



# SAN FRANCISCO PLANNING DEPARTMENT

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## Addendum to Environmental Impact Report

*Addendum Date:* February 22, 2016  
*Case No.:* **2007.0347E**  
*Project Title:* **Modified Long Term Improvement L-8 Golden Gate Avenue Bike Lanes and Road Diet**  
*EIR:* San Francisco Bicycle Plan Environmental Impact Report, State Clearinghouse No. 2008032052, Certified June 25, 2009  
*Project Sponsor:* Dan Provence, San Francisco Municipal Transportation Agency (415) 701-4448  
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### BACKGROUND

The project sponsor, the San Francisco Municipal Transportation Agency (SFMTA), proposes to implement a truncated segment of Long Term Improvement L-8 Golden Gate Avenue discussed in the *San Francisco Bicycle Plan Environmental Impact Report (Bicycle Plan EIR, Case No. 2007.0347E)*. The modified project includes changes to the public right-of-way on Golden Gate Avenue between Polk and Market Streets, which is a portion of the larger Golden Gate Avenue corridor (between Baker and Market Streets) analyzed in the *Bicycle Plan EIR*. The proposed project would connect bicycle facilities located on both Polk and Market Streets.<sup>1</sup> In addition, the proposed project aims to slow vehicle speeds and increase safety on an identified high injury corridor as part of SFMTA's Vision Zero<sup>2</sup> initiative.

The San Francisco Planning Commission certified the *Bicycle Plan EIR* on June 25, 2009. The motion to certify the EIR was appealed to the Board of Supervisors. On August 4, 2009 the Board of Supervisors reaffirmed the Planning Commission's certification of the EIR. Subsequently, the Board of Supervisors passed an ordinance adopting the 2009 San Francisco Bicycle Plan, which also amended the *San Francisco General Plan* in connection with the San Francisco Bicycle Plan; adopted environmental findings and findings that the General Plan amendment is consistent with the *General Plan* and eight priority policies of *Planning Code* Section 101.1; as well as authorized other acts in connection thereto.

### ORIGINAL PROJECT DESCRIPTION

The Original Project, Long Term Improvement L-8 Golden Gate Avenue, as described in the *Bicycle Plan EIR*, is summarized below. Specific design and striping details for Long Term Improvement L-8 were not included in the *Bicycle Plan EIR*.

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<sup>1</sup> San Francisco Municipal Transportation Agency. *Golden Gate Avenue Road Diet and Bike Lanes*. December 10, 2015. This memorandum is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400 as part of Case File No. 2007.0347E.

<sup>2</sup> Vision Zero is a road safety policy adopted by the SFMTA that aims to eliminate traffic injuries and deaths by 2024 through engineering, education, and enforcement.

Golden Gate Avenue between Baker and Market Streets is a low to moderate volume arterial that runs through the Civic Center and Western Addition neighborhood. This 19-block (1.7-mile) segment of Golden Gate Avenue is not currently part of the existing bicycle route network.

East of Divisadero Street, Golden Gate Avenue runs one-way eastbound with three travel lanes and parking on both sides of the street. The 16AX-Noriega "A" Express and 16BX-Noriega "B" Express Muni bus lines run on Golden Gate Avenue between Franklin and Market Street during the a.m. peak period (7:00 a.m. to 9:00 a.m.). Golden Gate Transit runs on Golden Gate Avenue between Webster and Hyde Street during the morning peak period.

Long-term improvements on this segment of Golden Gate Avenue would involve the installation of Class II or Class III bicycle facilities. These improvements would extend the existing Bicycle Route 20 on Golden Gate Avenue west of Baker Street to the east and consolidate east-west bicycle travel routes between the Civic Center area and the University of San Francisco. This improvement would create a couplet with the westbound bicycle lanes proposed on McAllister Street as part of near-term improvement Project 3.3: McAllister Street Bicycle Lane, from Market Street to Masonic Avenue. Design and implementation of long-term improvements on Golden Gate Avenue would include coordination with Golden Gate Transit to accommodate and minimize impacts on Golden Gate Transit bus operations.

The route would connect with north/south bicycle routes on Polk Street (existing Bicycle Route 345) and on Steiner Street (existing Bicycle Route 45). Also see near-term improvement Project 3.4: Polk Street Bicycle Lane, Market Street to McAllister Street, and near-term improvement Project 3-5: Scott Street Bicycle Lane, Fell Street to Oak Street. (*Bicycle Plan EIR* page V.A.5-8)

The *Bicycle Plan EIR* also analyzed the following general features for all of the proposed long-term improvement projects, including the Original Project (text reproduced from the EIR).

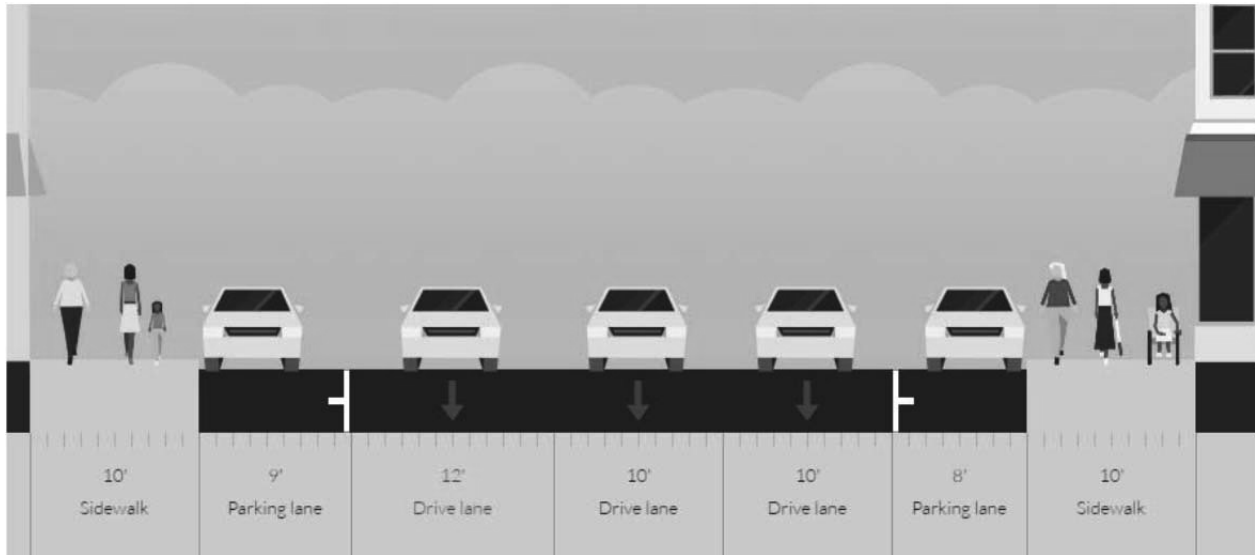
- Installation of bicycle lanes, pathways or other bicycle facilities, including those created in conjunction with the narrowing or removal of travel lanes;
- Signage changes;
- Pavement marking such as the installation of colored pavement materials and the installation of sharrows;
- Modifications to bus zones;
- Modifications to parking configurations such as changes to the location, configuration, and number of metered and unmetered parking spaces and loading zones;
- Changes to the locations and configurations of curb cuts sidewalks and medians;
- Widening of roadways;
- Reconfiguration of intersections to improve bicycle crossings, including installation of bicycle traffic signals;
- The installation of traffic calming devices, including designation of bicycle boulevards that prioritize bicycle travel over other transportation modes; and,
- Designation of shared bicycle and transit lanes. (*Bicycle Plan EIR* pages IV.B-51 and IV.B-52)

## PROPOSED REVISIONS TO PROJECT

Subsequent to adoption of the *Bicycle Plan EIR*, the design for pedestrian and bicycle facility improvements on Golden Gate Avenue between Polk and Market Streets was modified by the SFMTA. The Modified Project differs from the Original Project analyzed in the EIR as follows.

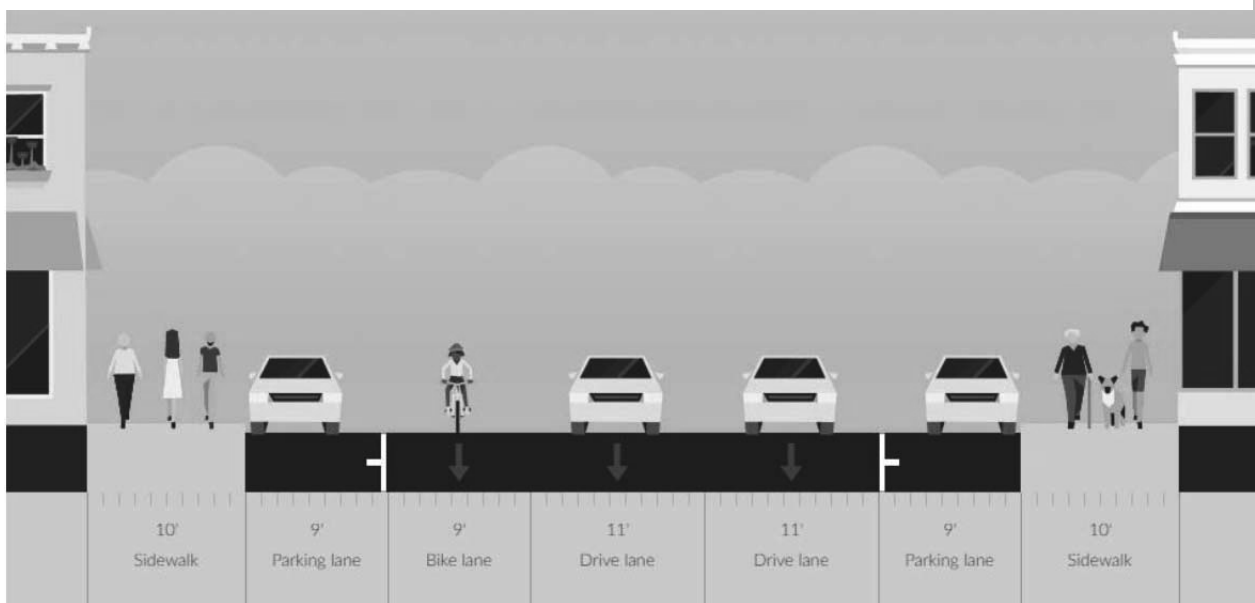
- 1) While the Modified Project is consistent with the Original Project in proposing Class II bicycle lanes along Golden Gate Avenue, the Modified Project proposes bicycle lanes for a truncated segment of Golden Gate Avenue between Polk and Market Streets (5 blocks). The Original Project included bicycle lanes on a longer segment of Golden Gate Avenue, between Baker and Market Streets (19 blocks).
- 2) The Modified Project includes the installation of a road diet on the proposed segment of Golden Gate Avenue. The road diet would include reduction of vehicle travel lanes and expansion of pedestrian facilities (see item 3 below). These were some of the general improvements analyzed for all of the Long-Term Improvement corridors in the *Bicycle Plan EIR* (narrowing or removal of travel lanes, reconfiguration of intersections, addition of pavement markings, and changes to the locations and configurations of sidewalks).
- 3) The Modified Project adds specificity (locations and approximate dimensions of the proposed facilities and improvements) to the Original Project, as illustrated in **Figure 1 - Existing Golden Gate Avenue Cross-Section Facing West** and **Figure 2 - Proposed Golden Gate Avenue Cross-Section Facing West** below, and **Attachment 2 – Proposed Roadway Striping**.
  - a. The proposed road diet would reduce the existing eastbound one-way Golden Gate Avenue roadway from three (3) vehicle travel lanes (varying in approximate width from 10-12 feet) to two (2) vehicle travel lanes (approximately 11 feet in width).
  - b. Existing nine-foot-wide curbside parking lanes would remain on both sides of the street.
  - c. A buffered bicycle lane (Class II) would be located between the curbside parking and the vehicle lanes along the southern edge of Golden Gate Avenue. The proposed Class II bicycle lane would measure approximately six feet wide, and would include a three-foot-wide painted buffer separating the facility from vehicle traffic.
  - d. Mixing zones—areas where bicycle traffic and vehicle traffic mix—would be installed to allow channelized vehicle right-turn movements from Golden Gate Avenue onto Hyde Street and Jones Street.
  - e. The southernmost vehicle travel lane on Golden Gate Avenue as it approaches Polk Street in the eastbound direction is currently a through-lane. It would be re-stripped as a right-turn-only lane onto Polk Street due to the elimination of this lane on Golden Gate Avenue east of Polk Street, as part of the proposed road diet.
  - f. The Modified Project includes pedestrian safety elements intended to further increase safety along the proposed corridor. High visibility continental crosswalks would be installed at all intersections on the corridor where they do not already exist. Additionally, painted pedestrian safety zones that increase pedestrian visibility would be installed at several intersections along the corridor, including:
    - Larkin/Golden Gate northwest corner;
    - Larkin/Golden Gate southeast corner;
    - Hyde/Golden Gate northeast corner;
    - Leavenworth/Golden Gate northwest corner;
    - Leavenworth/Golden Gate southeast corner; and
    - Jones/Golden Gate southwest corner.

