

Transportation Impact Analysis

# **Peninsula Heights Development TIA**

San Mateo, California

FINAL

November 2020

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Transportation Impact Analysis

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San Mateo, California

Prepared For:

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## EXECUTIVE SUMMARY

### PROJECT TRIP GENERATION

The proposed project is estimated to generate 58 fewer vehicle trips (-130 inbound, 72 outbound) during the weekday AM peak hour and 22 fewer vehicle trips (73 inbound, -95 outbound) during the weekday PM peak hour compared to the existing office use. Accounting for the difference between the proposed project trips and the existing occupancy of the office buildings, the proposed project would not meet the minimum threshold of 100 new peak hour vehicle trips for a congestion management program (CMP) analysis per C/CAG CMP guidelines.

### CEQA ANALYSIS

The proposed project is located within transportation analysis zone (TAZ) 2965, which has a vehicle miles traveled (VMT) per Capita of 23.9 and exceeds the countywide regional average of 15.5 VMT per Capita. Given that the project would replace an existing commercial area, the total VMT, generated by the existing and proposed land uses, was calculated to determine whether the proposed project would result in a net increase in VMT. Based on the total VMT calculations, the proposed project would result in a net reduction of 4,085 VMT at the project site and would result in a less-than-significant impact with respect to VMT.

### LOCAL TRANSPORTATION ANALYSIS

Kittelson conducted the intersection level of service analysis at four study intersections for Existing, Baseline, Baseline with Project, Cumulative, and Cumulative with Project Conditions for weekday AM and PM peak hour traffic conditions. Kittelson reviewed the site access and on-site circulation based on the proposed site plan and the changes in the 95<sup>th</sup> percentile queue lengths caused by the proposed project at the study intersections. The results for all scenarios are presented in the report below. The proposed project would not cause any study intersections to exceed the level of service standard as specified in the City's Circulation Element of the 2030 General Plan, i.e. the acceptable level of service standards that were in place in February 2020, at the time of the Senate Bill 330 Application<sup>1</sup>.

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<sup>1</sup> The developer submitted a Senate Bill 330 Application in February 2020 that freezes codes and policies in effect of its submitted date.

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## INTRODUCTION

This report documents the California Environmental Quality Act (CEQA) analysis findings and the local transportation analysis conducted for the proposed Peninsula Heights development in San Mateo, California (Figure 1).

## PROJECT DESCRIPTION

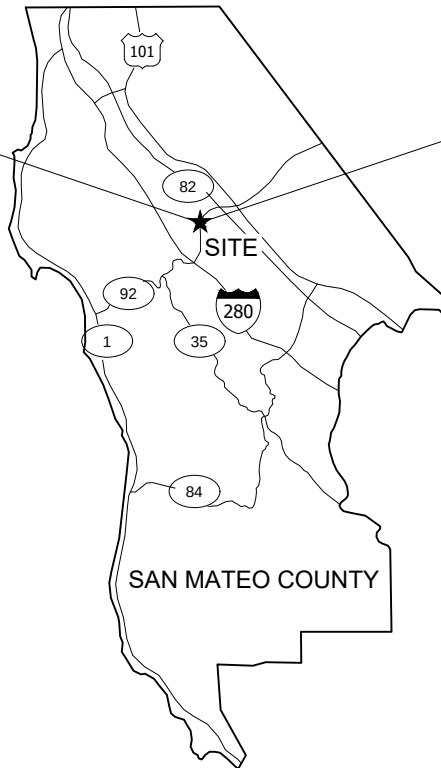
### Project Location

The proposed project is located to the east of California State Route 92 (SR 92), on a hillside, across two parcels of 15.45 acres in San Mateo, California (Figure 1). Access to the existing site is provided via two two-way driveways on the north side and two two-way driveways on the south side of Campus Drive. Nearby land uses include residential, office, commercial, recreational, and institutional. There is also an undeveloped canyon to the south and southeast of the site.

### Existing and Proposed Uses

The existing site includes two parcels divided by Campus Drive – a northern parcel (7.04 acres) and a southern parcel (8.41 acres). The site includes four office buildings totaling 224,844 square feet of office space. The General Plan designation of the project site is *Executive Office* and zoned as E1-1 (Executive Park) which supports administrative, executive, and office-related commercial uses. Residential use is permitted in this zone with a Special Use Permit and is subject to the minimum development standards for R3 zoning and affordable housing requirements as adopted by City Council resolution.

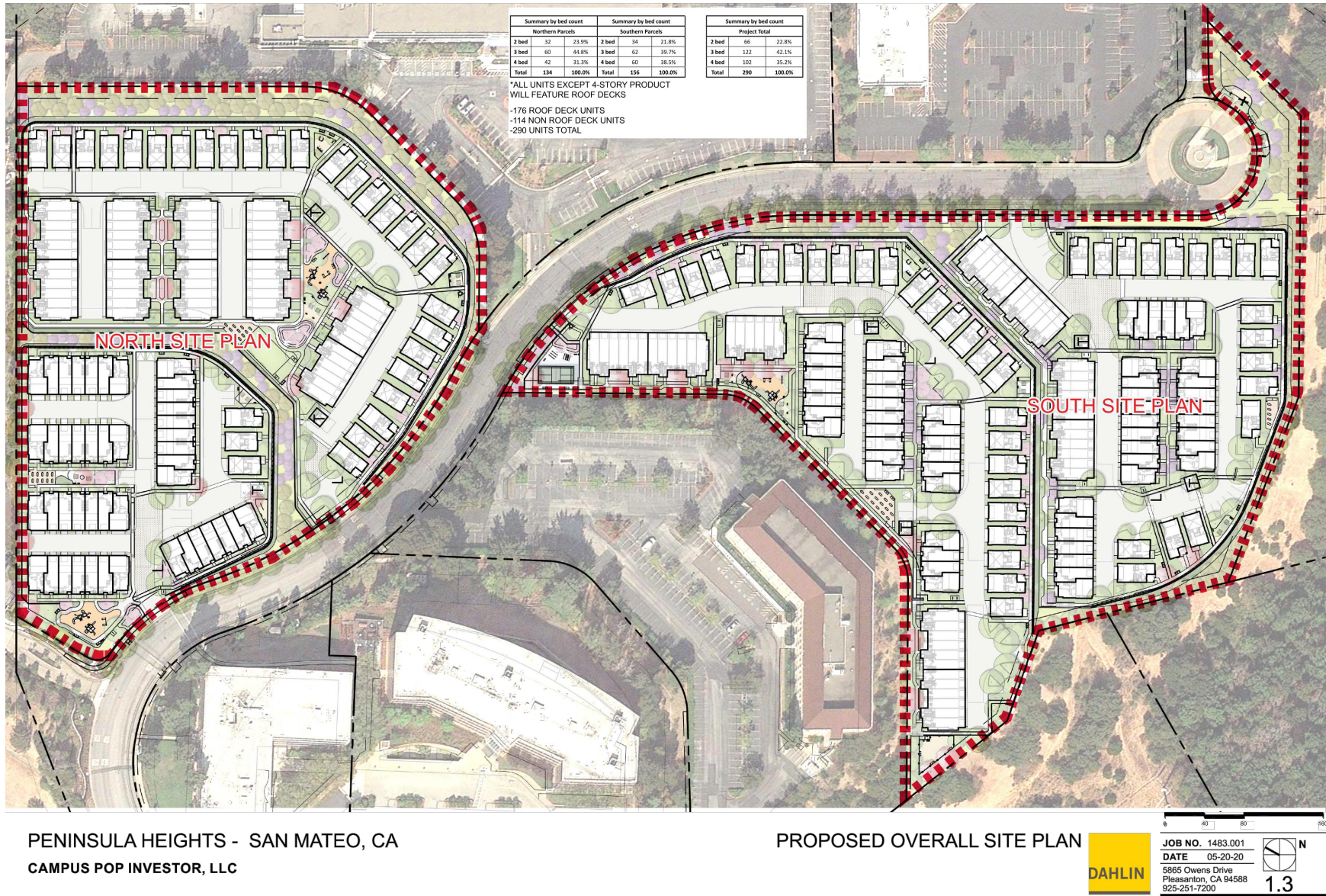
Harvest Properties is proposing to replace the existing office buildings and construct 290 residential units composed of three-story, four-story townhomes, stacked flats, and detached single-family residences. The northern parcel would accommodate 60 four-story townhomes, 44 three-story townhomes, and 30 single-family dwelling units. The southern parcel would consist of 54 four-story townhomes, 58 three-story townhomes, and 44 single-family dwelling units (Figure 2). Each residential building would be a maximum of 46 feet tall, and each unit would range between 1,400 to 2,200 square feet. The project would reserve 10 percent of units as below market rate (BMR) units, for a total of 29 affordable units, and would qualify for benefits under the State Density Bonus law (California Government Code 65915). Additional on-site amenities would include four to six mini-parks, picnic areas, open spaces, terraces, and 1.2 miles of landscaped paths that would provide the residences public access to the surrounding roadways and neighborhoods. Regional access to the project site would be primarily provided by State Route 92 via W Hillsdale Boulevard and Campus Drive. Local access to the project site would be provided by Campus Drive.



Project Location

Figure  
1





Received from City of San Mateo (July 13, 2020)

Site Plan

Figure  
2

## Transportation Demand Management Plan

The proposed project would implement a Transportation Demand Management (TDM) Plan to encourage sustainable, automobile-alternative, modes of transportation and reduce vehicle trips to and from the site. The available TDM services, proposed and recommended TDM measures are summarized in this section from the TDM Plan<sup>2</sup>, as follows.

### ***Available TDM Services***

Commute.org is San Mateo County's Transportation Demand Management Agency. The residents and employees of the proposed project site will be able to take advantage of TDM resources curated for those commuting within the county and in surrounding areas, including:

- CAM Shuttle (Campus Drive, Commute.org Shuttle)
- Try Transit Incentives
- Ridematching
- Carpool Incentives
- Vanpool Incentives
- Bike Education
- Bike Incentives
- E-Bike Rebate
- Guaranteed Ride Home (GRH)

### ***Proposed TDM Measures***

The developer proposed TDM measures include the following:

- Upgrading current Class III Bicycle Route to Class II bike lane on Campus Drive from the shopping center to the east end gate,
- Sidewalk improvements to the proposed project site (study area), aligning with the City's Pedestrian Design Guidelines,
- Providing short term bike racks and long-term bicycle parking, and
- prewiring for electric vehicle charging in garages.

### ***Additional Recommended TDM Measures***

In addition to the developer proposed TDM measures by Harvest Properties, Steer Group recommended programmatic TDM measures to reduce VMT and increase sustainable trips. The Peninsula Heights TDM Plan outlines each of the TDM measures in detail, including the guidelines for implementation, cost estimates for each of the TDM measures, expected timelines, and anticipated responsible party for each

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<sup>2</sup> Peninsula Heights TDM Plan, Prepared for the City of San Mateo by Steer Group, September 2020.

recommended measure. This section outlines the TDM measures developed by Steer Group, as part of this project, as follows:

- TDM Administration and Information Sharing
- Bike and Walk Strategies
- Recommended Shared Vehicle Strategies

## SCOPE OF STUDY

The purpose of this transportation analysis is to determine whether the proposed project would have transportation impacts, as defined by the City of San Mateo's acceptable level of service standards in the Circulation Element of the 2030 General Plan, and VMT guidelines provided by the Governor's Office of Planning and Research (OPR), as of February 2020. The City was in the process of developing updated Traffic Impact Analysis Guidelines consistent with the City's General Plan and OPR requirements. The analysis covers the following topics:

### California Environmental Quality Act (CEQA) Analysis

The California Environmental Quality Act (CEQA) transportation analysis assesses how the study area's transportation system would operate with the implementation of the proposed project at Peninsula Heights. The technical advisory provided by the OPR specifically addresses the requirements of California Senate Bill (SB) 743 which mandated specific types of CEQA analysis of land use development and transportation projects effective July 1, 2020. The quantitative methodology, significance thresholds, and mitigation measures for conducting transportation analysis are based on vehicle miles traveled (VMT) metrics.

### Local Transportation Analysis

The City of San Mateo requires the analysis of unsignalized and signalized intersections, though it does not require the analysis of roadway segments, in compliance with the 2030 General Plan. Since a roadway segment's capacity is generally controlled by the downstream intersection, an intersection analysis is sufficient for assessing a project's impacts. Based on the discussions with City Staff and the approved scope of work, Kittelson evaluated the following under the local transportation analysis section:

- Site Access and On-Site Circulation
  - Vehicular Access
  - Pedestrian Access
  - Bicyclist Access
  - Transit Access
  - Emergency Vehicle Access
- Intersection Operations
  - Level of Service
  - Vehicle Queueing



## CEQA ANALYSIS

### SCREENING CRITERIA

According to the technical advisory by OPR<sup>3</sup>, a project requires detailed VMT analysis unless it meets at least one of the City's five screening criteria:

1. Small Projects
2. Affordable Housing
3. Local-Serving Retail and Public Services
4. High-Quality Transit Area
5. Project Located in Low VMT Areas

The proposed project would not meet any of the OPR's screening criteria and would not be screened out for the reasons described below. As such, a detailed VMT analysis is required.

1. *Small Projects* – The proposed project has 290 residential units and generates more than 110 vehicle daily trips.
2. *Affordable Housing* – The affordable housing for the proposed project is 10 percent which is less than 100 percent criterion specified in the guidelines.
3. *Local-Serving Retail and Public Services* – The proposed project is 100 percent residential, so this criterion does not apply.
4. *High-Quality Transit Area* – The proposed project is not located in a high-quality transit area as specified in Attachment A of the guidelines.
5. *Project Located in Low VMT Areas* – The proposed project is in TAZ 2965 with VMT per Capita of 23.9. San Mateo County has a regional average of 15.5 VMT per Capita with an impact threshold of 13.1 VMT per Capita for residential uses. The project is not located within a low VMT area (See Figure 3 and Figure 4).

### SIGNIFICANT IMPACT THRESHOLDS

For projects which do not meet the screening criteria; the following threshold is used to assess a significant impact related to VMT, consistent with the OPR guidance. For residential projects, the project's impact would be considered significant if it would - Generate VMT per Capita greater than 15 percent below the existing San Mateo County average of 13.1 VMT per Capita

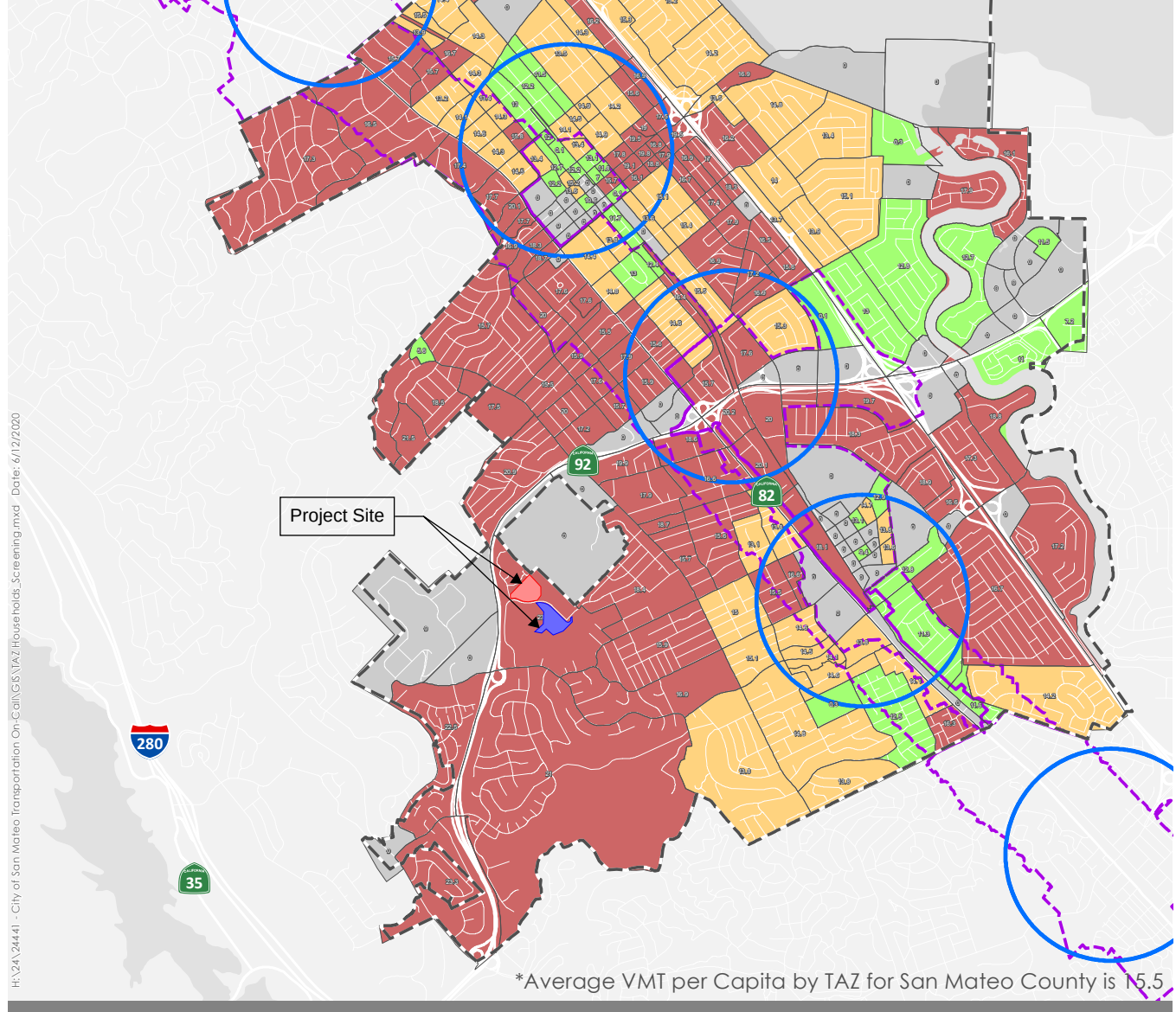
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<sup>3</sup> Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, December 2018.

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### Average VMT/ Capita by TAZ

- < 13.1 - Below Target VMT (County Average - 15%)
- 13.1 - 15.5 - Target VMT (County Average- 15%) to County Average
- > 15.5 - Above County Average
- No Data
- City Boundary
- High Quality Transit Area
- Priority Development Area

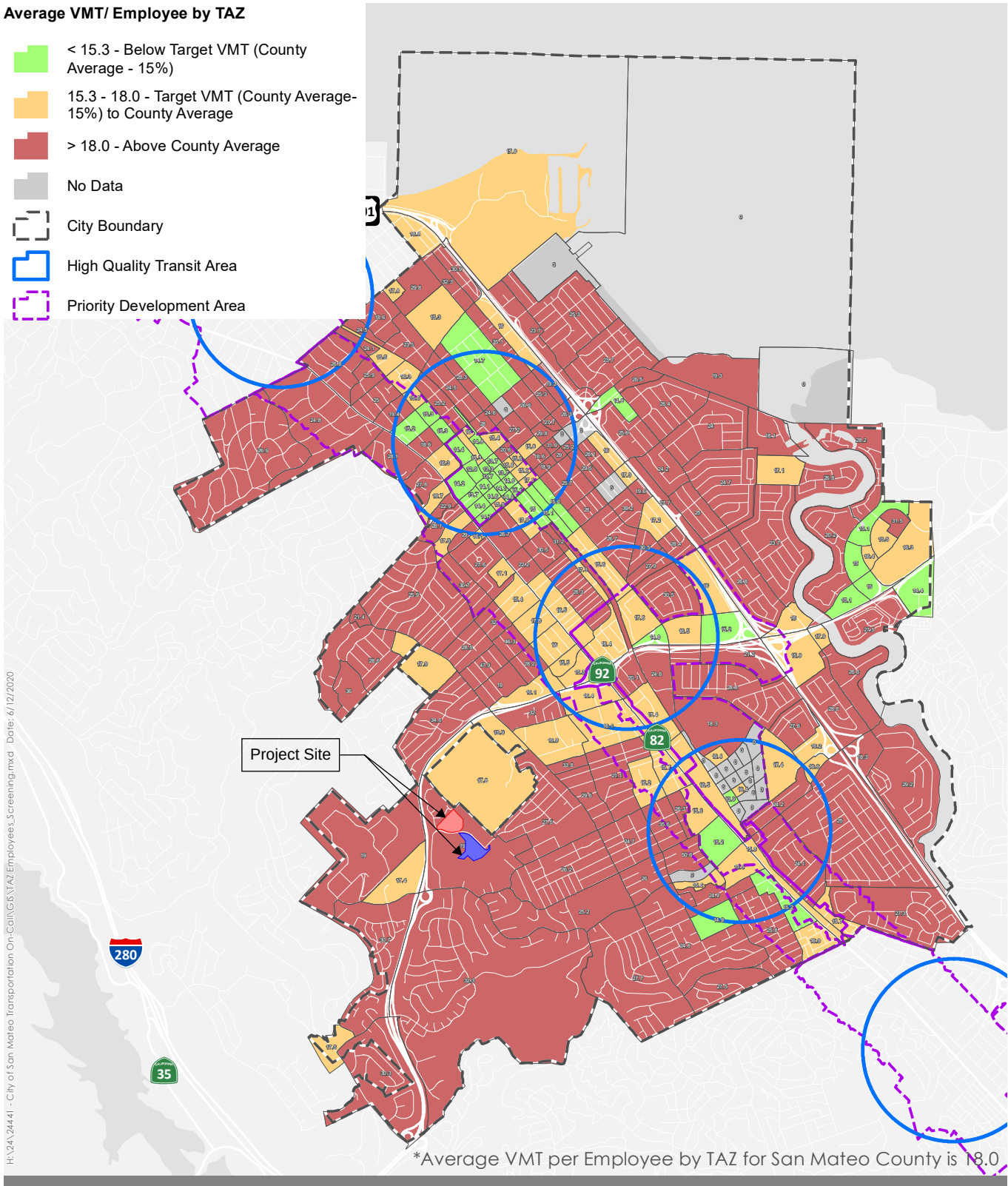


VMT Per Capita

Figure  
3

### Average VMT/ Employee by TAZ

- < 15.3 - Below Target VMT (County Average - 15%)
- 15.3 - 18.0 - Target VMT (County Average-15%) to County Average
- > 18.0 - Above County Average
- No Data
- City Boundary
- High Quality Transit Area
- Priority Development Area



0 3,900 Feet

VMT Per Employee

Figure  
4

## IMPACT DISCUSSION

### Vehicle Miles Traveled

The proposed project is in TAZ 2965 with VMT per Capita of 23.9. San Mateo County has a regional average of 15.5 VMT per Capita with an impact threshold of 13.1 VMT per Capita for residential uses. However, according to Section E Redevelopment Projects (Page 17) of the technical advisory of OPR, “When a project replaces existing VMT-generating land uses and the project leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact.”

