671	3343			2922		1416	2872		1504		2369
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (perm)	1671	3343			2922		1416	2872		1504		2369
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)	68	93	0	0	77	100	120	260	83	96	0	87
RTOR Reduction (vph)	0	0	0	0	73	0	0	24	0	0	0	74
Lane Group Flow (vph)	68	93	0	0	104	0	108	331	0	96	0	13
Confl. Peds. (#/hr)	10					10						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	8%	8%	8%	12%	12%	12%	16%	16%	16%	20%	20%	20%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	6.1	28.2			17.9		14.1	14.1		9.8		9.8
Effective Green, g (s)	6.1	28.2			17.9		14.1	14.1		9.8		9.8
Actuated g/C Ratio	0.09	0.43			0.27		0.21	0.21		0.15		0.15
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	155	1434			796		303	616		224		353
v/s Ratio Prot	c0.04	0.03			c0.04					c0.06		
v/s Ratio Perm							0.08	0.12				0.01
v/c Ratio	0.44	0.06			0.13		0.36	0.54		0.43		0.04
Uniform Delay, d1	28.2	11.0			18.0		21.9	22.9		25.4		23.9
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.7	0.0			0.1		0.5	0.7		1.0		0.0
Delay (s)	28.9	11.0			18.1		22.5	23.6		26.4		23.9
Level of Service	C	B			B		C	C		C		C
Approach Delay (s)		18.6			18.1			23.3			25.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	17.8
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	629	120	65	423	6	128	1	121	17	1	18
Future Volume (vph)	16	629	120	65	423	6	128	1	121	17	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
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)	16	629	120	65	423	6	128	1	121	17	1	18
RTOR Reduction (vph)	0	0	92	0	1	0	0	0	68	0	19	0
Lane Group Flow (vph)	16	629	28	65	428	0	64	65	53	17	0	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	6%	6%	8%	8%	8%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	19.8	19.8	6.9	25.7		37.2	37.2	37.2	2.1	2.1	
Effective Green, g (s)	1.0	19.8	19.8	6.9	25.7		37.2	37.2	37.2	2.1	2.1	
Actuated g/C Ratio	0.01	0.23	0.23	0.08	0.30		0.44	0.44	0.44	0.02	0.02	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	20	798	352	136	1014		680	682	640	40	69	
v/s Ratio Prot	0.01	c0.18		c0.04	0.13		0.04	c0.04	0.04	c0.01	0.00	
v/s Ratio Perm			0.02									
v/c Ratio	0.80	0.79	0.08	0.48	0.42		0.09	0.10	0.08	0.42	0.01	
Uniform Delay, d1	41.7	30.4	25.2	37.1	23.5		13.8	13.8	13.7	40.6	40.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	105.9	4.8	0.0	1.0	0.1		0.0	0.0	0.0	2.6	0.0	
Delay (s)	147.5	35.2	25.3	38.0	23.6		13.8	13.8	13.8	43.2	40.2	
Level of Service	F	D	C	D	C		B	B	B	D	D	
Approach Delay (s)		36.0			25.5			13.8			41.6	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	550	45	76	447	142	48	106	277	234	78	31
Future Volume (vph)	196	550	45	76	447	142	48	106	277	234	78	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.89		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (prot)	1719	3395		1703	3406	1524	1671	2980		1535	3085	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	
Satd. Flow (perm)	1719	3395		1703	3406	1524	1671	2980		1535	3085	
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)	196	550	45	76	447	142	48	106	277	234	78	31
RTOR Reduction (vph)	0	6	0	0	0	107	0	243	0	0	11	0
Lane Group Flow (vph)	196	589	0	76	447	35	48	140	0	117	215	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	10.0	18.4		5.1	14.4	14.4	7.1	7.1		8.3	8.3	
Effective Green, g (s)	10.0	18.4		5.1	14.4	14.4	7.1	7.1		8.3	8.3	
Actuated g/C Ratio	0.17	0.32		0.09	0.25	0.25	0.12	0.12		0.14	0.14	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	294	1069		148	839	375	203	362		218	438	
v/s Ratio Prot	c0.11	c0.17		0.04	0.13		0.03	c0.05		c0.08	0.07	
v/s Ratio Perm						0.02						
v/c Ratio	0.67	0.55		0.51	0.53	0.09	0.24	0.39		0.54	0.49	
Uniform Delay, d1	22.6	16.6		25.5	19.1	17.0	23.2	23.6		23.3	23.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.4		1.3	0.3	0.0	0.2	0.2		1.3	0.3	
Delay (s)	27.0	16.9		26.7	19.4	17.0	23.4	23.9		24.5	23.4	
Level of Service	C	B		C	B	B	C	C		C	C	
Approach Delay (s)		19.4			19.7			23.8			23.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	19.5
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	315	16	171	294	15	17	17	98	9	11	12
Future Volume (veh/h)	16	315	16	171	294	15	17	17	98	9	11	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	0.99		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1727	1900	1759	1759	1900	1900	1759	1759	1900	1743	1900
Adj Flow Rate, veh/h	16	315	16	171	294	15	17	17	98	9	11	12
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	10	10	8	8	8	8	8	8	9	9	9
Cap, veh/h	519	1429	72	472	1453	74	385	362	669	215	256	248
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	978	3175	161	981	3230	164	706	804	1487	349	570	551
Grp Volume(v), veh/h	16	162	169	171	151	158	34	0	98	32	0	0
Grp Sat Flow(s),veh/h/ln	978	1641	1695	981	1671	1723	1509	0	1487	1470	0	0
Q Serve(g_s), s	0.7	4.8	4.9	4.7	0.9	0.9	0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	4.8	4.9	9.6	0.9	0.9	0.9	0.0	3.1	0.9	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.10	0.50		1.00	0.28		0.37
Lane Grp Cap(c), veh/h	519	738	763	472	752	775	747	0	669	719	0	0
V/C Ratio(X)	0.03	0.22	0.22	0.36	0.20	0.20	0.05	0.00	0.15	0.04	0.00	0.00
Avail Cap(c_a), veh/h	519	738	763	472	752	775	747	0	669	719	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	13.4	13.4	3.5	2.2	2.2	12.3	0.0	13.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.7	2.2	0.6	0.6	0.1	0.0	0.5	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(50%),veh/ln	0.2	2.3	2.4	1.5	0.5	0.5	0.4	0.0	1.4	0.4	0.0	0.0
LnGrp Delay(d),s/veh	12.9	14.1	14.1	5.7	2.8	2.8	12.5	0.0	13.4	12.5	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		B	B		
Approach Vol, veh/h		347			480			132			32	
Approach Delay, s/veh		14.1			3.8			13.2			12.5	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		5.1		6.9		2.9		11.6
Green Ext Time (p_c), s		0.5		2.1		0.1		2.7

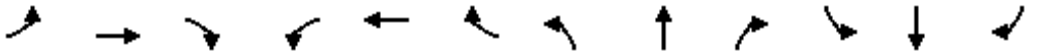
Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	69	0	313	102	21	37	99	597	1	166	23
Future Volume (veh/h)	9	69	0	313	102	21	37	99	597	1	166	23
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1900	1387	1387	1900	1681	1681	1681	1900	1776	1900
Adj Flow Rate, veh/h	9	69	-30	313	102	12	37	99	276	1	166	6
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	37	37	37	13	13	13	7	7	7
Cap, veh/h	371	546	0	396	297	35	73	506	650	59	636	23
Arrive On Green	0.22	0.31	0.00	0.15	0.24	0.24	0.05	0.30	0.30	0.20	0.20	0.20
Sat Flow, veh/h	1660	1743	0	2562	1216	143	1601	1681	1428	4	3247	116
Grp Volume(v), veh/h	9	39	0	313	0	114	37	99	276	91	0	82
Grp Sat Flow(s),veh/h/ln	1660	1743	0	1281	0	1359	1601	1681	1428	1772	0	1595
Q Serve(g_s), s	0.3	1.0	0.0	7.4	0.0	4.3	1.4	2.7	8.2	0.0	0.0	2.7
Cycle Q Clear(g_c), s	0.3	1.0	0.0	7.4	0.0	4.3	1.4	2.7	8.2	2.7	0.0	2.7
Prop In Lane	1.00		0.00	1.00		0.11	1.00		1.00	0.01		0.07
Lane Grp Cap(c), veh/h	371	546	0	396	0	332	73	506	650	406	0	313
V/C Ratio(X)	0.02	0.07	0.00	0.79	0.00	0.34	0.51	0.20	0.42	0.22	0.00	0.26
Avail Cap(c_a), veh/h	372	1025	0	504	0	763	156	978	1052	820	0	688
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	15.1	0.0	25.5	0.0	19.5	29.2	16.3	11.5	21.3	0.0	21.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.5	0.0	0.5	4.0	0.3	0.6	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.0	3.0	0.0	1.7	0.7	1.3	3.3	1.3	0.0	1.2
LnGrp Delay(d),s/veh	19.0	15.1	0.0	32.0	0.0	20.0	33.2	16.5	12.1	21.4	0.0	21.5
LnGrp LOS	B	B		C		B	C	B	B	C		C
Approach Vol, veh/h		48			427			412			173	
Approach Delay, s/veh		15.9			28.8			15.1			21.4	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	19.5	6.5	17.9	14.4	23.8		24.4
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	2.3	6.3	3.4	4.7	9.4	3.0		4.7
Green Ext Time (p_c), s	0.0	0.5	0.0	0.6	0.3	0.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	21.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	365	46	53	413	55	17	70	36	43	59	45
Future Volume (veh/h)	31	365	46	53	413	55	17	70	36	43	59	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1759	1759	1759	1759	1759	1900	1900	1776	1900
Adj Flow Rate, veh/h	31	365	46	53	413	55	17	70	36	43	59	45
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	7	7	7
Cap, veh/h	448	1641	205	593	968	818	474	764	365	325	419	327
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	868	2984	373	914	1759	1487	1210	2183	1043	730	1196	935
Grp Volume(v), veh/h	31	203	208	53	413	55	17	52	54	78	0	69
Grp Sat Flow(s),veh/h/ln	868	1671	1685	914	1759	1487	1210	1671	1555	1428	0	1432
Q Serve(g_s), s	0.8	0.0	0.0	2.2	11.0	1.4	0.8	1.7	1.9	1.0	0.0	2.6
Cycle Q Clear(g_c), s	11.8	0.0	0.0	2.2	11.0	1.4	3.4	1.7	1.9	2.8	0.0	2.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.67	0.55		0.65
Lane Grp Cap(c), veh/h	448	919	927	593	968	818	474	585	544	570	0	501
V/C Ratio(X)	0.07	0.22	0.22	0.09	0.43	0.07	0.04	0.09	0.10	0.14	0.00	0.14
Avail Cap(c_a), veh/h	448	919	927	593	968	818	474	585	544	570	0	501
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	8.6	10.6	8.4	18.9	17.4	17.5	17.7	0.0	17.8
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.3	1.4	0.2	0.1	0.3	0.4	0.5	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(50%),veh/ln	0.2	0.1	0.1	0.6	5.6	0.6	0.3	0.8	0.8	1.3	0.0	1.1
LnGrp Delay(d),s/veh	1.8	0.6	0.6	8.9	12.0	8.6	19.1	17.7	17.9	18.2	0.0	18.3
LnGrp LOS	A	A	A	A	B	A	B	B	B	B		B
Approach Vol, veh/h		442			521			123			147	
Approach Delay, s/veh		0.6			11.3			18.0			18.3	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		5.4		13.8		4.8		13.0
Green Ext Time (p_c), s		0.6		2.8		0.8		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	568	63	128	236	44	180	73	164	66	49	23
Future Volume (veh/h)	10	568	63	128	236	44	180	73	164	66	49	23
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1667	1667	1329	1329	1900	1195	1195	1195	1696	1696	1696
Adj Flow Rate, veh/h	10	568	63	128	236	44	180	73	164	66	49	23
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	14	14	14	43	43	43	59	59	59	12	12	12
Cap, veh/h	76	779	356	122	906	166	231	243	205	226	237	200
Arrive On Green	0.25	0.25	0.25	0.10	0.43	0.43	0.20	0.20	0.20	0.14	0.14	0.14
Sat Flow, veh/h	18	3076	1405	1265	2126	389	1138	1195	1011	1616	1696	1434
Grp Volume(v), veh/h	310	268	63	128	138	142	180	73	164	66	49	23
Grp Sat Flow(s),veh/h/ln	1654	1441	1405	1265	1262	1253	1138	1195	1011	1616	1696	1434
Q Serve(g_s), s	0.3	8.9	1.8	5.0	3.7	3.8	7.8	2.7	8.0	1.9	1.3	0.7
Cycle Q Clear(g_c), s	8.9	8.9	1.8	5.0	3.7	3.8	7.8	2.7	8.0	1.9	1.3	0.7
Prop In Lane	0.03		1.00	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	490	365	356	122	538	534	231	243	205	226	237	200
V/C Ratio(X)	0.63	0.73	0.18	1.05	0.26	0.26	0.78	0.30	0.80	0.29	0.21	0.11
Avail Cap(c_a), veh/h	798	637	622	122	777	771	503	529	447	715	750	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	17.8	15.2	23.5	9.6	9.6	19.6	17.6	19.7	20.1	19.8	19.6
Incr Delay (d2), s/veh	0.5	1.1	0.1	96.2	0.3	0.3	6.1	0.7	7.5	0.7	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	3.6	0.7	5.0	1.3	1.3	2.8	0.9	2.6	0.9	0.7	0.3
LnGrp Delay(d),s/veh	18.3	18.9	15.3	120.0	9.9	9.9	25.7	18.3	27.2	20.8	20.2	19.8
LnGrp LOS	B	B	B	F	A	A	C	B	C	C	C	B
Approach Vol, veh/h		641			408			417			138	
Approach Delay, s/veh		18.3			44.4			25.0			20.4	
Approach LOS		B			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		26.2		14.6	9.0	17.2		11.3
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		5.8		9.8	7.0	10.9		3.9
Green Ext Time (p_c), s		1.8		0.5	0.0	1.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	37	15	125	50	108	0	206	93	50	124	16
Future Volume (veh/h)	23	37	15	125	50	108	0	206	93	50	124	16
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1557	1900	1900	1258	1900	0	1124	1900	1131	1131	1900
Adj Flow Rate, veh/h	23	37	15	125	50	108	0	206	93	50	124	16
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	22	22	22	51	51	51	0	69	69	68	68	68
Cap, veh/h	185	249	85	223	84	126	0	315	137	118	856	109
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.22	0.22	0.11	0.45	0.45
Sat Flow, veh/h	290	789	270	379	266	398	0	1506	631	1077	1919	244
Grp Volume(v), veh/h	75	0	0	283	0	0	0	150	149	50	69	71
Grp Sat Flow(s),veh/h/ln	1348	0	0	1043	0	0	0	1068	1013	1077	1074	1088
Q Serve(g_s), s	0.0	0.0	0.0	10.2	0.0	0.0	0.0	6.4	6.8	2.2	1.9	2.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	12.7	0.0	0.0	0.0	6.4	6.8	2.2	1.9	2.0
Prop In Lane	0.31		0.20	0.44		0.38	0.00		0.62	1.00		0.22
Lane Grp Cap(c), veh/h	519	0	0	432	0	0	0	232	220	118	479	485
V/C Ratio(X)	0.14	0.00	0.00	0.65	0.00	0.00	0.00	0.65	0.68	0.42	0.14	0.15
Avail Cap(c_a), veh/h	1037	0	0	837	0	0	0	529	502	235	894	905
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	0.0	16.0	0.0	0.0	0.0	18.0	18.1	21.0	8.3	8.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	0.0	1.1	1.4	0.9	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	3.7	0.0	0.0	0.0	1.9	2.0	0.7	0.6	0.6
LnGrp Delay(d),s/veh	12.5	0.0	0.0	16.6	0.0	0.0	0.0	19.1	19.5	21.9	8.3	8.3
LnGrp LOS	B			B				B	B	C	A	A
Approach Vol, veh/h		75			283			299			190	
Approach Delay, s/veh		12.5			16.6			19.3			11.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		28.5		22.0	11.5	17.0		22.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		4.0		14.7	4.2	8.8		3.8
Green Ext Time (p_c), s		0.6		1.3	0.0	1.1		0.3

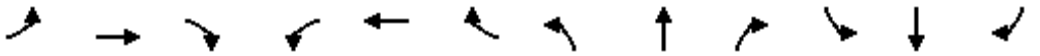
Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	128	130	57	98	247	0	12	207	77	7	73
Future Vol, veh/h	59	128	130	57	98	247	0	12	207	77	7	73
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
Heavy Vehicles, %	82	82	82	88	88	88	97	97	97	83	83	83
Mvmt Flow	59	128	130	57	98	247	0	12	207	77	7	73
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	16.2	17.7	20.2	14
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	32%	0%	37%	0%	92%	0%
Vol Thru, %	5%	68%	0%	63%	0%	8%	0%
Vol Right, %	95%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	219	187	130	155	247	84	73
LT Vol	0	59	0	57	0	77	0
Through Vol	12	128	0	98	0	7	0
RT Vol	207	0	130	0	247	0	73
Lane Flow Rate	219	187	130	155	247	84	73
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.515	0.447	0.279	0.369	0.526	0.223	0.169
Departure Headway (Hd)	8.472	8.6	7.721	8.575	7.671	9.538	8.349
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	427	419	467	420	472	377	431
Service Time	6.505	6.333	5.453	6.307	5.402	7.276	6.086
HCM Lane V/C Ratio	0.513	0.446	0.278	0.369	0.523	0.223	0.169
HCM Control Delay	20.2	18.1	13.4	16.3	18.6	15	12.8
HCM Lane LOS	C	C	B	C	C	B	B
HCM 95th-tile Q	2.9	2.2	1.1	1.7	3	0.8	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	233	28	105	238	403	12	204	136	125	66	30
Future Volume (vph)	155	233	28	105	238	403	12	204	136	125	66	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1008	2017	902	1188	2375	1062	992	1852		2175	1125	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1008	2017	902	1188	2375	1062	992	1852		2175	1125	
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)	155	233	28	105	238	403	12	204	136	125	66	30
RTOR Reduction (vph)	0	0	18	0	0	263	0	107	0	0	15	0
Lane Group Flow (vph)	155	233	10	105	238	140	12	233	0	125	81	0
Confl. Peds. (#/hr)									4	4		
Heavy Vehicles (%)	79%	79%	79%	52%	52%	52%	82%	82%	82%	61%	61%	61%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	12.2	32.5	32.5	11.0	31.3	31.3	1.6	18.9		10.4	27.7	
Effective Green, g (s)	12.2	32.5	32.5	11.0	31.3	31.3	1.6	18.9		10.4	27.7	
Actuated g/C Ratio	0.14	0.36	0.36	0.12	0.35	0.35	0.02	0.21		0.12	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	136	729	326	145	827	370	17	389		251	347	
v/s Ratio Prot	c0.15	0.12		0.09	0.10		0.01	c0.13		c0.06	0.07	
v/s Ratio Perm			0.01			c0.13						
v/c Ratio	1.14	0.32	0.03	0.72	0.29	0.38	0.71	0.60		0.50	0.23	
Uniform Delay, d1	38.8	20.7	18.5	37.9	21.2	22.0	43.9	32.0		37.3	23.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	119.6	1.2	0.2	16.4	0.2	0.7	84.0	2.5		1.6	0.3	
Delay (s)	158.4	21.8	18.7	54.3	21.4	22.6	127.8	34.5		38.8	23.5	
Level of Service	F	C	B	D	C	C	F	C		D	C	
Approach Delay (s)		72.5			26.7			37.7			32.1	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

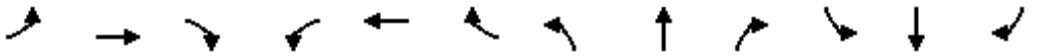
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	178	324	169	750	0	0
Future Volume (veh/h)	178	324	169	750	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1138	1138	1284	1284		
Adj Flow Rate, veh/h	178	324	169	750		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	67	67	48	48		
Cap, veh/h	1400	626	384	2207		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	2219	967	2372	2503		
Grp Volume(v), veh/h	178	324	169	750		
Grp Sat Flow(s),veh/h/ln	1081	967	1186	1220		
Q Serve(g_s), s	1.6	8.8	3.2	2.1		
Cycle Q Clear(g_c), s	1.6	8.8	3.2	2.1		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1400	626	384	2207		
V/C Ratio(X)	0.13	0.52	0.44	0.34		
Avail Cap(c_a), veh/h	1400	626	1440	2207		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.3	4.6	18.7	0.3		
Incr Delay (d2), s/veh	0.2	3.0	0.8	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	2.8	1.1	0.6		
LnGrp Delay(d),s/veh	3.5	7.6	19.5	0.4		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	502			919		
Approach Delay, s/veh	6.2			3.9		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		4.1			5.2	10.8		
Green Ext Time (p_c), s		2.3			0.6	1.9		