Figure 1—Existing Golden Gate Avenue Cross-Section Facing West



Source: SFMTA, 2015. Graphic not to scale.

Figure 2 - Proposed Golden Gate Avenue Cross-Section Facing West



Source: SFMTA, 2015. Graphic not to scale.

## ANALYSIS OF POTENTIAL ENVIRONMENTAL EFFECTS

Section 31.19(c)(1) of the San Francisco Administrative Code states that a modified project must be reevaluated and that,

“If, on the basis of such reevaluation, the Environmental Review Officer determines, based on the requirements of CEQA, that no additional environmental review is necessary, this determination and the reasons therefore shall be noted in writing in the case record, and no further evaluation shall be required by this Chapter.”

CEQA Guidelines Section 15164 provides for the use of an addendum to document the basis of a lead agency’s decision not to require a Subsequent or Supplemental EIR for a project that is already adequately covered in an existing certified EIR. The lead agency’s decision to use an addendum must be supported by substantial evidence that the conditions that would trigger the preparation of a Subsequent EIR, as provided in CEQA Guidelines Section 15162, are not present. This Addendum documents the assessment and determination that the modified project is within the scope of the *Bicycle Plan EIR* and no additional environmental review is required.

The Initial Study and the EIR for the Bicycle Plan programmatically evaluated the potential impacts of construction and operation of the Original Project and found that, with implementation of mitigation measures, the Original Project would result in project-specific and cumulative significant and unavoidable operational impacts to traffic, transit, and loading. All other impacts of the Original Project were determined to be less than significant with mitigation incorporated as part of the overall Bicycle Plan program. The San Francisco Planning Commission certified the *Bicycle Plan EIR* on June 25, 2009. The motion to certify the EIR was appealed to the Board of Supervisors. On August 4, 2009 the Board of Supervisors reaffirmed the Planning Commission’s certification of the EIR and adopted a Statement of Overriding Considerations due to the Significant and Unavoidable Impacts identified in the EIR.

Since certification of the EIR, no substantial changes have occurred in the circumstances under which the project would be implemented. No substantial change in the severity of the project’s physical impacts as analyzed in the *Bicycle Plan EIR* would occur, and no new information has emerged that would materially change the analyses or conclusions set forth in the *Bicycle Plan EIR*.

Further, proposed modifications and design refinements to Bicycle Plan Long-Term Improvement L-8, as demonstrated below, would not result in any new significant environmental impacts, substantial increases in the severity of previously identified significant impacts, or necessitate implementation of additional or considerably different mitigation measures than those identified in the EIR. The effects of the Modified Project would be substantially the same as, and in some cases less severe than, those reported for the Original Project in the *Bicycle Plan EIR*. The following discussion provides the basis for this conclusion.

### *Traffic*

The Original Project analyzed in the *Bicycle Plan EIR* was evaluated qualitatively for level of service (LOS) as no specific designs had yet been identified for the purposes of quantitative analysis. The EIR’s qualitative analysis found that the Golden Gate Avenue project could result in a reduction in travel lanes and roadway capacity to accommodate bicycle lanes, thereby increasing traffic delays. The EIR therefore

concluded that traffic impacts resulting from Original Project would be significant and unavoidable in both the Existing-Plus-Project and Cumulative-Plus-Project scenarios.

The Modified Project proposes to change roadway capacity on Golden Gate Avenue between Polk and Market Streets, specifically by removing an eastbound travel lane between Polk Street and Market Street. The LOS for Existing, Existing-Plus-Project, Cumulative (year 2040), and Cumulative-Plus-Project conditions was determined for each study intersection along the project corridor, and is presented in **Table 1 – Level of Service Results** below.<sup>3</sup> The intersections potentially affected by the Modified Project include Golden Gate/Polk, Golden Gate/Larkin, Golden Gate/Hyde, Golden Gate, Leavenworth, Golden Gate/Jones, and Golden Gate/Market. The Cumulative analysis takes into account the proposed future roadway changes in the vicinity of the Golden Gate/Market intersection that would be made as part of the SFMTA Sixth Street Pedestrian Safety Project, which is currently undergoing environmental review.

TABLE 1: LEVEL OF SERVICE RESULTS GOLDEN GATE AVENUE INTERSECTIONS, PM PEAK HOUR				
Intersection	Existing Conditions LOS – Delay (v/c)		Cumulative (Year 2040) Conditions LOS – Delay (v/c)	
	No Project	Modified Project	No Project	Modified Project
Golden Gate / Polk	C – 20.8	C – 21.0	C – 24.2	C – 29.5
Golden Gate / Larkin	B – 11.0	B – 13.2	B – 12.4	B – 14.1
Golden Gate / Hyde	B – 11.6	B – 13.0	B – 18.5	C – 25.1
Golden Gate / Leavenworth	B – 15.7	B – 17.3	B – 17.8	C – 20.7
Golden Gate / Jones	C – 31.7	C – 32.2	C – 30.7	C – 33.1
Golden Gate / Market	C – 31.4	<b>F – 100+ (.88)</b>	<b>F – 100+ (1.04)</b>	<b>F – 100+ (1.18)</b>

LOS presented in average seconds of delay per vehicle. Signalized intersections operating at LOS F indicate delay greater than 80 seconds per vehicle, and unsignalized intersections operating at LOS F indicate delay greater than 50 seconds per vehicle.  
Delay is presented in seconds of average stopped delay per vehicle.  
V/C signifies the volume/capacity ratio, and is presented only for intersections operating at LOS E or F.  
**Bold text denotes unacceptable intersection operation.**  
Source: San Francisco Municipal Transportation Agency, 2015.

<sup>3</sup> San Francisco Municipal Transportation Agency. *Harrison Street Southbound Road Diet*. This memorandum is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400 as part of Case File No. 2008.1075E.

As illustrated in Table 1, the average vehicle delay would increase slightly at five of the six study intersections. The sixth intersection (Golden Gate Avenue and Market Street) would experience failing LOS in both the Existing-Plus-Project and Cumulative-Plus-Project scenarios.<sup>4</sup> Thus, the Modified Project would result in significant traffic impacts at the intersection of Golden Gate Avenue and Market Street under both the Existing-Plus-Project and Cumulative-Plus-Project scenarios. This conclusion is consistent with the analysis in the *Bicycle Plan EIR*, which found that the Original Project would result in significant and unavoidable traffic impacts for both existing and cumulative conditions along the proposed Long-Term Improvement corridors, including Golden Gate Avenue. Therefore, the Modified Project would not result in any new or more severe significant impacts than previously analyzed in the *Bicycle Plan EIR*.

Several Mitigation Measures identified in the *Bicycle Plan EIR* for the Long-Term Improvements pertain to the potential traffic impacts of the Modified Project. These measures would be applied to the Modified Project as follows:

- *M-TR-LT1.1 Signalize Intersection* – Not applicable: All intersections along the project corridor are already signalized.
- *M-TR-LT1.2 Signal Timing Changes* – Not feasible: This mitigation measure specifies that traffic signal timing should be modified to enhance vehicle throughput, as appropriate. However, one of the goals of the Modified Project is to calm traffic on a designated High Injury Corridor identified in SFMTA’s Vision Zero and WalkFirst programs. Implementing this mitigation measure would be contrary to project goals, SFMTA policy, and the City’s Vision Zero policy. This mitigation measure is therefore infeasible.
- *M-TR-LT1.3 Roadway Geometry Changes* – Applicable: SFMTA has incorporated this mitigation measures into the project design process, and has adjusted drawings as appropriate. The roadway geometry drawings shown in **Attachment 2 – Proposed Roadway Striping** reflect the change made in accordance with this mitigation measure.
- *M-TR-LT1.4 Floating Bicycle Lanes* – Not applicable: This mitigation measure defines floating bicycle lanes as bicycle lanes on streets with peak-hour tow-away zones, where the location of the bicycle lane shifts when tow-away zones are in effect. No peak hour tow away zones exist on the subject segment of Golden Gate Avenue. Therefore, this mitigation measure is not applicable to the Modified Project.
- *M-TR-LT1.5 Parking Elimination* – Not feasible: This mitigation measure specifies that curb parking should be removed to provide additional vehicle lane capacity. One of the goals of the Modified Project is to calm traffic on a designated High Injury Corridor identified in SFMTA’s Vision Zero and WalkFirst programs. Implementing this mitigation measure would be contrary to project goals, SFMTA policy, and the City’s Vision Zero policy. This mitigation measure is therefore infeasible.