Since the proposed project is a redevelopment project, replacing the existing office uses totaling approximately 224,844 square feet with 290 new residential units, the total VMT for existing and proposed uses was calculated to see if there is a net decrease or increase in the overall VMT. The total VMT calculations are presented in in Table 1.

**Table 1: Total VMT Calculations for Existing and Proposed Uses**

| Site Conditions                                                 | Size (Characteristics)                      | Number of Employees/Residents | Existing VMT per Employee or VMT Per Capita for TAZ 2965 | Total VMT Generated by the Site |
|-----------------------------------------------------------------|---------------------------------------------|-------------------------------|----------------------------------------------------------|---------------------------------|
| Existing Office Use                                             | 224,844 (73.3% occupancy rate) <sup>1</sup> | 1,320 employees <sup>2</sup>  | 19.5                                                     | 25,740                          |
| Proposed Residential Use                                        | 290 Units (906 Bedrooms)                    | 906 residents <sup>3</sup>    | 23.9                                                     | 21,655                          |
| Net VMT Change (Proposed Residential Use – Existing Office Use) |                                             |                               |                                                          | -4,085                          |

Source: Kittelson & Associates, 2020.

Notes:

<sup>1</sup> Assumes an average occupancy rate of 73.3% over the most recent three-year period. Occupancy data provided by City staff via email, dated July 24, 2020.

<sup>2</sup> Assumes an average of 125 square feet per employee based on data obtained from Gensler *Workplace Standards Benchmarking* (March 6, 2012) for the technology, finance, and biotech and science fields. [https://www.gsa.gov/cdnstatic/Workplace\\_Standards\\_Benchmark.pdf](https://www.gsa.gov/cdnstatic/Workplace_Standards_Benchmark.pdf).

<sup>3</sup> Assumes one person per bedroom.

As shown in Table 1, with the proposed project, there would be a net decrease in VMT at the project site. The proposed residential use would generate 4,085 fewer vehicle miles traveled on a daily basis than the existing office buildings.

According to Section E Redevelopment Projects (Page 17) of the technical advisory of OPR, the proposed project would result in a less-than-significant impact with respect to VMT and no further analysis or mitigations are required.

## LOCAL TRANSPORTATION ANALYSIS

### SCOPE OF STUDY

#### Time Periods

Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour occurs between 7 AM and 9 AM, and the PM peak hour occurs between 4 PM and 6 PM on a regular weekday. It is during these peak commute periods that the traffic demand on the roadway system is the greatest.

Transportation conditions were evaluated for the following scenarios:

- *Existing Conditions.* Traffic volumes for the Existing Conditions were estimated using historical counts, as collecting turning movement volumes at the study intersections was not recommended due to COVID-19<sup>4</sup> conditions. The study intersections were evaluated with a level of service analysis using Synchro software in accordance with the 2010 Highway Capacity Manual methodology.
- *Baseline Conditions.* Baseline traffic volumes were estimated by adding the projected volumes from approved, but not yet completed developments to existing peak hour volumes for the project completion year.
- *Baseline with Project Conditions.* Baseline traffic volumes with the project were estimated by adding the additional traffic generated by the project to the baseline traffic volumes. Baseline with Project Conditions were evaluated relative to Baseline Conditions to determine the effects the proposed project would have on the baseline roadway network.
- *Cumulative Conditions.* Cumulative Conditions are represented by future traffic volumes on the roadway network. This scenario was estimated by adding a regional growth to existing traffic volumes between the existing year (2020) and future year (2040).
- *Cumulative with Project Conditions.* Cumulative traffic volumes with the project are estimated by adding cumulative traffic volumes to the additional traffic generated by the project. Cumulative with Project Conditions were evaluated relative to Cumulative Conditions to determine the effects the proposed project would have on the future roadway network.

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<sup>4</sup> The COVID-19 pandemic has resulted in shelter-in-place orders across the Bay Area and travel demand is significantly reduced across all modes. Travel patterns have also changed substantially. These changes are the result of multiple factors such as school closures, restrictions on business operations, and an increased amount of telecommuting.

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## Study Intersections

The following four study intersections were selected for analysis and are shown in Figure 5.

1. Campus Drive at Hillsdale Boulevard
2. SR-92 Westbound Ramps at Hillsdale Boulevard
3. SR-92 Eastbound Ramps at Hillsdale Boulevard
4. Alameda de Las Pulgas at Hillsdale Boulevard

## Intersection Level of Service (LOS) Criteria

Level of service (LOS) describes the operating conditions experienced by motorists. LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions and delay, freedom to maneuver, driving comfort, and convenience. LOS A through LOS F covers the entire range of traffic operations that might occur. Motorists using a facility that operates at a LOS A experience very little delay, while those using a facility that operates at a LOS F will experience long delays. Intersection analyses for the four study intersections were conducted using the operational methodologies outlined in the 2010 Highway Capacity Manual (HCM) (Transportation Research Board, Washington, D.C., 2010), calculated with Synchro software.

### *Signalized Intersections*

The HCM procedure calculates a weighted average control delay in seconds per vehicle at a signalized intersection and assigns a level of service designation based upon the delay. The City of San Mateo level of service standard is mid-LOS D (delay of 45 seconds) or better for all signalized study intersections.

### *Unsignalized Intersections*

The HCM methodology calculates a weighted average control delay in seconds per vehicle for each controlled intersection leg and for the intersection. A level of service designation for all-way stop-controlled intersections is based upon the weighted average control delay for all intersection legs, similar to the level of service designation for signalized intersections. For two-way stop-controlled intersections, the LOS for the worst approach is used as the LOS performance measure. The City of San Mateo does not have a LOS standard for unsignalized intersections as specified in the 2030 General Plan. While the City adopted Transportation Impact Analysis (TIA) Guidelines in August 2020 to include LOS standards for unsignalized intersections, those standards do not apply to this analysis because the developer submitted a Senate Bill 330 Application in February 2020 that freezes codes and policies in effect of its submitted date. Therefore, intersection levels of service for unsignalized intersections are reported for informational purposes only.

Table 2 presents the relationship of average delay to level of service for both signalized and unsignalized intersections.





Study Intersections

Figure  
5



**Table 2: Level of Service Definition for Intersections**

| Signalized Intersection             | LOS | Description of Traffic Conditions                                                                                                                                                                 | Unsignalized Intersection           |
|-------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Average Delay Per Vehicle (Seconds) |     |                                                                                                                                                                                                   | Average Delay Per Vehicle (Seconds) |
| ≤10.0                               | A   | Free flowing. Most vehicles do not have to stop.                                                                                                                                                  | ≤10.0                               |
| >10.0 and ≤20.0                     | B   | Minimal delays. Some vehicles have to stop, although waits are not bothersome.                                                                                                                    | >10.0 and ≤15.0                     |
| >20.0 and ≤35.0                     | C   | Acceptable delays. Significant numbers of vehicles have to stop because of steady, high traffic volumes. Still, many pass without stopping.                                                       | >15.0 and ≤25.0                     |
| >35.0 and ≤55.0                     | D   | Tolerable delays. Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach. | >25.0 and ≤35.0                     |
| >55.0 and ≤80.0                     | E   | Significant delays. Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches.                                                                     | >35.0 and ≤50.0                     |
| >80.0                               | F   | Excessive delays. Intersection is jammed. Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into “up-stream” intersections.                    | >50.0                               |

Source: Transportation Research Board, 2010 Highway Capacity Manual (Washington D.C., 2010)

### General Plan LOS Policy Standard

Per the City’s General Plan Policy C 2.7, all projects are required, at a minimum, to pay a transportation mitigation fee. The transportation mitigation fee is used to fund planned transportation improvements that are identified in the City of San Mateo Traffic Mitigation Program. The cost of the off-site improvements may be reimbursed by the City if a reimbursement program is established through the timeframe of the City of San Mateo’s current Traffic Mitigation Program or at the time when the improvement was initially scheduled. In addition to paying the transportation impact fee, a development project may be required to fund off-site circulation improvements which are needed as a result of project generated traffic if:

#### *Signalized Intersections*

- The level of service at the intersection drops below mid-level LOS D (average delay of more than 45 seconds) when the project traffic is added, **and**
- An intersection that operates below its level of service standard under the base year conditions experiences an increase in delay of four or more seconds, **and**

- c) The needed improvement of the intersection(s) is not funded in the applicable five-year City Capital Improvement Program from the date of application approval.

### ***Unsignalized Intersections***

As of February 2020, when the developer submitted its Senate Bill 330 application, the City of San Mateo did not have a LOS standard for unsignalized intersections as specified in the 2030 General Plan. Transportation studies typically evaluate whether unsignalized intersections are functioning adequately and whether signalization is warranted using the peak-hour volume signal warrant described in the California MUTCD.

## **EXISTING CONDITIONS**

### **Roadway Network**

Regional access to the project site would be primarily provided by State Route 92 via W Hillsdale Boulevard and Campus Drive.

**State Route 92** is a four-to six lane state highway in California, serving as a major east-west corridor in the San Francisco Bay Area. It extends from State Route 1 in Half Moon Bay at the west end and San Mateo-Hayward Bridge to downtown Hayward in the East Bay at its junction with State Route 238. Access to and from the project study area is provided via interchanges at Hillsdale Boulevard.

**Hillsdale Boulevard** is an arterial roadway that extends in an east-west direction from the San Mateo Community College and transitioning into Beach Park Boulevard. In the vicinity of the project site, Hillsdale Boulevard has four lanes, and provides access to the project site via Campus Drive and State Route 92.

**Campus Drive** is a north-south local collector that extends from Hillsdale Boulevard to 26<sup>th</sup> Avenue. Collector streets are designed to channel traffic from local streets to arterials, and to handle short trips within the neighborhood areas. In the vicinity of the project site, Campus Drive has four lanes, and provides direct access to the project site via driveways.

**Alameda de Las Pulgas** is a north-south, four-lane arterial roadway extending from the St. Bartholomew School at Crystal Springs Road on the north and transitioning into San Carlos Avenue. In the vicinity of the project site, Alameda de Las Pulgas has four lanes, and provides access to the project site via Hillsdale Boulevard and Campus Drive.

### **Pedestrian Facilities and Amenities**

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the project vicinity, sidewalks exist along both sides of Campus Drive, Hillsdale Boulevard, and Alameda

de Las Pulgas, providing pedestrian access to and from the project site. Marked crosswalks with pedestrian signal heads and push buttons are provided at Campus Drive/Hillsdale Boulevard intersection and marked crosswalks on all stop-controlled approaches are provided at Hillsdale Boulevard/Alameda de Las Pulgas intersection. The overall network of sidewalks and crosswalks in the study area has good connectivity and provides pedestrian with safe routes to maneuver.

As mentioned in the TDM memo developed by Steer Group, per the Citywide Pedestrian Master Plan, the project site's change of use from commercial to single and multi-family will obligate the developer to implement Pedestrian Design Guideline A.5 *Residential Type C New Development*, requiring a minimum overall sidewalk width of 9.5 feet with a recommended width of 12 feet.

## Bicycle Facilities and Amenities

Bicycle facilities are defined by the following four classes<sup>5</sup>:

- **Class I** (Multi-use Path) – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- **Class II** (Bike Lane) – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.
- **Class III** (Bike Route) – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.
- **Class IV** (Separated Bike Lane) – Provides a restricted right-of-way designated lane for the exclusive use of bicyclists that is separated by a vertical element to provide further separation from motor vehicle traffic.

The existing and proposed<sup>6</sup> bicycle routes within the study area are described below. The existing bicycle network is shown in Figure 6.

**Alameda de Las Pulgas** – This corridor has been identified by the public and local jurisdictions as a key bicycling corridor connecting Santa Clara County to San Mateo. It provides an inland alternative to the Bay Trail. Bike lanes (Class II) are striped on approximately half the length of the corridor (South of Belmont) while the remainder is a signed bicycle route (Class III). There is an existing Class III bike route on Alameda de Las Pulgas in the vicinity of the project. The 2020 Bicycle Master Plan proposes a Class II bike lane between 26<sup>th</sup> Avenue and Crystal Springs Road.

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<sup>5</sup> As detailed in Chapter 1000 of the Highway Design Manual (Caltrans, 2015).

<sup>6</sup> As proposed in City of San Mateo Bicycle Master Plan, 2020. <https://www.cityofsanmateo.org/3944/Bicycle-Master-Plan-2020>.

**Hillsdale Boulevard** – There is an existing Class II bike lane on Hillsdale Boulevard extending from Alameda de Las Pulgas to Laurel Creek Drive, in the vicinity of the project site. The Bicycle Master Plan proposes extending the existing Class II bike lane from Laurel Creek Drive to 31<sup>st</sup> Avenue and installing a Class IV separated bike lane from 31<sup>st</sup> Avenue to San Mateo Community College.

**Campus Drive/26<sup>th</sup> Avenue** – There is an existing Class III bike route on Campus Drive extending from Hillsdale Boulevard to 26<sup>th</sup> Avenue, providing access to the project site. The Bicycle Master Plan proposes upgrading the existing Class III bike route to a Class II bike lane on Campus Drive to 26<sup>th</sup> Avenue and designating a Class III facility on 26<sup>th</sup> Avenue between Campus Drive and Hacienda Street.

## Transit Service

The existing transit service to the study area is provided by the San Mateo County Transit District (SamTrans), Norfolk Caltrain Shuttle, and Caltrain. The project site has five bus routes (Route 250, 251, 256, 294 and 295) nearby, operated by SamTrans with the nearest bus stops located at the intersection of Alameda de Las Pulgas and Hillsdale Boulevard and in the study area vicinity. Two bus routes (school-day only) Route 57 and 58 operate in the vicinity of the project site. Caltrain commuter shuttles are available at the Hillsdale Caltrain Station and they have stops in the vicinity of project site at Glendora Drive/Hillsdale Boulevard, 31<sup>st</sup> Avenue/Hillsdale Boulevard, Del Monte Street/ Hillsdale Boulevard, and Alameda de Las Pulgas/Hillsdale Boulevard, Laurelwood Shopping Center stop on Campus Drive, Peninsula Office Park, and Campus Drive/26<sup>th</sup> Avenue intersections. The shuttle service operates during commute hours between transit stations and major employment areas, i.e. various area office buildings. The bus routes that provide the peak-hour services near the project site are described in Table 3 and are shown in Figure 7.

## Caltrain Service

Commuter rail service between San Francisco and Gilroy is provided by Caltrain. The project site is located about 2.7 miles west of the Hillsdale Caltrain Station<sup>7</sup>, which is about a 11-minute car ride, and 12-minute bike ride. Caltrain provides service at this station with approximately 15-minute frequency during the weekday AM and PM commute hours, midday, and at nights. Service is provided with approximately 90-minute headways on weekends.

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<sup>7</sup> The Hillsdale Caltrain Station is temporarily closed for construction as part of the 25<sup>th</sup> Avenue Grade Separation project. Upon completion of construction, the Hillsdale Caltrain Station will be relocated about one block north of its current location, between 28<sup>th</sup> Avenue and 31<sup>st</sup> Avenue. More information about the relocation and construction timeline can be found on the Caltrain website, here:

[https://www.caltrain.com/projectsplans/Projects/Caltrain\\_Capital\\_Program/25th\\_Avenue\\_Grade\\_Separation/Hillsdale\\_Closure.html](https://www.caltrain.com/projectsplans/Projects/Caltrain_Capital_Program/25th_Avenue_Grade_Separation/Hillsdale_Closure.html). Website accessed October 8, 2020.

## Emergency Vehicle Access

The developer proposes to maintain the existing emergency vehicle access (EVA) road connecting Campus Drive to 26<sup>th</sup> Avenue as an EVA. The nearest fire station is located approximately 2 miles from the project site at 320 Paul Scannell Drive.

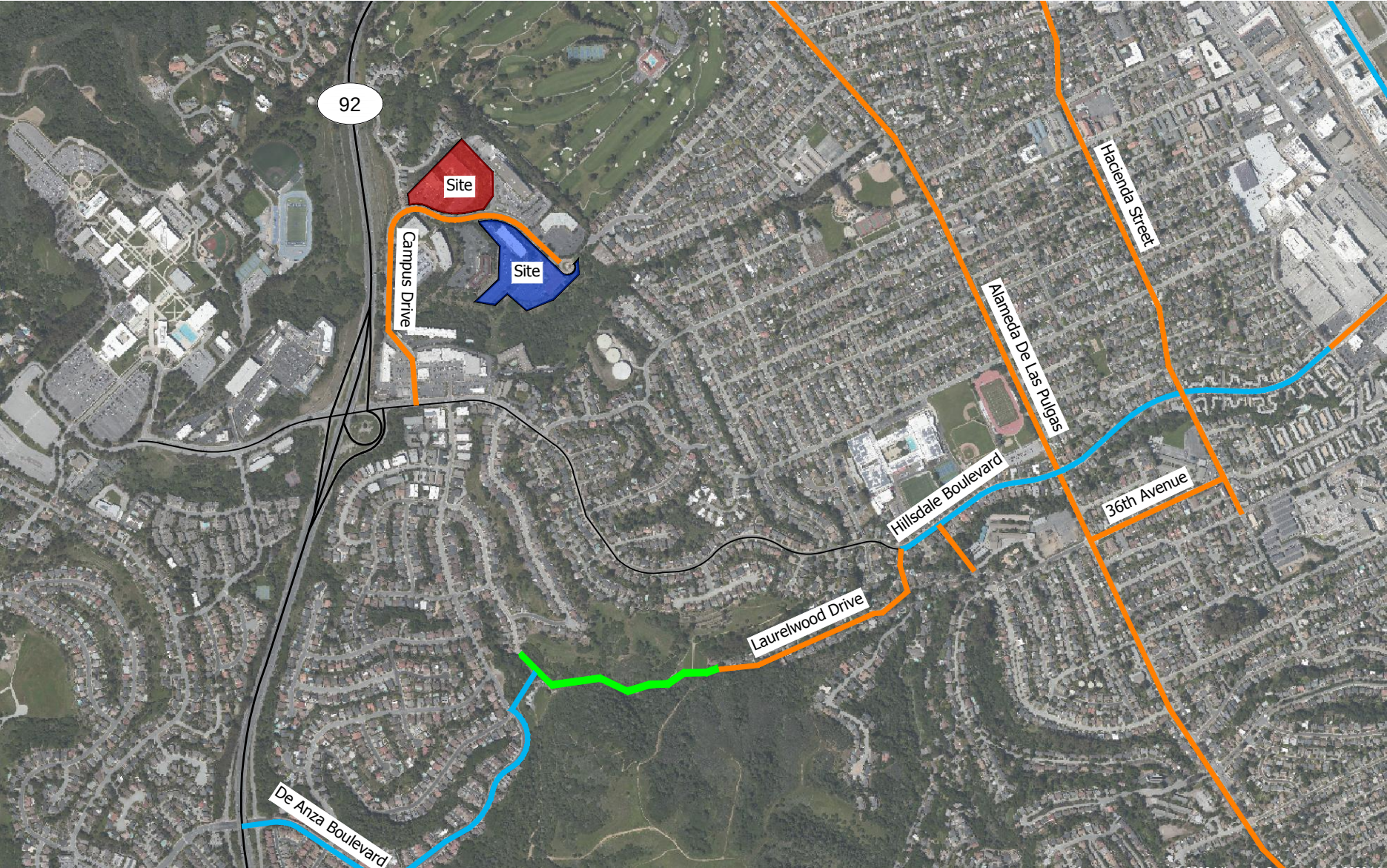
**Table 3: Existing Bus Service**

| Bus Route       | Description                                                          | Operating Hours                              | Peak-Hour Headway | Closest Bus Stop                                                                                |
|-----------------|----------------------------------------------------------------------|----------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------|
| 57              | Hillsdale High School – Edgewater/Beach Park (School-day only)       | 6:30 AM – 8:30 AM (and)<br>3:30 PM – 4:30 PM | NA                | 31 <sup>st</sup> Avenue and Fernwood Street                                                     |
| 58              | Borel School – Polhemus/Paul Scannell (School-day only)              | 7:00 AM – 8:00 AM (and)<br>1:00 PM – 3:30 PM | NA                | Clearview Way/W Hillsdale Boulevard                                                             |
| 250             | 5 <sup>th</sup> /El Camino Real – College of San Mateo               | 6 AM – 11 PM                                 | 1 hour            | Clearview Way/W Hillsdale Boulevard                                                             |
| 251             | Foster City – Hillsdale Mall                                         | 8:30 AM – 7 PM                               | 2 hours           | Alameda de Las Pulgas/W Hillsdale Boulevard (or)<br>31 <sup>st</sup> Avenue and Fernwood Street |
| 256             | Hillsdale Mall – Foster City                                         | 6:30 AM – 8 PM                               | 1 – 4 hours       | Alameda de Las Pulgas/W Hillsdale Boulevard (or)<br>31 <sup>st</sup> Avenue and Fernwood Street |
| 294             | San Mateo Medical Center – Hillsdale – CSM – Half Moon Bay           | 6 AM – 10 PM                                 | 1 hour            | Clearview Way/W Hillsdale Boulevard                                                             |
| 295             | San Mateo Caltrain – Redwood City Transit Center                     | 6 AM – 7 PM                                  | 2 hours           | Alameda de Las Pulgas/26 <sup>th</sup> Avenue                                                   |
| Norfolk Shuttle | Between Hillsdale Caltrain Station and Various Office Area Buildings | 7 AM – 9:30 AM and<br>3 PM – 7 PM            | 30 – 45 min       | Various stops on Hillsdale Boulevard and Campus Drive                                           |

Source: SamTrans, 2020.