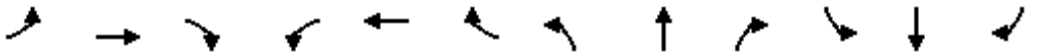
Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

Notes



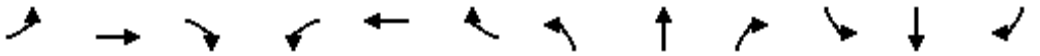
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	51	0	0	205	91	416	177	96	64	0	298
Future Volume (vph)	132	51	0	0	205	91	416	177	96	64	0	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frt	1.00	1.00			0.95		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (prot)	1135	2270			2994		1117	2233		1299		2045
Flt Permitted	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (perm)	1135	2270			2994		1117	2233		1299		2045
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)	132	51	0	0	205	91	416	177	96	64	0	298
RTOR Reduction (vph)	0	0	0	0	50	0	0	19	0	0	0	253
Lane Group Flow (vph)	132	51	0	0	246	0	229	441	0	64	0	45
Heavy Vehicles (%)	59%	59%	59%	15%	15%	15%	47%	47%	47%	39%	39%	39%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	15.0	36.2			17.0		23.2	23.2		13.0		13.0
Effective Green, g (s)	15.0	36.2			17.0		23.2	23.2		13.0		13.0
Actuated g/C Ratio	0.17	0.42			0.20		0.27	0.27		0.15		0.15
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	197	955			591		301	602		196		309
v/s Ratio Prot	c0.12	0.02			c0.08					c0.05		
v/s Ratio Perm							c0.20	0.20				0.02
v/c Ratio	0.67	0.05			0.42		0.76	0.73		0.33		0.15
Uniform Delay, d1	33.2	14.8			30.2		28.9	28.6		32.6		31.7
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	6.8	0.0			0.3		10.3	4.3		0.7		0.2
Delay (s)	40.0	14.8			30.5		39.2	32.9		33.3		31.8
Level of Service	D	B			C		D	C		C		C
Approach Delay (s)		33.0			30.5			35.0			32.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	112	41	181	678	10	264	9	175	25	0	3
Future Volume (vph)	12	112	41	181	678	10	264	9	175	25	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1556	3112	1392	1626	3245		1372	1380	1292	1150	1954	
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)	12	112	41	181	678	10	264	9	175	25	0	3
RTOR Reduction (vph)	0	0	34	0	1	0	0	0	99	0	3	0
Lane Group Flow (vph)	12	112	7	181	687	0	137	136	76	25	0	0
Heavy Vehicles (%)	16%	16%	16%	11%	11%	11%	25%	25%	25%	57%	57%	57%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	14.8	14.8	12.0	25.8		36.4	36.4	36.4	2.2	2.2	
Effective Green, g (s)	1.0	14.8	14.8	12.0	25.8		36.4	36.4	36.4	2.2	2.2	
Actuated g/C Ratio	0.01	0.18	0.18	0.14	0.31		0.43	0.43	0.43	0.03	0.03	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	18	548	245	232	997		595	598	560	30	51	
v/s Ratio Prot	0.01	0.04		c0.11	c0.21		c0.10	0.10	0.06	c0.02	0.00	
v/s Ratio Perm			0.01									
v/c Ratio	0.67	0.20	0.03	0.78	0.69		0.23	0.23	0.14	0.83	0.00	
Uniform Delay, d1	41.3	29.5	28.6	34.7	25.5		14.9	14.9	14.3	40.7	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	54.1	0.1	0.0	14.4	1.6		0.1	0.1	0.0	93.0	0.0	
Delay (s)	95.4	29.6	28.6	49.1	27.1		15.0	15.0	14.3	133.6	39.8	
Level of Service	F	C	C	D	C		B	B	B	F	D	
Approach Delay (s)		34.1			31.7			14.7			123.6	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	154	76	122	573	206	76	157	171	85	147	174
Future Volume (vph)	128	154	76	122	573	206	76	157	171	85	147	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.92		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1357	2569		1656	3312	1482	1357	2502		1190	2304	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1357	2569		1656	3312	1482	1357	2502		1190	2304	
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)	128	154	76	122	573	206	76	157	171	85	147	174
RTOR Reduction (vph)	0	55	0	0	0	151	0	147	0	0	148	0
Lane Group Flow (vph)	128	175	0	122	573	55	76	181	0	76	182	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	33%	33%	33%	9%	9%	9%	33%	33%	33%	38%	38%	38%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	8.0	16.4		6.7	16.0	16.0	8.5	8.5		8.9	8.9	
Effective Green, g (s)	8.0	16.4		6.7	16.0	16.0	8.5	8.5		8.9	8.9	
Actuated g/C Ratio	0.13	0.27		0.11	0.27	0.27	0.14	0.14		0.15	0.15	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	180	702		184	883	395	192	354		176	341	
v/s Ratio Prot	c0.09	0.07		0.07	c0.17		0.06	c0.07		0.06	c0.08	
v/s Ratio Perm						0.04						
v/c Ratio	0.71	0.25		0.66	0.65	0.14	0.40	0.51		0.43	0.53	
Uniform Delay, d1	24.9	17.0		25.6	19.5	16.8	23.4	23.8		23.2	23.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.5	0.1		6.8	1.2	0.1	0.5	0.5		0.6	0.8	
Delay (s)	35.4	17.1		32.3	20.8	16.8	23.9	24.4		23.9	24.4	
Level of Service	D	B		C	C	B	C	C		C	C	
Approach Delay (s)		23.6			21.4			24.3			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	728	30	89	365	29	29	80	579	19	11	17
Future Volume (veh/h)	26	728	30	89	365	29	29	80	579	19	11	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.99		0.91	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1810	1810	1900	1900	1863	1863	1900	1792	1900
Adj Flow Rate, veh/h	26	728	30	89	365	29	29	80	579	19	11	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	2	2	2	6	6	6
Cap, veh/h	494	1525	63	292	1441	114	229	603	707	246	145	186
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	929	3389	140	676	3202	252	383	1341	1572	405	323	412
Grp Volume(v), veh/h	26	373	385	89	195	199	109	0	579	47	0	0
Grp Sat Flow(s),veh/h/ln	929	1736	1793	676	1719	1736	1724	0	1572	1140	0	0
Q Serve(g_s), s	1.3	12.0	12.0	5.7	1.2	1.2	0.0	0.0	25.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	12.0	12.0	17.8	1.2	1.2	2.7	0.0	25.7	1.3	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.15	0.27		1.00	0.40		0.36
Lane Grp Cap(c), veh/h	494	781	807	292	774	781	833	0	707	576	0	0
V/C Ratio(X)	0.05	0.48	0.48	0.30	0.25	0.26	0.13	0.00	0.82	0.08	0.00	0.00
Avail Cap(c_a), veh/h	494	781	807	292	774	781	833	0	707	576	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	15.4	15.4	6.4	2.3	2.3	12.9	0.0	19.2	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.1	2.0	2.7	0.8	0.8	0.3	0.0	10.2	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(50%),veh/ln	0.4	6.1	6.3	1.3	0.6	0.6	1.5	0.0	13.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	13.3	17.5	17.4	9.0	3.0	3.0	13.2	0.0	29.4	12.7	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		C	B		
Approach Vol, veh/h		784			483			688			47	
Approach Delay, s/veh		17.3			4.1			26.8			12.7	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		27.7		14.0		3.3		19.8
Green Ext Time (p_c), s		2.1		5.1		0.3		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	213	1	356	182	24	36	578	1003	2	85	41
Future Volume (veh/h)	88	213	1	356	182	24	36	578	1003	2	85	41
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1776	1776	1900	1845	1845	1845	1900	1696	1900
Adj Flow Rate, veh/h	88	213	-29	356	182	15	36	578	682	2	85	24
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	7	7	7	3	3	3	12	12	12
Cap, veh/h	348	569	0	453	400	33	75	652	770	55	628	169
Arrive On Green	0.20	0.31	0.00	0.14	0.25	0.25	0.04	0.35	0.35	0.26	0.26	0.26
Sat Flow, veh/h	1774	1863	0	3281	1617	133	1757	1845	1565	10	2427	653
Grp Volume(v), veh/h	88	184	0	356	0	197	36	578	682	59	0	52
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1640	0	1750	1757	1845	1565	1664	0	1427
Q Serve(g_s), s	3.0	5.4	0.0	7.5	0.0	6.8	1.4	21.1	25.2	0.0	0.0	2.0
Cycle Q Clear(g_c), s	3.0	5.4	0.0	7.5	0.0	6.8	1.4	21.1	25.2	1.9	0.0	2.0
Prop In Lane	1.00		0.00	1.00		0.08	1.00		1.00	0.03		0.46
Lane Grp Cap(c), veh/h	348	569	0	453	0	433	75	652	770	482	0	369
V/C Ratio(X)	0.25	0.32	0.00	0.79	0.00	0.45	0.48	0.89	0.89	0.12	0.00	0.14
Avail Cap(c_a), veh/h	348	960	0	565	0	861	150	941	1015	665	0	540
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.3	19.1	0.0	29.7	0.0	22.8	33.4	21.7	16.4	20.3	0.0	20.4
Incr Delay (d2), s/veh	0.1	0.2	0.0	5.8	0.0	0.6	3.5	8.6	8.5	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.8	0.0	3.7	0.0	3.4	0.8	12.2	13.8	0.9	0.0	0.8
LnGrp Delay(d),s/veh	24.4	19.3	0.0	35.5	0.0	23.3	36.8	30.4	24.9	20.4	0.0	20.4
LnGrp LOS	C	B		D		C	D	C	C	C		C
Approach Vol, veh/h		272			553			1296			111	
Approach Delay, s/veh		21.0			31.2			27.7			20.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	21.9	6.8	24.1	14.6	26.0		30.8
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	5.0	8.8	3.4	4.0	9.5	7.4		23.1
Green Ext Time (p_c), s	0.1	0.9	0.0	0.4	0.4	0.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1205	83	53	393	67	21	150	99	98	153	63
Future Volume (veh/h)	57	1205	83	53	393	67	21	150	99	98	153	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1827	1827	1827	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	1205	83	53	393	67	21	150	99	98	153	63
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	4	4	4	2	2	2
Cap, veh/h	479	1826	126	320	1005	830	403	715	440	318	501	218
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	912	3320	228	418	1827	1509	1131	2043	1257	698	1430	622
Grp Volume(v), veh/h	57	635	653	53	393	67	21	126	123	155	0	159
Grp Sat Flow(s),veh/h/ln	912	1752	1796	418	1827	1509	1131	1736	1564	1181	0	1569
Q Serve(g_s), s	1.3	0.0	0.0	5.2	9.9	1.7	1.1	4.1	4.4	5.7	0.0	5.9
Cycle Q Clear(g_c), s	11.1	0.0	0.0	5.2	9.9	1.7	7.0	4.1	4.4	10.1	0.0	5.9
Prop In Lane	1.00		0.13	1.00		1.00	1.00		0.80	0.63		0.40
Lane Grp Cap(c), veh/h	479	964	988	320	1005	830	403	607	547	487	0	549
V/C Ratio(X)	0.12	0.66	0.66	0.17	0.39	0.08	0.05	0.21	0.23	0.32	0.00	0.29
Avail Cap(c_a), veh/h	479	964	988	320	1005	830	403	607	547	487	0	549
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.2	0.0	0.0	9.3	10.3	8.5	21.3	18.2	18.3	20.7	0.0	18.8
Incr Delay (d2), s/veh	0.5	3.5	3.5	1.1	1.1	0.2	0.2	0.8	1.0	1.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.9	1.0	0.7	5.2	0.7	0.4	2.1	2.1	2.9	0.0	2.7
LnGrp Delay(d),s/veh	1.8	3.5	3.5	10.4	11.5	8.7	21.6	19.0	19.3	22.5	0.0	20.1
LnGrp LOS	A	A	A	B	B	A	C	B	B	C		C
Approach Vol, veh/h		1345			513			270			314	
Approach Delay, s/veh		3.4			11.0			19.3			21.3	
Approach LOS		A			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		9.0		13.1		12.1		11.9
Green Ext Time (p_c), s		1.4		11.6		1.7		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1036	91	51	331	43	223	160	82	172	91	8
Future Volume (veh/h)	63	1036	91	51	331	43	223	160	82	172	91	8
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1827	1583	1583	1900	1667	1667	1667	1845	1845	1845
Adj Flow Rate, veh/h	63	1036	91	51	331	43	223	160	82	172	91	8
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	20	20	20	14	14	14	3	3	3
Cap, veh/h	109	1139	556	58	1237	159	311	326	274	269	282	236
Arrive On Green	0.36	0.36	0.36	0.04	0.46	0.46	0.20	0.20	0.20	0.15	0.15	0.15
Sat Flow, veh/h	128	3169	1546	1508	2680	345	1587	1667	1397	1757	1845	1540
Grp Volume(v), veh/h	576	523	91	51	185	189	223	160	82	172	91	8
Grp Sat Flow(s),veh/h/ln	1717	1579	1546	1508	1504	1522	1587	1667	1397	1757	1845	1540
Q Serve(g_s), s	13.6	20.0	2.5	2.1	4.8	4.8	8.3	5.4	3.2	5.8	2.8	0.3
Cycle Q Clear(g_c), s	20.4	20.0	2.5	2.1	4.8	4.8	8.3	5.4	3.2	5.8	2.8	0.3
Prop In Lane	0.11		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	681	568	556	58	694	702	311	326	274	269	282	236
V/C Ratio(X)	0.85	0.92	0.16	0.87	0.27	0.27	0.72	0.49	0.30	0.64	0.32	0.03
Avail Cap(c_a), veh/h	687	574	562	119	761	770	577	606	508	639	671	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	19.4	13.8	30.2	10.5	10.5	23.8	22.6	21.7	25.2	23.9	22.8
Incr Delay (d2), s/veh	9.1	19.7	0.1	24.2	0.2	0.2	3.4	1.2	0.7	2.5	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	11.8	1.1	1.3	2.0	2.0	3.9	2.6	1.3	3.0	1.5	0.1
LnGrp Delay(d),s/veh	28.4	39.1	13.8	54.4	10.7	10.7	27.1	23.9	22.4	27.7	24.5	22.9
LnGrp LOS	C	D	B	D	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1190			425			465			271	
Approach Delay, s/veh		32.0			15.9			25.2			26.5	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		33.2		16.4	6.4	26.7		13.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		6.8		10.3	4.1	22.4		7.8
Green Ext Time (p_c), s		2.4		1.2	0.0	0.4		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	115	24	86	116	126	0	177	144	68	104	15
Future Volume (veh/h)	31	115	24	86	116	126	0	177	144	68	104	15
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1900	1900	1638	1900	0	1367	1900	1450	1450	1900
Adj Flow Rate, veh/h	31	115	24	86	116	126	0	177	144	68	104	15
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	16	16	16	0	39	39	31	31	31
Cap, veh/h	135	411	77	171	195	176	0	287	219	180	1082	153
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.21	0.21	0.13	0.45	0.45
Sat Flow, veh/h	169	1244	232	264	591	534	0	1461	1058	1381	2417	341
Grp Volume(v), veh/h	170	0	0	328	0	0	0	164	157	68	58	61
Grp Sat Flow(s),veh/h/ln	1645	0	0	1389	0	0	0	1299	1152	1381	1378	1380
Q Serve(g_s), s	0.0	0.0	0.0	6.4	0.0	0.0	0.0	6.2	6.8	2.4	1.3	1.4
Cycle Q Clear(g_c), s	4.0	0.0	0.0	10.9	0.0	0.0	0.0	6.2	6.8	2.4	1.3	1.4
Prop In Lane	0.18		0.14	0.26		0.38	0.00		0.92	1.00		0.25
Lane Grp Cap(c), veh/h	622	0	0	543	0	0	0	268	238	180	617	618
V/C Ratio(X)	0.27	0.00	0.00	0.60	0.00	0.00	0.00	0.61	0.66	0.38	0.09	0.10
Avail Cap(c_a), veh/h	1137	0	0	996	0	0	0	601	533	281	1071	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	0.0	15.6	0.0	0.0	0.0	19.5	19.7	21.5	8.6	8.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.8	1.2	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	4.3	0.0	0.0	0.0	2.3	2.2	0.9	0.5	0.5
LnGrp Delay(d),s/veh	13.5	0.0	0.0	16.0	0.0	0.0	0.0	20.3	20.9	22.0	8.6	8.6
LnGrp LOS	B			B				C	C	C	A	A
Approach Vol, veh/h		170			328			321			187	
Approach Delay, s/veh		13.5			16.0			20.6			13.5	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		30.2		23.8	13.0	17.2		23.8
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		3.4		12.9	4.4	8.8		6.0
Green Ext Time (p_c), s		0.5		1.5	0.0	1.2		0.7

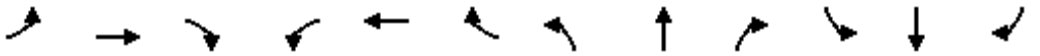
Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	111	61	85	42	74	2	58	73	98	45	33
Future Vol, veh/h	56	111	61	85	42	74	2	58	73	98	45	33
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
Heavy Vehicles, %	26	26	26	69	69	69	93	93	93	60	60	60
Mvmt Flow	56	111	61	85	42	74	2	58	73	98	45	33
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	11.4	12	13.4	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	2%	34%	0%	67%	0%	69%	0%
Vol Thru, %	44%	66%	0%	33%	0%	31%	0%
Vol Right, %	55%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	167	61	127	74	143	33
LT Vol	2	56	0	85	0	98	0
Through Vol	58	111	0	42	0	45	0
RT Vol	73	0	61	0	74	0	33
Lane Flow Rate	133	167	61	127	74	143	33
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.278	0.308	0.097	0.266	0.134	0.299	0.059
Departure Headway (Hd)	7.513	6.629	5.749	7.547	6.497	7.516	6.46
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	543	623	476	552	479	554
Service Time	5.556	4.368	3.487	5.286	4.236	5.257	4.201
HCM Lane V/C Ratio	0.278	0.308	0.098	0.267	0.134	0.299	0.06
HCM Control Delay	13.4	12.3	9.1	13	10.2	13.4	9.6
HCM Lane LOS	B	B	A	B	B	B	A
HCM 95th-tile Q	1.1	1.3	0.3	1.1	0.5	1.2	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	126	5	65	116	90	3	143	69	103	104	20
Future Volume (vph)	96	126	5	65	116	90	3	143	69	103	104	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	3008	1346	1271	2542	1137	1056	2000		2398	1270	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1504	3008	1346	1271	2542	1137	1056	2000		2398	1270	
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)	96	126	5	65	116	90	3	143	69	103	104	20
RTOR Reduction (vph)	0	0	3	0	0	53	0	56	0	0	7	0
Lane Group Flow (vph)	96	126	2	65	116	38	3	156	0	103	117	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	20%	20%	20%	42%	42%	42%	71%	71%	71%	46%	46%	46%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	7.8	34.0	34.0	7.3	33.5	33.5	1.1	15.0		7.1	21.0	
Effective Green, g (s)	7.8	34.0	34.0	7.3	33.5	33.5	1.1	15.0		7.1	21.0	
Actuated g/C Ratio	0.10	0.42	0.42	0.09	0.42	0.42	0.01	0.19		0.09	0.26	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	145	1272	569	115	1059	473	14	373		211	331	
v/s Ratio Prot	c0.06	0.04		0.05	c0.05		0.00	c0.08		c0.04	0.09	
v/s Ratio Perm			0.00			0.03						
v/c Ratio	0.66	0.10	0.00	0.57	0.11	0.08	0.21	0.42		0.49	0.35	
Uniform Delay, d1	35.0	14.0	13.4	35.0	14.3	14.1	39.2	28.8		34.9	24.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.8	0.2	0.0	6.2	0.0	0.1	7.6	0.8		1.8	0.7	
Delay (s)	45.8	14.1	13.4	41.3	14.4	14.2	46.8	29.6		36.7	24.8	
Level of Service	D	B	B	D	B	B	D	C		D	C	
Approach Delay (s)		27.5			20.8			29.8			30.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