As stated on page V.A.5-19 of the *Bicycle Plan EIR*, in some instances, street right-of-way geometry may not permit implementation of all traffic mitigation measures. The *Bicycle Plan EIR* therefore concluded

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<sup>4</sup> The intersection of Golden Gate Avenue and Market Street would operate at LOS F under year 2040 cumulative baseline conditions, and would continue to operate at LOS F with Modified Project implementation. Therefore, the Modified Project would not cause the year 2040 cumulative LOS rating to change. Since the Modified Project would increase the volume-to-capacity ratio by more than 10 percent in the year 2040 scenario, the Modified Project’s would make a cumulatively considerable contribution to a significant impact.

that the above Mitigation Measures may not reduce traffic impacts below the threshold of significance, resulting in traffic impacts that are significant and unavoidable with mitigation. This conclusion would also be true for the Modified Project, as it would result in significant traffic impacts and several of the traffic mitigation measures are not feasible or not applicable. Therefore, potential traffic impacts resulting from the Modified Project would not substantially differ from the traffic impacts analyzed in the *Bicycle Plan EIR*.

### *Transit*

According to the *Bicycle Plan EIR*, “the 16AX-Noriega “A” Express and 16BX-Noriega “B” Express Muni bus lines run on Golden Gate Avenue between Franklin and Market Street during the a.m. peak period. Golden Gate Transit runs on Golden Gate Avenue between Webster and Hyde Street during the a.m. peak period.” Subsequent to adoption of the EIR, the SFMTA approved the Transit Effectiveness Project (TEP) now called *Muni Forward*. This project was evaluated in the *Transit Effectiveness Project Environmental Impact Report*<sup>5</sup> (TEP EIR). Muni Forward includes transit service improvements, service-related capital improvements, and travel time reduction proposals. As part of Muni Forward, the 16AX-Noriega Express and 16BX-Noriega Express bus lines were rebranded as line 7X which currently traverses the project corridor during weekday morning commute periods (approximately 7:00 a.m. to 9:00 a.m.) in the inbound (eastbound) direction. Stops are located on Golden Gate Avenue near Polk Street, Hyde Street, and Jones Street. Golden Gate Transit Route 92 buses travel inbound on Golden Gate Avenue during weekday morning commute periods as well.

The Modified Project would reduce the one-way eastbound vehicle travel lanes on Golden Gate Avenue between Polk and Market Streets from three lanes to two in order to accommodate a buffered bike lane. As presented in the *Traffic* section, the Modified Project would result in degraded LOS at the intersection of Golden Gate Avenue and Market Street under both Existing-Plus-Project and Cumulative-Plus-Project conditions, which would be a significant traffic impact. These traffic impacts were analyzed further to determine how much project-related delay would result for transit vehicles on Golden Gate Avenue.

Though the Muni and Golden Gate Transit routes traverse Golden Gate Avenue in the morning, the PM Peak LOS Analysis presents the most conservative estimate of traffic delays that Golden Gate Avenue would experience at any time of day, including the mornings (SFMTA analysis shows that AM Peak and PM Peak traffic volumes along Golden Gate Avenue are similar, and that AM Peak traffic volumes do not exceed PM Peak traffic volumes, despite the one-way eastbound orientation of Golden Gate Avenue).<sup>6</sup> Thus, Muni Route 7X and Golden Gate Transit Route 92 would not experience new delays greater than 139.4 seconds in Existing-Plus-Project conditions and 263.2 seconds in Cumulative-Plus-Project conditions at Golden Gate Avenue and Market Street at any time of day, on weekdays or weekends. The actual delays for these routes would likely be less due to their a.m. peak period operation, when traffic volumes are typically lower than in the PM Peak period. Operational impacts on transit would be considered significant under Existing-Plus-Project conditions if a project would result in additional

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<sup>5</sup> San Francisco Planning Department. 2014. *Transit Effectiveness Project Final Environmental Impact Report*. This document is available online at <http://tepeir.sfplanning.org/>.

<sup>6</sup> San Francisco Municipal Transportation Agency. *Golden Gate Avenue Road Diet and Bike Lanes*. December 10, 2015. This memorandum is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400 as part of Case File No. 2007.0347E.



transit delay equal to or greater than the scheduled peak period headway, which is seven (7) minutes at time of issuance of this Addendum.<sup>7</sup> For Cumulative-Plus-Project conditions, operational transit impacts would be considered significant if transit delay is equal to or greater than six (6) minutes.<sup>8</sup> Golden Gate Transit Route 92 operates at one-hour headways during peak hours.<sup>9</sup> Though the Modified Project would increase transit delay in the Existing-Plus-Project and Cumulative-Plus-Project scenarios, the increase would be below the level of significance (one scheduled headway). Since transit vehicle delay at the Golden Gate Avenue and Market Street intersection would be below 420 seconds (seven minutes) for the Existing-Plus-Project scenario, and below 360 seconds (six minutes) for the Cumulative-Plus-Project scenario, the Modified Project would not result in significant increases in transit delay and the mitigation measures identified in the *Bicycle Plan EIR* would not apply.

The *Bicycle Plan EIR* evaluated transit impacts resulting from the Original Project, and found impacts to be significant and unavoidable in the Existing-Plus-Project and Cumulative-Plus-Project conditions due to increases in traffic-related transit delay longer than one scheduled headway. The EIR identified four mitigation measures related to transit, *Mitigation Measure M-TR-LT2.1 Transit Signal Priority, Mitigation Measure M-TR-LT2.2 Bicycle Facility Discontinuity, Mitigation Measure M-TR-LT2.3 Bus Stop Reconfiguration, and Mitigation Measure M-TR-LT2.4 Conversion of Parking to Travel Lane*. These mitigation measures are not applicable to the Modified Project because it would not cause significant impacts related to transit delay, as discussed above.

In light of the above, potential impacts resulting from the Modified Project would not be substantially more severe than the transit impacts analyzed in the *Bicycle Plan EIR*, and no new significant impacts would occur. No new mitigation measures would be required.

### ***Pedestrians***

The Original Project analyzed in the *Bicycle Plan EIR* was found to have no significant impacts on pedestrians because no sidewalk narrowing or median removal was proposed. The Modified Project would install continental crosswalks at all intersections on the project corridor, as well as painted pedestrian safety zones at certain intersection corners to improve pedestrian visibility. No further modifications to pedestrian facilities are proposed. Therefore, the Modified Project would not result in the overcrowding of sidewalks, create potentially hazardous conditions, or otherwise interfere with pedestrian accessibility. The Modified Project is located on Golden Gate Avenue between Polk and Market Streets, which has been identified by the SFMTA as part of the Vision Zero High Priority Network. The High Priority Network is a set of streets on which the SFMTA is prioritizing safety

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<sup>7</sup> SFMTA, *7X - Noriega Express : Inbound toward Downtown. Outbound toward Sunset District. Peak direction only*, January 13, 2016. Available online at: <http://transit.511.org/schedules/index.aspx#m1=S&m2=bus&routeid=51375&cid=SF>. Accessed on January 13, 2016. Seven minutes is the shortest time between any two scheduled runs, but the average peak period headway is approximately nine minutes.

<sup>8</sup> SFMTA is considering increasing service on line 7X in the future, causing buses to run more frequently during the a.m. peak period. In an effort to provide a conservative analysis, a six minute frequency is used for the future-year cumulative analysis.

<sup>9</sup> Golden Gate Transit, *92 - Manzanita Park & Ride - Marin City - Sausalito - San Francisco*, January 13, 2016. Available online at: <http://transit.511.org/schedules/index.aspx#m1=S&m2=bus&routeid=35389&dir=S &type=5693&cid=GG>. Accessed on January 13, 2016.

treatments. As such, elements proposed as part of the Modified Project—including the road diet, continental crosswalks, and painted safety zones—would increase safety on the subject Golden Gate Avenue corridor.

Therefore, the Modified Project would not result in any new or substantially more severe significant impacts, and no new mitigation measures would be required.

### *Bicycles*

The EIR found that long-term improvements would improve travel conditions and safety for bicyclists by addressing deficiencies and gaps within the bicycle route network. Long-term improvements were found to not result in significant bicycle impacts. The Modified Project is consistent with the Original Project, in that it proposes bicycle facilities improvements (Class II bicycle facilities) on Golden Gate Avenue to fill in bicycle route network gaps and connect existing bicycle routes on Market and Polk Streets. Furthermore, the Modified Project includes installation of 3-foot-wide painted buffers separating bicycle traffic from vehicle traffic, which would enhance the safety of bicyclists.

Therefore, potential impacts resulting from the Modified Project would not be substantially more severe than those analyzed in the *Bicycle Plan EIR*. No new significant impacts would occur, and no new mitigation measures would be required.

### *Loading*

The *Bicycle Plan EIR* found that the Original Project could result in significant and unavoidable impacts due to the potential removal of commercial and passenger curb loading areas and the inability to replace them elsewhere. The *Bicycle Plan EIR* identified two mitigation measures related to loading, *Mitigation Measure M-TR-LT3.1 Relocate Loading Zones* and *Mitigation Measure M-TR-LT3.2 Loading Management*. The *Bicycle Plan EIR* also identified two improvement measures related to the less-than-significant impacts of removing existing on-street loading spaces, *Improvement Measure I-TR-LT3.1 Convert Metered Parking to Yellow Commercial Freight Loading Zones* and *Mitigation Measure I-TR-LT3.2 Developing and Implementing Traffic Management Strategies*. The Modified Project would not remove any loading spaces, thus the mitigation measures and improvement measures identified in the *Bicycle Plan EIR* would not apply. Therefore, potential impacts resulting from the Modified Project would not be substantially worse than those studied in the *Bicycle Plan EIR*. No new significant impacts would occur, and no mitigation measures would be required.

### *Emergency Access*

The *Bicycle Plan EIR* evaluated the Original Project for potential impacts related to Emergency Access. Construction would comply with Public Works Code and Fire Code, and reconfiguration of features within the existing right-of-way would not affect existing emergency response or evacuation plans. The EIR therefore found impacts resulting from the Original Project to be less than significant with respect to emergency response.

The Modified Project would reduce the existing one-way eastbound travel lanes on Golden Gate Avenue from three lanes to two lanes, resulting in significant and unavoidable traffic impacts at the Golden Gate Avenue and Market Street intersection, as discussed in the *Traffic* section. The existing roadway network

in the project area enables emergency vehicle response to all locations along the Golden Gate Avenue project corridor. Emergency vehicles often identify and use multiple routes (dependent on time of day, traffic conditions, etc.) to travel to different parts of the City. Peak period traffic congestion generally does not result in substantial delay for emergency vehicles, which have right-of-way and often use multi-lane major arterials for access. Emergency vehicles are permitted to use transit-only lanes and other vehicle-restricted lanes, as needed. Regardless of the number of travel lanes on a street, all drivers must comply with the California Vehicle Code Section 21806, which requires that drivers yield right of way to authorized emergency vehicles and drive to the right road curb or edge, and to stop and remain stopped until the emergency vehicle has passed. The Modified Project would utilize roadway paint to modify the proposed roadway configuration, including buffered bike lanes and painted safety zones. None of these elements would introduce design features that would inhibit emergency access as emergency vehicles would be able to pass over these painted features as needed. The number of lanes on Golden Gate Avenue would be reduced from three lanes to two lanes, but no physical features would be introduced that would impede the movement of emergency vehicles. The Modified Project would not reduce the width of the roadway available to emergency vehicles. Therefore, potential impacts resulting from the Modified Project would not be more severe than the emergency access impacts analyzed in the *Bicycle Plan EIR*. The Modified Project also would not result in any new significant impacts, and no new mitigation measures would be required.