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Legend:

- Shared Use Path
- Bike Lane
- Bike Route

Existing Bicycle Network

Figure 6



H:\24\24837 - San Mateo Peninsula Heights EIR\report\figs\24837-Figures.dwg Nov 05, 2020 - 2:49pm - lwllman Layout Tab: Existing Transit Services



Legend:

- |           |                        |                        |
|-----------|------------------------|------------------------|
| Route 250 | Route 294              | Route 58 (School Days) |
| Route 251 | Route 295              |                        |
| Route 256 | Route 57 (School Days) |                        |

Existing Transit Services

Figure  
7

## Traffic Volumes

Multimodal turning movement counts were estimated at the four study intersections shown in Figure 5 for the weekday AM and weekday PM peak periods. The hour with the highest vehicle volumes from the peak periods was determined for use in the transportation analysis.

The estimated multimodal turning movement counts are presented in Appendix A. The existing intersection geometries and estimated existing volumes (due to COVID-19 conditions) are shown in Figure 8 and Figure 9.

## Intersection Level of Service

The estimated traffic volumes due to COVID-19 conditions, lane configurations, and traffic controls for each study intersection were used to assess the Existing Conditions LOS and delay. Table 4 shows the findings of this analysis for the AM and PM peak hours. Detailed calculation worksheets for the Existing Conditions are provided in Appendix B. These delay and LOS values can be compared to the City of San Mateo thresholds outlined in the Circulation Element of the 2030 General Plan, discussed in the previous section.

**Table 4: Existing Conditions Intersection Operations Results**

| No | Location                                    | Control | Existing AM |     | Existing PM |     |
|----|---------------------------------------------|---------|-------------|-----|-------------|-----|
|    |                                             |         | Delay       | LOS | Delay       | LOS |
| 1  | Campus Drive & Hillsdale Boulevard          | Signal  | 11.4        | B   | 9.3         | A   |
| 2  | SR-92 Westbound Ramps & Hillsdale Boulevard | Signal  | 10.9        | B   | 15.5        | B   |
| 3  | SR-92 Eastbound Ramps & Hillsdale Boulevard | Signal  | 27.6        | C   | 15.8        | B   |
| 4  | Alameda de Las Pulgas & Hillsdale Boulevard | AWSC    | 95.3        | F   | 86.4        | F   |

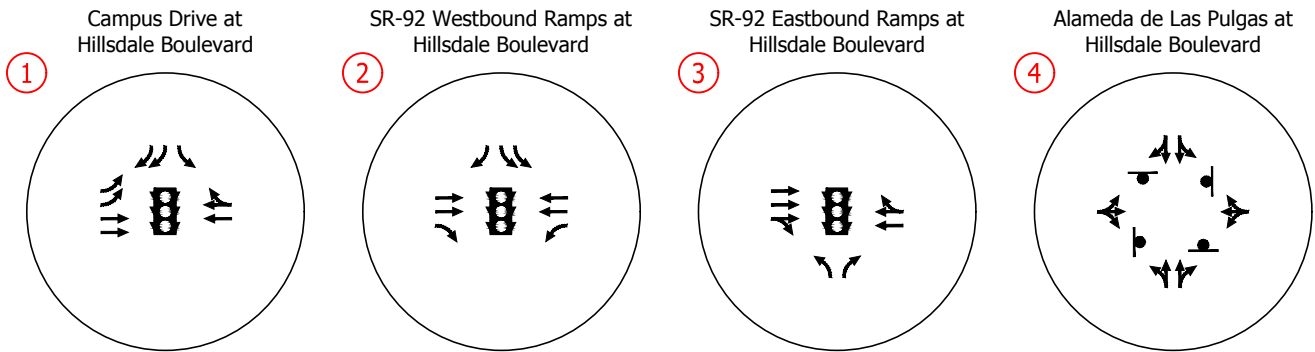
Notes: AWSC = All-Way Stop Control; AM = weekday a.m. peak hour; PM = weekday p.m. peak hour; LOS = Level of Service; Delay reported in seconds per vehicle; No = intersection number.

Source: Highway Capacity Manual 2010; Kittelson & Associates, 2020

As mentioned in the previous section, intersection analyses for the four study intersections were conducted using the operational methodologies outlined in the 2010 Highway Capacity Manual (HCM), calculated with Synchro software. However, Synchro's adaptation of HCM 2010 does not account for vehicles turning right on red (i.e., right-turn-on-red) at the SR-92 Eastbound Ramps/Hillsdale Boulevard intersection. Kittelson updated the Synchro network to more accurately reflect existing intersection operations and account for right-turn-on-red operations by modifying the growth rate input parameter for the respective turning movements in Synchro.

As shown in Table 4, the three signalized intersections currently operate at LOS C or better during both peak hours and the all-way stop-controlled intersection at Alameda de Las Pulgas and Hillsdale Boulevard, currently operates at LOS F during both peak hours.

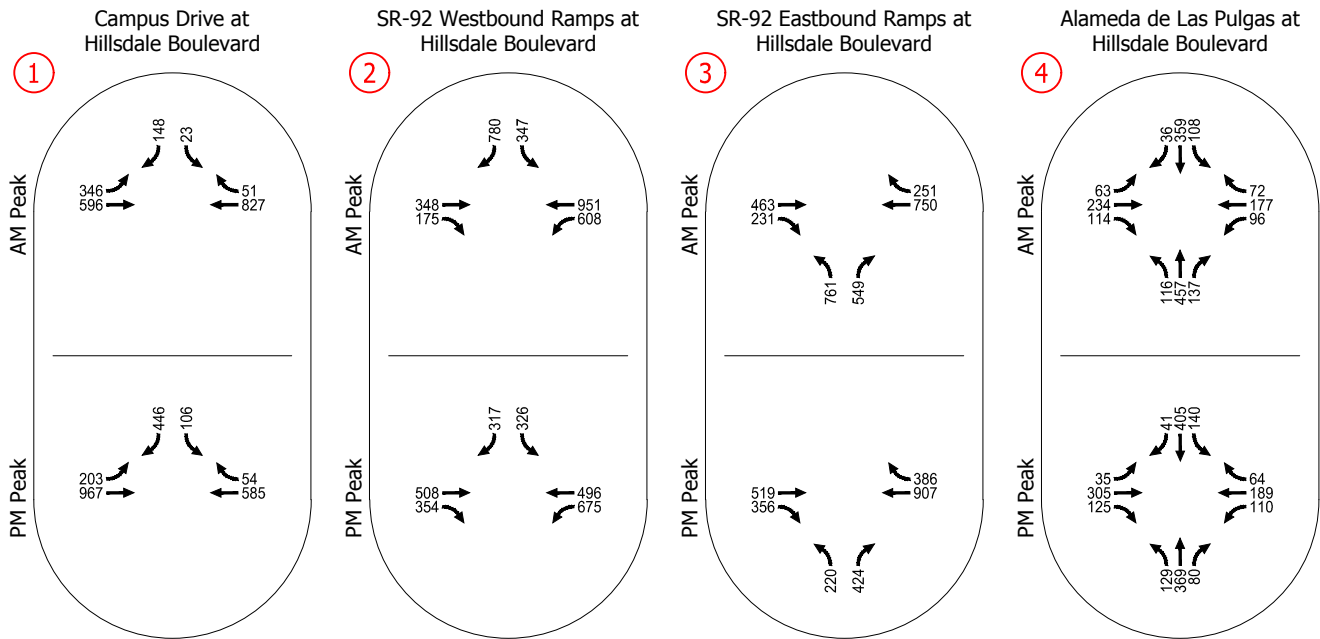




-  - Stop Sign
-  - Traffic Signal

Existing Conditions  
Traffic Control and  
Lane Configurations

Figure  
8



Existing Conditions Peak Hour  
Turning Movement Volumes

Figure  
9

## BASELINE CONDITIONS

This section presents baseline traffic conditions, which are defined as conditions just prior to the completion of the proposed project. Traffic volumes for the Baseline Conditions comprise volumes from existing traffic counts and traffic generated by other approved developments in the vicinity of the project site.

### Transportation Network

The Baseline Conditions analysis assumes the reconfiguration of Campus Drive from a four-lane roadway to a three-lane roadway with Class II bike lanes on both sides. The assumed traffic control devices and lane configurations under Baseline Conditions are shown in Figure 10.

### Intersection Level of Service

Traffic volumes for the Baseline Conditions are the same as the existing estimated traffic volumes, shown in Figure 9. This is because there are no projects that are underway in the vicinity of the study area that would add to the existing estimated volumes. Table 5 shows the Baseline intersection operations for the AM and PM peak hours, respectively. Detailed calculation worksheets for the Baseline Conditions are provided in Appendix C.

**Table 5: Baseline Conditions Intersection Operations Results**

| No | Location                                    | Control | Baseline AM |     | Baseline PM |     |
|----|---------------------------------------------|---------|-------------|-----|-------------|-----|
|    |                                             |         | Delay       | LOS | Delay       | LOS |
| 1  | Campus Drive & Hillsdale Boulevard          | Signal  | 11.5        | B   | 11.8        | B   |
| 2  | SR-92 Westbound Ramps & Hillsdale Boulevard | Signal  | 10.9        | B   | 15.5        | B   |
| 3  | SR-92 Eastbound Ramps & Hillsdale Boulevard | Signal  | 27.6        | C   | 15.7        | B   |
| 4  | Alameda de Las Pulgas & Hillsdale Boulevard | AWSC    | 95.3        | F   | 86.4        | F   |

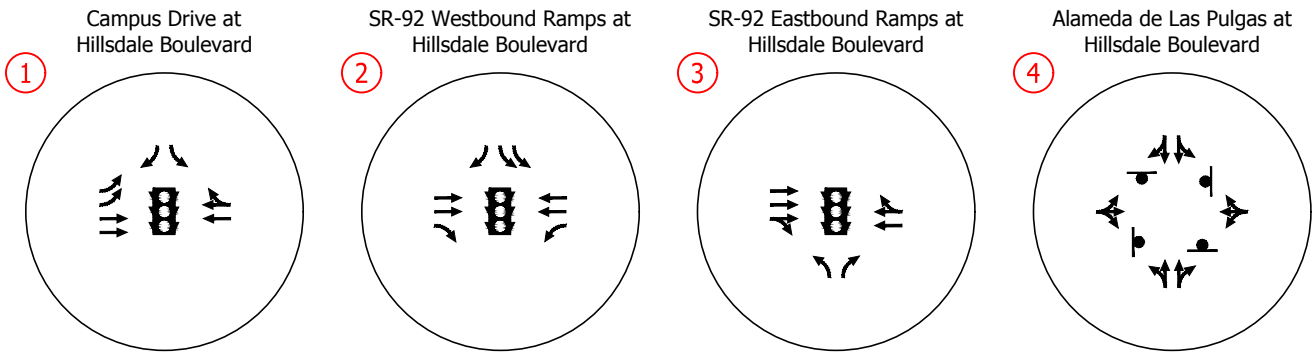
Note:

AWSC = All-Way Stop Control; ; AM = weekday a.m. peak hour; PM = weekday p.m. peak hour; LOS = Level of Service; Delay reported in seconds per vehicle

Source: Highway Capacity Manual 2010; Kittelson & Associates, 2020

As shown in Table 5 under Baseline Conditions, the three signalized intersections would continue to operate at LOS C or better during both peak hours, and the all-way stop-controlled intersection at Alameda de Las Pulgas and Hillsdale Boulevard would continue to operate at LOS F during both peak hours.





Baseline Conditions  
Traffic Control and  
Lane Configurations

Figure  
10

## PROJECT TRAVEL DEMAND

### Trip Generation

Trip generation of the project is based on information compiled in the 10<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* manual<sup>8</sup>. The trips generated by the existing general office buildings (ITE code 710) were compared to the proposed residential units (ITE code 210 for single-family detached housing and ITE code 221 for mid-rise multifamily housing).

The owner of the four office buildings recorded the following occupancy data for the past two and a half years: 2018 – 82.2%, 2019 – 72.9%, and 2020 – 64.8%.<sup>9</sup> The average occupancy rate of 73.3% was applied to the trip estimates for the general office building land use, as to provide a quantitative approximation of how many trips the existing site is creating. No adjustments to the standard trip generation rates were made to account for internalization, pass-by trips, or diverted trips, as the proposed residential development does not provide the mix of uses that would typically result in these types of trips.

As summarized in Table 6, the proposed project is estimated to generate 58 fewer vehicle trips (-130 inbound, 72 outbound) during the weekday AM peak hour and 22 fewer vehicle trips (73 inbound, -95 outbound) during the weekday PM peak hour compared to the existing office campus. Accounting for the difference between the proposed project trips and the existing occupancy of the office buildings, the proposed project would not meet the minimum threshold of 100 new peak hour vehicle trips for a congestion management program (CMP) analysis per C/CAG CMP guidelines.

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<sup>8</sup> Institute of Transportation Engineers. *Trip Generation, 9<sup>th</sup> Edition*, Washington, D.C. 2012

<sup>9</sup> Occupancy data provided by City staff via email, dated July 24, 2020.

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**Table 6: Project Trip Generation**

| Land Use                                               | ITE Code | Size | Unit <sup>1</sup> | Daily | Weekday AM Peak Hour |     |       | Weekday PM Peak Hour |     |       |
|--------------------------------------------------------|----------|------|-------------------|-------|----------------------|-----|-------|----------------------|-----|-------|
|                                                        |          |      |                   |       | In                   | Out | Total | In                   | Out | Total |
| Existing                                               |          |      |                   |       |                      |     |       |                      |     |       |
| General Office Building                                | 710      | 225  | KSF               | 2,192 | 224                  | 37  | 261   | 42                   | 217 | 259   |
| 73.3% Occupancy Adjustment Adjusted Total <sup>2</sup> |          |      |                   | 1,606 | 164                  | 27  | 191   | 31                   | 159 | 190   |
| Proposed                                               |          |      |                   |       |                      |     |       |                      |     |       |
| Single Family Detached Housing                         | 210      | 74   | DU                | 699   | 14                   | 41  | 55    | 46                   | 27  | 73    |
| Multifamily House (Low-Rise)                           | 221      | 216  | DU                | 1,175 | 20                   | 58  | 78    | 58                   | 37  | 95    |
| Total                                                  |          |      |                   | 1,874 | 34                   | 99  | 133   | 104                  | 64  | 168   |
| Net New Project Vehicle Trips                          |          |      |                   | 268   | -130                 | 72  | -58   | 73                   | -95 | -22   |

Notes:

<sup>1</sup> KSF = Thousand Square Feet. DU = Dwelling Unit.

<sup>2</sup> An average occupancy rate of 73.3% was applied to the estimated ITE vehicle trips to reflect the existing occupancy of the office buildings.

## Trip Distribution and Assignment

The distribution of project trips was derived from existing travel volume data and from knowledge of local travel times. The recorded north/south distribution of traffic along State Route 92 was used to inform the direction that project traffic would be going to or coming from in order to access the project site. Access to State Route 92 from the project was assumed to be via the Campus Drive, Hillsdale Boulevard and the State Route 92 ramp terminal intersections.

## BASELINE WITH PROJECT CONDITIONS

### Site Access and On-Site Circulation

This section describes the site access and circulation of the proposed project based on a review of the proposed site plan.

### *Vehicle Access and Circulation*

#### *On-Site Circulation and Driveway Access*

The proposed residential use would replace the existing four office buildings on-site. The project proposes to construct an inverted “L”-shaped roadway on-site that runs in a north-south direction from Campus Drive for both northern and southern parcels. This roadway would provide access to the parking garage entrances. Access to the buildings and the parking garages would be provided by two two-way driveways on the north side and two two-way driveways on the south side, on Campus Drive. All driveways are proposed to be 24 to 26 feet wide.

The project driveways need to be designed to preserve the sight triangles<sup>10</sup> free of visual obstructions. The proposed site plan shows driveway sight triangles start at the sidewalk and measure 10 feet on the side, established as per the City of San Mateo Municipal Code (Section 27.84.010 (B)(2)), and intersection sight triangles start at the sidewalk and measure 45 feet in length, established as per the City of San Mateo Municipal Code (Section 27.84.010 (B)(1)).

Sight distance is the continuous length of the roadway ahead, visible to the roadway user. According to the *Caltrans Highway Design Manual*, the minimum standards for stopping sight distance are related to the design speed for motorists (Table 201.1 Sight Distance Standards)<sup>11</sup>. Stopping sight distance<sup>12</sup> for motorists is measured from the drivers' eyes, which are assumed to be 3½ feet above the pavement surface, to an object ½ foot high on the road. The driveways from the project site lead to Campus Drive, which has a posted speed limit of 25 mph (i.e. design speed of 30 mph), the Caltrans stopping sight distance requirement is 200 feet.

There is no on-street parking or severe roadway curves along Campus Drive, hence the project driveways would all have adequate sight distance. The landscaping near the project driveways currently do not impair sight distance for the driver and should be taken care of in such a way that it does not interfere with drivers' view in future conditions as well. The project proposes a tree removal and mitigation plan at the project site to minimize the potential for landscaping to obscure the roadway visibility.

### *Vehicle Parking*

The proposed project would include 624 on-site vehicle parking spaces, including 580 residential parking spaces in attached two-car garages and 44 surface parking spaces for visitors distributed across the northern and southern parcels. The proposed project would include 23 accessible units distributed across the northern and southern parcels. There is a total of nine accessible parking stalls (of which five are Electric Vehicle accessible parking stalls) and five Electric Vehicle parking stalls in the proposed project site. All parking aisle and parking stall dimensions are shown to comply with the minimum requirements of the City "Standard Drawings and Specifications". All parking spaces appear to have sufficient space near the end of dead-end aisles for vehicles to turn around.

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<sup>10</sup> Sight triangles identify areas at the corners of intersections of roads and driveways where views of approaching traffic should not be obstructed.

<sup>11</sup> Chapter 200 – Geometric Design and Structure Standards, Caltrans Highway Design Manual, July 2020.

<sup>12</sup> The minimum stopping sight distance as defined by the Highway Design Manual is "the distance required by the user, traveling at a given speed, to bring the vehicle or bicycle to a stop after an object ½ foot high on the road becomes visible".