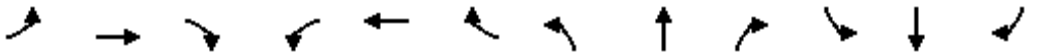
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	187	183	67	264	0	0
Future Volume (veh/h)	187	183	67	264	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1610	1610	1407	1407		
Adj Flow Rate, veh/h	187	183	67	264		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	18	18	35	35		
Cap, veh/h	1982	868	421	2420		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	3140	1340	2600	2744		
Grp Volume(v), veh/h	187	183	67	264		
Grp Sat Flow(s),veh/h/ln	1530	1340	1300	1337		
Q Serve(g_s), s	1.1	2.8	1.1	0.5		
Cycle Q Clear(g_c), s	1.1	2.8	1.1	0.5		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1982	868	421	2420		
V/C Ratio(X)	0.09	0.21	0.16	0.11		
Avail Cap(c_a), veh/h	1982	868	1579	2420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.3	3.5	17.8	0.2		
Incr Delay (d2), s/veh	0.1	0.6	0.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	1.1	0.4	0.2		
LnGrp Delay(d),s/veh	3.4	4.1	18.0	0.3		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	370			331		
Approach Delay, s/veh	3.7			3.8		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		2.5			3.1	4.8		
Green Ext Time (p_c), s		0.7			0.2	1.4		

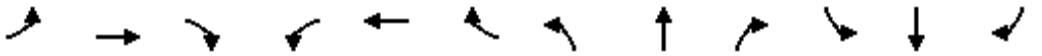
Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

Notes



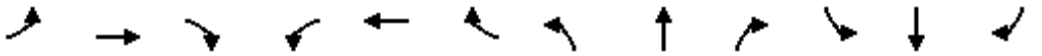
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	93	0	0	77	100	146	260	83	96	0	106
Future Volume (vph)	100	93	0	0	77	100	146	260	83	96	0	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Frt	1.00	1.00			0.92		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1671	3343			2922		1416	2871		1504		2369
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (perm)	1671	3343			2922		1416	2871		1504		2369
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)	100	93	0	0	77	100	146	260	83	96	0	106
RTOR Reduction (vph)	0	0	0	0	74	0	0	25	0	0	0	91
Lane Group Flow (vph)	100	93	0	0	103	0	131	333	0	96	0	15
Confl. Peds. (#/hr)	10					10						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	8%	8%	8%	12%	12%	12%	16%	16%	16%	20%	20%	20%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	9.4	31.6			18.0		14.5	14.5		9.6		9.6
Effective Green, g (s)	9.4	31.6			18.0		14.5	14.5		9.6		9.6
Actuated g/C Ratio	0.14	0.46			0.26		0.21	0.21		0.14		0.14
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	226	1524			758		296	600		208		328
v/s Ratio Prot	c0.06	0.03			c0.04					c0.06		
v/s Ratio Perm							0.09	0.12				0.01
v/c Ratio	0.44	0.06			0.14		0.44	0.56		0.46		0.04
Uniform Delay, d1	27.5	10.5			19.7		23.9	24.5		27.5		25.9
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.5	0.0			0.1		0.8	0.9		1.2		0.0
Delay (s)	28.0	10.6			19.7		24.6	25.4		28.7		25.9
Level of Service	C	B			B		C	C		C		C
Approach Delay (s)		19.6			19.7			25.2			27.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	17.8
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



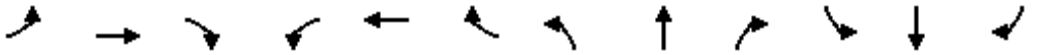
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	629	126	78	423	6	139	1	143	17	1	18
Future Volume (vph)	16	629	126	78	423	6	139	1	143	17	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
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)	16	629	126	78	423	6	139	1	143	17	1	18
RTOR Reduction (vph)	0	0	96	0	1	0	0	0	80	0	19	0
Lane Group Flow (vph)	16	629	30	78	428	0	69	71	63	17	0	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	6%	6%	8%	8%	8%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	20.0	20.0	7.0	26.0		37.3	37.3	37.3	2.1	2.1	
Effective Green, g (s)	1.0	20.0	20.0	7.0	26.0		37.3	37.3	37.3	2.1	2.1	
Actuated g/C Ratio	0.01	0.24	0.24	0.08	0.31		0.44	0.44	0.44	0.02	0.02	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	20	802	354	137	1021		678	680	639	40	69	
v/s Ratio Prot	0.01	c0.18		c0.05	0.13		0.04	c0.05	0.04	c0.01	0.00	
v/s Ratio Perm			0.02									
v/c Ratio	0.80	0.78	0.08	0.57	0.42		0.10	0.10	0.10	0.42	0.01	
Uniform Delay, d1	41.9	30.4	25.3	37.5	23.4		14.0	14.0	13.9	40.8	40.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	105.9	4.7	0.0	3.2	0.1		0.0	0.0	0.0	2.6	0.0	
Delay (s)	147.7	35.1	25.3	40.7	23.5		14.0	14.0	14.0	43.4	40.4	
Level of Service	F	D	C	D	C		B	B	B	D	D	
Approach Delay (s)		35.8			26.2			14.0			41.8	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	550	45	76	447	142	48	138	277	234	97	44
Future Volume (vph)	218	550	45	76	447	142	48	138	277	234	97	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.90		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	
Satd. Flow (prot)	1719	3395		1703	3406	1524	1671	3008		1535	3079	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	
Satd. Flow (perm)	1719	3395		1703	3406	1524	1671	3008		1535	3079	
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)	218	550	45	76	447	142	48	138	277	234	97	44
RTOR Reduction (vph)	0	6	0	0	0	107	0	243	0	0	16	0
Lane Group Flow (vph)	218	589	0	76	447	35	48	172	0	126	233	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	11.2	19.9		5.2	14.8	14.8	7.5	7.5		8.8	8.8	
Effective Green, g (s)	11.2	19.9		5.2	14.8	14.8	7.5	7.5		8.8	8.8	
Actuated g/C Ratio	0.18	0.33		0.09	0.24	0.24	0.12	0.12		0.14	0.14	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	316	1109		145	827	370	205	370		221	444	
v/s Ratio Prot	c0.13	c0.17		0.04	0.13		0.03	c0.06		c0.08	0.08	
v/s Ratio Perm						0.02						
v/c Ratio	0.69	0.53		0.52	0.54	0.09	0.23	0.47		0.57	0.52	
Uniform Delay, d1	23.2	16.7		26.7	20.1	17.9	24.1	24.8		24.3	24.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9	0.2		1.6	0.4	0.0	0.2	0.3		2.2	0.5	
Delay (s)	28.2	16.9		28.2	20.5	17.9	24.3	25.2		26.5	24.6	
Level of Service	C	B		C	C	B	C	C		C	C	
Approach Delay (s)		20.0			20.8			25.1			25.3	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	19.5
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	313	16	171	291	12	17	17	98	7	11	12
Future Volume (veh/h)	16	313	16	171	291	12	17	17	98	7	11	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.96	0.99		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	1727	1900	1759	1759	1900	1900	1759	1759	1900	1743	1900
Adj Flow Rate, veh/h	16	313	16	171	291	12	17	17	98	7	11	12
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	10	10	8	8	8	8	8	8	9	9	9
Cap, veh/h	522	1428	73	473	1470	60	385	362	669	182	277	269
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	983	3174	162	983	3266	134	706	804	1487	280	616	597
Grp Volume(v), veh/h	16	161	168	171	148	155	34	0	98	30	0	0
Grp Sat Flow(s),veh/h/ln	983	1641	1694	983	1671	1729	1509	0	1487	1493	0	0
Q Serve(g_s), s	0.7	4.8	4.8	4.7	0.9	0.9	0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	4.8	4.8	9.6	0.9	0.9	0.9	0.0	3.1	0.8	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.08	0.50		1.00	0.23		0.40
Lane Grp Cap(c), veh/h	522	738	762	473	752	778	747	0	669	727	0	0
V/C Ratio(X)	0.03	0.22	0.22	0.36	0.20	0.20	0.05	0.00	0.15	0.04	0.00	0.00
Avail Cap(c_a), veh/h	522	738	762	473	752	778	747	0	669	727	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	13.4	13.4	3.5	2.2	2.2	12.3	0.0	13.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.7	0.7	2.1	0.6	0.6	0.1	0.0	0.5	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(50%),veh/ln	0.2	2.3	2.4	1.5	0.5	0.5	0.4	0.0	1.4	0.4	0.0	0.0
LnGrp Delay(d),s/veh	12.9	14.1	14.1	5.6	2.8	2.8	12.5	0.0	13.4	12.4	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		B	B		
Approach Vol, veh/h		345			474			132			30	
Approach Delay, s/veh		14.0			3.8			13.2			12.4	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		5.1		6.8		2.8		11.6
Green Ext Time (p_c), s		0.5		2.1		0.1		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	69	0	283	102	21	37	99	570	1	166	23
Future Volume (veh/h)	9	69	0	283	102	21	37	99	570	1	166	23
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1900	1387	1387	1900	1681	1681	1681	1900	1776	1900
Adj Flow Rate, veh/h	9	69	-30	283	102	12	37	99	249	1	166	6
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	9	9	9	37	37	37	13	13	13	7	7	7
Cap, veh/h	370	565	0	367	297	35	73	506	634	59	637	23
Arrive On Green	0.22	0.32	0.00	0.14	0.24	0.24	0.05	0.30	0.30	0.20	0.20	0.20
Sat Flow, veh/h	1660	1743	0	2562	1216	143	1601	1681	1428	4	3247	116
Grp Volume(v), veh/h	9	39	0	283	0	114	37	99	249	91	0	82
Grp Sat Flow(s),veh/h/ln	1660	1743	0	1281	0	1359	1601	1681	1428	1772	0	1595
Q Serve(g_s), s	0.3	1.0	0.0	6.7	0.0	4.3	1.4	2.7	7.3	0.0	0.0	2.7
Cycle Q Clear(g_c), s	0.3	1.0	0.0	6.7	0.0	4.3	1.4	2.7	7.3	2.7	0.0	2.7
Prop In Lane	1.00		0.00	1.00		0.11	1.00		1.00	0.01		0.07
Lane Grp Cap(c), veh/h	370	565	0	367	0	332	73	506	634	406	0	313
V/C Ratio(X)	0.02	0.07	0.00	0.77	0.00	0.34	0.51	0.20	0.39	0.22	0.00	0.26
Avail Cap(c_a), veh/h	372	1026	0	504	0	763	156	979	1036	821	0	689
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	14.6	0.0	25.8	0.0	19.5	29.2	16.2	11.7	21.3	0.0	21.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.9	0.0	0.5	4.0	0.3	0.6	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.0	2.6	0.0	1.7	0.7	1.3	3.0	1.3	0.0	1.2
LnGrp Delay(d),s/veh	19.0	14.6	0.0	30.8	0.0	19.9	33.2	16.5	12.3	21.4	0.0	21.5
LnGrp LOS	B	B		C		B	C	B	B	C		C
Approach Vol, veh/h		48			397			385			173	
Approach Delay, s/veh		15.5			27.7			15.4			21.4	
Approach LOS		B			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	19.5	6.5	17.9	13.6	24.5		24.4
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	2.3	6.3	3.4	4.7	8.7	3.0		4.7
Green Ext Time (p_c), s	0.0	0.5	0.0	0.6	0.4	0.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	365	40	39	413	55	11	51	21	43	42	45
Future Volume (veh/h)	31	365	40	39	413	55	11	51	21	43	42	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1759	1900	1759	1759	1759	1759	1759	1900	1900	1776	1900
Adj Flow Rate, veh/h	31	365	40	39	413	55	11	51	21	43	42	45
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	7	7	7
Cap, veh/h	448	1669	182	596	968	818	484	821	317	365	334	368
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	868	3035	330	919	1759	1487	1229	2346	907	834	955	1052
Grp Volume(v), veh/h	31	200	205	39	413	55	11	35	37	70	0	60
Grp Sat Flow(s),veh/h/ln	868	1671	1694	919	1759	1487	1229	1671	1582	1432	0	1409
Q Serve(g_s), s	0.8	0.0	0.0	1.6	11.0	1.4	0.5	1.1	1.2	1.1	0.0	2.3
Cycle Q Clear(g_c), s	11.8	0.0	0.0	1.6	11.0	1.4	2.8	1.1	1.2	2.4	0.0	2.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.57	0.62		0.75
Lane Grp Cap(c), veh/h	448	919	932	596	968	818	484	585	554	574	0	493
V/C Ratio(X)	0.07	0.22	0.22	0.07	0.43	0.07	0.02	0.06	0.07	0.12	0.00	0.12
Avail Cap(c_a), veh/h	448	919	932	596	968	818	484	585	554	574	0	493
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	8.5	10.6	8.4	18.6	17.3	17.3	17.6	0.0	17.7
Incr Delay (d2), s/veh	0.3	0.5	0.5	0.2	1.4	0.2	0.1	0.2	0.2	0.4	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(50%),veh/ln	0.2	0.1	0.1	0.4	5.6	0.6	0.2	0.6	0.6	1.1	0.0	1.0
LnGrp Delay(d),s/veh	1.8	0.5	0.5	8.7	12.0	8.6	18.7	17.5	17.5	18.1	0.0	18.2
LnGrp LOS	A	A	A	A	B	A	B	B	B	B		B
Approach Vol, veh/h		436			507			83			130	
Approach Delay, s/veh		0.6			11.3			17.7			18.1	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		4.8		13.8		4.4		13.0
Green Ext Time (p_c), s		0.3		2.8		0.7		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	568	36	101	236	44	150	33	134	66	13	23
Future Volume (veh/h)	10	568	36	101	236	44	150	33	134	66	13	23
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1667	1667	1329	1329	1900	1195	1195	1195	1696	1696	1696
Adj Flow Rate, veh/h	10	568	36	101	236	44	150	33	134	66	13	23
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	14	14	14	43	43	43	59	59	59	12	12	12
Cap, veh/h	83	807	369	113	927	170	202	212	180	214	224	190
Arrive On Green	0.26	0.26	0.26	0.09	0.44	0.44	0.18	0.18	0.18	0.13	0.13	0.13
Sat Flow, veh/h	18	3076	1406	1265	2126	389	1138	1195	1011	1616	1696	1434
Grp Volume(v), veh/h	310	268	36	101	138	142	150	33	134	66	13	23
Grp Sat Flow(s),veh/h/ln	1654	1441	1406	1265	1262	1253	1138	1195	1011	1616	1696	1434
Q Serve(g_s), s	0.0	8.0	0.9	3.7	3.3	3.4	5.9	1.1	5.9	1.7	0.3	0.7
Cycle Q Clear(g_c), s	8.0	8.0	0.9	3.7	3.3	3.4	5.9	1.1	5.9	1.7	0.3	0.7
Prop In Lane	0.03		1.00	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	513	378	369	113	551	546	202	212	180	214	224	190
V/C Ratio(X)	0.60	0.71	0.10	0.90	0.25	0.26	0.74	0.16	0.75	0.31	0.06	0.12
Avail Cap(c_a), veh/h	879	702	685	134	855	849	554	582	492	787	826	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	15.8	13.2	21.3	8.4	8.5	18.4	16.4	18.4	18.5	17.9	18.1
Incr Delay (d2), s/veh	0.4	0.9	0.0	42.3	0.2	0.2	5.7	0.4	6.5	0.8	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	3.2	0.4	2.6	1.2	1.2	2.2	0.4	2.0	0.8	0.2	0.3
LnGrp Delay(d),s/veh	16.2	16.7	13.2	63.6	8.7	8.7	24.1	16.8	25.0	19.4	18.0	18.4
LnGrp LOS	B	B	B	E	A	A	C	B	C	B	B	B
Approach Vol, veh/h		614			381			317			102	
Approach Delay, s/veh		16.3			23.3			23.7			19.0	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		24.6		12.4	8.2	16.4		10.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		5.4		7.9	5.7	10.0		3.7
Green Ext Time (p_c), s		1.9		0.3	0.0	2.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	37	15	125	50	108	0	107	93	50	35	16
Future Volume (veh/h)	23	37	15	125	50	108	0	107	93	50	35	16
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1557	1900	1900	1258	1900	0	1124	1900	1131	1131	1900
Adj Flow Rate, veh/h	23	37	15	125	50	108	0	107	93	50	35	16
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	22	22	22	51	51	51	0	69	69	68	68	68
Cap, veh/h	186	250	85	224	84	126	0	242	192	119	651	278
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.21	0.21	0.11	0.44	0.44
Sat Flow, veh/h	289	791	270	378	267	398	0	1188	901	1077	1467	628
Grp Volume(v), veh/h	75	0	0	283	0	0	0	100	100	50	25	26
Grp Sat Flow(s),veh/h/ln	1350	0	0	1043	0	0	0	1068	965	1077	1074	1020
Q Serve(g_s), s	0.0	0.0	0.0	10.1	0.0	0.0	0.0	4.1	4.5	2.2	0.7	0.7
Cycle Q Clear(g_c), s	1.8	0.0	0.0	12.6	0.0	0.0	0.0	4.1	4.5	2.2	0.7	0.7
Prop In Lane	0.31		0.20	0.44		0.38	0.00		0.93	1.00		0.62
Lane Grp Cap(c), veh/h	521	0	0	434	0	0	0	228	206	119	477	452
V/C Ratio(X)	0.14	0.00	0.00	0.65	0.00	0.00	0.00	0.44	0.48	0.42	0.05	0.06
Avail Cap(c_a), veh/h	1047	0	0	845	0	0	0	534	483	237	903	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.3	0.0	0.0	15.8	0.0	0.0	0.0	17.1	17.2	20.8	7.9	7.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.5	0.7	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	3.7	0.0	0.0	0.0	1.2	1.2	0.7	0.2	0.2
LnGrp Delay(d),s/veh	12.3	0.0	0.0	16.5	0.0	0.0	0.0	17.6	17.9	21.6	7.9	8.0
LnGrp LOS	B			B				B	B	C	A	A
Approach Vol, veh/h		75			283			200			101	
Approach Delay, s/veh		12.3			16.5			17.7			14.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		28.2		21.8	11.5	16.7		21.8
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		2.7		14.6	4.2	6.5		3.8
Green Ext Time (p_c), s		0.2		1.3	0.0	0.8		0.3