### *Parking*

The *Bicycle Plan EIR* analyzed changes in on-street parking supply resulting from implementation of the Original Project. The EIR found that implementation of the Original Project could reduce the number of on-street parking spaces, which could cause increased competition for on-street and off-street parking spaces. In San Francisco, parking supply is not considered a permanent physical condition, and changes in the parking supply would not be a significant environmental impact under CEQA but rather a social effect. The loss of parking may cause potential indirect physical effects which could include cars circling and looking for a parking space on neighboring streets. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to some drivers, aware of constrained parking conditions in a given area, shifting travel modes. Hence, any secondary environmental impacts that may result from a shortfall in parking would be minor. Thus, the *Bicycle Plan EIR* found any net reduction in on-street parking supply to not result in significant parking impacts.

The Modified Project would potentially remove approximately thirteen (13) on-street parking spaces along Golden Gate Avenue. In light of the information presented above, potential impacts resulting from the Modified Project would not substantially differ from the parking impacts analyzed in the *Bicycle Plan EIR*. No new or substantially more severe significant impacts would occur, and no mitigation measures would be required.

### *Air Quality*

The *Bicycle Plan EIR* (p. V.B, 22) found that implementation of the Original Project would not result in new vehicle trips being added to the roadway network. The EIR also found that, though vehicle lane removal would cause additional congestion at intersections, air pollutant levels would not exceed air quality thresholds. The EIR therefore found that the project would not have significant adverse air quality impacts.

The Modified Project would be constructed on Golden Gate Avenue between Polk and Market Streets, which is located in the Air Pollutant Exposure Zone as identified in San Francisco Health Code Article 38. Construction would occur over the course of approximately two (2) weeks. Given that the Modified Project consists of roadway painting, the project is not anticipated to generate substantial permanent additional emissions of air pollutants. No excavation is proposed. The construction activities performed as part of the proposed project would also be subject to the city's Clean Construction Ordinance,<sup>10</sup> which requires diesel vehicles to be fueled with B20 biodiesel and the use of equipment that meets USEPA Tier 2 standards or best available control technologies for equipment over 25 horsepower. The Modified Project would also be subject to the Construction Dust Control Ordinance<sup>11</sup>, which supersedes *Mitigation Measure 2: Construction-Related Air Quality* from the *Bicycle Plan Initial Study*. Thus, no significant air quality impacts would occur. Therefore, potential impacts resulting from the Modified Project would not substantially differ from the air quality impacts analyzed in the *Bicycle Plan EIR*. No new or substantially more severe significant impacts would occur, and no mitigation measures would be required.

### ***Other Environmental Topics***

As previously described, the Modified Project would include changes to the Original Project. The proposed changes in the Modified Project would not substantially alter the EIR analysis since the Modified Project's portion of construction duration and activities, as well as the project's operations, would be similar to the Original Project. The *Bicycle Plan EIR* determined that for the following topics, any environmental effects associated with the Program would either be insignificant or would be reduced to a less-than-significant level by implementation of the mitigation measures included in the EIR: land use, population and housing, noise, recreation, air quality (discussed previously), recreation, utilities and service systems, public services, biological resources<sup>12</sup>, geology and soils, hydrology and water quality, hazards and hazardous materials, mineral and energy resources, and agricultural resources. The proposed project modifications consist of 1) shortening the length of the proposed project, 2) restriping the Golden Gate Avenue roadway, and 3) adding specificity to the locations and dimensions of project features. These modifications would not cause substantial changes in the analysis or conclusions for the above-listed CEQA topics. The significance conclusions reached in the *Bicycle Plan EIR* remain applicable to the Modified Project and mitigation measures and improvement measures from the EIR and Initial Study would apply to the Modified Project as discussed above.

## **CONCLUSION**

Based on the foregoing, it is concluded that the analyses conducted and the conclusions reached in the final *Bicycle Plan EIR* certified on June 25, 2009 remain valid. The proposed revisions to the project would not cause new significant impacts not identified in the EIR, nor would the revisions cause significant impacts previously identified in the EIR to become substantially more severe. No new mitigation measures would be necessary to reduce significant impacts. No changes have occurred with respect to

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<sup>10</sup> Section 6.25 of Chapter 6 of the San Francisco Administrative Code, Ordinance Number 70-07, Approved April 2, 2007.

<sup>11</sup> Ordinance 176-08 (June 2008)

<sup>12</sup> No vegetation removal is proposed as part of the Modified Project, therefore *Mitigation Measure 3: Biological Resources* from the *Bicycle Plan Initial Study* is not applicable to the Modified Project.

circumstances surrounding the proposed project that would cause significant environmental impacts to which the project would contribute considerably, and no new information has become available that shows that the project would cause significant environmental impacts. Therefore, no supplemental environmental review is required beyond this addendum.

Date of Determination:

February 25, 2016

I do hereby certify that the above determination has been made pursuant to State and Local requirements.



Sarah B. Jones  
Environmental Review Officer

cc: Alan Uy, San Francisco Municipal Transportation Agency  
Erik Jaszewski, San Francisco Municipal Transportation Agency  
Bulletin Board / Master Decision File/Distribution List



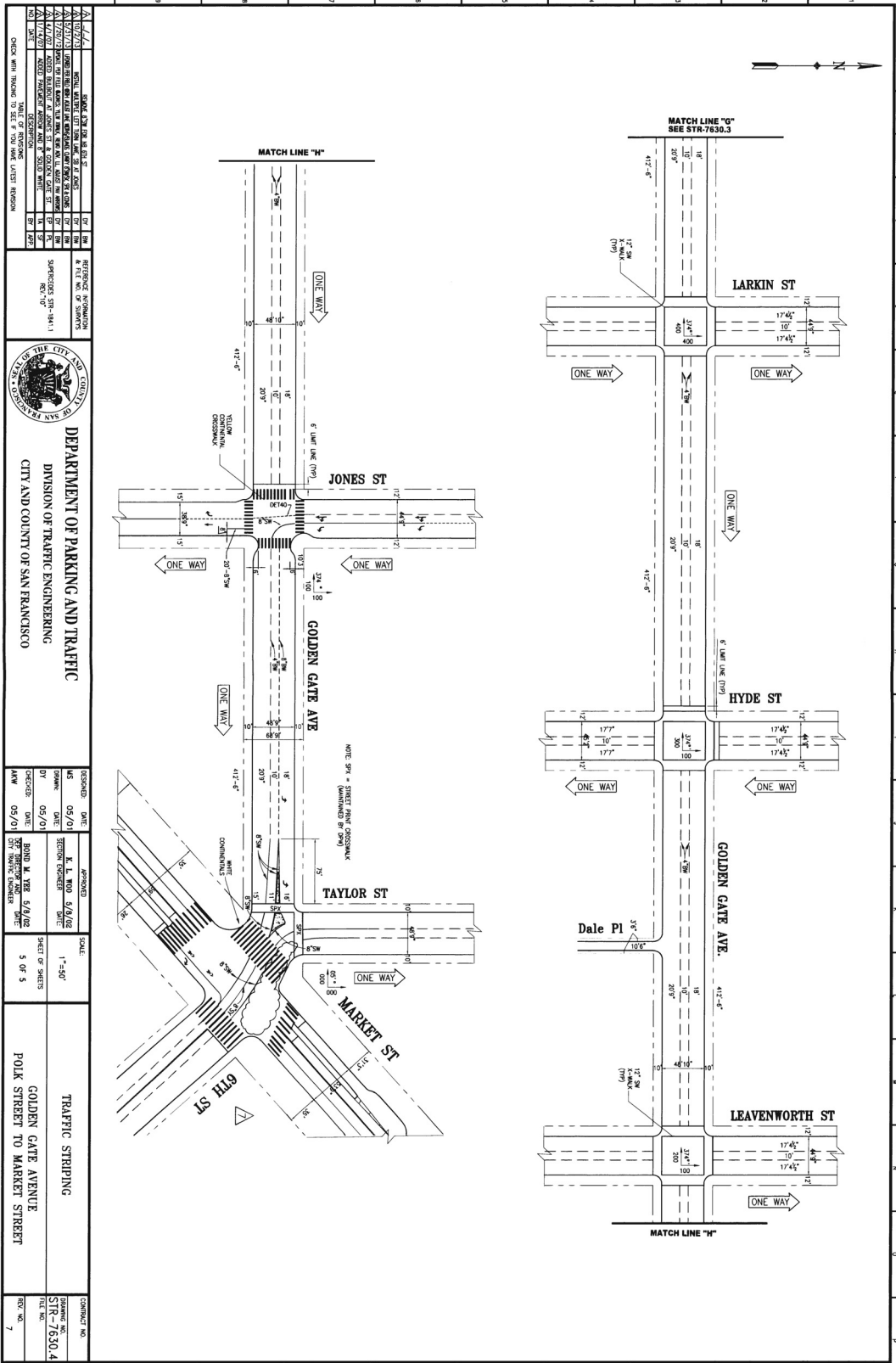
# **ATTACHMENT 1**

## **Existing Roadway Striping**









NO.	DATE	DESCRIPTION	BY	CHKD.
1	05/01/03	ISSUED FOR PERMITS	BY	BY
2	05/01/03	REVISED PER COMMENTS	BY	BY
3	05/01/03	REVISED PER COMMENTS	BY	BY
4	05/01/03	REVISED PER COMMENTS	BY	BY
5	05/01/03	REVISED PER COMMENTS	BY	BY
6	05/01/03	REVISED PER COMMENTS	BY	BY
7	05/01/03	REVISED PER COMMENTS	BY	BY
8	05/01/03	REVISED PER COMMENTS	BY	BY
9	05/01/03	REVISED PER COMMENTS	BY	BY
10	05/01/03	REVISED PER COMMENTS	BY	BY

ORIGIN: OPERATIONS  
 SCALE FACTOR: 1"=50'  
 PLLOT SCALE: 1"=1'