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### *Passenger Loading*

The project proposes passenger loading zones near the project site, which would serve as a waiting area for the residents. Four residential loading zones are shown in the proposed project site plan, which are established as per the City of San Mateo Municipal Code (Section 27.64.320).

### *Pedestrians*

Pedestrian pathways would link the proposed development to the surrounding neighborhood. Approximately 2.2 acres of the site is dedicated to open space with 1.2 miles of paths and trails. Two pedestrian pathways (i.e. loops) are proposed within the northern parcel and one pedestrian pathway is proposed within the southern parcel to provide circulation and access to the proposed activity and fitness centers on site. Wayfinding signage would be provided to direct people to the on-site amenities. Overall, the proposed project would promote accessibility for people walking to and through the site by connecting new pathways to the existing sidewalk networks. The project would not generate activities that would interfere with access or circulation for people walking.

### *Bicyclists*

The project would provide short term bike racks (class II) and secure long-term bicycle parking (class I). The North Site would provide 16 short-term and 208 long-term parking spaces, and the South Site would provide 17 short-term and 224 long-term parking spaces. Bicyclists would access the site from the Class II bike lanes on Campus Drive. Overall, the proposed project would promote accessibility for people biking to and through the site by providing bicycle parking and connecting to the existing bicycle networks. The project would not generate activities that would interfere with access or circulation for people biking.

### *Transit*

Five bus routes (Route 250, 251, 256, 294 and 295) operated by SamTrans provide service to/from the project site from the bus stops located at the intersection of Alameda de Las Pulgas and Hillsdale Boulevard and in the study area vicinity. Two bus routes (school-day only)-Route 57 and 58 operate in the vicinity of the project site. Caltrain commuter shuttles are available at the Hillsdale Caltrain Station with stops in the vicinity of project site at Laurelwood Shopping Center stop on Campus Drive, Peninsula Office Park, and Campus Drive/26<sup>th</sup> Avenue intersections.

### *Emergency Vehicle and Fire Truck Access*

The project proposes to maintain and improve the existing Emergency Vehicle Access road east of the roundabout on the south end of the project site, connecting Campus Drive to 26th Avenue. The proposed site plan designates 20 to 26 feet unobstructed fire lane width and no less than 13.5 feet unobstructed height for aerial apparatus access. All curbs within the project site will be painted red and marked with white curb lettering “No Parking Fire Lane” at no less than 25 feet intervals. The proposed internal streets would provide sufficient clear width to accommodate emergency vehicles and meet fire department

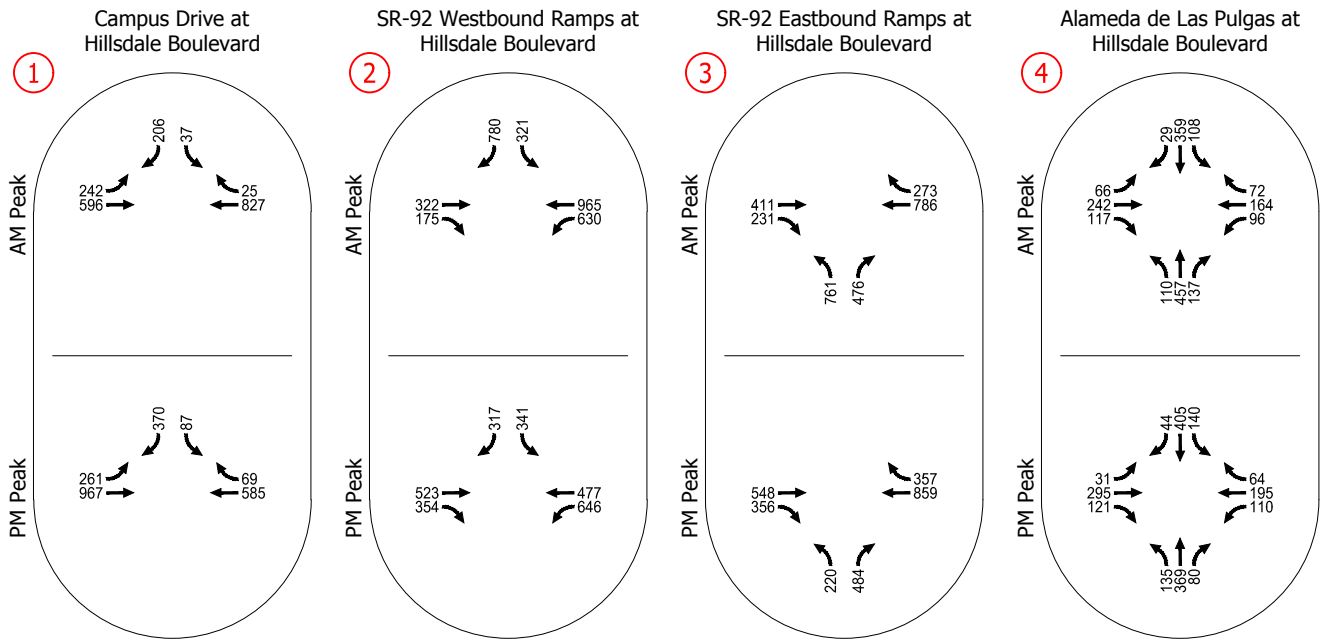
requirements. The proposed site plan also indicates that all fire hydrants in the vicinity of the project site shall be upgraded to Clow Model 960 or approved equivalent. Onsite hydrant spacing shall be 250 feet measured along access road. Although there would be a general increase in vehicle traffic from the proposed project, the proposed project would not inhibit emergency vehicle or fire truck access to or from the project site. Overall, fire truck access and circulation would meet San Mateo fire department requirements and development of the project site and associated increase in vehicles, pedestrians, and bicycle travel would not have a substantial adverse effect on emergency vehicle access to other buildings or land uses in the area or to hospitals.

### ***Garbage Trucks***

The project site plan shows three trash compactor rooms located at the southeast, south and western edges of the north project site, and two trash compactors located at the mid-south and southern edges of the south project site. Garbage trucks would enter and exit the project site via Campus Drive to access the proposed trash compactor rooms. Overall, garbage truck access and circulation would be adequate.

### **Intersection Level of Service**

Traffic volumes for the Baseline with Project Conditions were developed by combining the existing estimated traffic volumes with the project only volumes. The resulting Baseline with Project turning movement volumes are shown in Figure 11. Table 7 shows the Baseline with Project intersection operations for the AM and PM peak hours, respectively. Detailed calculation worksheets for the Baseline with Project Conditions are provided in Appendix D.



Baseline with Project Conditions  
Peak Hour Turning Movement Volumes

Figure  
11

**Table 7: Baseline with Project Conditions Intersection Operations Results**

| No | Location                                                 | Scenario     | Weekday AM Peak Hour |     | Weekday PM Peak Hour |     |
|----|----------------------------------------------------------|--------------|----------------------|-----|----------------------|-----|
|    |                                                          |              | Delay                | LOS | Delay                | LOS |
| 1  | Campus Drive & Hillsdale Boulevard                       | No Project   | 11.5                 | B   | 11.8                 | B   |
|    |                                                          | Plus Project | 12.6                 | B   | 11.1                 | B   |
| 2  | SR-92 Westbound Ramps & Hillsdale Boulevard              | No Project   | 10.9                 | B   | 15.5                 | B   |
|    |                                                          | Plus Project | 10.7                 | B   | 15.0                 | B   |
| 3  | SR-92 Eastbound Ramps & Hillsdale Boulevard              | No Project   | 27.6                 | C   | 15.7                 | B   |
|    |                                                          | Plus Project | 28.1                 | C   | 20.9                 | C   |
| 4  | Alameda de Las Pulgas & Hillsdale Boulevard <sup>1</sup> | No Project   | 95.3                 | F   | 86.4                 | F   |
|    |                                                          | Plus Project | 95.9                 | F   | 80.9                 | F   |

Note: No = intersection number;

LOS = Level of Service; Delay reported in seconds per vehicle

<sup>1</sup> This intersection is an All-Way Stop Controlled intersection

Source: Highway Capacity Manual 2010; Kittelson & Associates, 2020

As shown in Table 7, under Baseline with Project Conditions, the three signalized intersections would continue to operate at LOS C or better during the AM and PM peak hours, and the all-way stop-controlled intersection at Alameda de Las Pulgas and Hillsdale Boulevard would continue to operate at LOS F during the both peak hours. The proposed project would not cause any intersection to exceed level of service standard and no intersection modifications would be required.

## CUMULATIVE CONDITIONS

This section presents the anticipated Cumulative Conditions for the study intersections for the year 2040 and the effect the addition of the project trips would have on them.

### Land Use Development and Transportation Network Changes

The C/CAG San Mateo County Travel Demand Model was used to develop the future volume forecast for Cumulative Conditions. The model includes future development throughout the region. The 2040 cumulative forecasts are consistent with regional growth totals projected by the Association of Bay Area Governments (ABAG) Plan Bay Area<sup>13</sup>. Therefore, the traffic forecasts reflect traffic reflecting both growth in Peninsula Heights and increases in traffic volumes on State Route 92 due to regional growth. Base year (Year 2020) and future year (Year 2040) forecasts were extracted from the model and linearly interpolated to develop growth between the estimated existing traffic counts (2020) and the current model horizon year (2040).

<sup>13</sup> <https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040>



The intersection lane configurations under Cumulative Conditions were assumed to be the same as described under the Baseline Conditions. Additionally, Cumulative Conditions analysis assumed the intersection of Alameda de Las Pulgas and Hillside Boulevard will be converted from a stop-controlled intersection to a signalized intersection. The assumed traffic control devices and lane configurations under Cumulative Conditions for all study intersections are shown in Figure 12.

### Intersection Level of Service

The projected turning movement volumes for each peak hour under Cumulative Conditions are provided in Figure 13. Based on these volumes and lane configurations, the cumulative operations at the study intersections are shown in Table 8. Detailed calculation worksheets for the Cumulative Conditions are provided in Appendix E.

**Table 8: Cumulative Conditions Intersection Operations Results**

| No | Location                                    | Control | Cumulative AM |     | Cumulative PM |     |
|----|---------------------------------------------|---------|---------------|-----|---------------|-----|
|    |                                             |         | Delay         | LOS | Delay         | LOS |
| 1  | Campus Drive & Hillsdale Boulevard          | Signal  | 13.3          | B   | 14.3          | B   |
| 2  | SR-92 Westbound Ramps & Hillsdale Boulevard | Signal  | 13.2          | B   | 60.9          | E   |
| 3  | SR-92 Eastbound Ramps & Hillsdale Boulevard | Signal  | 36.8          | D   | 32.7          | C   |
| 4  | Alameda de Las Pulgas & Hillsdale Boulevard | Signal  | 17.6          | B   | 18.2          | B   |

Note: **Red bold lettering** indicates an intersection that does not meet the City's minimum acceptable design level of service (LOS D for Signalized intersections); No = intersection number; LOS = Level of Service; Delay reported in seconds per vehicle.  
Source: Highway Capacity Manual 2010; Kittelson & Associates, 2020

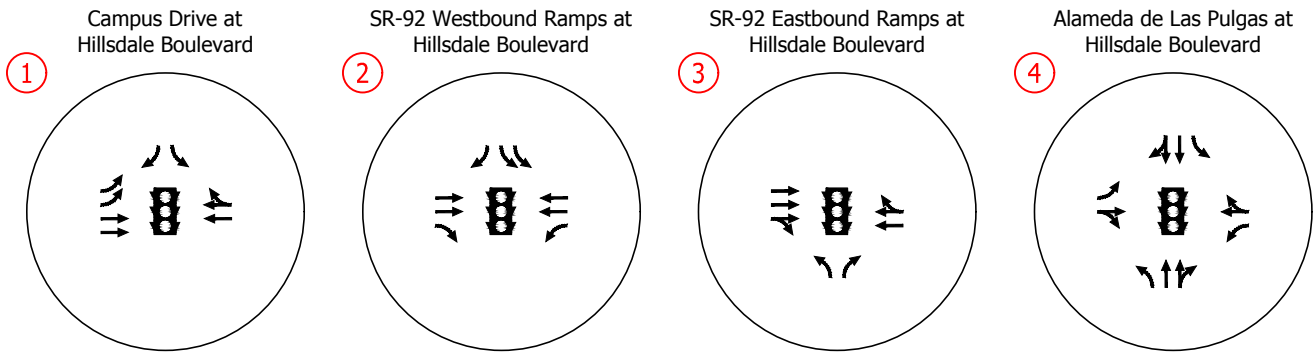
As shown in Table 8, under Cumulative Conditions, all study intersections would be signalized. Conversion of Alameda de Las Pulgas and Hillsdale Boulevard to a signalized intersection would reduce delay and improve operations at this location from LOS F under Existing and Baseline Conditions to LOS B under Cumulative Conditions. Three of the study intersections would operate at LOS D or better, and one study intersection, SR-92 Westbound Ramps and Hillsdale Boulevard, would operate at LOS E during the PM peak hour.

## CUMULATIVE WITH PROJECT CONDITIONS

This section discusses the effect of proposed project on traffic operations under Cumulative Conditions. Traffic volumes for the Cumulative with Project Conditions were developed using the same additive approach used for the Baseline with Project volumes. The turning movement volumes resulting from adding the project trips to the Cumulative Conditions volumes are shown in Figure 14.

### Intersection Level of Service

Based on these volumes and lane configurations, the Cumulative with Project operations at the study intersections are shown in Table 9. Detailed calculation worksheets for the Cumulative with Project Conditions are provided in Appendix F. Based on the significance criteria previously described, the proposed project would not cause significant impact at any of the study intersections.

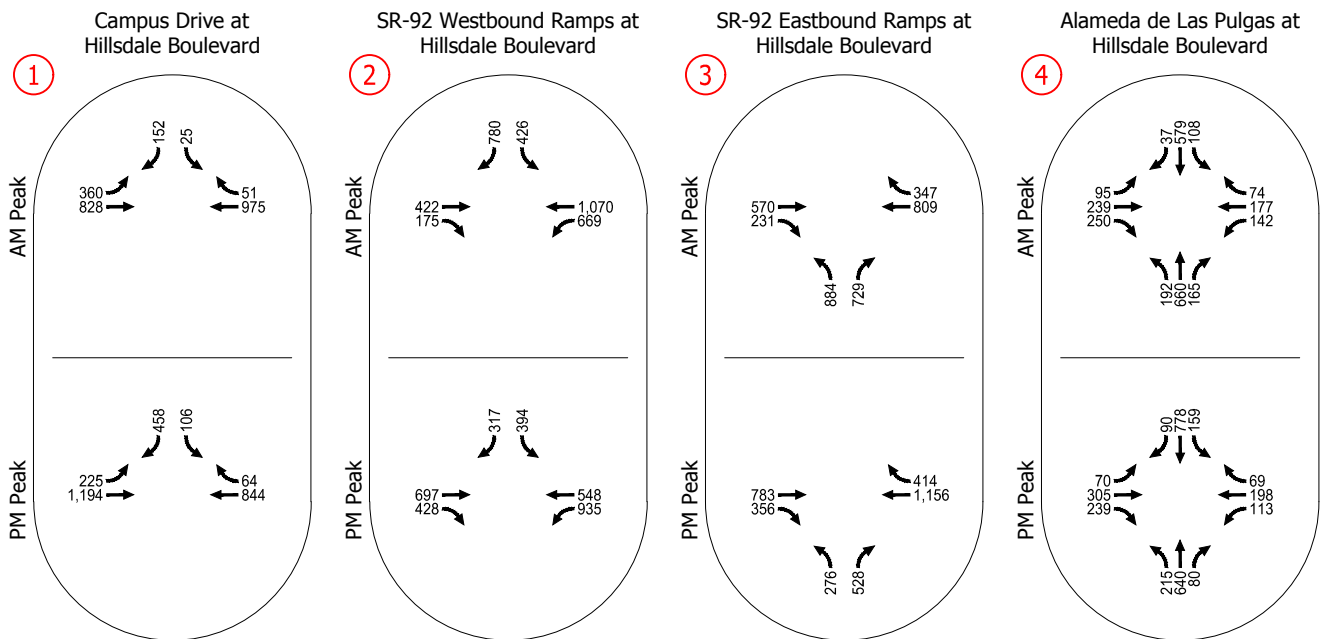


- Traffic Signal

Cumulative Conditions  
Traffic Control and  
Lane Configurations

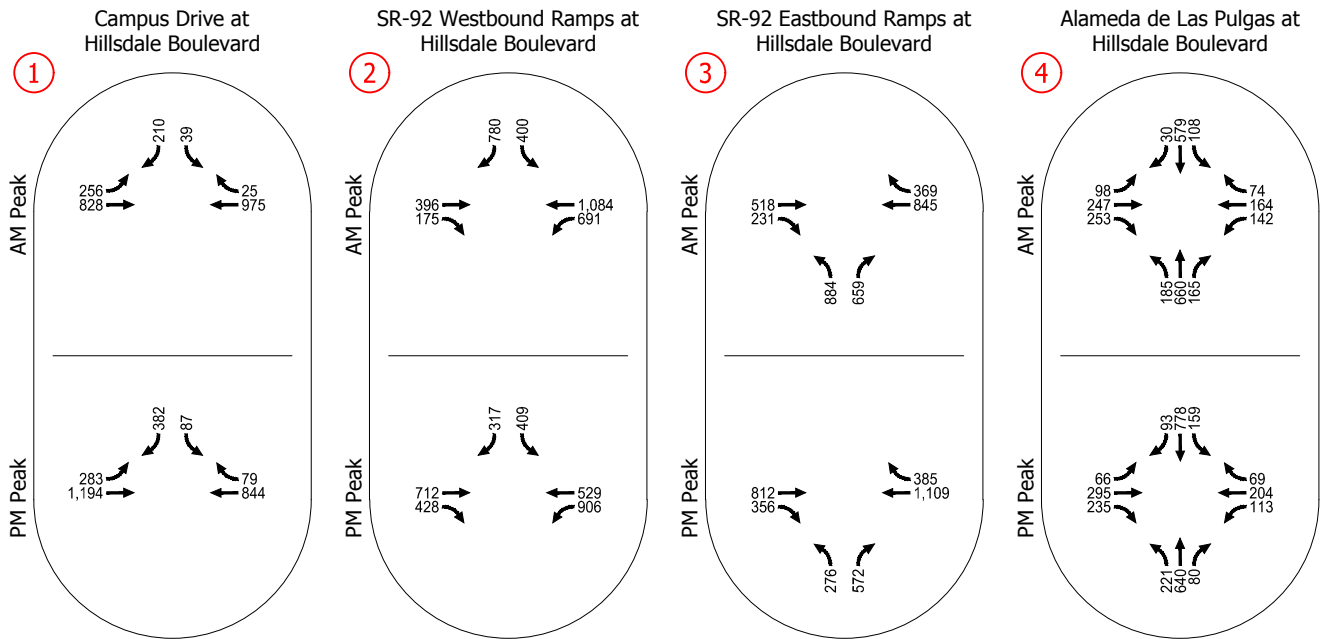
Figure  
12





Cumulative Conditions Peak Hour  
Turning Movement Volumes

Figure  
13



Cumulative with Project Conditions  
Peak Hour Turning Movement Volumes

Figure  
14



**Table 9: Cumulative with Project Conditions Intersection Operations Results**

| No | Location                                    | Scenario     | Weekday AM Peak Hour |     | Weekday PM Peak Hour |          |
|----|---------------------------------------------|--------------|----------------------|-----|----------------------|----------|
|    |                                             |              | Delay                | LOS | Delay                | LOS      |
| 1  | Campus Drive & Hillsdale Boulevard          | No Project   | 13.3                 | B   | 14.3                 | B        |
|    |                                             | Plus Project | 12.9                 | B   | 13.7                 | B        |
| 2  | SR-92 Westbound Ramps & Hillsdale Boulevard | No Project   | 13.2                 | B   | <b>60.9</b>          | <b>E</b> |
|    |                                             | Plus Project | 13.3                 | B   | <b>57.9</b>          | <b>E</b> |
| 3  | SR-92 Eastbound Ramps & Hillsdale Boulevard | No Project   | 36.8                 | D   | 32.7                 | C        |
|    |                                             | Plus Project | 37.5                 | D   | 38.8                 | D        |
| 4  | Alameda de Las Pulgas & Hillsdale Boulevard | No Project   | 17.6                 | B   | 18.2                 | B        |
|    |                                             | Plus Project | 17.8                 | B   | 18.1                 | B        |

Note: **Red bold lettering** indicates an intersection that does not meet the City's minimum acceptable design level of service (LOS D for Signalized intersections); All intersections are signalized; No = intersection number; Delay presented in seconds per vehicle; LOS = level of service.

Source: Highway Capacity Manual 2010; Kittelson & Associates, 2020

As shown in Table 9, three study intersections that would operate at LOS D or better under Cumulative Conditions would continue to operate at LOS D or better under Cumulative with Project Conditions. The SR-92 Westbound Ramps and Hillsdale Boulevard intersection would operate at LOS E under Cumulative Conditions during the PM peak hour and would continue to operate at LOS E during the PM peak hour under Cumulative with Project Conditions. The proposed project would not cause any of the study intersections to exceed the level of service standard, and no intersection modifications would be required.