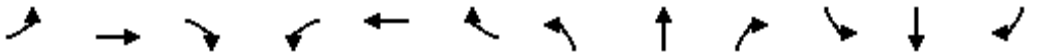
Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	91	154	21	67	245	0	23	167	74	7	97
Future Vol, veh/h	88	91	154	21	67	245	0	23	167	74	7	97
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
Heavy Vehicles, %	82	82	82	88	88	88	97	97	97	83	83	83
Mvmt Flow	88	91	154	21	67	245	0	23	167	74	7	97
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	15.6	16.9	18	13.6
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	49%	0%	24%	0%	91%	0%
Vol Thru, %	12%	51%	0%	76%	0%	9%	0%
Vol Right, %	88%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	179	154	88	245	81	97
LT Vol	0	88	0	21	0	74	0
Through Vol	23	91	0	67	0	7	0
RT Vol	167	0	154	0	245	0	97
Lane Flow Rate	190	179	154	88	245	81	97
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.444	0.421	0.32	0.207	0.518	0.208	0.217
Departure Headway (Hd)	8.405	8.469	7.48	8.45	7.612	9.251	8.066
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	429	428	482	427	475	389	445
Service Time	6.44	6.18	5.213	6.156	5.318	6.989	5.804
HCM Lane V/C Ratio	0.443	0.418	0.32	0.206	0.516	0.208	0.218
HCM Control Delay	18	17.2	13.7	13.3	18.2	14.4	13
HCM Lane LOS	C	C	B	B	C	B	B
HCM 95th-tile Q	2.2	2	1.4	0.8	2.9	0.8	0.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	264	28	125	273	410	12	210	167	133	67	43
Future Volume (vph)	166	264	28	125	273	410	12	210	167	133	67	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.93		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1008	2017	902	1188	2375	1062	992	1838		2175	1111	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1008	2017	902	1188	2375	1062	992	1838		2175	1111	
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)	166	264	28	125	273	410	12	210	167	133	67	43
RTOR Reduction (vph)	0	0	18	0	0	266	0	132	0	0	21	0
Lane Group Flow (vph)	166	264	10	125	273	144	12	245	0	133	89	0
Confl. Peds. (#/hr)									4	4		
Heavy Vehicles (%)	79%	79%	79%	52%	52%	52%	82%	82%	82%	61%	61%	61%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	12.1	32.3	32.3	11.8	32.0	32.0	1.6	19.3		10.7	28.4	
Effective Green, g (s)	12.1	32.3	32.3	11.8	32.0	32.0	1.6	19.3		10.7	28.4	
Actuated g/C Ratio	0.13	0.35	0.35	0.13	0.35	0.35	0.02	0.21		0.12	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	133	715	319	153	834	373	17	389		255	346	
v/s Ratio Prot	c0.16	0.13		0.11	0.11		0.01	c0.13		c0.06	0.08	
v/s Ratio Perm			0.01			c0.14						
v/c Ratio	1.25	0.37	0.03	0.82	0.33	0.39	0.71	0.63		0.52	0.26	
Uniform Delay, d1	39.5	21.8	19.2	38.6	21.7	22.2	44.5	32.7		37.8	23.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	159.4	1.5	0.2	27.4	0.2	0.7	84.0	3.3		1.9	0.4	
Delay (s)	198.9	23.3	19.4	66.0	21.9	22.8	128.5	36.0		39.7	23.8	
Level of Service	F	C	B	E	C	C	F	D		D	C	
Approach Delay (s)		86.7			29.2			38.8			32.5	
Approach LOS		F			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

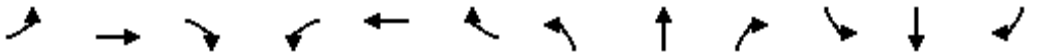
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	208	365	169	812	0	0
Future Volume (veh/h)	208	365	169	812	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1138	1138	1284	1284		
Adj Flow Rate, veh/h	208	365	169	812		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	67	67	48	48		
Cap, veh/h	1400	626	384	2207		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	2219	967	2372	2503		
Grp Volume(v), veh/h	208	365	169	812		
Grp Sat Flow(s),veh/h/ln	1081	967	1186	1220		
Q Serve(g_s), s	1.9	10.5	3.2	2.3		
Cycle Q Clear(g_c), s	1.9	10.5	3.2	2.3		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1400	626	384	2207		
V/C Ratio(X)	0.15	0.58	0.44	0.37		
Avail Cap(c_a), veh/h	1400	626	1440	2207		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.4	4.9	18.7	0.3		
Incr Delay (d2), s/veh	0.2	3.9	0.8	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.6	3.4	1.1	0.7		
LnGrp Delay(d),s/veh	3.6	8.9	19.5	0.4		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	573			981		
Approach Delay, s/veh	7.0			3.7		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		4.3			5.2	12.5		
Green Ext Time (p_c), s		2.5			0.6	2.2		

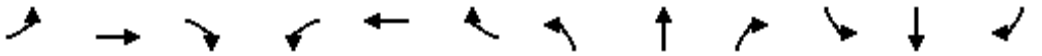
Intersection Summary	
HCM 2010 Ctrl Delay	4.9
HCM 2010 LOS	A

Notes



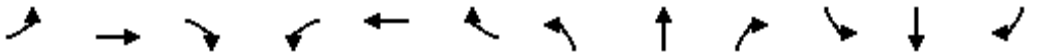
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	51	0	0	205	91	452	177	96	64	0	324
Future Volume (vph)	162	51	0	0	205	91	452	177	96	64	0	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frt	1.00	1.00			0.95		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (prot)	1135	2270			2994		1117	2234		1299		2045
Flt Permitted	0.95	1.00			1.00		0.95	0.98		0.95		1.00
Satd. Flow (perm)	1135	2270			2994		1117	2234		1299		2045
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)	162	51	0	0	205	91	452	177	96	64	0	324
RTOR Reduction (vph)	0	0	0	0	50	0	0	17	0	0	0	277
Lane Group Flow (vph)	162	51	0	0	246	0	244	464	0	64	0	47
Heavy Vehicles (%)	59%	59%	59%	15%	15%	15%	47%	47%	47%	39%	39%	39%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	17.0	38.2			17.0		24.8	24.8		12.9		12.9
Effective Green, g (s)	17.0	38.2			17.0		24.8	24.8		12.9		12.9
Actuated g/C Ratio	0.19	0.43			0.19		0.28	0.28		0.14		0.14
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	215	968			568		309	619		187		294
v/s Ratio Prot	c0.14	0.02			c0.08					c0.05		
v/s Ratio Perm							c0.22	0.21				0.02
v/c Ratio	0.75	0.05			0.43		0.79	0.75		0.34		0.16
Uniform Delay, d1	34.3	15.0			32.0		29.9	29.5		34.5		33.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	12.4	0.0			0.4		12.2	4.7		0.8		0.2
Delay (s)	46.7	15.1			32.4		42.1	34.2		35.3		33.7
Level of Service	D	B			C		D	C		D		C
Approach Delay (s)		39.1			32.4			36.9			34.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	17.8
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	112	50	199	678	10	273	9	195	25	0	3
Future Volume (vph)	12	112	50	199	678	10	273	9	195	25	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	1556	3112	1392	1626	3245		1372	1379	1292	1150	1954	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	1556	3112	1392	1626	3245		1372	1379	1292	1150	1954	
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)	12	112	50	199	678	10	273	9	195	25	0	3
RTOR Reduction (vph)	0	0	41	0	1	0	0	0	111	0	3	0
Lane Group Flow (vph)	12	112	9	199	687	0	142	140	84	25	0	0
Heavy Vehicles (%)	16%	16%	16%	11%	11%	11%	25%	25%	25%	57%	57%	57%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	14.8	14.8	12.8	26.6		36.4	36.4	36.4	2.2	2.2	
Effective Green, g (s)	1.0	14.8	14.8	12.8	26.6		36.4	36.4	36.4	2.2	2.2	
Actuated g/C Ratio	0.01	0.17	0.17	0.15	0.31		0.43	0.43	0.43	0.03	0.03	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	18	543	243	245	1019		589	592	555	29	50	
v/s Ratio Prot	0.01	0.04		c0.12	c0.21		c0.10	0.10	0.06	c0.02	0.00	
v/s Ratio Perm			0.01									
v/c Ratio	0.67	0.21	0.04	0.81	0.67		0.24	0.24	0.15	0.86	0.00	
Uniform Delay, d1	41.7	29.9	29.0	34.8	25.3		15.4	15.3	14.7	41.1	40.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	54.1	0.1	0.0	17.4	1.4		0.1	0.1	0.0	106.7	0.0	
Delay (s)	95.8	30.0	29.0	52.1	26.7		15.4	15.4	14.8	147.8	40.2	
Level of Service	F	C	C	D	C		B	B	B	F	D	
Approach Delay (s)		34.3			32.4			15.2			136.3	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	18.5
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	154	76	122	573	206	76	187	171	85	173	192
Future Volume (vph)	148	154	76	122	573	206	76	187	171	85	173	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.93		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1357	2569		1656	3312	1482	1357	2520		1190	2310	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1357	2569		1656	3312	1482	1357	2520		1190	2310	
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)	148	154	76	122	573	206	76	187	171	85	173	192
RTOR Reduction (vph)	0	53	0	0	0	152	0	147	0	0	164	0
Lane Group Flow (vph)	148	177	0	122	573	54	76	211	0	76	210	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	33%	33%	33%	9%	9%	9%	33%	33%	33%	38%	38%	38%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	10.9	20.2		7.2	17.4	17.4	9.2	9.2		9.7	9.7	
Effective Green, g (s)	10.9	20.2		7.2	17.4	17.4	9.2	9.2		9.7	9.7	
Actuated g/C Ratio	0.17	0.31		0.11	0.26	0.26	0.14	0.14		0.15	0.15	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	224	788		181	875	391	189	352		175	340	
v/s Ratio Prot	c0.11	c0.07		0.07	c0.17		0.06	c0.08		0.06	c0.09	
v/s Ratio Perm						0.04						
v/c Ratio	0.66	0.23		0.67	0.65	0.14	0.40	0.60		0.43	0.62	
Uniform Delay, d1	25.7	17.0		28.2	21.5	18.5	25.8	26.6		25.6	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	0.1		7.5	1.4	0.1	0.5	1.8		0.6	2.4	
Delay (s)	31.3	17.0		35.7	22.9	18.5	26.3	28.4		26.2	28.7	
Level of Service	C	B		D	C	B	C	C		C	C	
Approach Delay (s)		22.6			23.6			28.0			28.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	19.5
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	726	30	89	362	26	29	80	579	17	11	17
Future Volume (veh/h)	26	726	30	89	362	26	29	80	579	17	11	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.99		0.91	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1810	1810	1900	1900	1863	1863	1900	1792	1900
Adj Flow Rate, veh/h	26	726	30	89	362	26	29	80	579	17	11	17
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	5	5	5	2	2	2	6	6	6
Cap, veh/h	496	1525	63	293	1454	104	229	603	707	234	154	198
Arrive On Green	0.45	0.45	0.45	0.90	0.90	0.90	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	933	3388	140	677	3231	230	383	1341	1572	383	343	441
Grp Volume(v), veh/h	26	372	384	89	191	197	109	0	579	45	0	0
Grp Sat Flow(s),veh/h/ln	933	1736	1792	677	1719	1742	1724	0	1572	1167	0	0
Q Serve(g_s), s	1.3	12.0	12.0	5.7	1.1	1.2	0.0	0.0	25.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	12.0	12.0	17.7	1.1	1.2	2.7	0.0	25.7	1.2	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.13	0.27		1.00	0.38		0.38
Lane Grp Cap(c), veh/h	496	781	807	293	774	784	833	0	707	587	0	0
V/C Ratio(X)	0.05	0.48	0.48	0.30	0.25	0.25	0.13	0.00	0.82	0.08	0.00	0.00
Avail Cap(c_a), veh/h	496	781	807	293	774	784	833	0	707	587	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.1	15.4	15.4	6.3	2.3	2.3	12.9	0.0	19.2	12.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	2.1	2.0	2.7	0.8	0.8	0.3	0.0	10.2	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(50%),veh/ln	0.4	6.1	6.3	1.3	0.6	0.6	1.5	0.0	13.1	0.6	0.0	0.0
LnGrp Delay(d),s/veh	13.3	17.5	17.4	9.0	3.0	3.0	13.2	0.0	29.4	12.7	0.0	0.0
LnGrp LOS	B	B	B	A	A	A	B		C	B		
Approach Vol, veh/h		782			477			688			45	
Approach Delay, s/veh		17.3			4.1			26.8			12.7	
Approach LOS		B			A			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		40.0		40.0		40.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		36.0		36.0		36.0
Max Q Clear Time (g_c+I1), s		27.7		14.0		3.2		19.7
Green Ext Time (p_c), s		2.1		5.1		0.3		2.8

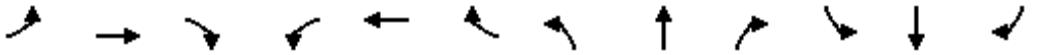
Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	213	1	323	182	24	36	578	983	2	85	41
Future Volume (veh/h)	88	213	1	323	182	24	36	578	983	2	85	41
Number	1	6	16	5	2	12	3	8	18	7	4	14
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		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1776	1776	1900	1845	1845	1845	1900	1696	1900
Adj Flow Rate, veh/h	88	213	-29	323	182	15	36	578	662	2	85	24
Adj No. of Lanes	1	1	0	2	1	0	1	1	1	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	7	7	7	3	3	3	12	12	12
Cap, veh/h	348	586	0	422	400	33	75	653	755	55	629	169
Arrive On Green	0.20	0.31	0.00	0.13	0.25	0.25	0.04	0.35	0.35	0.26	0.26	0.26
Sat Flow, veh/h	1774	1863	0	3281	1617	133	1757	1845	1565	10	2428	653
Grp Volume(v), veh/h	88	184	0	323	0	197	36	578	662	59	0	52
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1640	0	1750	1757	1845	1565	1665	0	1427
Q Serve(g_s), s	3.0	5.4	0.0	6.8	0.0	6.8	1.4	21.1	25.3	0.0	0.0	2.0
Cycle Q Clear(g_c), s	3.0	5.4	0.0	6.8	0.0	6.8	1.4	21.1	25.3	1.9	0.0	2.0
Prop In Lane	1.00		0.00	1.00		0.08	1.00		1.00	0.03		0.46
Lane Grp Cap(c), veh/h	348	586	0	422	0	433	75	653	755	483	0	370
V/C Ratio(X)	0.25	0.31	0.00	0.77	0.00	0.46	0.48	0.89	0.88	0.12	0.00	0.14
Avail Cap(c_a), veh/h	348	960	0	565	0	860	150	940	999	665	0	539
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.3	18.6	0.0	30.1	0.0	22.8	33.4	21.7	16.6	20.3	0.0	20.4
Incr Delay (d2), s/veh	0.1	0.2	0.0	4.4	0.0	0.6	3.5	8.6	7.9	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.8	0.0	3.3	0.0	3.4	0.8	12.1	13.2	0.9	0.0	0.8
LnGrp Delay(d),s/veh	24.4	18.8	0.0	34.5	0.0	23.4	36.9	30.3	24.5	20.3	0.0	20.4
LnGrp LOS	C	B		C		C	D	C	C	C		C
Approach Vol, veh/h		272			520			1276			111	
Approach Delay, s/veh		20.6			30.3			27.5			20.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	18.7	21.9	6.8	24.1	13.9	26.7		30.9
Change Period (Y+Rc), s	* 4.7	* 4.2	3.7	* 5.6	* 4.7	* 4.2		5.6
Max Green Setting (Gmax), s	* 14	* 35	6.1	* 27	* 12	* 37		36.4
Max Q Clear Time (g_c+I1), s	5.0	8.8	3.4	4.0	8.8	7.4		23.1
Green Ext Time (p_c), s	0.1	0.9	0.0	0.4	0.4	0.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1205	79	43	393	67	14	130	83	98	140	63
Future Volume (veh/h)	57	1205	79	43	393	67	14	130	83	98	140	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	1.00		0.97	0.99		0.97	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1827	1827	1827	1900	1900	1863	1900
Adj Flow Rate, veh/h	57	1205	79	43	393	67	14	130	83	98	140	63
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	0	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	4	4	4	2	2	2
Cap, veh/h	479	1833	120	321	1005	830	411	726	431	337	484	229
Arrive On Green	1.00	1.00	1.00	0.55	0.55	0.55	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	912	3332	218	419	1827	1509	1144	2075	1230	751	1382	654
Grp Volume(v), veh/h	57	633	651	43	393	67	14	107	106	150	0	151
Grp Sat Flow(s),veh/h/ln	912	1752	1798	419	1827	1509	1144	1736	1570	1224	0	1563
Q Serve(g_s), s	1.3	0.0	0.0	4.1	9.9	1.7	0.7	3.4	3.8	5.4	0.0	5.5
Cycle Q Clear(g_c), s	11.1	0.0	0.0	4.1	9.9	1.7	6.3	3.4	3.8	9.2	0.0	5.5
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.78	0.65		0.42
Lane Grp Cap(c), veh/h	479	964	989	321	1005	830	411	607	549	503	0	547
V/C Ratio(X)	0.12	0.66	0.66	0.13	0.39	0.08	0.03	0.18	0.19	0.30	0.00	0.28
Avail Cap(c_a), veh/h	479	964	989	321	1005	830	411	607	549	503	0	547
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.2	0.0	0.0	9.0	10.3	8.5	21.0	18.0	18.1	20.3	0.0	18.7
Incr Delay (d2), s/veh	0.5	3.5	3.4	0.9	1.1	0.2	0.2	0.6	0.8	1.5	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.9	0.9	0.6	5.2	0.7	0.2	1.7	1.7	2.8	0.0	2.6
LnGrp Delay(d),s/veh	1.8	3.5	3.4	9.9	11.5	8.7	21.1	18.6	18.9	21.9	0.0	19.9
LnGrp LOS	A	A	A	A	B	A	C	B	B	C		B
Approach Vol, veh/h		1341			503			227			301	
Approach Delay, s/veh		3.4			11.0			18.9			20.9	
Approach LOS		A			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		32.0		48.0		32.0		48.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		28.0		44.0		28.0		44.0
Max Q Clear Time (g_c+I1), s		8.3		13.1		11.2		11.9
Green Ext Time (p_c), s		1.2		11.6		1.7		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1036	71	31	331	43	190	117	49	172	65	8
Future Volume (veh/h)	63	1036	71	31	331	43	190	117	49	172	65	8
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1827	1583	1583	1900	1667	1667	1667	1845	1845	1845
Adj Flow Rate, veh/h	63	1036	71	31	331	43	190	117	49	172	65	8
Adj No. of Lanes	0	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	20	20	20	14	14	14	3	3	3
Cap, veh/h	114	1176	573	41	1247	161	283	297	249	269	283	236
Arrive On Green	0.37	0.37	0.37	0.03	0.47	0.47	0.18	0.18	0.18	0.15	0.15	0.15
Sat Flow, veh/h	125	3174	1547	1508	2680	345	1587	1667	1395	1757	1845	1540
Grp Volume(v), veh/h	577	522	71	31	185	189	190	117	49	172	65	8
Grp Sat Flow(s),veh/h/ln	1720	1579	1547	1508	1504	1522	1587	1667	1395	1757	1845	1540
Q Serve(g_s), s	11.7	18.4	1.8	1.2	4.4	4.5	6.6	3.7	1.8	5.4	1.8	0.3
Cycle Q Clear(g_c), s	18.6	18.4	1.8	1.2	4.4	4.5	6.6	3.7	1.8	5.4	1.8	0.3
Prop In Lane	0.11		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	705	585	573	41	700	708	283	297	249	269	283	236
V/C Ratio(X)	0.82	0.89	0.12	0.76	0.26	0.27	0.67	0.39	0.20	0.64	0.23	0.03
Avail Cap(c_a), veh/h	736	615	602	128	814	824	618	649	543	684	718	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	17.5	12.3	28.6	9.6	9.6	22.7	21.5	20.7	23.5	22.0	21.3
Incr Delay (d2), s/veh	6.4	14.2	0.0	19.2	0.2	0.2	3.0	0.9	0.4	2.5	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	10.3	0.8	0.7	1.8	1.9	3.1	1.8	0.7	2.8	1.0	0.1
LnGrp Delay(d),s/veh	23.8	31.7	12.3	47.8	9.8	9.8	25.7	22.4	21.1	26.0	22.4	21.3
LnGrp LOS	C	C	B	D	A	A	C	C	C	C	C	C
Approach Vol, veh/h		1170			405			356			245	
Approach Delay, s/veh		26.6			12.7			24.0			24.9	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		31.5		14.5	5.6	25.9		13.1
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		32.0		23.0	5.0	23.0		23.0
Max Q Clear Time (g_c+I1), s		6.5		8.6	3.2	20.6		7.4
Green Ext Time (p_c), s		2.4		1.0	0.0	1.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	115	24	86	116	126	0	69	144	68	37	15
Future Volume (veh/h)	31	115	24	86	116	126	0	69	144	68	37	15
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1759	1900	1900	1638	1900	0	1367	1900	1450	1450	1900
Adj Flow Rate, veh/h	31	115	24	86	116	126	0	69	144	68	37	15
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	8	8	8	16	16	16	0	39	39	31	31	31
Cap, veh/h	135	411	77	172	196	176	0	265	232	180	866	328
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.00	0.20	0.20	0.13	0.45	0.45
Sat Flow, veh/h	169	1244	232	264	592	534	0	1367	1137	1381	1942	735
Grp Volume(v), veh/h	170	0	0	328	0	0	0	69	144	68	25	27
Grp Sat Flow(s),veh/h/ln	1645	0	0	1389	0	0	0	1299	1137	1381	1378	1299
Q Serve(g_s), s	0.0	0.0	0.0	6.4	0.0	0.0	0.0	2.4	6.2	2.4	0.6	0.6
Cycle Q Clear(g_c), s	4.0	0.0	0.0	10.8	0.0	0.0	0.0	2.4	6.2	2.4	0.6	0.6
Prop In Lane	0.18		0.14	0.26		0.38	0.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	623	0	0	544	0	0	0	265	232	180	615	580
V/C Ratio(X)	0.27	0.00	0.00	0.60	0.00	0.00	0.00	0.26	0.62	0.38	0.04	0.05
Avail Cap(c_a), veh/h	1142	0	0	1001	0	0	0	604	529	283	1077	1016
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.4	0.0	0.0	15.5	0.0	0.0	0.0	18.0	19.5	21.4	8.4	8.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.2	1.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	4.3	0.0	0.0	0.0	0.9	2.0	0.9	0.2	0.2
LnGrp Delay(d),s/veh	13.5	0.0	0.0	15.9	0.0	0.0	0.0	18.2	20.5	21.8	8.4	8.4
LnGrp LOS	B			B				B	C	C	A	A
Approach Vol, veh/h		170			328			213			120	
Approach Delay, s/veh		13.5			15.9			19.8			16.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		30.0		23.8	13.0	17.0		23.8
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s		42.0		36.0	11.0	25.0		36.0
Max Q Clear Time (g_c+I1), s		2.6		12.8	4.4	8.2		6.0
Green Ext Time (p_c), s		0.2		1.5	0.0	0.8		0.7