**DEPARTMENT OF PARKING AND TRAFFIC**  
 DIVISION OF TRAFFIC ENGINEERING  
 CITY AND COUNTY OF SAN FRANCISCO

PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

NO.	DATE	DESCRIPTION	BY	CHKD.
1	05/01/03	ISSUED FOR PERMITS	BY	BY
2	05/01/03	REVISED PER COMMENTS	BY	BY
3	05/01/03	REVISED PER COMMENTS	BY	BY
4	05/01/03	REVISED PER COMMENTS	BY	BY
5	05/01/03	REVISED PER COMMENTS	BY	BY
6	05/01/03	REVISED PER COMMENTS	BY	BY
7	05/01/03	REVISED PER COMMENTS	BY	BY
8	05/01/03	REVISED PER COMMENTS	BY	BY
9	05/01/03	REVISED PER COMMENTS	BY	BY
10	05/01/03	REVISED PER COMMENTS	BY	BY

PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

NO.	DATE	DESCRIPTION	BY	CHKD.
1	05/01/03	ISSUED FOR PERMITS	BY	BY
2	05/01/03	REVISED PER COMMENTS	BY	BY
3	05/01/03	REVISED PER COMMENTS	BY	BY
4	05/01/03	REVISED PER COMMENTS	BY	BY
5	05/01/03	REVISED PER COMMENTS	BY	BY
6	05/01/03	REVISED PER COMMENTS	BY	BY
7	05/01/03	REVISED PER COMMENTS	BY	BY
8	05/01/03	REVISED PER COMMENTS	BY	BY
9	05/01/03	REVISED PER COMMENTS	BY	BY
10	05/01/03	REVISED PER COMMENTS	BY	BY

PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

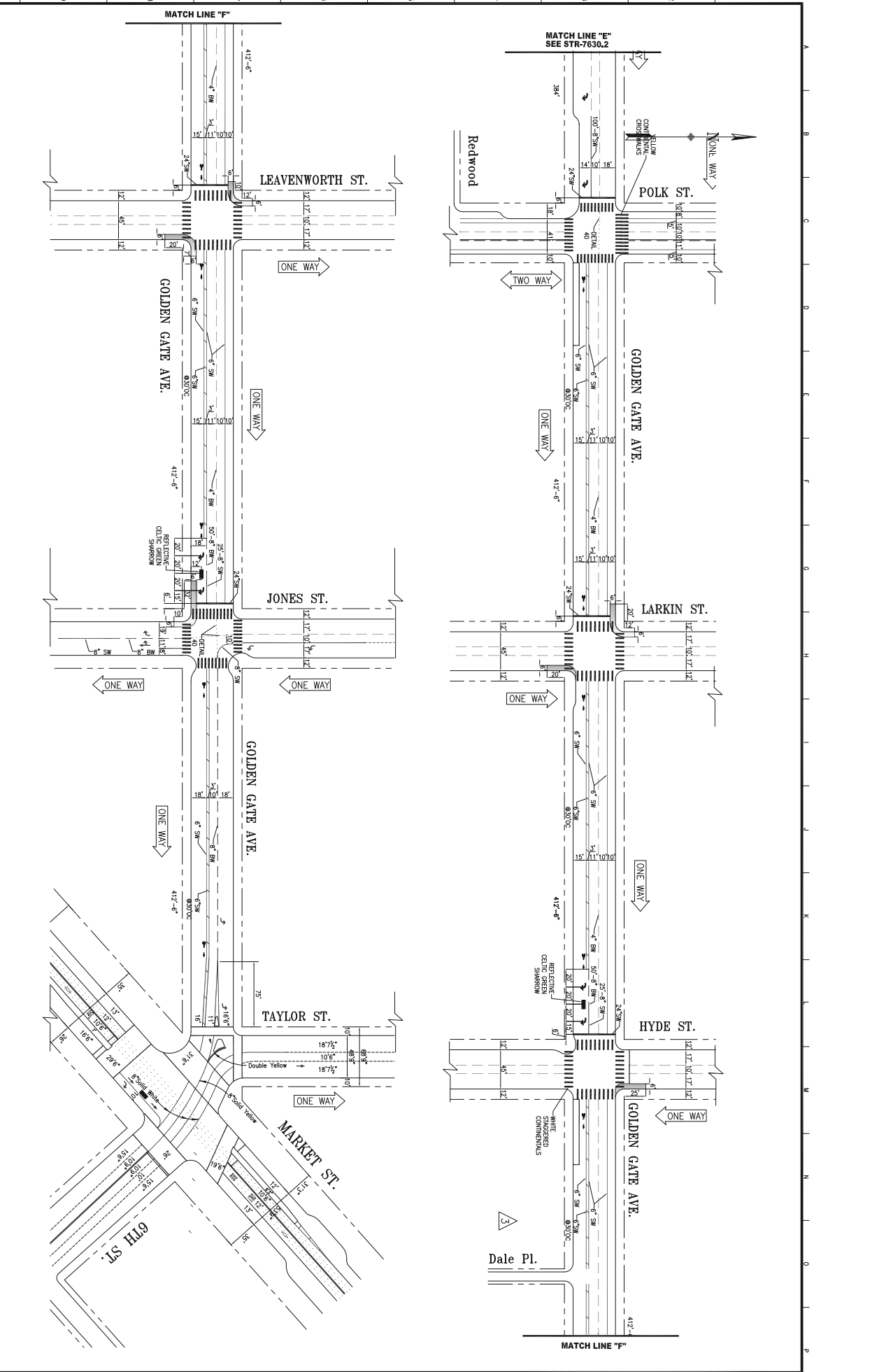
PROJECT: GOLDEN GATE AVENUE  
 SHEET: 5 OF 5

# **ATTACHMENT 2**

## **Proposed Roadway Striping**



NO.		DATE		DESCRIPTION		BY	DATE
CHECK WITH DRAWING TO SEE IF YOU HAVE LATEST REVISION							
				<b>SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY</b> CITY AND COUNTY OF SAN FRANCISCO			
SUPERSEDES		MS		DATE		APPROVED	
STR-1941 REV. "A", "B" & "C"		DRAWN		DATE		DATE	
STR-1941.1 REV. "D"		BY		DATE		DATE	
CHECKED		DATE		DATE		DATE	
AMW		05/03		CITY TRAFFIC ENGINEER		DATE	
SCALE: 1"=30'				TRAFFIC STRIPING			
SHEET OF SHEETS 4 OF 5				GOLDEN GATE AVENUE POLK STREET TO JONES STREET			
CONTRACT NO.		DRAWING NO.		FILE NO.		REV. NO.	





## **ATTACHMENT 3**



















### **Traffic Analysis – Existing Conditions**

















HCM Signalized Intersection Capacity Analysis  
300: Polk & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  									 	
Volume (vph)	28	623	189	0	0	0	0	52	22	82	555	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5						7.5			7.5	
Lane Util. Factor		0.91						1.00			0.95	
Frbp, ped/bikes		0.94						0.90			1.00	
Flpb, ped/bikes		0.99						1.00			0.96	
Frt		0.97						0.96			1.00	
Flt Protected		1.00						1.00			0.99	
Satd. Flow (prot)		3941						1403			2944	
Flt Permitted		1.00						1.00			0.90	
Satd. Flow (perm)		3941						1403			2656	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	656	199	0	0	0	0	55	23	86	584	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	883	0	0	0	0	0	69	0	0	670	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						8			4	
Permitted Phases	2									4		
Actuated Green, G (s)		26.5						16.5			16.5	
Effective Green, g (s)		27.5						17.5			17.5	
Actuated g/C Ratio		0.46						0.29			0.29	
Clearance Time (s)		8.5						8.5			8.5	
Lane Grp Cap (vph)		1806						409			774	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.22									c0.25	
v/c Ratio		0.49						0.17			0.87	
Uniform Delay, d1		11.3						15.8			20.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		1.0						0.9			12.4	
Delay (s)		12.3						16.7			32.6	
Level of Service		B						B			C	
Approach Delay (s)		12.3			0.0			16.7			32.6	
Approach LOS		B			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.8								HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			60.0							15.0	Sum of lost time (s)	
Intersection Capacity Utilization			58.5%								ICU Level of Service	B
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis  
301: Larkin & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	126	585	0	0	0	0	0	1263	109	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		0.94						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4139						4290				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4139						4290				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	616	0	0	0	0	0	1329	115	0	0	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	731	0	0	0	0	0	1443	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		2						4				
Permitted Phases	2											
Actuated Green, G (s)		19.0						32.0				
Effective Green, g (s)		19.0						32.0				
Actuated g/C Ratio		0.32						0.53				
Clearance Time (s)		4.5						4.5				
Lane Grp Cap (vph)		1310						2288				
v/s Ratio Prot								c0.34				
v/s Ratio Perm		0.18										
v/c Ratio		0.56						0.63				
Uniform Delay, d1		17.0						9.8				
Progression Factor		0.54						1.00				
Incremental Delay, d2		1.5						1.3				
Delay (s)		10.7						11.2				
Level of Service		B						B				
Approach Delay (s)		10.7			0.0			11.2			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.0					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			55.6%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
302: Hyde & Golden Gate













11/6/2015

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑									↑↑↑		
Volume (vph)	0	445	195	0	0	0	0	0	0	109	1036	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0									4.0		
Lane Util. Factor		0.91									0.91		
Frbp, ped/bikes		0.90									1.00		
Flpb, ped/bikes		1.00									0.98		
Frt		0.95									1.00		
Flt Protected		1.00									1.00		
Satd. Flow (prot)		3797									4317		
Flt Permitted		1.00									1.00		
Satd. Flow (perm)		3797									4317		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	468	205	0	0	0	0	0	0	115	1091	0	
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	8	0	
Lane Group Flow (vph)	0	664	0	0	0	0	0	0	0	0	1199	0	
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		17.0									35.0		
Effective Green, g (s)		17.0									35.0		
Actuated g/C Ratio		0.28									0.58		
Clearance Time (s)		4.0									4.0		
Lane Grp Cap (vph)		1075									2518		
v/s Ratio Prot		0.17											
v/s Ratio Perm											0.28		
v/c Ratio		0.62									0.48		
Uniform Delay, d1		18.7									7.2		
Progression Factor		0.86									1.00		
Incremental Delay, d2		2.2									0.6		
Delay (s)		18.3									7.9		
Level of Service		B									A		
Approach Delay (s)		18.3			0.0			0.0			7.9		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.6									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	8.0
Intersection Capacity Utilization			53.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 303: Leavenworth & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	154	453	0	0	0	0	0	814	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5						3.5				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		0.92						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4034						4354				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4034						4354				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	162	477	0	0	0	0	0	857	36	0	0	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	632	0	0	0	0	0	888	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)		23.0						30.0				
Effective Green, g (s)		23.0						30.0				
Actuated g/C Ratio		0.38						0.50				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		1546						2177				
v/s Ratio Prot								c0.20				
v/s Ratio Perm		0.16										
v/c Ratio		0.41						0.41				
Uniform Delay, d1		13.5						9.4				
Progression Factor		1.71						1.00				
Incremental Delay, d2		0.7						0.6				
Delay (s)		23.8						10.0				
Level of Service		C						A				
Approach Delay (s)		23.8			0.0			10.0			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.7					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		7.0		
Intersection Capacity Utilization			50.8%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
304: Jones & Golden Gate