## 95TH PERCENTILE QUEUE ANALYSIS

In addition to the operations analysis, Kittelson also reviewed the changes in 95<sup>th</sup> percentile queue lengths for the study intersections. Queue lengths are typically evaluated as part of the network-level or design-related considerations (i.e., to gauge interaction between nearby intersections). The 95<sup>th</sup> percentile queue lengths are reported to provide an appropriate storage for all but the worst 5% of traffic scenarios. This report is providing queue lengths at the request of the City. Since there are no impact criteria available to evaluate queue length, this information is presented for informational purposes only.

The queue lengths presented are derived from outputs from Synchro traffic analysis software and are representative of the 95th percentile traffic volumes<sup>14</sup>.

Table 10 displays the existing storage lengths for each approach at the study intersections. Table 11 through Table 13 show the 95<sup>th</sup> percentile queue lengths for the Existing, Baseline, Baseline with Project,

<sup>14</sup> Microsimulation of queues using SimTraffic, another analysis software package, was not performed because this model is typically used in the design phase of a project. For a planning level study, industry practice is to use the Synchro outputs.

Cumulative and Cumulative with Project conditions. A summary of how the proposed project may affect 95<sup>th</sup> percentile queue lengths is as follows:

- Existing Conditions – The westbound left-turn queue length exceeds the existing storage capacity during the weekday peak hours at the SR-92 Westbound Ramps at Hillsdale Boulevard. Similarly, the queue lengths for westbound through movement at the SR-92 Eastbound Ramps at Hillsdale Boulevard, and northbound movement at Alameda de Las Pulgas at Hillsdale Boulevard exceeds the existing link/storage lengths during the weekday peak hours.
- Baseline with Project Conditions – At the SR-92 Westbound Ramps at Hillsdale Boulevard, the project would not increase the westbound left-turn lane queue length, though the number of vehicles present during the weekday peak hours is estimated to exceed the storage capacity. The project would increase queue lengths by five vehicles for the westbound through movement at the SR-92 Eastbound Ramps at Hillsdale Boulevard. For other study intersections, the proposed project would change queue lengths by one or two vehicles on some turning movements.
- Cumulative with Project Conditions – At the SR-92 Westbound Ramps at Hillsdale Boulevard, the project is estimated to increase the westbound left-turn lane queue length by more than two vehicles and would cause additional traffic queue spillback at the intersection of SR-92 Eastbound Ramps at Hillsdale Boulevard. Similarly, the project would increase queue lengths by two vehicles for the northbound right-turn movement and cause queue spillback at the northbound left-turn movement at the SR-92 Eastbound Ramps at Hillsdale Boulevard. For other study intersections, the proposed project would change queue lengths by one or two vehicles on some turning movements.

**Table 10: Existing Storage Lengths**

| # | Location                                             | Storage Length (number of vehicles) |     |    |                     |     |    |                      |    |    |                      |     |    |
|---|------------------------------------------------------|-------------------------------------|-----|----|---------------------|-----|----|----------------------|----|----|----------------------|-----|----|
|   |                                                      | Eastbound Movements                 |     |    | Westbound Movements |     |    | Northbound Movements |    |    | Southbound Movements |     |    |
|   |                                                      | LT                                  | TH  | RT | LT                  | TH  | RT | LT                   | TH | RT | LT                   | TH  | RT |
| 1 | Campus Drive & Hillsdale Boulevard (Signal)          | 6                                   | 10  | -  | -                   | 10  | -  | -                    | -  | -  | 7                    | >20 | 10 |
| 2 | SR-92 Westbound Ramps & Hillsdale Boulevard (Signal) | -                                   | >20 | -  | 8                   | >20 | -  | -                    | -  | -  | 15                   | -   | 15 |
| 3 | SR-92 Eastbound Ramps & Hillsdale Boulevard (Signal) | -                                   | 16  | -  | -                   | 16  | -  | 16                   | -  | 16 | -                    | -   | -  |
| 4 | Alameda de Las Pulgas & Hillsdale Boulevard (AWSC)   | -                                   | >20 | -  | -                   | >20 | -  | -                    | 15 | -  | -                    | 12  | -  |

Notes: LT=Left-Turn Movements; TH = Through Movements; RT=Right-Turn Movements; '-' = Particular movement is not relevant to the intersection.

**Table 11: 95th Percentile Queue Lengths for Existing Conditions**

| #                    | Location<br>(Control)                                | Scenario   | 95 <sup>th</sup> Percentile Queue Length (number of vehicles) |     |     |                    |     |     |                     |     |     |                     |     |     |
|----------------------|------------------------------------------------------|------------|---------------------------------------------------------------|-----|-----|--------------------|-----|-----|---------------------|-----|-----|---------------------|-----|-----|
|                      |                                                      |            | Eastbound Approach                                            |     |     | Westbound Approach |     |     | Northbound Approach |     |     | Southbound Approach |     |     |
|                      |                                                      |            | EBL                                                           | EBT | EBR | WBL                | WBT | WBR | NBL                 | NBT | NBR | SBL                 | SBT | SBR |
| Weekday AM Peak Hour |                                                      |            |                                                               |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard (Signal)          | No Project | 5                                                             | 2   | -   | -                  | 8   | -   | -                   | -   | -   | 2                   | -   | 2   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard (Signal) | No Project | -                                                             | 6   | 0   | 18                 | 6   | -   | -                   | -   | -   | 6                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard (Signal) | No Project | -                                                             | 4   | -   | -                  | 13  | -   | >20                 | -   | 9   | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard (AWSC)   | No Project | 9                                                             |     |     | 14                 |     |     | 19                  |     |     | 13                  |     |     |
| Weekday PM Peak Hour |                                                      |            |                                                               |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard (Signal)          | No Project | 3                                                             | 3   | -   | -                  | 5   | -   | -                   | -   | -   | 4                   | -   | 3   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard (Signal) | No Project | -                                                             | 9   | 0   | >20                | 3   | -   | -                   | -   | -   | 6                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard (Signal) | No Project | -                                                             | 2   | -   | -                  | 12  | -   | 6                   | -   | 5   | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard (AWSC)   | No Project | 11                                                            |     |     | 9                  |     |     | >20                 |     |     | 12                  |     |     |

Notes: EBL = Eastbound Left; EBT = Eastbound Through; EBR = Eastbound Right; similar for W = Westbound, N = Northbound, and S = Southbound movements; AWSC: All-Way Stop Control

'-' = Particular movement is not relevant to the intersection

Bold and shaded cells indicate that the queue lengths exceed the storage lengths for the movement.

**Table 12: 95th Percentile Queue Lengths for Baseline and Baseline with Project Conditions**

| #                    | Location<br>(Control)                                   | Scenario     | 95 <sup>th</sup> Percentile Queue Length (number of vehicles) |     |     |                    |     |     |                     |     |     |                     |     |     |
|----------------------|---------------------------------------------------------|--------------|---------------------------------------------------------------|-----|-----|--------------------|-----|-----|---------------------|-----|-----|---------------------|-----|-----|
|                      |                                                         |              | Eastbound Approach                                            |     |     | Westbound Approach |     |     | Northbound Approach |     |     | Southbound Approach |     |     |
|                      |                                                         |              | EBL                                                           | EBT | EBR | WBL                | WBT | WBR | NBL                 | NBT | NBR | SBL                 | SBT | SBR |
| Weekday AM Peak Hour |                                                         |              |                                                               |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard<br>(Signal)          | No Project   | 5                                                             | 2   | -   | -                  | 8   | -   | -                   | -   | -   | 2                   | -   | 3   |
|                      |                                                         | Plus Project | 4                                                             | 2   | -   | -                  | 7   | -   | -                   | -   | -   | 2                   | -   | 5   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                             | 6   | 0   | 18                 | 6   | -   | -                   | -   | -   | 6                   | -   | 0   |
|                      |                                                         | Plus Project | -                                                             | 6   | 0   | 18                 | 6   | -   | -                   | -   | -   | 6                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                             | 4   | -   | -                  | 14  | -   | >20                 | -   | 9   | -                   | -   | -   |
|                      |                                                         | Plus Project | -                                                             | 4   | -   | -                  | 15  | -   | >20                 | -   | 6   | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard<br>(AWSC)   | No Project   | 9                                                             |     |     | 14                 |     |     | 19                  |     |     | 13                  |     |     |
|                      |                                                         | Plus Project | 9                                                             |     |     | 14                 |     |     | >20                 |     |     | 12                  |     |     |
| Weekday PM Peak Hour |                                                         |              |                                                               |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard<br>(Signal)          | No Project   | 3                                                             | 3   | -   | -                  | 6   | -   | -                   | -   | -   | 4                   | -   | 7   |
|                      |                                                         | Plus Project | 4                                                             | 3   | -   | -                  | 6   | -   | -                   | -   | -   | 3                   | -   | 6   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                             | 9   | 0   | >20                | 3   | -   | -                   | -   | -   | 6                   | -   | 0   |
|                      |                                                         | Plus Project | -                                                             | 9   | 0   | >20                | 3   | -   | -                   | -   | -   | 6                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                             | 2   | -   | -                  | 7   | -   | 6                   | -   | 5   | -                   | -   | -   |
|                      |                                                         | Plus Project | -                                                             | 3   | -   | -                  | 12  | -   | 6                   | -   | 7   | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard<br>(AWSC)   | No Project   | 11                                                            |     |     | 9                  |     |     | >20                 |     |     | 12                  |     |     |
|                      |                                                         | Plus Project | 11                                                            |     |     | 10                 |     |     | 19                  |     |     | 12                  |     |     |

Notes: EBL = Eastbound Left; EBT = Eastbound Through; EBR = Eastbound Right; similar for W = Westbound, N = Northbound, and S = Southbound movements; AWSC: All-Way Stop Control

'-' = Particular movement is not relevant to the intersection

Bold and shaded cells indicate that the queue lengths exceed the storage lengths for the movement.



**Table 13: 95th Percentile Queue Lengths for Cumulative and Cumulative with Project Conditions**

| #                    | Location<br>(Control)                                   | Scenario     | 95 <sup>th</sup> Percentile Queue Length (vehicles) |     |     |                    |     |     |                     |     |     |                     |     |     |
|----------------------|---------------------------------------------------------|--------------|-----------------------------------------------------|-----|-----|--------------------|-----|-----|---------------------|-----|-----|---------------------|-----|-----|
|                      |                                                         |              | Eastbound Approach                                  |     |     | Westbound Approach |     |     | Northbound Approach |     |     | Southbound Approach |     |     |
|                      |                                                         |              | EBL                                                 | EBT | EBR | WBL                | WBT | WBR | NBL                 | NBT | NBR | SBL                 | SBT | SBR |
| Weekday AM Peak Hour |                                                         |              |                                                     |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard<br>(Signal)          | No Project   | 5                                                   | 3   | -   | -                  | 10  | -   | -                   | -   | -   | 2                   | -   | 4   |
|                      |                                                         | Plus Project | 4                                                   | 3   | -   | -                  | 9   | -   | -                   | -   | -   | 2                   | -   | 5   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                   | 8   | 0   | >20                | 7   | -   | -                   | -   | -   | 7                   | -   | 0   |
|                      |                                                         | Plus Project | -                                                   | 7   | 0   | >20                | 7   | -   | -                   | -   | -   | 7                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                   | 5   | -   | -                  | 17  | -   | >20                 | -   | >20 | -                   | -   | -   |
|                      |                                                         | Plus Project | -                                                   | 5   | -   | -                  | 19  | -   | >20                 | -   | 14  | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard<br>(Signal) | No Project   | 4                                                   | 4   | -   | 6                  | 6   | -   | 2                   | 8   | -   | 5                   | 4   | -   |
|                      |                                                         | Plus Project | 4                                                   | 4   | -   | 6                  | 6   | -   | 2                   | 9   | -   | 5                   | 3   | -   |
| Weekday PM Peak Hour |                                                         |              |                                                     |     |     |                    |     |     |                     |     |     |                     |     |     |
| 1                    | Campus Drive & Hillsdale Boulevard<br>(Signal)          | No Project   | 3                                                   | 4   | -   | -                  | 10  | -   | -                   | -   | -   | 4                   | -   | 8   |
|                      |                                                         | Plus Project | 4                                                   | 3   | -   | -                  | 9   | -   | -                   | -   | -   | 3                   | -   | 7   |
| 2                    | SR-92 Westbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                   | 13  | 0   | >20                | 3   | -   | -                   | -   | -   | 8                   | -   | 0   |
|                      |                                                         | Plus Project | -                                                   | 13  | 0   | >20                | 3   | -   | -                   | -   | -   | 8                   | -   | 0   |
| 3                    | SR-92 Eastbound Ramps & Hillsdale Boulevard<br>(Signal) | No Project   | -                                                   | 4   | -   | -                  | 17  | -   | 7                   | -   | 14  | -                   | -   | -   |
|                      |                                                         | Plus Project | -                                                   | 4   | -   | -                  | 16  | -   | 7                   | -   | 16  | -                   | -   | -   |
| 4                    | Alameda de Las Pulgas & Hillsdale Boulevard<br>(Signal) | No Project   | 5                                                   | 6   | -   | 8                  | 5   | -   | 2                   | 10  | -   | 4                   | 4   | -   |
|                      |                                                         | Plus Project | 5                                                   | 6   | -   | 8                  | 5   | -   | 2                   | 10  | -   | 4                   | 4   | -   |

Notes: EBL = Eastbound Left; EBT = Eastbound Through; EBR = Eastbound Right; similar for W = Westbound, N = Northbound, and S = Southbound movements

'-' = Particular movement is not relevant to the intersection

Bold and shaded cells indicate that the queue lengths exceed the storage lengths for the movement.

## TECHNICAL APPENDIX

## Appendix A: Traffic Volume Estimation Memo

## MEMORANDUM - FINAL

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Date: August 13, 2020

Project #: 24837

To: Rendell Bustos  
City of San Mateo  
330 West 20th Avenue  
San Mateo, CA 94403

Cc: Sue-Ellen Atkinson, Bethany Lopez

From: Amanda Leahy, AICP and Anusha Musunuru, PhD

Project: Peninsula Heights Traffic Impact Analysis

Subject: Traffic Volume Estimation Memorandum – Final

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Kittelison & Associates, Inc. (Kittelison) has prepared this traffic volume estimation memorandum for the proposed Peninsula Heights development in San Mateo, California. The purpose of this memorandum is to summarize the methodology associated with estimating traffic volumes for the existing conditions because new data collection at the site is not recommended due to COVID-19 conditions.<sup>1</sup> The project description, trip generation and trip distribution are covered in detail in the Trip Generation Memorandum submitted on August 5, 2020.

## STUDY INTERSECTIONS

The study area and study intersections for this traffic impact analysis are based on the forecast trip generation of the development and the anticipated background traffic in the vicinity of the development. The proposed study intersections are:

1. Campus Drive at Hillsdale Boulevard
2. SR-92 Westbound Ramps at Hillsdale Boulevard
3. SR-92 Eastbound Ramps at Hillsdale Boulevard
4. Alameda de Las Pulgas at Hillsdale Boulevard

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<sup>1</sup> The COVID-19 pandemic has resulted in shelter-in-place orders across the Bay Area and travel demand is significantly reduced across all modes. Travel patterns have also changed substantially. These changes are the result of multiple factors such as school closures, restrictions on business operations, and an increased amount of telecommuting.



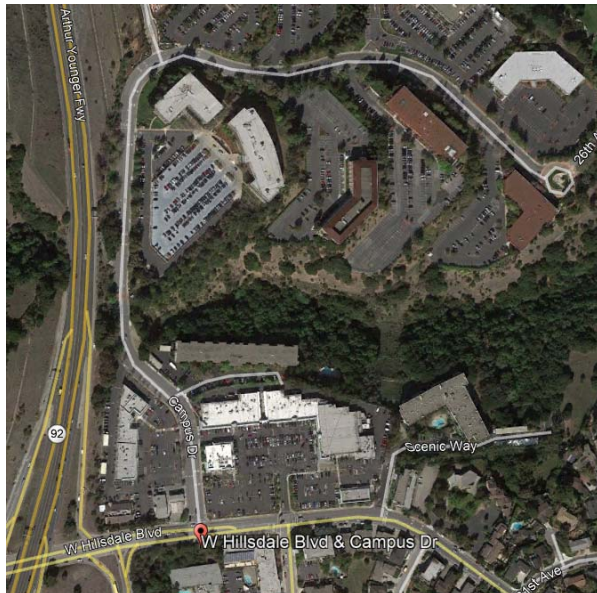
## TRAFFIC VOLUMES

Due to the current atypical traffic conditions associated with the COVID-19 pandemic, Kittelson proposes to develop an existing conditions analysis using historic traffic count data and engineering judgment to produce reasonable estimates of existing traffic volumes under a normal (i.e., non-pandemic) design time period. The historic turning movement counts will be adjusted to estimate reasonable baseline traffic demand in 2020. The following historical turning movement and average daily traffic (ADT) counts have been identified for use.

- Campus Drive at Hillsdale Boulevard: 2018 counts – AM & PM peak hours and 2020 ADT for Campus Drive
- SR-92 Westbound Ramps at Hillsdale Boulevard: 2014 counts – AM & PM peak hours
- SR-92 Eastbound Ramps at Hillsdale Boulevard: 2014 counts – AM & PM peak hours
- Alameda de Las Pulgas at Hillsdale Boulevard: 2016 counts – AM & PM peak hours and 2018 ADT for Hillsdale Boulevard and Alameda de Las Pulgas.

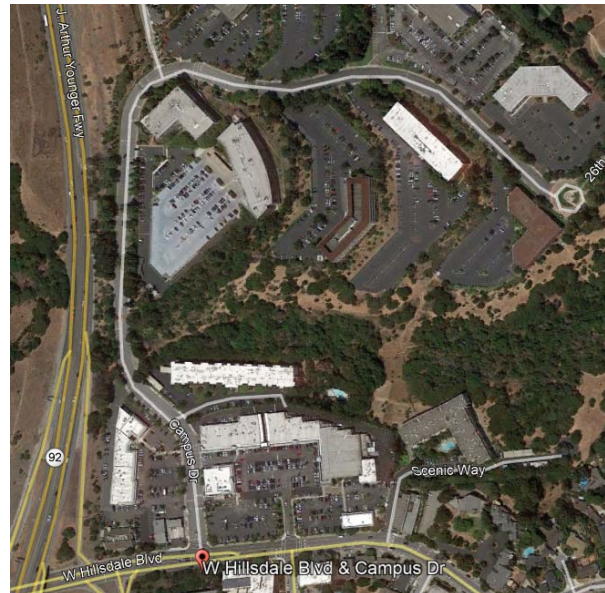
We propose to adjust the traffic counts above to estimated 2020 traffic conditions. The adjustments will reflect a variety of factors including local development, and growth in regional traffic. Exhibits 1 and 2 are aerial photos illustrating the study area in 2014 and imagery for the latest date available (2018, in this case) for context. As is notable from the aerials, no new development has occurred along Hillsdale Boulevard or Campus Drive, i.e. near the project vicinity.

**Exhibit 1. Aerial of Study Area in 2014**



Source: Google Earth 2/23/2014

**Exhibit 2. Aerial of Study Area in 2018**



Source: Google Earth 8/9/2020

Assuming City staff concur with the general methodology above, we will proceed with a detailed derivation of 2020 counts and preview the estimate with City staff.

The growth rates for Campus Drive, Hillsdale Boulevard, and Alameda de Las Pulgas were obtained by interpolating the intersection counts at those locations to the available ADT data on those segments. Once the annual growth rate was calculated for Hillsdale Boulevard, the SR-92 Westbound and Eastbound ramp segments were assumed to have similar growth rate as the side arterial street, i.e. Hillsdale Boulevard as two percent. Specifically, the annual growth rate was calculated for Hillsdale Boulevard using intersection counts at Alameda de Las Pulgas/Hillsdale Boulevard and ADT counts on Hillsdale Boulevard. This growth rate for Hillsdale Boulevard was used at other study locations considering the vicinity of the location (the distance between two farthest study intersections is 1.4 miles), and the count data availability.