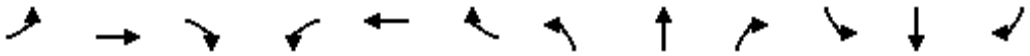
Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	70	79	58	20	73	2	69	29	93	45	51
Future Vol, veh/h	88	70	79	58	20	73	2	69	29	93	45	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
Heavy Vehicles, %	26	26	26	69	69	69	93	93	93	60	60	60
Mvmt Flow	88	70	79	58	20	73	2	69	29	93	45	51
Number of Lanes	0	1	1	0	1	1	0	0	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	10.9	10.8	12.5	11.9
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	2%	56%	0%	74%	0%	67%	0%
Vol Thru, %	69%	44%	0%	26%	0%	33%	0%
Vol Right, %	29%	0%	100%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	158	79	78	73	138	51
LT Vol	2	88	0	58	0	93	0
Through Vol	69	70	0	20	0	45	0
RT Vol	29	0	79	0	73	0	51
Lane Flow Rate	100	158	79	78	73	138	51
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.208	0.286	0.121	0.162	0.129	0.278	0.088
Departure Headway (Hd)	7.495	6.519	5.529	7.46	6.374	7.263	6.215
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	480	553	649	482	564	495	578
Service Time	5.522	4.245	3.254	5.188	4.101	4.987	3.94
HCM Lane V/C Ratio	0.208	0.286	0.122	0.162	0.129	0.279	0.088
HCM Control Delay	12.5	11.8	9	11.6	10	12.8	9.5
HCM Lane LOS	B	B	A	B	A	B	A
HCM 95th-tile Q	0.8	1.2	0.4	0.6	0.4	1.1	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	160	5	80	143	95	3	152	103	112	101	31
Future Volume (vph)	110	160	5	80	143	95	3	152	103	112	101	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	3008	1346	1271	2542	1137	1056	1973		2398	1256	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1504	3008	1346	1271	2542	1137	1056	1973		2398	1256	
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)	110	160	5	80	143	95	3	152	103	112	101	31
RTOR Reduction (vph)	0	0	3	0	0	56	0	84	0	0	11	0
Lane Group Flow (vph)	110	160	2	80	143	39	3	171	0	112	121	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	20%	20%	20%	42%	42%	42%	71%	71%	71%	46%	46%	46%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	8.2	34.0	34.0	7.8	33.6	33.6	1.1	15.4		7.3	21.6	
Effective Green, g (s)	8.2	34.0	34.0	7.8	33.6	33.6	1.1	15.4		7.3	21.6	
Actuated g/C Ratio	0.10	0.42	0.42	0.10	0.41	0.41	0.01	0.19		0.09	0.27	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	1254	561	121	1047	468	14	372		214	332	
v/s Ratio Prot	c0.07	0.05		0.06	c0.06		0.00	c0.09		c0.05	0.10	
v/s Ratio Perm			0.00			0.03						
v/c Ratio	0.73	0.13	0.00	0.66	0.14	0.08	0.21	0.46		0.52	0.36	
Uniform Delay, d1	35.6	14.6	13.9	35.6	14.9	14.6	39.8	29.4		35.4	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.1	0.2	0.0	12.8	0.1	0.1	7.6	0.9		2.3	0.7	
Delay (s)	51.6	14.8	13.9	48.3	15.0	14.7	47.3	30.3		37.7	25.0	
Level of Service	D	B	B	D	B	B	D	C		D	C	
Approach Delay (s)		29.5			23.3			30.5			30.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

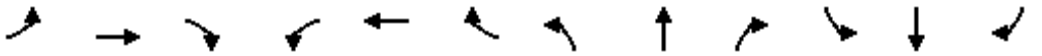
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	219	228	67	312	0	0
Future Volume (veh/h)	219	228	67	312	0	0
Number	6	16	5	2		
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		0.98	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1610	1610	1407	1407		
Adj Flow Rate, veh/h	219	228	67	312		
Adj No. of Lanes	2	1	2	2		
Peak Hour Factor	1.00	1.00	1.00	1.00		
Percent Heavy Veh, %	18	18	35	35		
Cap, veh/h	1982	868	421	2420		
Arrive On Green	0.65	0.65	0.16	0.90		
Sat Flow, veh/h	3140	1340	2600	2744		
Grp Volume(v), veh/h	219	228	67	312		
Grp Sat Flow(s),veh/h/ln	1530	1340	1300	1337		
Q Serve(g_s), s	1.3	3.6	1.1	0.6		
Cycle Q Clear(g_c), s	1.3	3.6	1.1	0.6		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1982	868	421	2420		
V/C Ratio(X)	0.11	0.26	0.16	0.13		
Avail Cap(c_a), veh/h	1982	868	1579	2420		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.3	3.7	17.8	0.3		
Incr Delay (d2), s/veh	0.1	0.7	0.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.6	1.4	0.4	0.2		
LnGrp Delay(d),s/veh	3.4	4.4	18.0	0.3		
LnGrp LOS	A	A	B	A		
Approach Vol, veh/h	447			379		
Approach Delay, s/veh	3.9			3.4		
Approach LOS	A			A		

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		49.4			12.7	36.7		
Change Period (Y+Rc), s		* 4.7			* 4.7	* 4.7		
Max Green Setting (Gmax), s		* 12			* 30	* 32		
Max Q Clear Time (g_c+I1), s		2.6			3.1	5.6		
Green Ext Time (p_c), s		0.9			0.2	1.7		

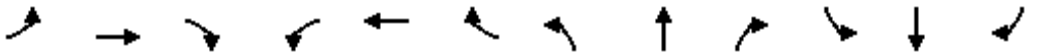
Intersection Summary	
HCM 2010 Ctrl Delay	3.7
HCM 2010 LOS	A

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	93	0	0	77	100	173	260	83	96	0	125
Future Volume (vph)	132	93	0	0	77	100	173	260	83	96	0	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Lane Util. Factor	1.00	0.95			0.95		0.91	0.91		1.00		0.88
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00		1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Frt	1.00	1.00			0.92		1.00	0.97		1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)	1671	3343			2921		1416	2871		1504		2369
Flt Permitted	0.95	1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (perm)	1671	3343			2921		1416	2871		1504		2369
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)	132	93	0	0	77	100	173	260	83	96	0	125
RTOR Reduction (vph)	0	0	0	0	78	0	0	24	0	0	0	103
Lane Group Flow (vph)	132	93	0	0	99	0	156	336	0	96	0	22
Confl. Peds. (#/hr)	10					10						
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	8%	8%	8%	12%	12%	12%	16%	16%	16%	20%	20%	20%
Turn Type	Prot	NA			NA		Perm	NA		Prot		Perm
Protected Phases	1	6			2			4		3		
Permitted Phases							4					3
Actuated Green, G (s)	13.7	34.6			16.7		14.3	14.3		13.5		13.5
Effective Green, g (s)	13.7	34.6			16.7		14.3	14.3		13.5		13.5
Actuated g/C Ratio	0.18	0.46			0.22		0.19	0.19		0.18		0.18
Clearance Time (s)	4.2	4.7			4.7		4.7	4.7		4.2		4.2
Vehicle Extension (s)	2.0	2.5			2.5		2.5	2.5		2.5		2.5
Lane Grp Cap (vph)	301	1521			641		266	540		267		420
v/s Ratio Prot	c0.08	0.03			c0.03					c0.06		
v/s Ratio Perm							0.11	0.12				0.01
v/c Ratio	0.44	0.06			0.15		0.59	0.62		0.36		0.05
Uniform Delay, d1	27.7	11.6			23.9		28.2	28.4		27.5		25.9
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2	0.4	0.0			0.1		2.7	1.9		0.6		0.0
Delay (s)	28.1	11.6			24.0		30.9	30.3		28.1		26.0
Level of Service	C	B			C		C	C		C		C
Approach Delay (s)		21.3			24.0			30.5			26.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	629	133	92	423	6	149	1	164	17	1	18
Future Volume (vph)	16	629	133	92	423	6	149	1	164	17	1	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	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		1.00	1.00	0.85	1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	1703	3406	1504	1671	3336		1545	1550	1455	1626	2790	
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)	16	629	133	92	423	6	149	1	164	17	1	18
RTOR Reduction (vph)	0	0	102	0	1	0	0	0	92	0	19	0
Lane Group Flow (vph)	16	629	31	92	428	0	74	76	72	17	0	0
Confl. Peds. (#/hr)									1	1		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	6%	6%	8%	8%	8%	11%	11%	11%	11%	11%	11%
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Prot	Split	NA	
Protected Phases	5	2		1	6		8	8	8	7	7	
Permitted Phases			2									
Actuated Green, G (s)	1.0	20.1	20.1	7.2	26.3		37.3	37.3	37.3	2.1	2.1	
Effective Green, g (s)	1.0	20.1	20.1	7.2	26.3		37.3	37.3	37.3	2.1	2.1	
Actuated g/C Ratio	0.01	0.24	0.24	0.08	0.31		0.44	0.44	0.44	0.02	0.02	
Clearance Time (s)	4.2	5.5	5.5	4.2	5.5		4.6	4.6	4.6	4.2	4.2	
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	
Lane Grp Cap (vph)	19	803	354	141	1029		676	678	636	40	68	
v/s Ratio Prot	0.01	c0.18		c0.06	0.13		0.05	0.05	c0.05	c0.01	0.00	
v/s Ratio Perm			0.02									
v/c Ratio	0.84	0.78	0.09	0.65	0.42		0.11	0.11	0.11	0.42	0.01	
Uniform Delay, d1	42.0	30.5	25.4	37.8	23.4		14.1	14.2	14.2	41.0	40.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	128.3	4.6	0.0	8.0	0.1		0.0	0.0	0.0	2.6	0.0	
Delay (s)	170.3	35.1	25.4	45.8	23.5		14.2	14.2	14.2	43.6	40.5	
Level of Service	F	D	C	D	C		B	B	B	D	D	
Approach Delay (s)		36.3			27.4			14.2			42.0	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	85.2	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	239	550	45	76	447	142	48	170	277	234	116	58
Future Volume (vph)	239	550	45	76	447	142	48	170	277	234	116	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.91	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	
Satd. Flow (prot)	1719	3395		1703	3406	1524	1671	3032		1535	3073	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	
Satd. Flow (perm)	1719	3395		1703	3406	1524	1671	3032		1535	3073	
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)	239	550	45	76	447	142	48	170	277	234	116	58
RTOR Reduction (vph)	0	6	0	0	0	109	0	241	0	0	21	0
Lane Group Flow (vph)	239	589	0	76	447	33	48	206	0	136	251	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	8%	8%	8%	7%	7%	7%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases						8						
Actuated Green, G (s)	12.4	21.2		5.3	15.0	15.0	8.2	8.2		9.4	9.4	
Effective Green, g (s)	12.4	21.2		5.3	15.0	15.0	8.2	8.2		9.4	9.4	
Actuated g/C Ratio	0.19	0.33		0.08	0.24	0.24	0.13	0.13		0.15	0.15	
Clearance Time (s)	4.2	5.1		4.2	4.2	4.2	5.1	5.1		5.1	5.1	
Vehicle Extension (s)	0.2	0.2		0.2	0.2	0.2	0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)	335	1131		141	803	359	215	390		226	454	
v/s Ratio Prot	c0.14	c0.17		0.04	0.13		0.03	c0.07		c0.09	0.08	
v/s Ratio Perm						0.02						
v/c Ratio	0.71	0.52		0.54	0.56	0.09	0.22	0.53		0.60	0.55	
Uniform Delay, d1	23.9	17.1		28.0	21.4	19.0	24.8	25.9		25.3	25.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	0.2		2.0	0.5	0.0	0.2	0.6		3.1	0.8	
Delay (s)	29.8	17.3		30.0	21.9	19.0	25.0	26.5		28.4	26.0	
Level of Service	C	B		C	C	B	C	C		C	C	
Approach Delay (s)		20.9			22.2			26.3			26.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	19.5
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Appendix B – Existing Conditions, Plus Project, and Sensitivity Testing Queue Tables

Appendix B-1: Existing Conditions Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Length Average (95th)[1]
1	Union Street & 7th Street	EBL	125	MD PM	25 (25) 25 (25)
		EBT	225	MD PM	50 (75) 150 (200)
		WBL	125	MD PM	50 (75) 25 (50)
		WBT	600	MD PM	50 (75) 50 (75)
		NBT	250	MD PM	25 (50) 50 (75)
		NBR	250	MD PM	25 (50) 200 (**350**)
		SBT	75	MD PM	25 (25) 25 (50)
2	Union Street & 5th Street	EBL	800	MD PM	25 (25) 50 (125)
		EBT	800	MD PM	25 (50) 125 (200)
		WBL	600	MD PM	25 (100) 50 (100)
		WBT	600	MD PM	25 (75) 100 (175)
		NBL	225	MD PM	25 (50) 25 (75)
		NBT	925	MD PM	25 (75) 225 (500)
		SBT	250	MD PM	25 (75) 25 (50)
3	Adeline Street & 7th Street	EBL	175	MD PM	25 (25) 25 (25)
		EBT	600	MD PM	25 (50) 175 (200)
		WBL	175	MD PM	25 (50) 25 (75)
		WBT	1,375	MD PM	50 (75) 50 (75)
		WBR	1,375	MD PM	25 (25) 25 (25)
		NBL	100	MD PM	25 (25) 25 (25)
		NBT	300	MD PM	25 (50) 50 (75)

Appendix B-1: Existing Conditions Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Length Average (95th)[1]
		SBT	425	MD PM	25 (50) 75 (100)
4	Adeline Street & 5th Street	EBL	625	MD PM	25 (25) 50 (100)
		EBT	625	MD PM	125 (225) 225 (450)
		WBL	400	MD PM	75 (150) 50 (75)
		WBT	1,000	MD PM	25 (50) 50 (75)
		NBL	650	MD PM	75 (150) 100 (175)
		NBT	650	MD PM	25 (75) 50 (100)
		SBL	175	MD PM	25 (75) 75 (150)
		SBT	300	MD PM	25 (75) 50 (100)
5	Adeline Street & 3rd Street	Queues not available for stop-controlled intersections			
6	Middle Harbor Road & Maritime Street	Queues not available for stop-controlled intersections			
7	Maritime Street & 7th Street	EBL	125	MD PM	75 (**225**) 50 (100)
		EBT	325	MD PM	50 (100) 25 (50)
		EBR	300	MD PM	25 (25) 25 (25)
		WBL	100	MD PM	50 (100) 25 (75)
		WBT	1,925	MD PM	50 (75) 25 (50)
		WBR	275	MD PM	25 (100) 25 (25)
		NBL	325	MD PM	25 (50) 25 (25)
		NBT	350	MD PM	50 (100) 50 (75)
		SBL	500	MD PM	50 (75) 25 (75)
		SBT	500	MD PM	25 (75) 50 (100)

Appendix B-1: Existing Conditions Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Length Average (95th)[1]
8	I-880 On-Ramp & 7th Street	EBT	1,925	MD PM	25 (25) 25 (25)
		EBR	275	MD PM	25 (25) 25 (25)
		WBL	275	MD PM	25 (50) 25 (25)
		WBT	275	MD PM	25 (25) 25 (25)
9	I-880 Off-Ramp/Frontage Road & 7th Street	EBL	275	MD PM	50 (150) 25 (100)
		EBT	275	MD PM	25 (25) 25 (50)
		WBT	225	MD PM	75 (125) 25 (50)
		NBL	450	MD PM	100 (350) 50 (125)
		NBT	450	MD PM	100 (250) 75 (175)
		SBL	175	MD PM	50 (100) 50 (125)
10	Maritime Street/Wake Avenue & W Grand Avenue	EBL	425	MD PM	25 (50) 25 (50)
		EBT	525	MD PM	50 (75) 175 (250)
		EBR	525	MD PM	25 (25) 25 (50)
		WBL	875	MD PM	75 (150) 50 (75)
		WBT	2,175	MD PM	175 (275) 100 (150)
		NBL	475	MD PM	50 (100) 25 (75)
		NBT	575	MD PM	50 (100) 25 (75)
		NBR	575	MD PM	25 (50) 25 (50)
		SBL	125	MD PM	25 (75) 25 (50)
		SBT	350	MD PM	25 (25) 25 (25)
11	Frontage Road/I-80 & W Grand Avenue	EBL	800	MD PM	50 (100) 75 (150)

Appendix B-1: Existing Conditions Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Length Average (95th)[1]
		EBT	2,175	MD PM	25 (75) 100 (175)
		WBL	275	MD PM	50 (125) 25 (75)
		WBT	750	MD PM	100 (200) 75 (150)
		WBR	325	MD PM	25 (50) 25 (50)
		NBL	625	MD PM	25 (75) 25 (75)
		NBT	750	MD PM	25 (75) 25 (75)
		SBL	425	MD PM	25 (100) 50 (125)
		SBT	450	MD PM	25 (75) 50 (100)

Notes:

1. Average = average queue length. 95th = 95th percentile queue length. Queues are reported in feet. Queues that exceed available storage are shown in **bold**

Source: Fehr & Peers, 2019.