11/6/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↙↑	
Volume (vph)	0	441	46	0	0	0	0	0	0	708	177	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5								4.5	4.5	
Lane Util. Factor		0.91								0.91	0.91	
Frbp, ped/bikes		0.97								1.00	1.00	
Flpb, ped/bikes		1.00								1.00	1.00	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	0.97	
Satd. Flow (prot)		4215								1401	2854	
Flt Permitted		1.00								0.95	0.97	
Satd. Flow (perm)		4215								1401	2854	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	464	48	0	0	0	0	0	0	745	186	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	512	0	0	0	0	0	0	0	372	559	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type		NA								Split	NA	
Protected Phases		2								4	4	
Permitted Phases												
Actuated Green, G (s)		12.5								17.5	17.5	
Effective Green, g (s)		12.5								17.5	17.5	
Actuated g/C Ratio		0.21								0.29	0.29	
Clearance Time (s)		4.5								4.5	4.5	
Lane Grp Cap (vph)		878								408	832	
v/s Ratio Prot		c0.12								c0.27	0.20	
v/s Ratio Perm												
v/c Ratio		0.58								0.91	0.88dl	
Uniform Delay, d1		21.4								20.5	18.7	
Progression Factor		1.26								1.00	1.00	
Incremental Delay, d2		2.6								27.1	4.3	
Delay (s)		29.5								47.6	23.0	
Level of Service		C								D	C	
Approach Delay (s)		29.5			0.0			0.0			32.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 305: Market & 6th St/Golden Gate & Taylor

11/6/2015



Movement	SEL2	SET	NWT	NET	NER	SWT	SWR2
Lane Configurations							
Volume (vph)	132	975	973	170	115	286	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.5	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.69	0.98	
Flpb, ped/bikes	0.91	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.85	0.99	
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1397	3079	3079	1621	956	3008	
Flt Permitted	0.17	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	256	3079	3079	1621	956	3008	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	139	1026	1024	179	121	301	12
RTOR Reduction (vph)	0	0	0	0	23	0	0
Lane Group Flow (vph)	139	1026	1024	179	98	313	0
Confl. Peds. (#/hr)	400				400		400
Turn Type	custom	NA	NA	NA	Perm	NA	
Protected Phases			8	2		6	
Permitted Phases	4	4			2		
Actuated Green, G (s)	21.5	21.5	21.5	27.0	27.0	27.0	
Effective Green, g (s)	23.0	23.0	21.5	29.0	29.0	29.0	
Actuated g/C Ratio	0.38	0.38	0.36	0.48	0.48	0.48	
Clearance Time (s)	5.5	5.5	5.5	6.0	6.0	6.0	
Lane Grp Cap (vph)	98	1180	1103	783	462	1453	
v/s Ratio Prot			0.33	0.11		0.10	
v/s Ratio Perm	0.54	0.33			0.10		
v/c Ratio	1.42	0.87	0.93	0.23	0.21	0.22	
Uniform Delay, d1	18.5	17.1	18.5	9.0	8.9	8.9	
Progression Factor	0.60	0.52	1.00	1.00	1.00	1.00	
Incremental Delay, d2	224.3	6.3	14.6	0.7	1.0	0.3	
Delay (s)	235.3	15.2	33.1	9.7	10.0	9.3	
Level of Service	F	B	C	A	A	A	
Approach Delay (s)		41.4	33.1	9.8		9.3	
Approach LOS		D	C	A		A	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

## **ATTACHMENT 4**



















### **Traffic Analysis – Existing Conditions Plus Project**

















HCM Signalized Intersection Capacity Analysis  
300: Polk & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 									 	
Volume (vph)	28	623	189	0	0	0	0	52	22	82	555	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5	7.5					7.5			7.5	
Lane Util. Factor		0.95	1.00					1.00			0.95	
Frbp, ped/bikes		1.00	0.72					0.90			1.00	
Flpb, ped/bikes		0.98	1.00					1.00			0.96	
Frt		1.00	0.85					0.96			1.00	
Flt Protected		1.00	1.00					1.00			0.99	
Satd. Flow (prot)		3014	994					1403			2944	
Flt Permitted		1.00	1.00					1.00			0.90	
Satd. Flow (perm)		3014	994					1403			2656	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	656	199	0	0	0	0	55	23	86	584	0
RTOR Reduction (vph)	0	0	54	0	0	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	685	145	0	0	0	0	69	0	0	670	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA	Perm					NA		Perm	NA	
Protected Phases		2						8			4	
Permitted Phases	2		2							4		
Actuated Green, G (s)		26.5	26.5					16.5			16.5	
Effective Green, g (s)		27.5	27.5					17.5			17.5	
Actuated g/C Ratio		0.46	0.46					0.29			0.29	
Clearance Time (s)		8.5	8.5					8.5			8.5	
Lane Grp Cap (vph)		1381	455					409			774	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.23	0.15								c0.25	
v/c Ratio		0.50	0.32					0.17			0.87	
Uniform Delay, d1		11.4	10.3					15.8			20.1	
Progression Factor		1.00	1.00					1.00			1.00	
Incremental Delay, d2		1.3	1.8					0.9			12.4	
Delay (s)		12.7	12.1					16.7			32.6	
Level of Service		B	B					B			C	
Approach Delay (s)		12.5			0.0			16.7			32.6	
Approach LOS		B			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.0					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		15.0		
Intersection Capacity Utilization			58.9%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis  
301: Larkin & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↑						↑↑↑				
Volume (vph)	126	585	0	0	0	0	0	1263	109	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5				
Lane Util. Factor		0.95						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		0.94						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		2881						4290				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		2881						4290				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	616	0	0	0	0	0	1329	115	0	0	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	731	0	0	0	0	0	1443	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		2						4				
Permitted Phases	2											
Actuated Green, G (s)		19.0						32.0				
Effective Green, g (s)		19.0						32.0				
Actuated g/C Ratio		0.32						0.53				
Clearance Time (s)		4.5						4.5				
Lane Grp Cap (vph)		912						2288				
v/s Ratio Prot								c0.34				
v/s Ratio Perm		0.25										
v/c Ratio		0.80						0.63				
Uniform Delay, d1		18.8						9.8				
Progression Factor		0.56						1.00				
Incremental Delay, d2		6.4						1.3				
Delay (s)		17.0						11.2				
Level of Service		B						B				
Approach Delay (s)		17.0			0.0			11.2			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.2					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			63.4%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis  
302: Hyde & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↖↑↑↑	
Volume (vph)	0	445	195	0	0	0	0	0	0	109	1036	0
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	1.00								0.91	
Frbp, ped/bikes		1.00	0.67								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								1.00	
Satd. Flow (prot)		3079	923								4317	
Flt Permitted		1.00	1.00								1.00	
Satd. Flow (perm)		3079	923								4317	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	468	205	0	0	0	0	0	0	115	1091	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	468	192	0	0	0	0	0	0	0	1199	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type		NA	Perm							Perm	NA	
Protected Phases		2									4	
Permitted Phases			2							4		
Actuated Green, G (s)		17.0	17.0								35.0	
Effective Green, g (s)		17.0	17.0								35.0	
Actuated g/C Ratio		0.28	0.28								0.58	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		872	261								2518	
v/s Ratio Prot		0.15										
v/s Ratio Perm			c0.21								0.28	
v/c Ratio		0.54	0.74								0.48	
Uniform Delay, d1		18.2	19.5								7.2	
Progression Factor		0.98	0.95								1.00	
Incremental Delay, d2		1.4	10.7								0.6	
Delay (s)		19.2	29.2								7.9	
Level of Service		B	C								A	
Approach Delay (s)		22.3			0.0			0.0			7.9	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.0		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			58.6%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 303: Leavenworth & Golden Gate

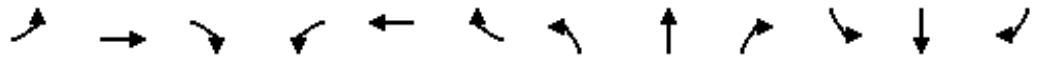
11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↑						↑↑↑				
Volume (vph)	154	453	0	0	0	0	0	814	34	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5						3.5				
Lane Util. Factor		0.95						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		0.92						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		2807						4354				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		2807						4354				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	162	477	0	0	0	0	0	857	36	0	0	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	632	0	0	0	0	0	888	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)		23.0						30.0				
Effective Green, g (s)		23.0						30.0				
Actuated g/C Ratio		0.38						0.50				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		1076						2177				
v/s Ratio Prot								c0.20				
v/s Ratio Perm		0.22										
v/c Ratio		0.59						0.41				
Uniform Delay, d1		14.7						9.4				
Progression Factor		1.73						1.00				
Incremental Delay, d2		2.1						0.6				
Delay (s)		27.5						10.0				
Level of Service		C						A				
Approach Delay (s)		27.5			0.0			10.0			0.0	
Approach LOS		C			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.3					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		7.0		
Intersection Capacity Utilization			53.8%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 304: Jones & Golden Gate

11/6/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗							↖	↖↑	
Volume (vph)	0	441	46	0	0	0	0	0	0	708	177	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.91	0.91	
Frbp, ped/bikes		1.00	0.64							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	0.97	
Satd. Flow (prot)		3079	881							1401	2854	
Flt Permitted		1.00	1.00							0.95	0.97	
Satd. Flow (perm)		3079	881							1401	2854	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	464	48	0	0	0	0	0	0	745	186	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	464	48	0	0	0	0	0	0	372	559	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type		NA	Perm							Split	NA	
Protected Phases		2								4	4	
Permitted Phases			2									
Actuated Green, G (s)		12.5	12.5							17.5	17.5	
Effective Green, g (s)		12.5	12.5							17.5	17.5	
Actuated g/C Ratio		0.21	0.21							0.29	0.29	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Lane Grp Cap (vph)		641	183							408	832	
v/s Ratio Prot		c0.15								c0.27	0.20	
v/s Ratio Perm			0.05									
v/c Ratio		0.72	0.26							0.91	0.88dl	
Uniform Delay, d1		22.1	19.9							20.5	18.7	
Progression Factor		1.16	1.14							1.00	1.00	
Incremental Delay, d2		5.8	2.8							27.1	4.3	
Delay (s)		31.6	25.4							47.6	23.0	
Level of Service		C	C							D	C	
Approach Delay (s)		31.0			0.0			0.0			32.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 305: Market & 6th St/Golden Gate & Taylor