Our steps will include:

- Adjust Campus Drive/Hillsdale Boulevard to 1) reflect the calculated annual growth rate of 2 percent on Hillsdale Boulevard and 2) reflect through traffic growth of one percent annually from 2018 to 2020 on Campus Drive (the annual growth rate for Campus Drive was computed using the 2018 intersection counts and 2020 ADT data on Campus Drive at Campus Drive/Hillsdale Boulevard location; the annual growth rate for Hillsdale Boulevard was computed using the 2016 intersection counts and 2018 ADT data on Hillsdale Boulevard at Alameda de Las Pulgas/Hillsdale Boulevard location. The same growth rate that was calculated at that intersection for Hillsdale Boulevard was used at this location as well).
- Adjust SR-92 Westbound Ramps/Hillsdale Boulevard to 1) reflect the calculated annual growth rate of 2 percent on Hillsdale Boulevard and 2) reflect through traffic growth of 2 percent annually on SR-92 Westbound Ramps (the annual growth rate for Hillsdale Boulevard was calculated by interpolating intersection counts to the available ADT data, the SR-92 Westbound ramp segments were assumed to have a similar growth rate as the side arterial street, i.e. Hillsdale Boulevard).
- Adjust SR-92 Eastbound Ramps /Hillsdale Boulevard to 1) reflect the calculated annual growth rate of 2 percent on Hillsdale Boulevard and 2) reflect through traffic growth of 2 percent annually on SR-92 Eastbound Ramps (the annual growth rate for Hillsdale Boulevard was calculated by interpolating intersection counts to the available ADT data, the SR-92 Eastbound ramp segments were assumed to have a similar growth rate as the side arterial street, i.e. Hillsdale Boulevard).
- Adjust Alameda de Las Pulgas/Hillsdale Boulevard to 1) reflect the calculated annual growth rate of 2 percent on Hillsdale Boulevard and 2) reflect through traffic growth of 2 and half percent annually from 2016 to 2020 on Alameda de Las Pulgas (the annual growth rates for Alameda de Las Pulgas and Hillsdale Boulevard were computed by interpolating 2016 intersection counts to the available 2020 ADT data).

The historic traffic counts for the intersections, and the baseline 2020 counts estimated using the methodology above are provided in Table 1 and Table 2, respectively.

## NEXT STEPS

This memorandum has provided Kittelson’s proposed methodology for adjusting historic, pre-COVID-19 conditions to represent reasonable baseline conditions in 2020. Upon City review and approval of the methodology and outputs, Kittelson will proceed with the analysis.

**Table 1: Historic Traffic Counts at Study Intersections**

| Intersection (Year)                         | Northbound |     |     | Southbound |     |     | Eastbound |     |     | Westbound |     |     | PHF  |
|---------------------------------------------|------------|-----|-----|------------|-----|-----|-----------|-----|-----|-----------|-----|-----|------|
|                                             | LT         | TH  | RT  | LT         | TH  | RT  | LT        | TH  | RT  | LT        | TH  | RT  |      |
| AM Peak Hour                                |            |     |     |            |     |     |           |     |     |           |     |     |      |
| Campus Dr/Hillsdale Blvd (2018)             | 0          | 0   | 0   | 22         | 0   | 145 | 332       | 573 | 0   | 0         | 795 | 49  | 1.00 |
| SR 92 WB Ramps/Hillsdale Blvd (2014)        | 0          | 0   | 0   | 309        | 0   | 696 | 0         | 310 | 156 | 508       | 795 | 0   | 0.92 |
| SR 92 EB Ramps/Hillsdale Blvd (2014)        | 679        | 0   | 591 | 0          | 0   | 0   | 0         | 413 | 206 | 0         | 669 | 224 | 0.95 |
| Alameda de Las Pulgas/Hillsdale Blvd (2016) | 105        | 415 | 124 | 98         | 326 | 32  | 58        | 216 | 105 | 88        | 163 | 66  | 0.88 |
| PM Peak Hour                                |            |     |     |            |     |     |           |     |     |           |     |     |      |
| Campus Dr/Hillsdale Blvd (2018)             | 0          | 0   | 0   | 103        | 0   | 437 | 195       | 929 | 0   | 0         | 562 | 51  | 1.00 |
| SR 92 WB Ramps/Hillsdale Blvd (2014)        | 0          | 0   | 0   | 291        | 0   | 283 | 0         | 453 | 316 | 602       | 442 | 0   | 0.91 |
| SR 92 EB Ramps/Hillsdale Blvd (2014)        | 196        | 0   | 582 | 0          | 0   | 0   | 0         | 463 | 317 | 0         | 809 | 344 | 0.95 |
| Alameda de Las Pulgas/Hillsdale Blvd (2016) | 117        | 335 | 72  | 127        | 372 | 37  | 32        | 282 | 116 | 101       | 175 | 59  | 0.96 |

**Table 2: Baseline (2020) Traffic Counts at Study Intersections**

| Intersection (Year)                  | Northbound |     |     | Southbound |     |     | Eastbound |     |     | Westbound |     |     | PHF  |
|--------------------------------------|------------|-----|-----|------------|-----|-----|-----------|-----|-----|-----------|-----|-----|------|
|                                      | LT         | TH  | RT  | LT         | TH  | RT  | LT        | TH  | RT  | LT        | TH  | RT  |      |
| AM Peak Hour                         |            |     |     |            |     |     |           |     |     |           |     |     |      |
| Campus Dr/Hillsdale Blvd             | 0          | 0   | 0   | 23         | 0   | 148 | 346       | 596 | 0   | 0         | 827 | 51  | 1.00 |
| SR 92 WB Ramps/Hillsdale Blvd        | 0          | 0   | 0   | 347        | 0   | 780 | 0         | 348 | 175 | 608       | 951 | 0   | 0.92 |
| SR 92 EB Ramps/Hillsdale Blvd        | 761        | 0   | 662 | 0          | 0   | 0   | 0         | 463 | 231 | 0         | 750 | 251 | 0.95 |
| Alameda de Las Pulgas/Hillsdale Blvd | 116        | 457 | 137 | 108        | 359 | 36  | 63        | 234 | 114 | 96        | 177 | 72  | 0.88 |
| PM Peak Hour                         |            |     |     |            |     |     |           |     |     |           |     |     |      |
| Campus Dr/Hillsdale Blvd             | 0          | 0   | 0   | 106        | 0   | 446 | 203       | 967 | 0   | 0         | 585 | 54  | 1.00 |

|                                          |     |     |     |     |     |     |    |     |     |     |     |     |      |
|------------------------------------------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|------|
| SR 92 WB Ramps/Hillsdale Blvd            | 0   | 0   | 0   | 326 | 0   | 317 | 0  | 508 | 354 | 675 | 496 | 0   | 0.91 |
| SR 92 EB Ramps/Hillsdale Blvd            | 220 | 0   | 652 | 0   | 0   | 0   | 0  | 519 | 356 | 0   | 907 | 386 | 0.95 |
| Alameda de Las Pulgas/<br>Hillsdale Blvd | 129 | 369 | 80  | 140 | 405 | 41  | 35 | 305 | 125 | 110 | 189 | 64  | 0.96 |



## Appendix B: Existing Conditions Synchro Worksheets

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Existing AM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 148                                                                               |   |   |
| Future Volume (veh/h)        | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 148                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 22                                                                                |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 512                                                                               | 3045                                                                              | 2284                                                                              | 141                                                                               | 103                                                                               | 577                                                                               |   |   |
| Arrive On Green              | 0.10                                                                              | 0.58                                                                              | 0.67                                                                              | 0.67                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3480                                                                              | 209                                                                               | 1774                                                                              | 2787                                                                              |   |   |
| Grp Volume(v), veh/h         | 346                                                                               | 596                                                                               | 432                                                                               | 446                                                                               | 23                                                                                | 22                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1826                                                                              | 1774                                                                              | 1393                                                                              |   |   |
| Q Serve(g_s), s              | 7.8                                                                               | 6.4                                                                               | 8.4                                                                               | 8.4                                                                               | 1.0                                                                               | 0.5                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 7.8                                                                               | 6.4                                                                               | 8.4                                                                               | 8.4                                                                               | 1.0                                                                               | 0.5                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.11                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 512                                                                               | 3045                                                                              | 1193                                                                              | 1231                                                                              | 103                                                                               | 577                                                                               |   |   |
| V/C Ratio(X)                 | 0.68                                                                              | 0.20                                                                              | 0.36                                                                              | 0.36                                                                              | 0.22                                                                              | 0.04                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1420                                                                              | 3045                                                                              | 1193                                                                              | 1231                                                                              | 266                                                                               | 832                                                                               |   |   |
| HCM Platoon Ratio            | 0.67                                                                              | 0.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.88                                                                              | 0.88                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 34.2                                                                              | 3.7                                                                               | 5.6                                                                               | 5.6                                                                               | 35.9                                                                              | 25.4                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.1                                                                               | 0.9                                                                               | 0.8                                                                               | 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     | 3.7                                                                               | 3.2                                                                               | 4.4                                                                               | 4.5                                                                               | 0.5                                                                               | 0.4                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 34.7                                                                              | 3.9                                                                               | 6.5                                                                               | 6.4                                                                               | 36.3                                                                              | 25.4                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 942                                                                               | 878                                                                               |                                                                                   | 45                                                                                |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 15.2                                                                              | 6.5                                                                               |                                                                                   | 31.0                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 72.3                                                                              |                                                                                   | 7.7                                                                               | 14.9                                                                              | 57.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 60.0                                                                              |                                                                                   | 10.5                                                                              | 31.5                                                                              | 24.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 8.4                                                                               |                                                                                   | 3.0                                                                               | 9.8                                                                               | 10.4                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.9                                                                               |                                                                                   | 0.0                                                                               | 0.6                                                                               | 6.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Existing AM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 348                                                                               | 175                                                                               | 608                                                                               | 951                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 347                                                                                 | 0                                                                                   | 780                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 348                                                                               | 175                                                                               | 608                                                                               | 951                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 347                                                                                 | 0                                                                                   | 780                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 378                                                                               | 0                                                                                 | 661                                                                               | 1034                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 377                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 813                                                                               | 364                                                                               | 742                                                                               | 2541                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 593                                                                                 | 0                                                                                   | 273                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.23                                                                              | 0.00                                                                              | 0.42                                                                              | 0.72                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 378                                                                               | 0                                                                                 | 661                                                                               | 1034                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 377                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 17.3                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 17.3                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 813                                                                               | 364                                                                               | 742                                                                               | 2541                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 593                                                                                 | 0                                                                                   | 273                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.47                                                                              | 0.00                                                                              | 0.89                                                                              | 0.41                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.64                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2862                                                                              | 1281                                                                              | 1506                                                                              | 2580                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1546                                                                                | 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)           | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.6                                                                              | 0.0                                                                               | 13.5                                                                              | 2.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.3                                                                               | 0.0                                                                               | 8.6                                                                               | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 16.8                                                                              | 0.0                                                                               | 15.0                                                                              | 2.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 1695                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 377                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.8                                                                              |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 19.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 24.4                                                                              | 15.0                                                                              |                                                                                   | 10.6                                                                              |                                                                                   | 39.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.3                                                                              | 6.6                                                                               |                                                                                   | 7.1                                                                               |                                                                                   | 7.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 0.5                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 1.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 10.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Existing AM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 463                                                                               | 231                                                                               | 0                                                                                 | 750                                                                               | 251                                                                               | 761                                                                                 | 0                                                                                   | 662                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 463                                                                               | 231                                                                               | 0                                                                                 | 750                                                                               | 251                                                                               | 761                                                                                 | 0                                                                                   | 662                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 487                                                                               | 0                                                                                 | 0                                                                                 | 789                                                                               | 264                                                                               | 801                                                                                 | 0                                                                                   | 578                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 1199                                                                              | 401                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.46                                                                              | 0.00                                                                              | 0.00                                                                              | 0.15                                                                              | 0.15                                                                              | 0.48                                                                                | 0.00                                                                                | 0.48                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2700                                                                              | 872                                                                               | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 487                                                                               | 0                                                                                 | 0                                                                                 | 536                                                                               | 517                                                                               | 801                                                                                 | 0                                                                                   | 578                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1709                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 0.0                                                                               | 22.8                                                                              | 22.8                                                                              | 34.4                                                                                | 0.0                                                                                 | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 0.0                                                                               | 22.8                                                                              | 22.8                                                                              | 34.4                                                                                | 0.0                                                                                 | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.51                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 814                                                                               | 786                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.21                                                                              | 0.00                                                                              | 0.00                                                                              | 0.66                                                                              | 0.66                                                                              | 0.95                                                                                | 0.00                                                                                | 0.76                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 814                                                                               | 786                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.76                                                                              | 0.00                                                                              | 0.00                                                                              | 0.93                                                                              | 0.93                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 12.9                                                                              | 0.0                                                                               | 0.0                                                                               | 28.0                                                                              | 28.0                                                                              | 19.9                                                                                | 0.0                                                                                 | 17.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 3.9                                                                               | 4.0                                                                               | 16.1                                                                                | 0.0                                                                                 | 3.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.2                                                                               | 0.0                                                                               | 0.0                                                                               | 12.0                                                                              | 11.7                                                                              | 20.5                                                                                | 0.0                                                                                 | 11.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 13.0                                                                              | 0.0                                                                               | 0.0                                                                               | 31.9                                                                              | 32.0                                                                              | 36.1                                                                                | 0.0                                                                                 | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 487                                                                               |                                                                                   |                                                                                   | 1053                                                                              |                                                                                   |                                                                                     | 1379                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 13.0                                                                              |                                                                                   |                                                                                   | 31.9                                                                              |                                                                                   |                                                                                     | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 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     |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                     | 40.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                     | 36.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                   | 1.0                                                                               |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 27.6                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 95.3 |
| Intersection LOS          | F    |

| Movement            | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔↔   |      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 108  | 359  | 36   | 116  | 457  | 137  | 63   | 234  | 114  | 96   | 177  | 72   |
| Future Vol, veh/h   | 108  | 359  | 36   | 116  | 457  | 137  | 63   | 234  | 114  | 96   | 177  | 72   |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 123  | 408  | 41   | 132  | 519  | 156  | 72   | 266  | 130  | 109  | 201  | 82   |
| Number of Lanes     | 0    | 2    | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | SE   | NW    | NE    | SW   |
|----------------------------|------|-------|-------|------|
| Opposing Approach          | NW   | SE    | SW    | NE   |
| Opposing Lanes             | 2    | 2     | 1     | 1    |
| Conflicting Approach Left  | SW   | NE    | SE    | NW   |
| Conflicting Lanes Left     | 1    | 1     | 2     | 2    |
| Conflicting Approach Right | NE   | SW    | NW    | SE   |
| Conflicting Lanes Right    | 1    | 1     | 2     | 2    |
| HCM Control Delay          | 47.6 | 102.6 | 145.8 | 89.4 |
| HCM LOS                    | E    | F     | F     | F    |

| Lane                   | NELn1 | NWLn1  | NWLn2  | SELn1  | SELn2  | SWLn1  |
|------------------------|-------|--------|--------|--------|--------|--------|
| Vol Left, %            | 15%   | 34%    | 0%     | 38%    | 0%     | 28%    |
| Vol Thru, %            | 57%   | 66%    | 63%    | 62%    | 83%    | 51%    |
| Vol Right, %           | 28%   | 0%     | 37%    | 0%     | 17%    | 21%    |
| Sign Control           | Stop  | Stop   | Stop   | Stop   | Stop   | Stop   |
| Traffic Vol by Lane    | 411   | 345    | 366    | 288    | 216    | 345    |
| LT Vol                 | 63    | 116    | 0      | 108    | 0      | 96     |
| Through Vol            | 234   | 229    | 229    | 180    | 180    | 177    |
| RT Vol                 | 114   | 0      | 137    | 0      | 36     | 72     |
| Lane Flow Rate         | 467   | 391    | 415    | 327    | 245    | 392    |
| Geometry Grp           | 2     | 7      | 7      | 7      | 7      | 2      |
| Degree of Util (X)     | 1.208 | 1.067  | 1.082  | 0.9    | 0.654  | 1.031  |
| Departure Headway (Hd) | 9.675 | 10.589 | 10.133 | 10.656 | 10.333 | 10.211 |
| Convergence, Y/N       | Yes   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Cap                    | 378   | 345    | 361    | 343    | 353    | 357    |
| Service Time           | 7.675 | 8.289  | 7.833  | 8.356  | 8.033  | 8.211  |
| HCM Lane V/C Ratio     | 1.235 | 1.133  | 1.15   | 0.953  | 0.694  | 1.098  |
| HCM Control Delay      | 145.8 | 101.2  | 103.9  | 60.3   | 30.6   | 89.4   |
| HCM Lane LOS           | F     | F      | F      | F      | D      | F      |
| HCM 95th-tile Q        | 18.7  | 13.2   | 14     | 8.8    | 4.4    | 12.4   |



HCM 2010 Signalized Intersection Summary  
1: Hillsdale Blvd & Campus Dr

Existing PM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 446                                                                               |   |   |
| Future Volume (veh/h)        | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 446                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 320                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 369                                                                               | 2674                                                                              | 1984                                                                              | 183                                                                               | 269                                                                               | 722                                                                               |   |   |
| Arrive On Green              | 0.14                                                                              | 1.00                                                                              | 0.61                                                                              | 0.61                                                                              | 0.15                                                                              | 0.15                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3370                                                                              | 302                                                                               | 1774                                                                              | 2787                                                                              |   |   |
| Grp Volume(v), veh/h         | 203                                                                               | 967                                                                               | 315                                                                               | 324                                                                               | 106                                                                               | 320                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1809                                                                              | 1774                                                                              | 1393                                                                              |   |   |
| Q Serve(g_s), s              | 3.8                                                                               | 0.0                                                                               | 6.0                                                                               | 6.0                                                                               | 3.8                                                                               | 6.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 3.8                                                                               | 0.0                                                                               | 6.0                                                                               | 6.0                                                                               | 3.8                                                                               | 6.7                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 369                                                                               | 2674                                                                              | 1071                                                                              | 1095                                                                              | 269                                                                               | 722                                                                               |   |   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.36                                                                              | 0.29                                                                              | 0.30                                                                              | 0.39                                                                              | 0.44                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 983                                                                               | 2674                                                                              | 1071                                                                              | 1095                                                                              | 355                                                                               | 856                                                                               |   |   |
| HCM Platoon Ratio            | 1.33                                                                              | 1.33                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.91                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 28.4                                                                              | 0.0                                                                               | 6.6                                                                               | 6.6                                                                               | 26.8                                                                              | 21.7                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.3                                                                               | 0.7                                                                               | 0.7                                                                               | 0.3                                                                               | 0.2                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.8                                                                               | 0.1                                                                               | 3.1                                                                               | 3.2                                                                               | 1.9                                                                               | 5.4                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 28.9                                                                              | 0.3                                                                               | 7.3                                                                               | 7.3                                                                               | 27.1                                                                              | 21.9                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1170                                                                              | 639                                                                               |                                                                                   | 426                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 5.3                                                                               | 7.3                                                                               |                                                                                   | 23.2                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 56.4                                                                              |                                                                                   | 13.6                                                                              | 10.5                                                                              | 45.9                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 48.0                                                                              |                                                                                   | 12.5                                                                              | 18.5                                                                              | 25.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   | 8.7                                                                               | 5.8                                                                               | 8.0                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 13.0                                                                              |                                                                                   | 0.4                                                                               | 0.3                                                                               | 5.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Existing PM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 508                                                                               | 354                                                                               | 675                                                                               | 496                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 326                                                                                 | 0                                                                                   | 317                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 508                                                                               | 354                                                                               | 675                                                                               | 496                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 326                                                                                 | 0                                                                                   | 317                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 558                                                                               | 0                                                                                 | 742                                                                               | 545                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 358                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 787                                                                               | 352                                                                               | 810                                                                               | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 553                                                                                 | 0                                                                                   | 254                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.22                                                                              | 0.00                                                                              | 0.46                                                                              | 0.74                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 558                                                                               | 0                                                                                 | 742                                                                               | 545                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 358                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 21.9                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 21.9                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 787                                                                               | 352                                                                               | 810                                                                               | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 553                                                                                 | 0                                                                                   | 254                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.71                                                                              | 0.00                                                                              | 0.92                                                                              | 0.21                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.65                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2559                                                                              | 1145                                                                              | 1346                                                                              | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1382                                                                                | 0                                                                                   | 636                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 20.1                                                                              | 0.0                                                                               | 14.2                                                                              | 2.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 3.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 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                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 4.0                                                                               | 0.0                                                                               | 11.4                                                                              | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 20.6                                                                              | 0.0                                                                               | 18.1                                                                              | 2.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 558                                                                               |                                                                                   |                                                                                   | 1287                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 358                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 22.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 29.1                                                                              | 16.0                                                                              |                                                                                   | 11.0                                                                              |                                                                                   | 45.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 23.9                                                                              | 10.2                                                                              |                                                                                   | 7.5                                                                               |                                                                                   | 4.6                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.8                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 0.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Existing PM  
10/02/2020