Appendix B-2: Existing and Existing Plus Project and Sensitivity Testing Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Lengths Average (95th)[1]			
					Existing	Existing Plus Project	Existing Plus Project Plus 25% Rerouting	Existing Plus Project Plus 50% Rerouting
1	Union Street & 7th Street	EBL	125	MD PM	25 (25) 25 (25)	25 (25) 25 (25)		
		EBT	225	MD PM	50 (75) 150 (200)	75 (100) 150 (200)		
		WBL	125	MD PM	50 (75) 25 (50)	50 (75) 25 (50)		
		WBT	600	MD PM	50 (75) 50 (75)	50 (75) 50 (75)		
		NBT	250	MD PM	25 (50) 50 (75)	25 (50) 50 (75)		
		NBR	250	MD PM	25 (50) 200 (**350**)	25 (50) 225 (**375**)		
		SBT	75	MD PM	25 (25) 25 (50)	25 (25) 25 (50)		
2	Union Street & 5th Street[3]	EBL	450	MD PM	25 (25) 50 (125)	25 (25) 50 (100)	Intersections not evaluated because operating assumption is that drivers to and from the Port avoid these intersections because of ballgames.	
		EBT	450	MD PM	25 (50) 125 (200)	25 (50) 100 (175)		
		WBL	325	MD PM	25 (100) 50 (100)	75 (175) 100 (225)		
		WBT	625	MD PM	25 (75) 100 (175)	25 (100) 100 (175)		
		NBL	225	MD PM	25 (50) 25 (75)	25 (50) 25 (75)		
		NBT	925	MD PM	25 (75) 225 (500)	50 (100) 225 (**525**)		
		NBR	925	MD PM		25 (75) 175 (**450**)		
		SBT	250	MD PM	25 (75) 25 (50)	25 (100) 25 (50)		
3	Adeline Street & 7th Street	EBL	175	MD PM	25 (25) 25 (25)	25 (25) 25 (25)		
		EBT	600	MD PM	25 (50) 175 (200)	25 (50) 175 (200)		
		WBL	175	MD PM	25 (50) 25 (75)	25 (50) 25 (100)		
		WBT	1,375	MD PM	50 (75) 50 (75)	125 (200) 125 (175)		

Appendix B-2: Existing and Existing Plus Project and Sensitivity Testing Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Lengths Average (95th)[1]			
					Existing	Existing Plus Project	Existing Plus Project Plus 25% Rerouting	Existing Plus Project Plus 50% Rerouting
		WBR	1,375	MD PM	25 (25) 25 (25)	25 (25) 25 (25)		
		NBL	100	MD PM	25 (25) 25 (25)	25 (25) 25 (50)		
		NBT	300	MD PM	25 (50) 50 (75)	25 (50) 50 (75)		
		SBT	425	MD PM	25 (50) 75 (100)	25 (50) 75 (100)		
4	Adeline Street & 5th Street[3]	EBT	625	MD PM	125 (225) 225 (450)	125 (200) 325 (550)		
		EBR	625	MD PM		25 (25) 25 (50)		
		WBL	325	MD PM	75 (150) 50 (75)	100 (250) 50 (125)		
		WBT	325	MD PM	25 (50) 50 (75)	50 (75) 75 (125)		
		NBL	650	MD PM	75 (150) 100 (175)	100 (175) 125 (225)		
		NBT	650	MD PM	25 (75) 50 (100)	50 (100) 100 (175)		
		SBL	175	MD PM	25 (75) 75 (150)	25 (50) 25 (50)		
		SBT	300	MD PM	25 (75) 50 (100)	50 (75) 75 (150)		
5	Adeline Street & 3rd Street	EBT	375	MD PM	Queues not available for stop-controlled intersections	50 (100) 50 (125)		
		WBT	425	MD PM		25 (75) 75 (125)		
		NBT	1000	MD PM		125 (275) 125 (250)		
		SBL	500	MD PM		100 (175) 100 (175)		
		SBT	650	MD PM		25 (75) 50 (100)		
6	Middle Harbor Road & Maritime Street	Queues not available for stop-controlled intersections						

Appendix B-2: Existing and Existing Plus Project and Sensitivity Testing Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Lengths Average (95th)[1]			
					Existing	Existing Plus Project	Existing Plus Project Plus 25% Rerouting	Existing Plus Project Plus 50% Rerouting
7	Maritime Street & 7th Street	EBL	125	MD PM	75 (**225**) 50 (100)	100 (**250**) 50 (100)	100 (**275**) 50 (125)	125 (**300**) 75 (**150**)
		EBT	325	MD PM	50 (100) 25 (50)	50 (100) 25 (50)	50 (100) 25 (75)	75 (125) 50 (75)
		EBR	300	MD PM	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)
		WBL	100	MD PM	50 (100) 25 (75)	50 (**125**) 25 (75)	75 (**175**) 50 (100)	75 (**200**) 50 (100)
		WBT	1,925	MD PM	50 (75) 25 (50)	50 (100) 25 (50)	50 (100) 25 (50)	75 (125) 25 (75)
		WBR	275	MD PM	25 (100) 25 (25)	25 (100) 25 (25)	25 (100) 25 (25)	25 (100) 25 (25)
		NBL	325	MD PM	25 (50) 25 (25)	25 (50) 25 (25)	25 (50) 25 (25)	25 (50) 25 (25)
		NBT	350	MD PM	50 (100) 50 (75)	75 (125) 50 (75)	75 (125) 50 (75)	75 (125) 50 (100)
		SBL	500	MD PM	50 (75) 25 (75)	50 (75) 25 (75)	50 (75) 25 (75)	50 (75) 50 (75)
		SBT	500	MD PM	25 (75) 50 (100)	50 (75) 50 (125)	50 (100) 50 (125)	50 (100) 50 (125)
8	I-880 On-Ramp & 7th Street	EBT	1,925	MD PM	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)
		EBR	275	MD PM	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)	25 (50) 25 (25)
		WBL	275	MD PM	25 (50) 25 (25)	25 (50) 25 (25)	25 (50) 25 (25)	25 (50) 25 (25)
		WBT	275	MD PM	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)
9	I-880 Off-Ramp/Frontage Road & 7th Street	EBL	275	MD PM	50 (150) 25 (100)	50 (150) 25 (100)	75 (200) 50 (150)	100 (250) 50 (175)
		EBT	275	MD PM	25 (25) 25 (50)	25 (25) 25 (50)	25 (25) 25 (50)	25 (25) 25 (50)
		WBT	225	MD PM	75 (125) 25 (50)	75 (125) 25 (50)	75 (125) 25 (50)	75 (125) 25 (50)
		NBL	450	MD PM	100 (350) 50 (125)	100 (375) 50 (150)	125 (400) 75 (175)	150 (425) 75 (225)
		NBT	450	MD PM	100 (250) 75 (175)	100 (275) 75 (175)	125 (300) 75 (200)	125 (325) 75 (200)

Appendix B-2: Existing and Existing Plus Project and Sensitivity Testing Queues

#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Lengths Average (95th)[1]			
					Existing	Existing Plus Project	Existing Plus Project Plus 25% Rerouting	Existing Plus Project Plus 50% Rerouting
		SBL	175	MD PM	50 (100) 50 (125)	50 (100) 50 (125)	50 (100) 50 (125)	50 (100) 50 (150)
10	Maritime Street/Wake Avenue & W Grand Avenue	EBL	425	MD PM	25 (50) 25 (50)	25 (50) 25 (50)	25 (50) 25 (50)	25 (50) 25 (50)
		EBT	525	MD PM	50 (75) 175 (250)	50 (75) 175 (250)	50 (75) 175 (250)	50 (75) 175 (250)
		EBR	525	MD PM	25 (25) 25 (50)	25 (25) 25 (50)	25 (25) 25 (50)	25 (25) 25 (50)
		WBL	875	MD PM	75 (150) 50 (75)	100 (175) 50 (100)	100 (175) 50 (100)	100 (200) 50 (125)
		WBT	2,175	MD PM	175 (275) 100 (150)	150 (250) 100 (150)	175 (275) 100 (150)	175 (275) 100 (150)
		NBL	475	MD PM	50 (100) 25 (75)	50 (100) 25 (75)	50 (125) 25 (75)	50 (125) 50 (75)
		NBT	575	MD PM	50 (100) 25 (75)	50 (100) 25 (75)	50 (125) 25 (75)	50 (125) 50 (75)
		NBR	575	MD PM	25 (50) 25 (50)	25 (50) 25 (50)	25 (50) 25 (50)	25 (50) 25 (50)
		SBL	125	MD PM	25 (75) 25 (50)	25 (75) 25 (50)	25 (75) 25 (50)	25 (75) 25 (50)
		SBT	350	MD PM	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)	25 (25) 25 (25)

Appendix B-2: Existing and Existing Plus Project and Sensitivity Testing Queues

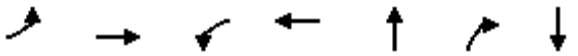
#	Study Intersection	Movement	Storage (ft)	Peak Hour	Queue Lengths Average (95th)[1]			
					Existing	Existing Plus Project	Existing Plus Project Plus 25% Rerouting	Existing Plus Project Plus 50% Rerouting
11	Frontage Road/I-80 & W Grand Avenue	EBL	800	MD PM	50 (100) 75 (150)	50 (100) 75 (150)	50 (125) 75 (175)	75 (150) 100 (200)
		EBT	2,175	MD PM	25 (75) 100 (175)	25 (75) 100 (175)	25 (75) 100 (200)	25 (75) 100 (200)
		WBL	275	MD PM	50 (125) 25 (75)	50 (125) 25 (75)	50 (125) 25 (100)	50 (125) 50 (100)
		WBT	750	MD PM	100 (200) 75 (150)	100 (200) 75 (150)	100 (225) 75 (175)	125 (225) 100 (175)
		WBR	325	MD PM	25 (50) 25 (50)	25 (50) 25 (50)	25 (75) 25 (50)	25 (75) 25 (50)
		NBL	625	MD PM	25 (75) 25 (75)	25 (100) 25 (75)	25 (100) 25 (75)	50 (100) 25 (75)
		NBT	750	MD PM	25 (75) 25 (75)	25 (75) 25 (75)	50 (100) 25 (100)	50 (125) 50 (100)
		SBL	425	MD PM	25 (100) 50 (125)	25 (100) 50 (125)	50 (100) 50 (150)	50 (100) 50 (150)
		SBT	450	MD PM	25 (75) 50 (100)	25 (75) 50 (100)	50 (100) 50 (100)	50 (125) 50 (125)

Notes:

1. Average = average queue length. 95th = 95th percentile queue length. Queues are reported in feet. Queues that exceed available storage are shown in **bold**

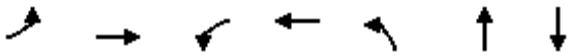
Source: Fehr & Peers, 2020.

Appendix C – Detailed Queue Calculation Worksheets



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	318	171	293	34	98	33
v/c Ratio	0.04	0.23	0.41	0.20	0.05	0.14	0.05
Control Delay	12.8	13.7	15.4	10.9	12.7	3.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	13.7	15.4	10.9	12.7	3.5	9.3
Queue Length 50th (ft)	4	47	39	33	9	0	6
Queue Length 95th (ft)	15	74	66	50	25	25	21
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	409	1370	418	1444	723	715	713
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	0.04	0.23	0.41	0.20	0.05	0.14	0.05

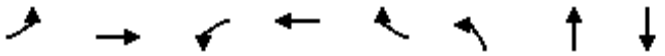
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	9	69	163	99	37	588	190
v/c Ratio	0.02	0.11	0.29	0.17	0.20	0.47	0.21
Control Delay	22.6	14.0	26.5	10.7	31.0	5.5	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	14.0	26.5	10.7	31.0	5.5	20.1
Queue Length 50th (ft)	2	14	21	10	10	12	21
Queue Length 95th (ft)	16	41	#80	60	48	61	73
Internal Link Dist (ft)		437		622		920	236
Turn Bay Length (ft)			300		220		
Base Capacity (vph)	456	1265	565	823	188	2117	1685
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	0.02	0.05	0.29	0.12	0.20	0.28	0.11

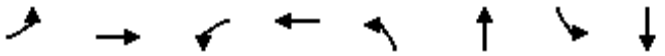
Intersection Summary

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



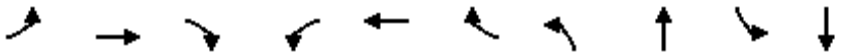
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	31	398	57	395	55	20	122	153
v/c Ratio	0.07	0.23	0.12	0.21	0.07	0.05	0.11	0.15
Control Delay	4.7	3.8	9.5	9.6	2.8	17.8	12.0	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	3.8	9.5	9.6	2.8	17.8	12.0	13.0
Queue Length 50th (ft)	3	14	13	48	0	7	13	18
Queue Length 95th (ft)	9	30	31	72	15	21	31	38
Internal Link Dist (ft)		585		1374			281	414
Turn Bay Length (ft)	160		150			75		
Base Capacity (vph)	476	1752	490	1838	832	402	1129	998
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.23	0.12	0.21	0.07	0.05	0.11	0.15

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	523	136	146	135	270	46	103
v/c Ratio	0.08	0.65	0.55	0.12	0.55	0.47	0.23	0.24
Control Delay	41.0	29.3	38.8	9.7	38.3	13.6	37.7	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.0	29.3	38.8	9.7	38.3	13.6	37.7	29.1
Queue Length 50th (ft)	4	101	52	11	51	16	19	17
Queue Length 95th (ft)	23	206	137	39	139	63	69	53
Internal Link Dist (ft)		622		310		636		281
Turn Bay Length (ft)			300				150	
Base Capacity (vph)	456	1496	465	1452	418	858	540	1104
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.35	0.29	0.10	0.32	0.31	0.09	0.09

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	185	28	73	174	393	12	271	114	55
v/c Ratio	0.83	0.21	0.06	0.49	0.21	0.63	0.12	0.66	0.41	0.16
Control Delay	78.3	20.9	0.2	49.2	21.4	7.8	42.8	30.7	41.3	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	20.9	0.2	49.2	21.4	7.8	42.8	30.7	41.3	22.9
Queue Length 50th (ft)	69	33	0	36	32	0	6	48	28	19
Queue Length 95th (ft)	#216	76	0	91	70	85	25	95	61	56
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	161	863	467	190	916	651	265	802	436	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.21	0.06	0.38	0.19	0.60	0.05	0.34	0.26	0.13

Intersection Summary

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



Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	148	247	169	645
v/c Ratio	0.11	0.35	0.39	0.26
Control Delay	4.2	2.3	21.1	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.2	2.3	21.1	0.3
Queue Length 50th (ft)	7	0	23	0
Queue Length 95th (ft)	17	21	45	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1367	702	1402	2439
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.35	0.12	0.26

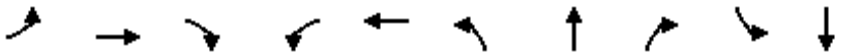
Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	102	51	296	206	405	64	271
v/c Ratio	0.50	0.06	0.43	0.72	0.68	0.29	0.47
Control Delay	45.1	14.5	24.4	46.4	33.8	40.4	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	14.5	24.4	46.4	33.8	40.4	8.5
Queue Length 50th (ft)	45	7	53	92	82	27	0
Queue Length 95th (ft)	134	19	104	#327	#237	92	43
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	308	1679	1312	380	779	317	705
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	0.33	0.03	0.23	0.54	0.52	0.20	0.38

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	12	112	33	145	688	132	131	139	25	3
v/c Ratio	0.10	0.24	0.11	0.64	0.66	0.21	0.20	0.21	0.42	0.01
Control Delay	39.7	32.1	0.8	46.4	27.5	15.6	15.6	4.0	62.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	32.1	0.8	46.4	27.5	15.6	15.6	4.0	62.4	0.0
Queue Length 50th (ft)	6	26	0	69	153	38	37	0	12	0
Queue Length 95th (ft)	25	53	0	139	250	98	97	36	#53	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	283	1618	773	359	1815	641	645	678	59	426
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.04	0.40	0.38	0.21	0.20	0.21	0.42	0.01

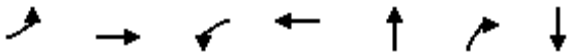
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	92	230	122	573	206	76	298	76	267
v/c Ratio	0.49	0.32	0.52	0.62	0.37	0.41	0.61	0.45	0.60
Control Delay	34.8	14.7	33.7	22.9	5.8	32.7	17.8	34.3	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	14.7	33.7	22.9	5.8	32.7	17.8	34.3	19.1
Queue Length 50th (ft)	27	20	35	82	0	22	19	24	20
Queue Length 95th (ft)	85	60	104	182	47	74	67	81	69
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	769	2022	469	1752	881	359	782	449	957
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.11	0.26	0.33	0.23	0.21	0.38	0.17	0.28

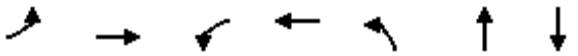
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	26	743	89	374	109	579	48
v/c Ratio	0.07	0.51	0.40	0.25	0.14	0.77	0.07
Control Delay	13.2	17.1	18.1	10.8	13.6	23.9	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	18.1	0.0
Total Delay	13.2	17.1	18.1	10.8	13.6	42.0	9.4
Queue Length 50th (ft)	7	133	22	44	31	198	8
Queue Length 95th (ft)	21	183	44	64	60	#348	27
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	381	1449	221	1478	783	752	698
Starvation Cap Reductn	0	0	0	0	0	173	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	0.07	0.51	0.40	0.25	0.14	1.00	0.07

Intersection Summary

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

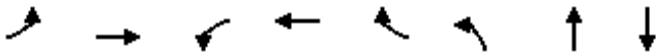


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	88	214	153	177	36	1437	128
v/c Ratio	0.30	0.46	0.41	0.39	0.25	0.88dr	0.11
Control Delay	40.2	32.4	42.1	32.2	46.1	19.0	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	32.4	42.1	32.2	46.1	19.0	15.1
Queue Length 50th (ft)	44	104	41	87	19	220	15
Queue Length 95th (ft)	108	180	84	150	57	#476	47
Internal Link Dist (ft)		437		622		920	236
Turn Bay Length (ft)			300		220		
Base Capacity (vph)	336	515	777	567	332	1948	1148
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	0.26	0.42	0.20	0.31	0.11	0.74	0.11

Intersection Summary

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

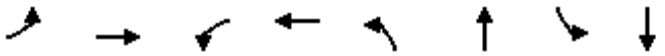
dr Defacto Right Lane. Recode with 1 though lane as a right lane.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	57	1273	57	371	67	24	267	318
v/c Ratio	0.11	0.69	0.43	0.19	0.08	0.07	0.23	0.33
Control Delay	7.7	12.8	23.4	9.4	2.6	18.2	15.1	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	12.8	23.4	9.4	2.6	18.2	15.1	17.6
Queue Length 50th (ft)	12	162	16	45	0	8	38	51
Queue Length 95th (ft)	m18	195	55	67	16	24	65	84
Internal Link Dist (ft)		585		1374			281	414
Turn Bay Length (ft)	160		150			75		
Base Capacity (vph)	510	1848	132	1909	860	338	1166	955
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.69	0.43	0.19	0.08	0.07	0.23	0.33

Intersection Summary

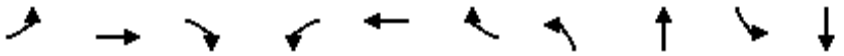
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	63	983	57	197	164	280	119	161
v/c Ratio	0.38	0.73	0.37	0.17	0.57	0.46	0.50	0.33
Control Delay	44.2	27.7	43.8	16.3	39.5	23.7	41.6	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	27.7	43.8	16.3	39.5	23.7	41.6	33.4
Queue Length 50th (ft)	30	215	27	26	75	46	60	39
Queue Length 95th (ft)	78	#442	72	66	151	91	135	79
Internal Link Dist (ft)		622		310		636		281
Turn Bay Length (ft)			300				150	
Base Capacity (vph)	406	1340	450	1353	473	946	477	983
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.73	0.13	0.15	0.35	0.30	0.25	0.16

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	73	93	5	43	71	82	3	156	95	97
v/c Ratio	0.39	0.06	0.01	0.29	0.06	0.13	0.03	0.45	0.33	0.27
Control Delay	40.8	16.8	0.0	40.1	17.4	1.0	39.0	27.0	37.3	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	16.8	0.0	40.1	17.4	1.0	39.0	27.0	37.3	24.0
Queue Length 50th (ft)	32	13	0	19	10	0	1	27	21	34
Queue Length 95th (ft)	87	39	0	59	32	5	11	59	53	87
Internal Link Dist (ft)		312			1908			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	253	1450	722	213	1210	616	296	875	504	470
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.01	0.20	0.06	0.13	0.01	0.18	0.19	0.21

Intersection Summary



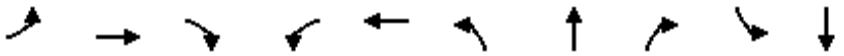
Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	154	103	67	190
v/c Ratio	0.08	0.11	0.16	0.07
Control Delay	3.4	1.2	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	1.2	18.9	0.1
Queue Length 50th (ft)	6	0	8	0
Queue Length 95th (ft)	13	10	22	0
Internal Link Dist (ft)	1908			285
Turn Bay Length (ft)		260		
Base Capacity (vph)	1981	912	1575	2674
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.04	0.07

Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	67	93	177	82	352	96	86
v/c Ratio	0.18	0.07	0.20	0.27	0.54	0.27	0.14
Control Delay	33.1	12.7	11.9	30.6	28.2	32.9	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	12.7	11.9	30.6	28.2	32.9	6.4
Queue Length 50th (ft)	23	11	13	31	65	34	0
Queue Length 95th (ft)	90	30	43	105	165	117	18
Internal Link Dist (ft)		285	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	628	2769	1725	665	1367	508	870
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	0.11	0.03	0.10	0.12	0.26	0.19	0.10