11/6/2015



Movement	SEL2	SET	NWT	NET	NER	SWT	SWR2
Lane Configurations	↶	↑	↑↑	↑	↷	↑↑	
Volume (vph)	132	975	973	170	115	286	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.5	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.69	0.98	
Flpb, ped/bikes	0.91	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.85	0.99	
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1397	1621	3079	1621	956	3008	
Flt Permitted	0.17	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	256	1621	3079	1621	956	3008	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	139	1026	1024	179	121	301	12
RTOR Reduction (vph)	0	0	0	0	23	0	0
Lane Group Flow (vph)	139	1026	1024	179	98	313	0
Confl. Peds. (#/hr)	400				400		400
Turn Type	custom	NA	NA	NA	Perm	NA	
Protected Phases			8	2		6	
Permitted Phases	4	4			2		
Actuated Green, G (s)	21.5	21.5	21.5	27.0	27.0	27.0	
Effective Green, g (s)	23.0	23.0	21.5	29.0	29.0	29.0	
Actuated g/C Ratio	0.38	0.38	0.36	0.48	0.48	0.48	
Clearance Time (s)	5.5	5.5	5.5	6.0	6.0	6.0	
Lane Grp Cap (vph)	98	621	1103	783	462	1453	
v/s Ratio Prot			0.33	0.11		0.10	
v/s Ratio Perm	0.54	0.63			0.10		
v/c Ratio	1.42	1.65	0.93	0.23	0.21	0.22	
Uniform Delay, d1	18.5	18.5	18.5	9.0	8.9	8.9	
Progression Factor	0.63	0.68	1.00	1.00	1.00	1.00	
Incremental Delay, d2	221.2	298.0	14.6	0.7	1.0	0.3	
Delay (s)	233.0	310.5	33.1	9.7	10.0	9.3	
Level of Service	F	F	C	A	A	A	
Approach Delay (s)		301.3	33.1	9.8		9.3	
Approach LOS		F	C	A		A	

Intersection Summary			
HCM 2000 Control Delay	139.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

## **ATTACHMENT 5**





















### **Traffic Analysis – Cumulative (Year 2040) No Project Conditions**





HCM Signalized Intersection Capacity Analysis  
300: Polk & Golden Gate

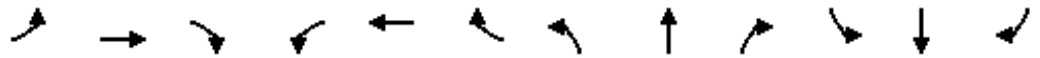
11/6/2015

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 		  			
Volume (vph)	39	864	262	0	0	0	0	127	54	105	712	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.0						3.0		3.0	3.0		
Lane Util. Factor		0.91						1.00		1.00	1.00		
Frbp, ped/bikes		0.87						0.90		1.00	1.00		
Flpb, ped/bikes		0.98						1.00		1.00	1.00		
Frt		0.97						0.96		1.00	1.00		
Flt Protected		1.00						1.00		0.95	1.00		
Satd. Flow (prot)		3641						1400		1540	1621		
Flt Permitted		1.00						1.00		0.95	1.00		
Satd. Flow (perm)		3641						1400		1540	1621		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	40	882	267	0	0	0	0	130	55	107	727	0	
RTOR Reduction (vph)	0	13	0	0	0	0	0	1	0	0	0	0	
Lane Group Flow (vph)	0	1176	0	0	0	0	0	184	0	107	727	0	
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400	
Turn Type	Perm	NA						NA		Prot	NA		
Protected Phases		2						8		9	4 9		
Permitted Phases	2												
Actuated Green, G (s)		21.0						17.0		10.0	31.0		
Effective Green, g (s)		22.0						18.0		11.0	32.0		
Actuated g/C Ratio		0.37						0.30		0.18	0.53		
Clearance Time (s)		4.0						4.0		4.0			
Lane Grp Cap (vph)		1335						420		282	864		
v/s Ratio Prot								0.13		0.07	c0.45		
v/s Ratio Perm		0.32											
v/c Ratio		0.88						0.44		0.38	0.84		
Uniform Delay, d1		17.8						16.9		21.5	11.9		
Progression Factor		1.00						1.00		1.00	1.00		
Incremental Delay, d2		8.6						3.3		3.8	9.7		
Delay (s)		26.4						20.2		25.4	21.6		
Level of Service		C						C		C	C		
Approach Delay (s)		26.4			0.0			20.2			22.1		
Approach LOS		C			A			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			24.2									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.91										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			78.5%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 301: Larkin & Golden Gate













11/6/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	183	848	0	0	0	0	0	1530	132	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5						4.5				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.98				
Flpb, ped/bikes		0.94						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4139						4290				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4139						4290				
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	187	865	0	0	0	0	0	1561	135	0	0	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1034	0	0	0	0	0	1696	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		2						4				
Permitted Phases	2											
Actuated Green, G (s)		19.0						32.0				
Effective Green, g (s)		19.0						32.0				
Actuated g/C Ratio		0.32						0.53				
Clearance Time (s)		4.5						4.5				
Lane Grp Cap (vph)		1310						2288				
v/s Ratio Prot								c0.40				
v/s Ratio Perm		0.25										
v/c Ratio		0.79						0.74				
Uniform Delay, d1		18.7						10.8				
Progression Factor		0.45						1.00				
Incremental Delay, d2		2.8						2.2				
Delay (s)		11.3						13.0				
Level of Service		B						B				
Approach Delay (s)		11.3			0.0			13.0			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.4					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			68.9%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												













HCM Signalized Intersection Capacity Analysis  
302: Hyde & Golden Gate

11/6/2015

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑									↑↑↑			
Volume (vph)	0	710	311	0	0	0	0	0	0	153	1452	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.0									4.0			
Lane Util. Factor		0.91									0.91			
Frbp, ped/bikes		0.90									1.00			
Flpb, ped/bikes		1.00									0.98			
Frt		0.95									1.00			
Flt Protected		1.00									1.00			
Satd. Flow (prot)		3798									4317			
Flt Permitted		1.00									1.00			
Satd. Flow (perm)		3798									4317			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98		
Adj. Flow (vph)	0	724	317	0	0	0	0	0	0	156	1482	0		
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	8	0		
Lane Group Flow (vph)	0	1037	0	0	0	0	0	0	0	0	1631	0		
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400		
Turn Type		NA								Perm	NA			
Protected Phases		2									4			
Permitted Phases										4				
Actuated Green, G (s)		17.0									35.0			
Effective Green, g (s)		17.0									35.0			
Actuated g/C Ratio		0.28									0.58			
Clearance Time (s)		4.0									4.0			
Lane Grp Cap (vph)		1076									2518			
v/s Ratio Prot		0.27												
v/s Ratio Perm											0.38			
v/c Ratio		0.96									0.65			
Uniform Delay, d1		21.2									8.4			
Progression Factor		0.82									1.00			
Incremental Delay, d2		14.9									1.3			
Delay (s)		32.3									9.7			
Level of Service		C									A			
Approach Delay (s)		32.3			0.0			0.0			9.7			
Approach LOS		C			A			A			A			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			18.5									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			60.0								8.0		Sum of lost time (s)	
Intersection Capacity Utilization			69.3%										ICU Level of Service	C
Analysis Period (min)			15											
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis  
 303: Leavenworth & Golden Gate

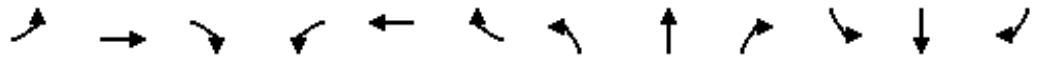
11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑↑↑				
Volume (vph)	218	640	0	0	0	0	0	882	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5						3.5				
Lane Util. Factor		0.91						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		0.92						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		4033						4353				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		4033						4353				
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	222	653	0	0	0	0	0	900	38	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	869	0	0	0	0	0	935	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)		23.0						30.0				
Effective Green, g (s)		23.0						30.0				
Actuated g/C Ratio		0.38						0.50				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		1545						2176				
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.22										
v/c Ratio		0.56						0.43				
Uniform Delay, d1		14.5						9.6				
Progression Factor		1.75						1.00				
Incremental Delay, d2		0.6						0.6				
Delay (s)		26.1						10.2				
Level of Service		C						B				
Approach Delay (s)		26.1			0.0			10.2			0.0	
Approach LOS		C			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.8					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		7.0		
Intersection Capacity Utilization			52.5%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 304: Jones & Golden Gate

11/6/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↙↑		
Volume (vph)	0	573	59	0	0	0	0	0	0	701	176	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5								4.5	4.5		
Lane Util. Factor		0.91								0.91	0.91		
Frbp, ped/bikes		0.97								1.00	1.00		
Flpb, ped/bikes		1.00								1.00	1.00		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	0.97		
Satd. Flow (prot)		4216								1401	2854		
Flt Permitted		1.00								0.95	0.97		
Satd. Flow (perm)		4216								1401	2854		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	585	60	0	0	0	0	0	0	715	180	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	645	0	0	0	0	0	0	0	357	538	0	
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400	
Turn Type		NA								Split	NA		
Protected Phases		2								4	4		
Permitted Phases													
Actuated Green, G (s)		12.5								17.5	17.5		
Effective Green, g (s)		12.5								17.5	17.5		
Actuated g/C Ratio		0.21								0.29	0.29		
Clearance Time (s)		4.5								4.5	4.5		
Lane Grp Cap (vph)		878								408	832		
v/s Ratio Prot		c0.15								c0.25	0.19		
v/s Ratio Perm													
v/c Ratio		0.73								0.88	0.65		
Uniform Delay, d1		22.2								20.2	18.6		
Progression Factor		1.19								1.00	1.00		
Incremental Delay, d2		4.6								22.2	3.9		
Delay (s)		31.1								42.4	22.4		
Level of Service		C								D	C		
Approach Delay (s)		31.1			0.0			0.0			30.4		
Approach LOS		C			A			A			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			30.7		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					13.0			
Intersection Capacity Utilization			50.4%		ICU Level of Service					A			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 305: Market & 6th St/Golden Gate & Taylor

11/6/2015



Movement	SEL2	SET	NWT	NET	NER	SWT	SWR2
Lane Configurations							
Volume (vph)	150	1109	927	321	217	196	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.5	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.49	0.98	
Flpb, ped/bikes	0.93	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.85	0.99	
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1428	3079	1621	1621	675	3008	
Flt Permitted	0.17	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	261	3079	1621	1621	675	3008	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	153	1132	946	328	221	200	8
RTOR Reduction (vph)	0	0	0	0	23	0	0
Lane Group Flow (vph)	153	1132	946	328	198	208	0
Confl. Peds. (#/hr)	400				400		400
Turn Type	custom	NA	NA	NA	Perm	NA	
Protected Phases			8	2		6	
Permitted Phases	4	4			2		
Actuated Green, G (s)	21.5	21.5	21.5	27.0	27.0	27.0	
Effective Green, g (s)	23.0	23.0	21.5	29.0	29.0	29.0	
Actuated g/C Ratio	0.38	0.38	0.36	0.48	0.48	0.48	
Clearance Time (s)	5.5	5.5	5.5	6.0	6.0	6.0	
Lane Grp Cap (vph)	100	1180	580	783	326	1453	
v/s Ratio Prot			0.58	0.20		0.07	
v/s Ratio Perm	c0.59	0.37			c0.29		
v/c Ratio	1.53	0.96	1.63	0.42	0.61	0.14	
Uniform Delay, d1	18.5	18.0	19.2	10.0	11.3	8.6	
Progression Factor	0.75	0.71	1.00	1.00	1.00	1.00	
Incremental Delay, d2	268.2	13.4	291.8	1.6	8.1	0.2	
Delay (s)	282.0	26.2	311.0	11.7	19.5	8.8	
Level of Service	F	C	F	B	B	A	
Approach Delay (s)		56.6	311.0	14.8		8.8	
Approach LOS		E	F	B		A	