Intersection Summary



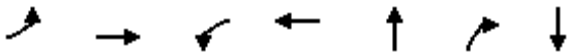
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	629	120	52	429	64	65	104	17	19
v/c Ratio	0.12	0.81	0.28	0.25	0.44	0.08	0.09	0.13	0.19	0.03
Control Delay	41.8	38.1	7.4	39.9	23.2	16.2	16.2	3.8	46.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	38.1	7.4	39.9	23.2	16.2	16.2	3.8	46.9	0.1
Queue Length 50th (ft)	8	173	0	27	86	21	22	0	9	0
Queue Length 95th (ft)	29	234	41	65	148	52	53	27	31	0
Internal Link Dist (ft)		503			2174		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	324	1854	873	386	1953	757	759	771	88	635
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.34	0.14	0.13	0.22	0.08	0.09	0.13	0.19	0.03

Intersection Summary



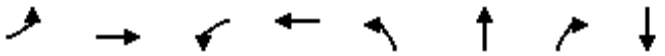
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	179	595	76	447	142	48	382	117	212
v/c Ratio	0.63	0.56	0.41	0.56	0.30	0.23	0.63	0.53	0.47
Control Delay	33.8	20.2	33.1	23.9	6.0	28.6	13.4	33.9	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	20.2	33.1	23.9	6.0	28.6	13.4	33.9	26.6
Queue Length 50th (ft)	53	83	23	65	0	14	16	38	32
Queue Length 95th (ft)	134	173	73	145	37	50	63	107	80
Internal Link Dist (ft)		2174		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	928	2576	460	1717	844	421	957	552	1122
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.23	0.17	0.26	0.17	0.11	0.40	0.21	0.19

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	334	171	315	34	98	35
v/c Ratio	0.04	0.24	0.42	0.22	0.05	0.14	0.05
Control Delay	12.8	13.8	15.6	11.6	12.7	3.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	13.8	15.6	11.6	12.7	3.5	9.5
Queue Length 50th (ft)	4	51	39	35	9	0	6
Queue Length 95th (ft)	15	77	74	60	25	25	22
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	396	1371	409	1443	723	715	709
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	0.04	0.24	0.42	0.22	0.05	0.14	0.05

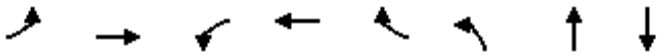
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	9	69	343	123	37	99	623	190
v/c Ratio	0.02	0.11	0.49	0.19	0.19	0.20	0.57	0.24
Control Delay	24.3	15.9	27.0	10.8	32.6	20.2	3.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	15.9	27.0	10.8	32.6	20.2	3.5	22.2
Queue Length 50th (ft)	2	16	50	13	11	26	0	24
Queue Length 95th (ft)	17	45	#173	75	49	82	55	76
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	469	1292	699	962	197	1240	1085	1737
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.49	0.13	0.19	0.08	0.57	0.11

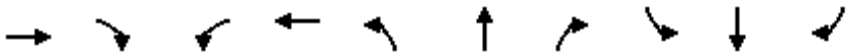
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	31	416	66	413	55	23	140	164
v/c Ratio	0.08	0.24	0.14	0.43	0.07	0.06	0.12	0.16
Control Delay	4.7	3.8	9.8	12.3	2.8	17.9	11.8	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	3.8	9.8	12.3	2.8	17.9	11.8	13.4
Queue Length 50th (ft)	3	14	15	113	0	8	15	21
Queue Length 95th (ft)	9	30	35	177	15	23	34	42
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	411	1754	479	967	832	398	1132	1002
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.24	0.14	0.43	0.07	0.06	0.12	0.16

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	578	89	154	280	210	113	194	66	84	23
v/c Ratio	0.70	0.19	1.44	0.26	0.66	0.34	0.46	0.26	0.32	0.07
Control Delay	27.6	4.5	277.0	13.6	34.5	24.3	7.9	31.6	32.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	4.5	277.0	13.6	34.5	24.3	7.9	31.6	32.5	0.4
Queue Length 50th (ft)	115	0	~97	36	77	37	0	26	33	0
Queue Length 95th (ft)	188	24	#234	71	#169	89	49	65	79	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	1172	619	107	1347	443	466	508	629	662	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.14	1.44	0.21	0.47	0.24	0.38	0.10	0.13	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

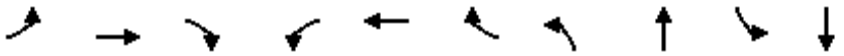
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	75	283	399	50	228
v/c Ratio	0.16	0.80	0.69	0.24	0.27
Control Delay	17.3	40.5	32.0	37.3	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	40.5	32.0	37.3	14.4
Queue Length 50th (ft)	24	121	95	22	33
Queue Length 95th (ft)	57	#274	160	63	63
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	774	576	915	209	1476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.49	0.44	0.24	0.15

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	202	28	85	203	396	12	303	117	81
v/c Ratio	0.89	0.23	0.06	0.55	0.24	0.62	0.12	0.70	0.42	0.23
Control Delay	90.4	20.9	0.2	52.9	21.2	7.6	43.4	31.1	42.0	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.4	20.9	0.2	52.9	21.2	7.6	43.4	31.1	42.0	21.8
Queue Length 50th (ft)	~78	38	0	43	37	0	6	54	30	26
Queue Length 95th (ft)	#232	81	0	#117	80	84	25	104	63	72
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	159	877	473	187	947	661	261	800	430	429
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.23	0.06	0.45	0.21	0.60	0.05	0.38	0.27	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	149	283	169	688
v/c Ratio	0.11	0.39	0.37	0.28
Control Delay	3.9	2.4	20.0	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.9	2.4	20.0	0.3
Queue Length 50th (ft)	6	0	22	0
Queue Length 95th (ft)	16	21	44	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1397	724	1435	2439
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.39	0.12	0.28

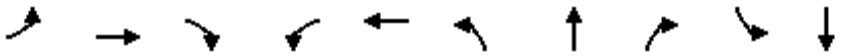
Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	103	51	296	220	433	64	272
v/c Ratio	0.50	0.06	0.42	0.71	0.68	0.29	0.47
Control Delay	45.4	14.3	24.0	44.5	33.3	40.6	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.4	14.3	24.0	44.5	33.3	40.6	8.5
Queue Length 50th (ft)	46	7	54	98	89	28	0
Queue Length 95th (ft)	135	18	103	#352	#262	91	43
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	306	1677	1320	383	786	316	703
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	0.34	0.03	0.22	0.57	0.55	0.20	0.39

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	12	112	33	163	688	132	131	155	25	3
v/c Ratio	0.10	0.22	0.11	0.67	0.62	0.20	0.20	0.22	0.40	0.01
Control Delay	39.6	31.1	0.7	46.9	25.3	15.5	15.5	3.9	60.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	31.1	0.7	46.9	25.3	15.5	15.5	3.9	60.0	0.0
Queue Length 50th (ft)	6	26	0	78	148	38	38	0	12	0
Queue Length 95th (ft)	25	52	0	152	243	97	96	37	#51	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	285	1670	795	361	1869	649	653	693	62	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.04	0.45	0.37	0.20	0.20	0.22	0.40	0.01

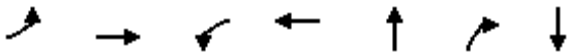
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	108	230	122	573	206	76	299	76	286
v/c Ratio	0.52	0.29	0.51	0.63	0.37	0.36	0.56	0.39	0.57
Control Delay	34.8	13.8	33.7	23.5	5.9	30.5	16.3	31.6	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	13.8	33.7	23.5	5.9	30.5	16.3	31.6	17.1
Queue Length 50th (ft)	31	19	35	83	0	22	18	24	20
Queue Length 95th (ft)	98	59	107	188	49	75	68	82	71
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	765	2035	470	1743	877	382	822	468	998
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.11	0.26	0.33	0.23	0.20	0.36	0.16	0.29

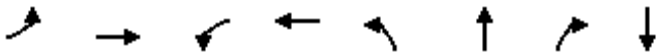
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	26	760	89	400	109	579	49
v/c Ratio	0.07	0.52	0.41	0.27	0.14	0.77	0.07
Control Delay	13.3	17.3	17.6	10.9	13.6	24.3	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.4	0.0
Total Delay	13.3	17.3	17.6	10.9	13.6	43.7	9.5
Queue Length 50th (ft)	7	136	21	47	31	201	9
Queue Length 95th (ft)	21	187	44	68	60	#354	27
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	366	1449	215	1478	783	749	696
Starvation Cap Reductn	0	0	0	0	0	173	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	0.07	0.52	0.41	0.27	0.14	1.01	0.07

Intersection Summary

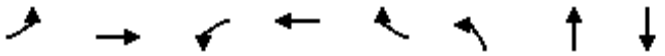
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	88	214	388	206	36	578	1022	128
v/c Ratio	0.27	0.45	0.73	0.40	0.26	0.81	0.94	0.13
Control Delay	33.9	27.9	42.6	27.0	43.2	32.6	25.1	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	27.9	42.6	27.0	43.2	32.6	25.1	15.9
Queue Length 50th (ft)	35	86	87	83	16	219	152	15
Queue Length 95th (ft)	99	155	#219	152	55	#523	#439	45
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	329	909	534	815	141	892	1085	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.24	0.73	0.25	0.26	0.65	0.94	0.12

Intersection Summary

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

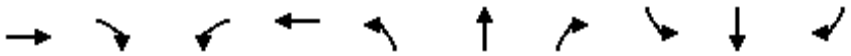


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	57	1292	63	393	67	27	286	326
v/c Ratio	0.13	0.70	0.50	0.39	0.08	0.08	0.25	0.34
Control Delay	7.9	12.8	28.0	11.8	2.6	18.3	15.6	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	12.8	28.0	11.8	2.6	18.3	15.6	17.9
Queue Length 50th (ft)	12	163	18	104	0	9	42	54
Queue Length 95th (ft)	m18	198	#76	164	16	26	71	87
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	443	1848	127	1004	860	333	1165	951
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.70	0.50	0.39	0.08	0.08	0.25	0.34

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.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1099	110	70	374	255	203	114	172	117	8
v/c Ratio	1.12	0.20	0.69	0.29	0.70	0.53	0.28	0.57	0.37	0.02
Control Delay	97.8	6.4	73.4	15.6	37.7	31.0	7.2	37.0	31.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.8	6.4	73.4	15.6	37.7	31.0	7.2	37.0	31.6	0.1
Queue Length 50th (ft)	~319	0	33	54	107	81	0	74	49	0
Queue Length 95th (ft)	#537	38	#114	108	202	158	39	141	100	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	977	559	101	1290	493	519	510	546	575	552
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.20	0.69	0.29	0.52	0.39	0.22	0.32	0.20	0.01

Intersection Summary

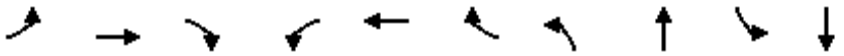
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	170	328	429	68	183
v/c Ratio	0.32	0.72	0.62	0.25	0.16
Control Delay	18.7	29.9	27.5	33.2	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	29.9	27.5	33.2	12.2
Queue Length 50th (ft)	53	122	86	25	20
Queue Length 95th (ft)	113	248	164	78	50
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	930	801	1120	277	1959
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.41	0.38	0.25	0.09

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	82	93	5	51	91	85	3	169	95	117
v/c Ratio	0.42	0.07	0.01	0.33	0.08	0.15	0.03	0.47	0.33	0.33
Control Delay	41.6	17.1	0.0	41.1	18.5	1.3	39.3	28.0	37.6	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	17.1	0.0	41.1	18.5	1.3	39.3	28.0	37.6	24.2
Queue Length 50th (ft)	37	13	0	23	13	0	1	31	21	40
Queue Length 95th (ft)	96	39	0	67	39	7	11	65	53	101
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	256	1427	713	216	1132	585	300	888	511	475
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.07	0.01	0.24	0.08	0.15	0.01	0.19	0.19	0.25

Intersection Summary



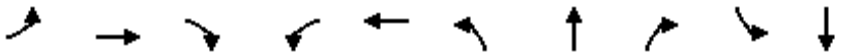
Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	155	140	67	220
v/c Ratio	0.08	0.15	0.16	0.08
Control Delay	3.4	1.2	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	1.2	18.9	0.1
Queue Length 50th (ft)	6	0	8	0
Queue Length 95th (ft)	13	12	22	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1981	936	1575	2674
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.15	0.04	0.08

Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	68	93	177	108	355	96	87
v/c Ratio	0.18	0.07	0.20	0.35	0.55	0.27	0.14
Control Delay	33.2	12.8	11.9	31.9	28.3	33.0	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	12.8	11.9	31.9	28.3	33.0	6.7
Queue Length 50th (ft)	24	11	13	42	66	34	0
Queue Length 95th (ft)	92	30	43	134	168	117	19
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	626	2767	1723	663	1361	507	868
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	0.11	0.03	0.10	0.16	0.26	0.19	0.10

Intersection Summary



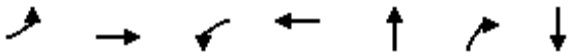
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	629	120	65	429	64	65	121	17	19
v/c Ratio	0.12	0.84	0.28	0.33	0.40	0.09	0.09	0.16	0.20	0.03
Control Delay	42.1	41.6	7.4	42.0	22.2	16.8	16.8	4.4	47.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	41.6	7.4	42.0	22.2	16.8	16.8	4.4	47.5	0.1
Queue Length 50th (ft)	8	173	0	33	86	21	22	0	9	0
Queue Length 95th (ft)	30	236	41	77	148	53	53	34	32	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	309	1771	839	369	1866	723	725	745	84	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.36	0.14	0.18	0.23	0.09	0.09	0.16	0.20	0.03

Intersection Summary



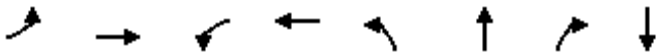
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	196	595	76	447	142	48	383	117	226
v/c Ratio	0.66	0.55	0.41	0.57	0.30	0.24	0.63	0.53	0.50
Control Delay	34.6	19.9	33.8	24.5	6.1	29.3	13.7	34.7	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	19.9	33.8	24.5	6.1	29.3	13.7	34.7	27.0
Queue Length 50th (ft)	58	83	23	66	0	14	16	38	35
Queue Length 95th (ft)	147	173	74	148	38	52	65	110	85
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	917	2545	454	1696	836	416	950	546	1105
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.23	0.17	0.26	0.17	0.12	0.40	0.21	0.20

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	331	171	309	34	98	32
v/c Ratio	0.04	0.24	0.42	0.21	0.05	0.14	0.04
Control Delay	12.8	13.8	15.6	11.7	12.7	3.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	13.8	15.6	11.7	12.7	3.5	9.2
Queue Length 50th (ft)	4	50	39	34	9	0	5
Queue Length 95th (ft)	15	77	73	58	25	25	20
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	400	1371	411	1445	723	715	714
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	0.04	0.24	0.42	0.21	0.05	0.14	0.04

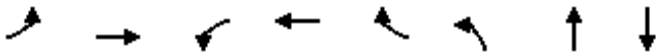
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	9	69	313	123	37	99	597	190
v/c Ratio	0.02	0.11	0.45	0.19	0.19	0.20	0.56	0.24
Control Delay	24.3	15.9	26.3	10.8	32.6	20.2	3.4	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	15.9	26.3	10.8	32.6	20.2	3.4	22.2
Queue Length 50th (ft)	2	16	44	13	11	26	0	24
Queue Length 95th (ft)	17	45	#153	75	49	82	55	76
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	469	1292	699	962	197	1240	1075	1737
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.45	0.13	0.19	0.08	0.56	0.11

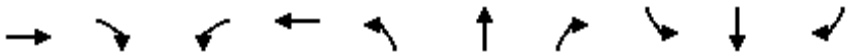
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	31	411	53	413	55	17	106	147
v/c Ratio	0.08	0.23	0.11	0.43	0.07	0.04	0.09	0.15
Control Delay	4.7	3.8	9.4	12.3	2.8	17.6	12.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	3.8	9.4	12.3	2.8	17.6	12.4	12.8
Queue Length 50th (ft)	2	14	12	113	0	6	12	17
Queue Length 95th (ft)	9	30	29	177	15	19	28	37
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	411	1755	482	967	832	405	1127	997
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.23	0.11	0.43	0.07	0.04	0.09	0.15

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	578	63	128	280	180	73	164	66	49	23
v/c Ratio	0.69	0.13	1.13	0.26	0.62	0.24	0.43	0.26	0.18	0.07
Control Delay	25.9	2.0	164.5	12.5	32.7	22.5	8.1	30.8	29.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	2.0	164.5	12.5	32.7	22.5	8.1	30.8	29.6	0.4
Queue Length 50th (ft)	102	0	~63	31	61	22	0	23	17	0
Queue Length 95th (ft)	184	10	#196	69	138	60	44	65	52	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	1238	648	113	1422	468	493	508	665	700	659
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.10	1.13	0.20	0.38	0.15	0.32	0.10	0.07	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

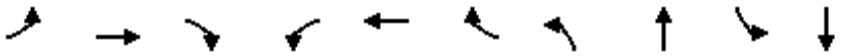
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	75	283	299	50	140
v/c Ratio	0.16	0.79	0.56	0.23	0.17
Control Delay	15.8	37.7	29.5	35.0	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	37.7	29.5	35.0	14.0
Queue Length 50th (ft)	21	109	64	20	18
Queue Length 95th (ft)	54	#265	118	62	41
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	805	599	943	218	1505
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.47	0.32	0.23	0.09

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	155	233	28	105	238	403	12	340	125	96
v/c Ratio	1.10	0.31	0.07	0.70	0.28	0.63	0.14	0.77	0.48	0.26
Control Delay	144.5	23.0	0.3	63.9	22.5	7.8	44.5	32.3	43.5	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	144.5	23.0	0.3	63.9	22.5	7.8	44.5	32.3	43.5	20.1
Queue Length 50th (ft)	~98	46	0	55	47	0	6	56	33	28
Queue Length 95th (ft)	#255	95	0	#154	94	88	25	110	67	79
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	141	755	427	166	857	640	232	738	382	393
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.31	0.07	0.63	0.28	0.63	0.05	0.46	0.33	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	178	324	169	750
v/c Ratio	0.13	0.44	0.39	0.31
Control Delay	4.3	2.8	21.1	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.3	2.8	21.1	0.3
Queue Length 50th (ft)	8	0	23	0
Queue Length 95th (ft)	20	24	45	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1367	730	1402	2439
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.44	0.12	0.31

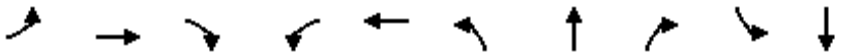
Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	132	51	296	229	460	64	298
v/c Ratio	0.67	0.05	0.47	0.77	0.74	0.33	0.53
Control Delay	54.4	14.7	26.5	49.9	37.8	43.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	14.7	26.5	49.9	37.8	43.0	8.9
Queue Length 50th (ft)	63	8	58	109	103	29	0
Queue Length 95th (ft)	#189	19	104	#375	#296	92	45
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	271	1514	1168	334	686	279	674
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	0.49	0.03	0.25	0.69	0.67	0.23	0.44

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	12	112	41	181	688	137	136	175	25	3
v/c Ratio	0.10	0.25	0.14	0.73	0.65	0.22	0.21	0.25	0.42	0.01
Control Delay	40.3	33.2	1.0	50.5	26.8	16.3	16.2	4.0	63.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	33.2	1.0	50.5	26.8	16.3	16.2	4.0	63.6	0.0
Queue Length 50th (ft)	6	27	0	88	153	43	42	0	12	0
Queue Length 95th (ft)	25	54	0	168	250	102	101	40	#53	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	279	1599	765	354	1793	634	637	691	59	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.05	0.51	0.38	0.22	0.21	0.25	0.42	0.01

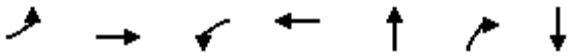
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	230	122	573	206	76	328	76	330
v/c Ratio	0.59	0.31	0.54	0.65	0.38	0.40	0.66	0.43	0.68
Control Delay	38.8	15.0	37.4	26.0	6.3	34.7	21.0	35.9	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	15.0	37.4	26.0	6.3	34.7	21.0	35.9	21.3
Queue Length 50th (ft)	40	21	39	92	0	24	26	26	26
Queue Length 95th (ft)	120	64	116	206	51	81	85	89	90
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	729	1920	445	1662	846	340	756	426	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.12	0.27	0.34	0.24	0.22	0.43	0.18	0.35

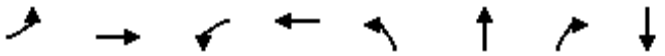
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	26	758	89	394	109	579	47
v/c Ratio	0.07	0.52	0.41	0.27	0.14	0.77	0.07
Control Delay	13.3	17.3	17.5	11.0	13.6	24.3	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.4	0.0
Total Delay	13.3	17.3	17.5	11.0	13.6	43.7	9.3
Queue Length 50th (ft)	7	136	21	46	31	201	8
Queue Length 95th (ft)	21	187	44	67	60	#354	27
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	369	1449	216	1479	783	749	701
Starvation Cap Reductn	0	0	0	0	0	173	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	0.07	0.52	0.41	0.27	0.14	1.01	0.07

Intersection Summary

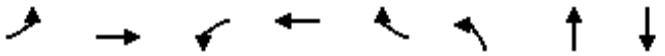
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	88	214	356	206	36	578	1003	128
v/c Ratio	0.27	0.45	0.67	0.40	0.26	0.81	0.92	0.13
Control Delay	33.9	27.9	40.3	27.0	43.2	32.6	22.6	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	27.9	40.3	27.0	43.2	32.6	22.6	15.9
Queue Length 50th (ft)	35	86	79	83	16	219	140	15
Queue Length 95th (ft)	99	155	#194	152	55	#523	#596	45
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	329	909	534	815	141	892	1085	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.24	0.67	0.25	0.26	0.65	0.92	0.12

Intersection Summary

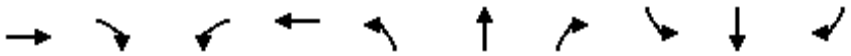
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	57	1288	53	393	67	21	249	314
v/c Ratio	0.13	0.70	0.41	0.39	0.08	0.06	0.21	0.33
Control Delay	7.9	12.8	22.8	11.8	2.6	18.0	14.8	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	12.8	22.8	11.8	2.6	18.0	14.8	17.5
Queue Length 50th (ft)	12	162	14	104	0	7	35	50
Queue Length 95th (ft)	m18	196	51	164	16	22	61	83
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	443	1848	128	1004	860	340	1165	960
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.70	0.41	0.39	0.08	0.06	0.21	0.33

Intersection Summary

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1099	91	51	374	223	160	82	172	91	8
v/c Ratio	1.02	0.15	0.46	0.31	0.62	0.43	0.21	0.53	0.27	0.02
Control Delay	61.0	4.6	51.2	15.4	34.0	28.3	4.4	34.2	28.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	4.6	51.2	15.4	34.0	28.3	4.4	34.2	28.7	0.1
Queue Length 50th (ft)	~304	0	23	52	91	62	0	72	36	0
Queue Length 95th (ft)	#536	27	#81	108	175	126	21	141	81	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	1077	604	112	1418	542	571	546	600	633	597
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.15	0.46	0.26	0.41	0.28	0.15	0.29	0.14	0.01

Intersection Summary

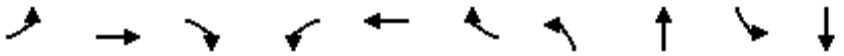
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	170	328	321	68	119
v/c Ratio	0.32	0.71	0.53	0.23	0.11
Control Delay	17.1	27.3	26.5	30.6	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	27.3	26.5	30.6	12.1
Queue Length 50th (ft)	48	112	60	23	12
Queue Length 95th (ft)	105	229	123	74	35
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	978	844	1153	291	2017
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.28	0.23	0.06

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	96	126	5	65	116	90	3	212	103	124
v/c Ratio	0.49	0.09	0.01	0.41	0.10	0.16	0.03	0.55	0.35	0.35
Control Delay	44.6	18.4	0.0	44.1	19.0	1.6	40.3	26.9	39.0	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	18.4	0.0	44.1	19.0	1.6	40.3	26.9	39.0	24.7
Queue Length 50th (ft)	44	19	0	30	18	0	1	34	24	43
Queue Length 95th (ft)	110	51	0	82	48	10	11	72	57	105
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	249	1336	677	211	1113	578	292	869	497	467
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.09	0.01	0.31	0.10	0.16	0.01	0.24	0.21	0.27

Intersection Summary



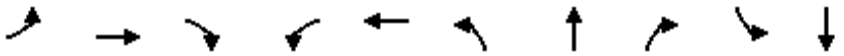
Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	187	183	67	264
v/c Ratio	0.09	0.19	0.16	0.10
Control Delay	3.4	1.2	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.4	1.2	18.9	0.1
Queue Length 50th (ft)	8	0	8	0
Queue Length 95th (ft)	15	14	22	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1981	951	1575	2674
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.09	0.19	0.04	0.10

Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	100	93	177	131	358	96	106
v/c Ratio	0.27	0.06	0.21	0.44	0.57	0.29	0.18
Control Delay	34.8	12.5	12.7	35.4	30.4	35.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	12.5	12.7	35.4	30.4	35.0	8.9
Queue Length 50th (ft)	36	11	13	52	67	34	0
Queue Length 95th (ft)	126	31	45	164	176	122	27
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	587	2655	1623	622	1279	476	822
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	0.17	0.04	0.11	0.21	0.28	0.20	0.13

Intersection Summary



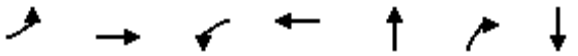
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	629	126	78	429	69	71	143	17	19
v/c Ratio	0.12	0.84	0.29	0.39	0.40	0.10	0.10	0.19	0.20	0.03
Control Delay	42.4	41.7	7.4	43.3	22.1	17.1	17.1	4.2	47.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	41.7	7.4	43.3	22.1	17.1	17.1	4.2	47.8	0.1
Queue Length 50th (ft)	8	173	0	40	86	23	24	0	9	0
Queue Length 95th (ft)	30	239	42	90	147	57	60	37	32	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	309	1767	840	368	1861	721	723	755	84	620
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.36	0.15	0.21	0.23	0.10	0.10	0.19	0.20	0.03

Intersection Summary



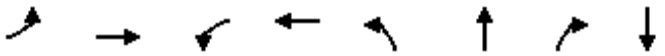
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	218	595	76	447	142	48	415	126	249
v/c Ratio	0.69	0.53	0.42	0.58	0.31	0.23	0.67	0.57	0.54
Control Delay	36.0	20.1	36.1	26.1	6.3	30.4	16.1	37.2	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	20.1	36.1	26.1	6.3	30.4	16.1	37.2	28.3
Queue Length 50th (ft)	67	85	24	70	0	15	22	42	39
Queue Length 95th (ft)	171	183	79	161	39	54	80	125	97
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	885	2456	438	1636	812	401	932	527	1069
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.24	0.17	0.27	0.17	0.12	0.45	0.24	0.23

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	16	329	171	303	34	98	30
v/c Ratio	0.04	0.24	0.41	0.21	0.05	0.14	0.04
Control Delay	12.8	13.8	15.6	11.7	12.7	3.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	13.8	15.6	11.7	12.7	3.5	9.1
Queue Length 50th (ft)	4	50	38	33	9	0	5
Queue Length 95th (ft)	15	76	72	57	25	25	19
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	404	1371	413	1447	723	715	719
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	0.04	0.24	0.41	0.21	0.05	0.14	0.04

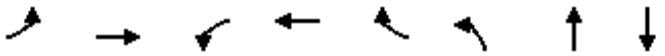
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	9	69	283	123	37	99	570	190
v/c Ratio	0.02	0.11	0.40	0.19	0.19	0.20	0.54	0.24
Control Delay	24.3	15.9	25.5	10.8	32.6	20.2	3.3	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	15.9	25.5	10.8	32.6	20.2	3.3	22.2
Queue Length 50th (ft)	2	16	40	13	11	26	0	24
Queue Length 95th (ft)	17	45	#132	75	49	82	54	76
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	469	1292	699	962	197	1240	1063	1737
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.40	0.13	0.19	0.08	0.54	0.11

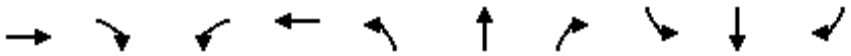
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	31	405	39	413	55	11	72	130
v/c Ratio	0.08	0.23	0.08	0.43	0.07	0.03	0.06	0.13
Control Delay	4.6	3.8	9.1	12.3	2.8	17.5	13.4	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	3.8	9.1	12.3	2.8	17.5	13.4	12.2
Queue Length 50th (ft)	2	14	9	113	0	4	8	14
Queue Length 95th (ft)	9	29	23	177	15	14	22	33
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	411	1757	486	967	832	411	1127	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.23	0.08	0.43	0.07	0.03	0.06	0.13

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	578	36	101	280	150	33	134	66	13	23
v/c Ratio	0.63	0.07	0.92	0.24	0.56	0.12	0.40	0.27	0.05	0.07
Control Delay	23.7	0.3	106.2	11.9	31.0	20.9	8.4	29.8	27.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	0.3	106.2	11.9	31.0	20.9	8.4	29.8	27.4	0.4
Queue Length 50th (ft)	96	0	37	28	48	9	0	22	4	0
Queue Length 95th (ft)	184	0	#158	69	115	32	40	65	21	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	1204	633	110	1381	454	478	481	645	679	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.06	0.92	0.20	0.33	0.07	0.28	0.10	0.02	0.04

Intersection Summary

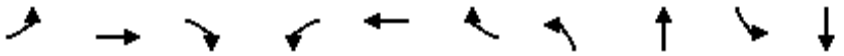
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	75	283	200	50	51
v/c Ratio	0.15	0.78	0.43	0.22	0.07
Control Delay	14.0	34.4	28.3	31.7	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	34.4	28.3	31.7	13.6
Queue Length 50th (ft)	19	98	39	18	6
Queue Length 95th (ft)	49	#238	82	58	18
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	838	624	957	227	1513
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.45	0.21	0.22	0.03

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	166	264	28	125	273	410	12	377	133	110
v/c Ratio	1.19	0.36	0.07	0.79	0.32	0.63	0.14	0.80	0.51	0.29
Control Delay	176.9	24.1	0.3	73.1	23.2	7.8	44.9	32.4	44.5	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.9	24.1	0.3	73.1	23.2	7.8	44.9	32.4	44.5	19.1
Queue Length 50th (ft)	~113	55	0	68	56	0	6	58	36	30
Queue Length 95th (ft)	#275	108	0	#191	107	90	25	116	70	85
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	139	741	422	164	864	647	227	743	375	396
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.36	0.07	0.76	0.32	0.63	0.05	0.51	0.35	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	208	365	169	812
v/c Ratio	0.15	0.49	0.39	0.33
Control Delay	4.4	3.2	21.1	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	3.2	21.1	0.4
Queue Length 50th (ft)	10	0	23	0
Queue Length 95th (ft)	23	26	45	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1367	745	1402	2439
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.49	0.12	0.33

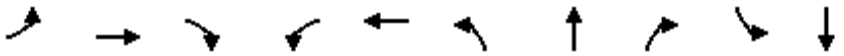
Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	162	51	296	244	481	64	324
v/c Ratio	0.76	0.05	0.48	0.79	0.76	0.34	0.57
Control Delay	59.8	14.5	27.8	52.8	39.4	44.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	14.5	27.8	52.8	39.4	44.7	9.2
Queue Length 50th (ft)	80	8	61	127	118	31	0
Queue Length 95th (ft)	#248	19	104	#407	#318	92	46
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	259	1445	1119	318	654	266	677
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	0.63	0.04	0.26	0.77	0.74	0.24	0.48

Intersection Summary

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



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	12	112	50	199	688	142	140	195	25	3
v/c Ratio	0.10	0.25	0.17	0.76	0.63	0.23	0.22	0.28	0.43	0.01
Control Delay	40.7	33.6	1.7	52.1	26.4	16.7	16.7	4.0	64.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	33.6	1.7	52.1	26.4	16.7	16.7	4.0	64.6	0.0
Queue Length 50th (ft)	6	27	0	98	153	46	45	0	13	0
Queue Length 95th (ft)	25	54	3	#196	250	105	104	42	#53	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	277	1583	759	351	1775	627	631	697	58	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.07	0.57	0.39	0.23	0.22	0.28	0.43	0.01

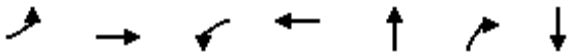
Intersection Summary

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



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	148	230	122	573	206	76	358	76	374
v/c Ratio	0.66	0.27	0.57	0.70	0.40	0.40	0.72	0.43	0.74
Control Delay	42.9	15.0	41.6	29.7	6.8	37.0	24.9	37.3	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	15.0	41.6	29.7	6.8	37.0	24.9	37.3	24.2
Queue Length 50th (ft)	52	23	43	103	0	26	34	28	35
Queue Length 95th (ft)	142	66	124	221	53	87	105	92	106
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	658	1772	401	1500	783	307	702	384	877
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.30	0.38	0.26	0.25	0.51	0.20	0.43

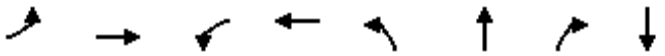
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	26	756	89	388	109	579	45
v/c Ratio	0.07	0.52	0.41	0.26	0.14	0.77	0.06
Control Delay	13.3	17.3	17.5	11.0	13.6	24.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	19.4	0.0
Total Delay	13.3	17.3	17.5	11.0	13.6	43.6	9.2
Queue Length 50th (ft)	7	136	21	45	31	201	8
Queue Length 95th (ft)	21	186	43	65	60	#352	25
Internal Link Dist (ft)		224		585	236		69
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	373	1449	216	1481	784	749	705
Starvation Cap Reductn	0	0	0	0	0	173	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	0.07	0.52	0.41	0.26	0.14	1.01	0.06

Intersection Summary

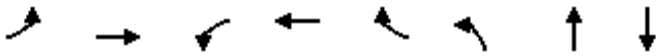
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	88	214	323	206	36	578	983	128
v/c Ratio	0.27	0.45	0.60	0.40	0.26	0.81	0.91	0.13
Control Delay	33.9	27.9	38.4	27.0	43.2	32.6	20.3	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	27.9	38.4	27.0	43.2	32.6	20.3	15.9
Queue Length 50th (ft)	35	86	71	83	16	219	128	15
Queue Length 95th (ft)	99	155	#169	152	55	#523	#569	45
Internal Link Dist (ft)		437		622		265		236
Turn Bay Length (ft)					220			
Base Capacity (vph)	329	909	534	815	141	892	1085	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.24	0.60	0.25	0.26	0.65	0.91	0.12

Intersection Summary

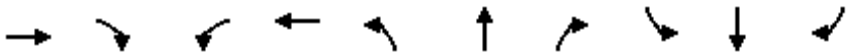
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	57	1284	43	393	67	14	213	301
v/c Ratio	0.13	0.69	0.33	0.39	0.08	0.04	0.18	0.31
Control Delay	7.8	12.7	18.8	11.8	2.6	17.7	13.9	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	12.7	18.8	11.8	2.6	17.7	13.9	17.0
Queue Length 50th (ft)	12	162	11	104	0	5	28	47
Queue Length 95th (ft)	m18	195	39	164	16	17	52	78
Internal Link Dist (ft)		585		1506			281	426
Turn Bay Length (ft)	160		150		100	75		
Base Capacity (vph)	443	1850	129	1004	860	348	1168	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.69	0.33	0.39	0.08	0.04	0.18	0.31

Intersection Summary

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



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1099	71	31	374	190	117	49	172	65	8
v/c Ratio	0.96	0.11	0.26	0.31	0.56	0.33	0.13	0.52	0.19	0.02
Control Delay	44.8	2.5	40.3	14.9	31.1	25.9	0.7	32.3	26.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	2.5	40.3	14.9	31.1	25.9	0.7	32.3	26.3	0.1
Queue Length 50th (ft)	197	0	11	47	62	36	0	57	20	0
Queue Length 95th (ft)	#528	15	44	106	147	94	1	142	62	0
Internal Link Dist (ft)	622			310		636			281	
Turn Bay Length (ft)			300				350	150		
Base Capacity (vph)	1143	633	118	1501	575	605	572	636	670	626
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.11	0.26	0.25	0.33	0.19	0.09	0.27	0.10	0.01

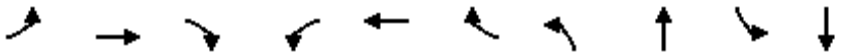
Intersection Summary

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



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	170	328	213	68	52
v/c Ratio	0.32	0.71	0.39	0.23	0.05
Control Delay	15.9	26.0	25.3	27.7	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	26.0	25.3	27.7	11.7
Queue Length 50th (ft)	46	106	36	21	5
Queue Length 95th (ft)	95	209	82	69	17
Internal Link Dist (ft)	367	898	318		636
Turn Bay Length (ft)				250	
Base Capacity (vph)	1013	873	1145	301	2027
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.38	0.19	0.23	0.03

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	110	160	5	80	143	95	3	255	112	132
v/c Ratio	0.54	0.12	0.01	0.49	0.13	0.17	0.03	0.61	0.38	0.37
Control Delay	47.4	18.8	0.0	47.1	19.4	2.0	40.7	25.8	39.8	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.4	18.8	0.0	47.1	19.4	2.0	40.7	25.8	39.8	24.1
Queue Length 50th (ft)	52	26	0	38	24	0	1	37	27	44
Queue Length 95th (ft)	#135	63	0	97	58	13	11	80	60	107
Internal Link Dist (ft)		312			1921			349		487
Turn Bay Length (ft)	110		280	80		270	300			
Base Capacity (vph)	246	1316	669	208	1100	573	288	869	492	466
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.12	0.01	0.38	0.13	0.17	0.01	0.29	0.23	0.28

Intersection Summary

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



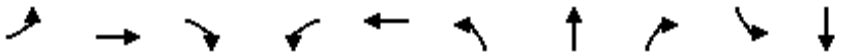
Lane Group	EBT	EBR	WBL	WBT
Lane Group Flow (vph)	219	228	67	312
v/c Ratio	0.11	0.24	0.16	0.12
Control Delay	3.5	1.3	18.9	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	3.5	1.3	18.9	0.1
Queue Length 50th (ft)	10	0	8	0
Queue Length 95th (ft)	18	15	22	0
Internal Link Dist (ft)	1921			273
Turn Bay Length (ft)		260		
Base Capacity (vph)	1981	967	1575	2674
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.24	0.04	0.12

Intersection Summary



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	132	93	177	156	360	96	125
v/c Ratio	0.44	0.06	0.25	0.60	0.65	0.36	0.24
Control Delay	37.5	12.6	13.0	41.0	33.7	37.4	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	12.6	13.0	41.0	33.7	37.4	8.8
Queue Length 50th (ft)	48	11	14	63	68	34	0
Queue Length 95th (ft)	161	31	47	201	184	126	31
Internal Link Dist (ft)		273	218		446		
Turn Bay Length (ft)				110		170	
Base Capacity (vph)	462	2564	1319	489	1011	374	683
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	0.29	0.04	0.13	0.32	0.36	0.26	0.18

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	629	133	92	429	74	76	164	17	19
v/c Ratio	0.12	0.84	0.31	0.45	0.39	0.10	0.11	0.21	0.20	0.03
Control Delay	42.9	41.9	7.4	44.9	21.9	17.5	17.5	4.1	48.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	41.9	7.4	44.9	21.9	17.5	17.5	4.1	48.3	0.1
Queue Length 50th (ft)	8	173	0	48	86	25	25	0	9	0
Queue Length 95th (ft)	30	243	43	103	147	63	65	40	32	0
Internal Link Dist (ft)		503			2173		560			336
Turn Bay Length (ft)	400			850		460			100	
Base Capacity (vph)	308	1762	842	367	1856	719	721	765	84	611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.36	0.16	0.25	0.23	0.10	0.11	0.21	0.20	0.03

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	239	595	76	447	142	48	447	136	272
v/c Ratio	0.72	0.52	0.43	0.59	0.31	0.22	0.71	0.60	0.57
Control Delay	37.9	20.6	38.6	28.0	6.6	31.2	18.2	39.6	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	20.6	38.6	28.0	6.6	31.2	18.2	39.6	29.5
Queue Length 50th (ft)	77	90	26	75	0	16	30	49	44
Queue Length 95th (ft)	196	191	84	171	40	56	95	140	110
Internal Link Dist (ft)		2173		725			735		443
Turn Bay Length (ft)	775		250		310	600		400	
Base Capacity (vph)	850	2361	421	1573	786	385	913	506	1030
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.18	0.28	0.18	0.12	0.49	0.27	0.26

Intersection Summary