Intersection Summary			
HCM 2000 Control Delay	126.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

## **ATTACHMENT 6**

### **Traffic Analysis – Cumulative (Year 2040) Plus Project Conditions**
























# HCM Signalized Intersection Capacity Analysis

## 300: Polk & Golden Gate




















11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 								 		
Volume (vph)	39	864	262	0	0	0	0	127	54	105	712	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	4.0					3.0		3.0	3.0	
Lane Util. Factor		0.95	1.00					1.00		1.00	1.00	
Frbp, ped/bikes		1.00	0.42					0.90		1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00		1.00	1.00	
Frt		1.00	0.85					0.96		1.00	1.00	
Flt Protected		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		3072	579					1400		1540	1621	
Flt Permitted		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (perm)		3072	579					1400		1540	1621	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	40	882	267	0	0	0	0	130	55	107	727	0
RTOR Reduction (vph)	0	0	58	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	922	209	0	0	0	0	184	0	107	727	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Split	NA	Perm					NA		Prot	NA	
Protected Phases	2	2						8		9	4	9
Permitted Phases			2									
Actuated Green, G (s)		22.0	22.0					17.0		9.0	30.0	
Effective Green, g (s)		23.0	22.0					18.0		10.0	31.0	
Actuated g/C Ratio		0.38	0.37					0.30		0.17	0.52	
Clearance Time (s)		4.0	4.0					4.0		4.0		
Lane Grp Cap (vph)		1177	212					420		256	837	
v/s Ratio Prot		0.30						0.13		0.07	c0.45	
v/s Ratio Perm			c0.36									
v/c Ratio		0.78	0.99					0.44		0.42	0.87	
Uniform Delay, d1		16.3	18.9					16.9		22.4	12.7	
Progression Factor		1.00	1.00					1.00		1.00	1.00	
Incremental Delay, d2		5.2	58.7					3.3		5.0	11.8	
Delay (s)		21.6	77.6					20.2		27.3	24.6	
Level of Service		C	E					C		C	C	
Approach Delay (s)		34.1			0.0			20.2			24.9	
Approach LOS		C			A			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			29.5									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			60.0							10.0		
Intersection Capacity Utilization			79.4%									ICU Level of Service D
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis













## 301: Larkin & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						   				
Volume (vph)	183	848	0	0	0	0	0	1530	132	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5						4.5				
Lane Util. Factor	1.00	0.95						0.91				
Frpb, ped/bikes	1.00	1.00						0.98				
Flpb, ped/bikes	0.68	1.00						1.00				
Frt	1.00	1.00						0.99				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1053	3079						4290				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1053	3079						4290				
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	187	865	0	0	0	0	0	1561	135	0	0	0
RTOR Reduction (vph)	18	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	169	865	0	0	0	0	0	1696	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		2						4				
Permitted Phases	2											
Actuated Green, G (s)	19.0	19.0						32.0				
Effective Green, g (s)	19.0	19.0						32.0				
Actuated g/C Ratio	0.32	0.32						0.53				
Clearance Time (s)	4.5	4.5						4.5				
Lane Grp Cap (vph)	333	975						2288				
v/s Ratio Prot		c0.28						c0.40				
v/s Ratio Perm	0.16											
v/c Ratio	0.51	0.89						0.74				
Uniform Delay, d1	16.7	19.5						10.8				
Progression Factor	0.42	0.45						1.00				
Incremental Delay, d2	3.7	8.4						2.2				
Delay (s)	10.7	17.1						13.0				
Level of Service	B	B						B				
Approach Delay (s)		16.0			0.0			13.0			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.1					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			70.4%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 302: Hyde & Golden Gate













11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗								↖↑↑↑	
Volume (vph)	0	710	311	0	0	0	0	0	0	153	1452	0
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	1.00								0.91	
Frbp, ped/bikes		1.00	0.67								1.00	
Flpb, ped/bikes		1.00	1.00								0.98	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								1.00	
Satd. Flow (prot)		3079	923								4317	
Flt Permitted		1.00	1.00								1.00	
Satd. Flow (perm)		3079	923								4317	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	724	317	0	0	0	0	0	0	156	1482	0
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	724	304	0	0	0	0	0	0	0	1631	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type		NA	Perm								Perm	NA
Protected Phases		2										4
Permitted Phases			2								4	
Actuated Green, G (s)		17.0	17.0								35.0	
Effective Green, g (s)		17.0	17.0								35.0	
Actuated g/C Ratio		0.28	0.28								0.58	
Clearance Time (s)		4.0	4.0								4.0	
Lane Grp Cap (vph)		872	261								2518	
v/s Ratio Prot		0.24										
v/s Ratio Perm			c0.33								0.38	
v/c Ratio		0.83	1.17								0.65	
Uniform Delay, d1		20.1	21.5								8.4	
Progression Factor		0.84	0.81								1.00	
Incremental Delay, d2		5.0	94.4								1.3	
Delay (s)		21.8	111.9								9.7	
Level of Service		C	F								A	
Approach Delay (s)		49.2			0.0			0.0			9.7	
Approach LOS		D			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.1								HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	8.0
Intersection Capacity Utilization			72.0%								ICU Level of Service	C
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 303: Leavenworth & Golden Gate













11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↑						↑↑↑				
Volume (vph)	218	640	0	0	0	0	0	882	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5						3.5				
Lane Util. Factor		0.95						0.91				
Frbp, ped/bikes		1.00						0.99				
Flpb, ped/bikes		0.92						1.00				
Frt		1.00						0.99				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		2807						4353				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		2807						4353				
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	222	653	0	0	0	0	0	900	38	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	869	0	0	0	0	0	935	0	0	0	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type	Perm	NA						NA				
Protected Phases		4						2				
Permitted Phases	4											
Actuated Green, G (s)		23.0						30.0				
Effective Green, g (s)		23.0						30.0				
Actuated g/C Ratio		0.38						0.50				
Clearance Time (s)		3.5						3.5				
Lane Grp Cap (vph)		1076						2176				
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.31										
v/c Ratio		0.81						0.43				
Uniform Delay, d1		16.5						9.6				
Progression Factor		1.70						1.00				
Incremental Delay, d2		3.9						0.6				
Delay (s)		32.0						10.2				
Level of Service		C						B				
Approach Delay (s)		32.0			0.0			10.2			0.0	
Approach LOS		C			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.7					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		7.0		
Intersection Capacity Utilization			61.6%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 304: Jones & Golden Gate

11/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗							↖	↔↑	
Volume (vph)	0	573	59	0	0	0	0	0	0	701	176	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5							4.5	4.5	
Lane Util. Factor		0.95	1.00							0.91	0.91	
Frbp, ped/bikes		1.00	0.64							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	0.97	
Satd. Flow (prot)		3079	881							1401	2854	
Flt Permitted		1.00	1.00							0.95	0.97	
Satd. Flow (perm)		3079	881							1401	2854	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	585	60	0	0	0	0	0	0	715	180	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	585	60	0	0	0	0	0	0	357	538	0
Confl. Peds. (#/hr)	400		400	400		400	400		400	400		400
Turn Type		NA	Perm							Split	NA	
Protected Phases		2								4	4	
Permitted Phases			2									
Actuated Green, G (s)		12.5	12.5							17.5	17.5	
Effective Green, g (s)		12.5	12.5							17.5	17.5	
Actuated g/C Ratio		0.21	0.21							0.29	0.29	
Clearance Time (s)		4.5	4.5							4.5	4.5	
Lane Grp Cap (vph)		641	183							408	832	
v/s Ratio Prot		c0.19								c0.25	0.19	
v/s Ratio Perm			0.07									
v/c Ratio		0.91	0.33							0.88	0.65	
Uniform Delay, d1		23.2	20.2							20.2	18.6	
Progression Factor		1.09	1.05							1.00	1.00	
Incremental Delay, d2		13.0	2.8							22.2	3.9	
Delay (s)		38.3	23.9							42.4	22.4	
Level of Service		D	C							D	C	
Approach Delay (s)		37.0			0.0			0.0			30.4	
Approach LOS		D			A			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			33.1		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					13.0		
Intersection Capacity Utilization			53.3%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 305: Market & 6th St/Golden Gate & Taylor

11/6/2015



Movement	SEL2	SET	NWT	NET	NER	SWT	SWR2
Lane Configurations							
Volume (vph)	150	1109	927	321	217	196	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	5.5	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.49	0.98	
Flpb, ped/bikes	0.93	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	1.00	0.85	0.99	
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1428	1621	1621	1621	675	3008	
Flt Permitted	0.17	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	261	1621	1621	1621	675	3008	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	153	1132	946	328	221	200	8
RTOR Reduction (vph)	0	0	0	0	23	0	0
Lane Group Flow (vph)	153	1132	946	328	198	208	0
Confl. Peds. (#/hr)	400				400		400
Turn Type	custom	NA	NA	NA	Perm	NA	
Protected Phases			8	2		6	
Permitted Phases	4	4			2		
Actuated Green, G (s)	21.5	21.5	21.5	27.0	27.0	27.0	
Effective Green, g (s)	23.0	23.0	21.5	29.0	29.0	29.0	
Actuated g/C Ratio	0.38	0.38	0.36	0.48	0.48	0.48	
Clearance Time (s)	5.5	5.5	5.5	6.0	6.0	6.0	
Lane Grp Cap (vph)	100	621	580	783	326	1453	
v/s Ratio Prot			0.58	0.20		0.07	
v/s Ratio Perm	0.59	c0.70			c0.29		
v/c Ratio	1.53	1.82	1.63	0.42	0.61	0.14	
Uniform Delay, d1	18.5	18.5	19.2	10.0	11.3	8.6	
Progression Factor	0.78	0.80	1.00	1.00	1.00	1.00	
Incremental Delay, d2	263.5	373.7	291.8	1.6	8.1	0.2	
Delay (s)	277.9	388.4	311.0	11.7	19.5	8.8	
Level of Service	F	F	F	B	B	A	
Approach Delay (s)		375.3	311.0	14.8		8.8	
Approach LOS		F	F	B		A	

Intersection Summary			
HCM 2000 Control Delay	263.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			