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  |      |      | ↑↑   |      | ↑    |      | ↑    |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 519  | 356  | 0    | 907  | 386  | 220  | 0    | 652  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 519  | 356  | 0    | 907  | 386  | 220  | 0    | 652  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| 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                                                                                  | 1863 | 1900 | 0    | 1863 | 1900 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 546  | 0    | 0    | 955  | 406  | 232  | 0    | 446  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 0    | 0    | 2    | 0    | 1    | 0    | 1    |     |     |     |
| Peak Hour Factor             | 0.95                                                                               | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3106 | 0    | 0    | 1485 | 624  | 564  | 0    | 503  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 0.61 | 0.00 | 0.00 | 0.61 | 0.61 | 0.32 | 0.00 | 0.32 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5421 | 0    | 0    | 2524 | 1022 | 1774 | 0    | 1583 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 546  | 0    | 0    | 692  | 669  | 232  | 0    | 446  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1695 | 0    | 0    | 1770 | 1682 | 1774 | 0    | 1583 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 3.3  | 0.0  | 0.0  | 17.5 | 18.0 | 7.2  | 0.0  | 18.7 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 3.3  | 0.0  | 0.0  | 17.5 | 18.0 | 7.2  | 0.0  | 18.7 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 0.00 | 0.00 |      | 0.61 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3106 | 0    | 0    | 1081 | 1028 | 564  | 0    | 503  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.18 | 0.00 | 0.00 | 0.64 | 0.65 | 0.41 | 0.00 | 0.89 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3106 | 0    | 0    | 1081 | 1028 | 570  | 0    | 509  |     |     |     |
| 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                                                                               | 0.64 | 0.00 | 0.00 | 0.94 | 0.94 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 5.9  | 0.0  | 0.0  | 8.7  | 8.8  | 18.7 | 0.0  | 22.7 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 2.8  | 3.0  | 0.2  | 0.0  | 16.4 |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 1.5  | 0.0  | 0.0  | 9.3  | 9.0  | 3.5  | 0.0  | 10.5 |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 6.0  | 0.0  | 0.0  | 11.5 | 11.8 | 18.9 | 0.0  | 39.0 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | B    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 546  |      |      | 1361 |      |      | 678  |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 6.0  |      |      | 11.6 |      |      | 32.2 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | C    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 45.8 |      |      |      | 45.8 |      | 24.2 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |      |      |      | 4.5  |      | 3.5  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 41.0 |      |      |      | 41.0 |      | 21.0 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 5.3  |      |      |      | 20.0 |      | 20.7 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 0.9  |      |      |      | 1.8  |      | 0.0  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 15.8 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | B    |      |      |      |      |      |     |     |     |

HCM 2010 AWSC  
4: Hillsdale Blvd & Alameda de Las Pulgas

Existing PM  
10/02/2020

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 86.4 |
| Intersection LOS          | F    |

| Movement            | SEL  | SET                                                                               | SER  | NWL  | NWT                                                                               | NWR  | NEL  | NET                                                                                 | NER  | SWL  | SWT                                                                                 | SWR  |
|---------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Lane Configurations |      |  |      |      |  |      |      |  |      |      |  |      |
| Traffic Vol, veh/h  | 140  | 405                                                                               | 41   | 129  | 369                                                                               | 80   | 35   | 305                                                                                 | 125  | 110  | 189                                                                                 | 64   |
| Future Vol, veh/h   | 140  | 405                                                                               | 41   | 129  | 369                                                                               | 80   | 35   | 305                                                                                 | 125  | 110  | 189                                                                                 | 64   |
| Peak Hour Factor    | 0.96 | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                              | 0.96 | 0.96 | 0.96                                                                                | 0.96 | 0.96 | 0.96                                                                                | 0.96 |
| Heavy Vehicles, %   | 2    | 2                                                                                 | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   | 2    | 2    | 2                                                                                   | 2    |
| Mvmt Flow           | 146  | 422                                                                               | 43   | 134  | 384                                                                               | 83   | 36   | 318                                                                                 | 130  | 115  | 197                                                                                 | 67   |
| Number of Lanes     | 0    | 2                                                                                 | 0    | 0    | 2                                                                                 | 0    | 0    | 1                                                                                   | 0    | 0    | 1                                                                                   | 0    |

| Approach                   | SE   | NW   | NE    | SW   |
|----------------------------|------|------|-------|------|
| Opposing Approach          | NW   | SE   | SW    | NE   |
| Opposing Lanes             | 2    | 2    | 1     | 1    |
| Conflicting Approach Left  | SW   | NE   | SE    | NW   |
| Conflicting Lanes Left     | 1    | 1    | 2     | 2    |
| Conflicting Approach Right | NE   | SW   | NW    | SE   |
| Conflicting Lanes Right    | 1    | 1    | 2     | 2    |
| HCM Control Delay          | 57.3 | 48.5 | 175.3 | 79.7 |
| HCM LOS                    | F    | E    | F     | F    |

| Lane                   | NELn1 | NWLn1  | NWLn2  | SELn1  | SELn2  | SWLn1  |
|------------------------|-------|--------|--------|--------|--------|--------|
| Vol Left, %            | 8%    | 41%    | 0%     | 41%    | 0%     | 30%    |
| Vol Thru, %            | 66%   | 59%    | 70%    | 59%    | 83%    | 52%    |
| Vol Right, %           | 27%   | 0%     | 30%    | 0%     | 17%    | 18%    |
| Sign Control           | Stop  | Stop   | Stop   | Stop   | Stop   | Stop   |
| Traffic Vol by Lane    | 465   | 314    | 265    | 343    | 244    | 363    |
| LT Vol                 | 35    | 129    | 0      | 140    | 0      | 110    |
| Through Vol            | 305   | 185    | 185    | 203    | 203    | 189    |
| RT Vol                 | 125   | 0      | 80     | 0      | 41     | 64     |
| Lane Flow Rate         | 484   | 327    | 276    | 357    | 254    | 378    |
| Geometry Grp           | 2     | 7      | 7      | 7      | 7      | 2      |
| Degree of Util (X)     | 1.286 | 0.893  | 0.721  | 0.971  | 0.668  | 0.991  |
| Departure Headway (Hd) | 9.56  | 10.765 | 10.323 | 10.715 | 10.373 | 10.445 |
| Convergence, Y/N       | Yes   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Cap                    | 383   | 340    | 353    | 342    | 350    | 352    |
| Service Time           | 7.56  | 8.465  | 8.023  | 8.415  | 8.073  | 8.445  |
| HCM Lane V/C Ratio     | 1.264 | 0.962  | 0.782  | 1.044  | 0.726  | 1.074  |
| HCM Control Delay      | 175.3 | 59.4   | 35.6   | 75.6   | 31.6   | 79.7   |
| HCM Lane LOS           | F     | F      | E      | F      | D      | F      |
| HCM 95th-tile Q        | 21.8  | 8.6    | 5.4    | 10.5   | 4.6    | 11.1   |

## Queues

Existing AM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 346  | 596  | 878  | 23   | 148  |
| v/c Ratio               | 0.57 | 0.21 | 0.41 | 0.13 | 0.16 |
| Control Delay           | 34.2 | 1.4  | 9.8  | 33.7 | 11.6 |
| Queue Delay             | 0.0  | 0.0  | 0.1  | 0.0  | 0.0  |
| Total Delay             | 34.2 | 1.4  | 9.9  | 33.7 | 11.6 |
| Queue Length 50th (ft)  | 82   | 14   | 109  | 11   | 18   |
| Queue Length 95th (ft)  | 122  | 33   | 181  | 31   | 35   |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 1416 | 2894 | 2120 | 265  | 1553 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 370  | 0    | 5    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.24 | 0.21 | 0.50 | 0.09 | 0.10 |
| Intersection Summary    |      |      |      |      |      |



## Queues

Existing AM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



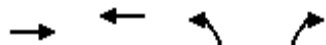
| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 378  | 190  | 661  | 1034 | 377  | 848  |
| v/c Ratio               | 0.59 | 0.12 | 0.71 | 0.39 | 0.62 | 0.54 |
| Control Delay           | 32.8 | 0.2  | 19.8 | 4.1  | 33.4 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 1.1  | 0.1  | 0.0  | 0.0  |
| Total Delay             | 32.8 | 0.2  | 21.0 | 4.2  | 33.4 | 1.3  |
| Queue Length 50th (ft)  | 82   | 0    | 203  | 64   | 80   | 0    |
| Queue Length 95th (ft)  | 145  | 0    | 435  | 132  | 137  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1970 | 1583 | 1034 | 3525 | 1061 | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 175  | 943  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.19 | 0.12 | 0.77 | 0.40 | 0.36 | 0.54 |
| Intersection Summary    |      |      |      |      |      |      |

## Queues

Existing AM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 730  | 1053 | 801  | 578  |
| v/c Ratio               | 0.33 | 0.71 | 0.91 | 0.64 |
| Control Delay           | 11.6 | 18.7 | 33.7 | 11.7 |
| Queue Delay             | 0.0  | 1.5  | 0.0  | 0.0  |
| Total Delay             | 11.6 | 20.3 | 33.7 | 11.7 |
| Queue Length 50th (ft)  | 63   | 250  | 323  | 107  |
| Queue Length 95th (ft)  | 92   | 325  | #562 | 205  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 2226 | 1494 | 941  | 948  |
| Starvation Cap Reductn  | 0    | 255  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.33 | 0.85 | 0.85 | 0.61 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

## Queues

Existing PM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 203  | 967  | 639  | 106  | 446  |
| v/c Ratio               | 0.41 | 0.36 | 0.32 | 0.42 | 0.41 |
| Control Delay           | 29.8 | 3.0  | 9.0  | 31.6 | 8.0  |
| Queue Delay             | 0.0  | 0.2  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 29.8 | 3.2  | 9.0  | 31.6 | 8.0  |
| Queue Length 50th (ft)  | 40   | 59   | 67   | 42   | 34   |
| Queue Length 95th (ft)  | 68   | 71   | 121  | 81   | 59   |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 980  | 2702 | 2017 | 354  | 1424 |
| Starvation Cap Reductn  | 0    | 870  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 131  | 0    | 9    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.21 | 0.53 | 0.34 | 0.30 | 0.32 |
| Intersection Summary    |      |      |      |      |      |

## Queues

Existing PM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 558  | 389  | 742  | 545  | 358  | 348  |
| v/c Ratio               | 0.74 | 0.25 | 0.80 | 0.20 | 0.65 | 0.22 |
| Control Delay           | 37.1 | 0.4  | 26.6 | 3.0  | 38.6 | 0.3  |
| Queue Delay             | 0.0  | 0.0  | 15.5 | 0.0  | 0.0  | 0.0  |
| Total Delay             | 37.1 | 0.4  | 42.0 | 3.0  | 38.6 | 0.3  |
| Queue Length 50th (ft)  | 140  | 0    | 288  | 28   | 89   | 0    |
| Queue Length 95th (ft)  | 212  | 0    | #648 | 61   | 142  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1763 | 1583 | 925  | 3478 | 950  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 182  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.32 | 0.25 | 1.00 | 0.16 | 0.38 | 0.22 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

## Queues

Existing PM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 921  | 1361 | 232  | 446  |
| v/c Ratio               | 0.26 | 0.55 | 0.66 | 0.76 |
| Control Delay           | 2.4  | 5.8  | 34.2 | 15.6 |
| Queue Delay             | 0.0  | 0.2  | 0.0  | 0.0  |
| Total Delay             | 2.4  | 6.0  | 34.2 | 15.6 |
| Queue Length 50th (ft)  | 19   | 105  | 94   | 40   |
| Queue Length 95th (ft)  | 47   | 277  | 140  | 117  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 3587 | 2467 | 568  | 739  |
| Starvation Cap Reductn  | 0    | 349  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.26 | 0.64 | 0.41 | 0.60 |
| Intersection Summary    |      |      |      |      |



## Appendix C: Baseline Conditions Synchro Worksheets

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Baseline AM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 148                                                                               |   |   |
| Future Volume (veh/h)        | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 148                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 346                                                                               | 596                                                                               | 827                                                                               | 51                                                                                | 23                                                                                | 22                                                                                |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 512                                                                               | 3045                                                                              | 2284                                                                              | 141                                                                               | 103                                                                               | 328                                                                               |   |   |
| Arrive On Green              | 0.10                                                                              | 0.58                                                                              | 0.67                                                                              | 0.67                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3480                                                                              | 209                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 346                                                                               | 596                                                                               | 432                                                                               | 446                                                                               | 23                                                                                | 22                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1826                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 7.8                                                                               | 6.4                                                                               | 8.4                                                                               | 8.4                                                                               | 1.0                                                                               | 0.9                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 7.8                                                                               | 6.4                                                                               | 8.4                                                                               | 8.4                                                                               | 1.0                                                                               | 0.9                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.11                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 512                                                                               | 3045                                                                              | 1193                                                                              | 1231                                                                              | 103                                                                               | 328                                                                               |   |   |
| V/C Ratio(X)                 | 0.68                                                                              | 0.20                                                                              | 0.36                                                                              | 0.36                                                                              | 0.22                                                                              | 0.07                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1420                                                                              | 3045                                                                              | 1193                                                                              | 1231                                                                              | 266                                                                               | 473                                                                               |   |   |
| HCM Platoon Ratio            | 0.67                                                                              | 0.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.88                                                                              | 0.88                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 34.2                                                                              | 3.7                                                                               | 5.6                                                                               | 5.6                                                                               | 35.9                                                                              | 25.5                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.1                                                                               | 0.9                                                                               | 0.8                                                                               | 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     | 3.7                                                                               | 3.2                                                                               | 4.4                                                                               | 4.5                                                                               | 0.5                                                                               | 0.9                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 34.7                                                                              | 3.9                                                                               | 6.5                                                                               | 6.4                                                                               | 36.3                                                                              | 25.5                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 942                                                                               | 878                                                                               |                                                                                   | 45                                                                                |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 15.2                                                                              | 6.5                                                                               |                                                                                   | 31.1                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 72.3                                                                              |                                                                                   | 7.7                                                                               | 14.9                                                                              | 57.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 60.0                                                                              |                                                                                   | 10.5                                                                              | 31.5                                                                              | 24.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 8.4                                                                               |                                                                                   | 3.0                                                                               | 9.8                                                                               | 10.4                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.9                                                                               |                                                                                   | 0.0                                                                               | 0.6                                                                               | 6.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Baseline AM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 348                                                                               | 175                                                                               | 608                                                                               | 951                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 347                                                                                 | 0                                                                                   | 780                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 348                                                                               | 175                                                                               | 608                                                                               | 951                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 347                                                                                 | 0                                                                                   | 780                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 378                                                                               | 0                                                                                 | 661                                                                               | 1034                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 377                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 813                                                                               | 364                                                                               | 742                                                                               | 2541                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 593                                                                                 | 0                                                                                   | 273                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.23                                                                              | 0.00                                                                              | 0.42                                                                              | 0.72                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 378                                                                               | 0                                                                                 | 661                                                                               | 1034                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 377                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 17.3                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 17.3                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 813                                                                               | 364                                                                               | 742                                                                               | 2541                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 593                                                                                 | 0                                                                                   | 273                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.47                                                                              | 0.00                                                                              | 0.89                                                                              | 0.41                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.64                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2862                                                                              | 1281                                                                              | 1506                                                                              | 2580                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1546                                                                                | 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)           | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.6                                                                              | 0.0                                                                               | 13.5                                                                              | 2.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 1.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.3                                                                               | 0.0                                                                               | 8.6                                                                               | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 16.8                                                                              | 0.0                                                                               | 15.0                                                                              | 2.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 1695                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 377                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.8                                                                              |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 19.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 24.4                                                                              | 15.0                                                                              |                                                                                   | 10.6                                                                              |                                                                                   | 39.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.3                                                                              | 6.6                                                                               |                                                                                   | 7.1                                                                               |                                                                                   | 7.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 0.5                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 1.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 10.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Baseline AM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 463                                                                               | 231                                                                               | 0                                                                                 | 750                                                                               | 251                                                                               | 761                                                                                 | 0                                                                                   | 662                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 463                                                                               | 231                                                                               | 0                                                                                 | 750                                                                               | 251                                                                               | 761                                                                                 | 0                                                                                   | 662                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 487                                                                               | 0                                                                                 | 0                                                                                 | 789                                                                               | 264                                                                               | 801                                                                                 | 0                                                                                   | 578                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 1199                                                                              | 401                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.46                                                                              | 0.00                                                                              | 0.00                                                                              | 0.15                                                                              | 0.15                                                                              | 0.48                                                                                | 0.00                                                                                | 0.48                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2700                                                                              | 872                                                                               | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 487                                                                               | 0                                                                                 | 0                                                                                 | 536                                                                               | 517                                                                               | 801                                                                                 | 0                                                                                   | 578                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1709                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 0.0                                                                               | 22.8                                                                              | 22.8                                                                              | 34.4                                                                                | 0.0                                                                                 | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 0.0                                                                               | 22.8                                                                              | 22.8                                                                              | 34.4                                                                                | 0.0                                                                                 | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.51                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 814                                                                               | 786                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.21                                                                              | 0.00                                                                              | 0.00                                                                              | 0.66                                                                              | 0.66                                                                              | 0.95                                                                                | 0.00                                                                                | 0.76                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2340                                                                              | 0                                                                                 | 0                                                                                 | 814                                                                               | 786                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.76                                                                              | 0.00                                                                              | 0.00                                                                              | 0.92                                                                              | 0.92                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 12.9                                                                              | 0.0                                                                               | 0.0                                                                               | 28.0                                                                              | 28.0                                                                              | 19.9                                                                                | 0.0                                                                                 | 17.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 3.8                                                                               | 3.9                                                                               | 16.1                                                                                | 0.0                                                                                 | 3.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.2                                                                               | 0.0                                                                               | 0.0                                                                               | 12.0                                                                              | 11.7                                                                              | 20.5                                                                                | 0.0                                                                                 | 11.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 13.0                                                                              | 0.0                                                                               | 0.0                                                                               | 31.8                                                                              | 31.9                                                                              | 36.1                                                                                | 0.0                                                                                 | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 487                                                                               |                                                                                   |                                                                                   | 1053                                                                              |                                                                                   |                                                                                     | 1379                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 13.0                                                                              |                                                                                   |                                                                                   | 31.9                                                                              |                                                                                   |                                                                                     | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 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     |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                     | 40.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                     | 36.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                   | 1.0                                                                               |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 27.6                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 95.3 |
| Intersection LOS          | F    |

| Movement            | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕↕   |      |      | ↕↕   |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 108  | 359  | 36   | 116  | 457  | 137  | 63   | 234  | 114  | 96   | 177  | 72   |
| Future Vol, veh/h   | 108  | 359  | 36   | 116  | 457  | 137  | 63   | 234  | 114  | 96   | 177  | 72   |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 123  | 408  | 41   | 132  | 519  | 156  | 72   | 266  | 130  | 109  | 201  | 82   |
| Number of Lanes     | 0    | 2    | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | SE   | NW    | NE    | SW   |
|----------------------------|------|-------|-------|------|
| Opposing Approach          | NW   | SE    | SW    | NE   |
| Opposing Lanes             | 2    | 2     | 1     | 1    |
| Conflicting Approach Left  | SW   | NE    | SE    | NW   |
| Conflicting Lanes Left     | 1    | 1     | 2     | 2    |
| Conflicting Approach Right | NE   | SW    | NW    | SE   |
| Conflicting Lanes Right    | 1    | 1     | 2     | 2    |
| HCM Control Delay          | 47.6 | 102.6 | 145.8 | 89.4 |
| HCM LOS                    | E    | F     | F     | F    |

| Lane                   | NELn1 | NWLn1  | NWLn2  | SELn1  | SELn2  | SWLn1  |
|------------------------|-------|--------|--------|--------|--------|--------|
| Vol Left, %            | 15%   | 34%    | 0%     | 38%    | 0%     | 28%    |
| Vol Thru, %            | 57%   | 66%    | 63%    | 62%    | 83%    | 51%    |
| Vol Right, %           | 28%   | 0%     | 37%    | 0%     | 17%    | 21%    |
| Sign Control           | Stop  | Stop   | Stop   | Stop   | Stop   | Stop   |
| Traffic Vol by Lane    | 411   | 345    | 366    | 288    | 216    | 345    |
| LT Vol                 | 63    | 116    | 0      | 108    | 0      | 96     |
| Through Vol            | 234   | 229    | 229    | 180    | 180    | 177    |
| RT Vol                 | 114   | 0      | 137    | 0      | 36     | 72     |
| Lane Flow Rate         | 467   | 391    | 415    | 327    | 245    | 392    |
| Geometry Grp           | 2     | 7      | 7      | 7      | 7      | 2      |
| Degree of Util (X)     | 1.208 | 1.067  | 1.082  | 0.9    | 0.654  | 1.031  |
| Departure Headway (Hd) | 9.675 | 10.589 | 10.133 | 10.656 | 10.333 | 10.211 |
| Convergence, Y/N       | Yes   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Cap                    | 378   | 345    | 361    | 343    | 353    | 357    |
| Service Time           | 7.675 | 8.289  | 7.833  | 8.356  | 8.033  | 8.211  |
| HCM Lane V/C Ratio     | 1.235 | 1.133  | 1.15   | 0.953  | 0.694  | 1.098  |
| HCM Control Delay      | 145.8 | 101.2  | 103.9  | 60.3   | 30.6   | 89.4   |
| HCM Lane LOS           | F     | F      | F      | F      | D      | F      |
| HCM 95th-tile Q        | 18.7  | 13.2   | 14     | 8.8    | 4.4    | 12.4   |



# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Baseline PM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 446                                                                               |   |   |
| Future Volume (veh/h)        | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 446                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 203                                                                               | 967                                                                               | 585                                                                               | 54                                                                                | 106                                                                               | 320                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 373                                                                               | 2503                                                                              | 1822                                                                              | 168                                                                               | 355                                                                               | 488                                                                               |   |   |
| Arrive On Green              | 0.11                                                                              | 0.71                                                                              | 0.56                                                                              | 0.56                                                                              | 0.20                                                                              | 0.20                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3370                                                                              | 302                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 203                                                                               | 967                                                                               | 315                                                                               | 324                                                                               | 106                                                                               | 320                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1809                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 3.9                                                                               | 7.7                                                                               | 6.7                                                                               | 6.8                                                                               | 3.6                                                                               | 12.3                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 3.9                                                                               | 7.7                                                                               | 6.7                                                                               | 6.8                                                                               | 3.6                                                                               | 12.3                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 373                                                                               | 2503                                                                              | 984                                                                               | 1006                                                                              | 355                                                                               | 488                                                                               |   |   |
| V/C Ratio(X)                 | 0.54                                                                              | 0.39                                                                              | 0.32                                                                              | 0.32                                                                              | 0.30                                                                              | 0.66                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 983                                                                               | 2503                                                                              | 984                                                                               | 1006                                                                              | 355                                                                               | 488                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.91                                                                              | 0.91                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 29.6                                                                              | 4.1                                                                               | 8.4                                                                               | 8.4                                                                               | 23.8                                                                              | 21.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.4                                                                               | 0.9                                                                               | 0.8                                                                               | 0.2                                                                               | 2.5                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.9                                                                               | 3.8                                                                               | 3.5                                                                               | 3.6                                                                               | 1.8                                                                               | 10.8                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 30.0                                                                              | 4.5                                                                               | 9.3                                                                               | 9.2                                                                               | 24.0                                                                              | 23.5                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1170                                                                              | 639                                                                               |                                                                                   | 426                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 9.0                                                                               | 9.3                                                                               |                                                                                   | 23.6                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 53.0                                                                              |                                                                                   | 17.0                                                                              | 10.6                                                                              | 42.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 48.0                                                                              |                                                                                   | 12.5                                                                              | 18.5                                                                              | 25.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 9.7                                                                               |                                                                                   | 14.3                                                                              | 5.9                                                                               | 8.8                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 12.3                                                                              |                                                                                   | 0.0                                                                               | 0.3                                                                               | 4.9                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

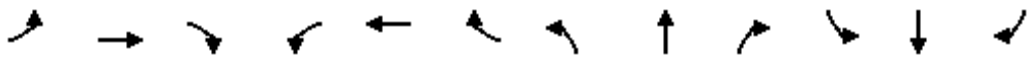
Baseline PM  
10/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 508                                                                               | 354                                                                               | 675                                                                               | 496                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 326                                                                                 | 0                                                                                   | 317                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 508                                                                               | 354                                                                               | 675                                                                               | 496                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 326                                                                                 | 0                                                                                   | 317                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 558                                                                               | 0                                                                                 | 742                                                                               | 545                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 358                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 787                                                                               | 352                                                                               | 810                                                                               | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 553                                                                                 | 0                                                                                   | 254                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.22                                                                              | 0.00                                                                              | 0.46                                                                              | 0.74                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 558                                                                               | 0                                                                                 | 742                                                                               | 545                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 358                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 21.9                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 21.9                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 787                                                                               | 352                                                                               | 810                                                                               | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 553                                                                                 | 0                                                                                   | 254                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.71                                                                              | 0.00                                                                              | 0.92                                                                              | 0.21                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.65                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2559                                                                              | 1145                                                                              | 1346                                                                              | 2623                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1382                                                                                | 0                                                                                   | 636                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 20.1                                                                              | 0.0                                                                               | 14.2                                                                              | 2.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 3.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 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                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 4.0                                                                               | 0.0                                                                               | 11.4                                                                              | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 20.6                                                                              | 0.0                                                                               | 18.1                                                                              | 2.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 558                                                                               |                                                                                   |                                                                                   | 1287                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 358                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 20.6                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 22.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 29.1                                                                              | 16.0                                                                              |                                                                                   | 11.0                                                                              |                                                                                   | 45.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 23.9                                                                              | 10.2                                                                              |                                                                                   | 7.5                                                                               |                                                                                   | 4.6                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.8                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 0.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Baseline PM

10/02/2020

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  |      |      | ↑↑   |      | ↑    |      | ↑    |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 519  | 356  | 0    | 907  | 386  | 220  | 0    | 652  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 519  | 356  | 0    | 907  | 386  | 220  | 0    | 652  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| 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                                                                                  | 1863 | 1900 | 0    | 1863 | 1900 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 546  | 0    | 0    | 955  | 406  | 232  | 0    | 446  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 0    | 0    | 2    | 0    | 1    | 0    | 1    |     |     |     |
| Peak Hour Factor             | 0.95                                                                               | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3106 | 0    | 0    | 1485 | 624  | 564  | 0    | 503  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 0.61 | 0.00 | 0.00 | 0.61 | 0.61 | 0.32 | 0.00 | 0.32 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5421 | 0    | 0    | 2524 | 1022 | 1774 | 0    | 1583 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 546  | 0    | 0    | 692  | 669  | 232  | 0    | 446  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1695 | 0    | 0    | 1770 | 1682 | 1774 | 0    | 1583 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 3.3  | 0.0  | 0.0  | 17.5 | 18.0 | 7.2  | 0.0  | 18.7 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 3.3  | 0.0  | 0.0  | 17.5 | 18.0 | 7.2  | 0.0  | 18.7 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 0.00 | 0.00 |      | 0.61 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3106 | 0    | 0    | 1081 | 1028 | 564  | 0    | 503  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.18 | 0.00 | 0.00 | 0.64 | 0.65 | 0.41 | 0.00 | 0.89 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3106 | 0    | 0    | 1081 | 1028 | 570  | 0    | 509  |     |     |     |
| 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                                                                               | 0.64 | 0.00 | 0.00 | 0.88 | 0.88 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 5.9  | 0.0  | 0.0  | 8.7  | 8.8  | 18.7 | 0.0  | 22.7 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 2.6  | 2.8  | 0.2  | 0.0  | 16.4 |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 1.5  | 0.0  | 0.0  | 9.2  | 9.0  | 3.5  | 0.0  | 10.5 |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 6.0  | 0.0  | 0.0  | 11.3 | 11.6 | 18.9 | 0.0  | 39.0 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | B    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 546  |      |      | 1361 |      |      | 678  |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 6.0  |      |      | 11.4 |      |      | 32.2 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | C    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 45.8 |      |      |      | 45.8 |      | 24.2 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |      |      |      | 4.5  |      | 3.5  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 41.0 |      |      |      | 41.0 |      | 21.0 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 5.3  |      |      |      | 20.0 |      | 20.7 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 0.9  |      |      |      | 1.8  |      | 0.0  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 15.7 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | B    |      |      |      |      |      |     |     |     |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 86.4 |
| Intersection LOS          | F    |

| Movement            | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕↕   |      |      | ↕↕   |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 140  | 405  | 41   | 129  | 369  | 80   | 35   | 305  | 125  | 110  | 189  | 64   |
| Future Vol, veh/h   | 140  | 405  | 41   | 129  | 369  | 80   | 35   | 305  | 125  | 110  | 189  | 64   |
| Peak Hour Factor    | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 146  | 422  | 43   | 134  | 384  | 83   | 36   | 318  | 130  | 115  | 197  | 67   |
| Number of Lanes     | 0    | 2    | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | SE   | NW   | NE    | SW   |
|----------------------------|------|------|-------|------|
| Opposing Approach          | NW   | SE   | SW    | NE   |
| Opposing Lanes             | 2    | 2    | 1     | 1    |
| Conflicting Approach Left  | SW   | NE   | SE    | NW   |
| Conflicting Lanes Left     | 1    | 1    | 2     | 2    |
| Conflicting Approach Right | NE   | SW   | NW    | SE   |
| Conflicting Lanes Right    | 1    | 1    | 2     | 2    |
| HCM Control Delay          | 57.3 | 48.5 | 175.3 | 79.7 |
| HCM LOS                    | F    | E    | F     | F    |

| Lane                   | NELn1 | NWLn1  | NWLn2  | SELn1  | SELn2  | SWLn1  |
|------------------------|-------|--------|--------|--------|--------|--------|
| Vol Left, %            | 8%    | 41%    | 0%     | 41%    | 0%     | 30%    |
| Vol Thru, %            | 66%   | 59%    | 70%    | 59%    | 83%    | 52%    |
| Vol Right, %           | 27%   | 0%     | 30%    | 0%     | 17%    | 18%    |
| Sign Control           | Stop  | Stop   | Stop   | Stop   | Stop   | Stop   |
| Traffic Vol by Lane    | 465   | 314    | 265    | 343    | 244    | 363    |
| LT Vol                 | 35    | 129    | 0      | 140    | 0      | 110    |
| Through Vol            | 305   | 185    | 185    | 203    | 203    | 189    |
| RT Vol                 | 125   | 0      | 80     | 0      | 41     | 64     |
| Lane Flow Rate         | 484   | 327    | 276    | 357    | 254    | 378    |
| Geometry Grp           | 2     | 7      | 7      | 7      | 7      | 2      |
| Degree of Util (X)     | 1.286 | 0.893  | 0.721  | 0.971  | 0.668  | 0.991  |
| Departure Headway (Hd) | 9.56  | 10.765 | 10.323 | 10.715 | 10.373 | 10.445 |
| Convergence, Y/N       | Yes   | Yes    | Yes    | Yes    | Yes    | Yes    |
| Cap                    | 383   | 340    | 353    | 342    | 350    | 352    |
| Service Time           | 7.56  | 8.465  | 8.023  | 8.415  | 8.073  | 8.445  |
| HCM Lane V/C Ratio     | 1.264 | 0.962  | 0.782  | 1.044  | 0.726  | 1.074  |
| HCM Control Delay      | 175.3 | 59.4   | 35.6   | 75.6   | 31.6   | 79.7   |
| HCM Lane LOS           | F     | F      | E      | F      | D      | F      |
| HCM 95th-tile Q        | 21.8  | 8.6    | 5.4    | 10.5   | 4.6    | 11.1   |

## Queues

Baseline AM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 346  | 596  | 878  | 23   | 148  |
| v/c Ratio               | 0.57 | 0.21 | 0.43 | 0.10 | 0.27 |
| Control Delay           | 33.5 | 1.8  | 11.1 | 31.0 | 14.8 |
| Queue Delay             | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Total Delay             | 33.5 | 1.8  | 11.2 | 31.0 | 14.8 |
| Queue Length 50th (ft)  | 79   | 18   | 120  | 10   | 40   |
| Queue Length 95th (ft)  | 120  | 37   | 192  | 31   | 74   |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 1416 | 2810 | 2036 | 265  | 917  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 410  | 0    | 3    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.24 | 0.21 | 0.54 | 0.09 | 0.16 |
| Intersection Summary    |      |      |      |      |      |

## Queues

Baseline AM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 378  | 190  | 661  | 1034 | 377  | 848  |
| v/c Ratio               | 0.59 | 0.12 | 0.71 | 0.39 | 0.62 | 0.54 |
| Control Delay           | 32.8 | 0.2  | 19.8 | 4.1  | 33.4 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 1.1  | 0.1  | 0.0  | 0.0  |
| Total Delay             | 32.8 | 0.2  | 21.0 | 4.2  | 33.4 | 1.3  |
| Queue Length 50th (ft)  | 82   | 0    | 203  | 64   | 80   | 0    |
| Queue Length 95th (ft)  | 145  | 0    | 435  | 132  | 137  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1970 | 1583 | 1034 | 3525 | 1061 | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 175  | 943  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.19 | 0.12 | 0.77 | 0.40 | 0.36 | 0.54 |
| Intersection Summary    |      |      |      |      |      |      |

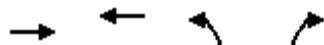


## Queues

Baseline AM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 730  | 1053 | 801  | 578  |
| v/c Ratio               | 0.33 | 0.71 | 0.91 | 0.64 |
| Control Delay           | 11.6 | 18.6 | 33.7 | 11.7 |
| Queue Delay             | 0.0  | 1.4  | 0.0  | 0.0  |
| Total Delay             | 11.6 | 20.0 | 33.7 | 11.7 |
| Queue Length 50th (ft)  | 63   | 254  | 323  | 107  |
| Queue Length 95th (ft)  | 92   | 334  | #562 | 205  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 2226 | 1494 | 941  | 948  |
| Starvation Cap Reductn  | 0    | 245  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.33 | 0.84 | 0.85 | 0.61 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

## Queues

Baseline PM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 203  | 967  | 639  | 106  | 446  |
| v/c Ratio               | 0.38 | 0.38 | 0.35 | 0.32 | 0.64 |
| Control Delay           | 28.1 | 4.1  | 11.4 | 26.9 | 15.4 |
| Queue Delay             | 0.0  | 0.3  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 28.1 | 4.3  | 11.5 | 26.9 | 15.4 |
| Queue Length 50th (ft)  | 39   | 72   | 78   | 39   | 101  |
| Queue Length 95th (ft)  | 61   | 72   | 138  | 80   | 159  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 980  | 2540 | 1818 | 354  | 887  |
| Starvation Cap Reductn  | 0    | 794  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 98   | 0    | 3    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.21 | 0.55 | 0.37 | 0.30 | 0.50 |
| Intersection Summary    |      |      |      |      |      |

## Queues

Baseline PM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 558  | 389  | 742  | 545  | 358  | 348  |
| v/c Ratio               | 0.74 | 0.25 | 0.80 | 0.20 | 0.65 | 0.22 |
| Control Delay           | 37.1 | 0.4  | 26.6 | 3.0  | 38.6 | 0.3  |
| Queue Delay             | 0.0  | 0.0  | 15.5 | 0.0  | 0.0  | 0.0  |
| Total Delay             | 37.1 | 0.4  | 42.0 | 3.0  | 38.6 | 0.3  |
| Queue Length 50th (ft)  | 140  | 0    | 288  | 28   | 89   | 0    |
| Queue Length 95th (ft)  | 212  | 0    | #648 | 61   | 142  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1763 | 1583 | 925  | 3478 | 950  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 182  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.32 | 0.25 | 1.00 | 0.16 | 0.38 | 0.22 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

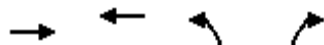
Queue shown is maximum after two cycles.

## Queues

Baseline PM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 921  | 1361 | 232  | 446  |
| v/c Ratio               | 0.26 | 0.55 | 0.66 | 0.76 |
| Control Delay           | 2.4  | 5.6  | 34.2 | 15.6 |
| Queue Delay             | 0.0  | 0.2  | 0.0  | 0.0  |
| Total Delay             | 2.4  | 5.8  | 34.2 | 15.6 |
| Queue Length 50th (ft)  | 19   | 86   | 94   | 40   |
| Queue Length 95th (ft)  | 47   | 153  | 140  | 117  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 3587 | 2467 | 568  | 739  |
| Starvation Cap Reductn  | 0    | 357  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.26 | 0.65 | 0.41 | 0.60 |
| Intersection Summary    |      |      |      |      |

## Appendix D: Baseline with Project Conditions Synchro Worksheets

HCM 2010 Signalized Intersection Summary  
1: Hillsdale Blvd & Campus Dr

Baseline+Project AM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 242                                                                               | 596                                                                               | 827                                                                               | 25                                                                                | 37                                                                                | 206                                                                               |   |   |
| Future Volume (veh/h)        | 242                                                                               | 596                                                                               | 827                                                                               | 25                                                                                | 37                                                                                | 206                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 242                                                                               | 596                                                                               | 827                                                                               | 25                                                                                | 37                                                                                | 80                                                                                |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 406                                                                               | 2961                                                                              | 2390                                                                              | 72                                                                                | 146                                                                               | 317                                                                               |   |   |
| Arrive On Green              | 0.04                                                                              | 0.28                                                                              | 0.68                                                                              | 0.68                                                                              | 0.08                                                                              | 0.08                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3601                                                                              | 106                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 242                                                                               | 596                                                                               | 417                                                                               | 435                                                                               | 37                                                                                | 80                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1844                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 5.5                                                                               | 10.3                                                                              | 7.9                                                                               | 7.9                                                                               | 1.6                                                                               | 3.4                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 5.5                                                                               | 10.3                                                                              | 7.9                                                                               | 7.9                                                                               | 1.6                                                                               | 3.4                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.06                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 406                                                                               | 2961                                                                              | 1206                                                                              | 1256                                                                              | 146                                                                               | 317                                                                               |   |   |
| V/C Ratio(X)                 | 0.60                                                                              | 0.20                                                                              | 0.35                                                                              | 0.35                                                                              | 0.25                                                                              | 0.25                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1420                                                                              | 2961                                                                              | 1206                                                                              | 1256                                                                              | 266                                                                               | 424                                                                               |   |   |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.92                                                                              | 0.92                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 36.6                                                                              | 8.5                                                                               | 5.3                                                                               | 5.3                                                                               | 34.4                                                                              | 27.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.1                                                                               | 0.8                                                                               | 0.8                                                                               | 0.3                                                                               | 0.2                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 5.1                                                                               | 4.1                                                                               | 4.2                                                                               | 0.8                                                                               | 3.2                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 37.1                                                                              | 8.6                                                                               | 6.1                                                                               | 6.1                                                                               | 34.8                                                                              | 27.1                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 838                                                                               | 852                                                                               |                                                                                   | 117                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 16.8                                                                              | 6.1                                                                               |                                                                                   | 29.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 70.4                                                                              |                                                                                   | 9.6                                                                               | 12.4                                                                              | 58.0                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 60.0                                                                              |                                                                                   | 10.5                                                                              | 31.5                                                                              | 24.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 12.3                                                                              |                                                                                   | 5.4                                                                               | 7.5                                                                               | 9.9                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.9                                                                               |                                                                                   | 0.1                                                                               | 0.4                                                                               | 6.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |



HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Baseline+Project AM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 322                                                                               | 175                                                                               | 630                                                                               | 965                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 321                                                                                 | 0                                                                                   | 780                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 322                                                                               | 175                                                                               | 630                                                                               | 965                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 321                                                                                 | 0                                                                                   | 780                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 350                                                                               | 0                                                                                 | 685                                                                               | 1049                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 349                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 805                                                                               | 360                                                                               | 764                                                                               | 2574                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 564                                                                                 | 0                                                                                   | 259                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.23                                                                              | 0.00                                                                              | 0.43                                                                              | 0.73                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 350                                                                               | 0                                                                                 | 685                                                                               | 1049                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 349                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 4.3                                                                               | 0.0                                                                               | 18.1                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.3                                                                               | 0.0                                                                               | 18.1                                                                              | 5.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 805                                                                               | 360                                                                               | 764                                                                               | 2574                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 564                                                                                 | 0                                                                                   | 259                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.43                                                                              | 0.00                                                                              | 0.90                                                                              | 0.41                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.62                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2836                                                                              | 1269                                                                              | 1492                                                                              | 2574                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1532                                                                                | 0                                                                                   | 705                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.7                                                                              | 0.0                                                                               | 13.4                                                                              | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.1                                                                               | 0.0                                                                               | 9.1                                                                               | 2.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 16.9                                                                              | 0.0                                                                               | 14.9                                                                              | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 20.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 350                                                                               |                                                                                   |                                                                                   | 1734                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 349                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.9                                                                              |                                                                                   |                                                                                   | 7.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 20.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 25.3                                                                              | 15.0                                                                              |                                                                                   | 10.3                                                                              |                                                                                   | 40.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 20.1                                                                              | 6.3                                                                               |                                                                                   | 6.8                                                                               |                                                                                   | 7.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.5                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 1.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 10.7                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Baseline+Project AM  
10/02/2020

|                              |  |                                                                                                                                                                      |  |  |                                                                                    |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |    |                                                                                   |                                                                                   |   |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 411                                                                                                                                                                                                                                                   | 231                                                                               | 0                                                                                 | 786                                                                                                                                                                 | 273                                                                               | 761                                                                                 | 0                                                                                   | 610                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 411                                                                                                                                                                                                                                                   | 231                                                                               | 0                                                                                 | 786                                                                                                                                                                 | 273                                                                               | 761                                                                                 | 0                                                                                   | 610                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                                                                                                                                                                                     | 12                                                                                | 1                                                                                 | 6                                                                                                                                                                   | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                                                                                                                                                                                                  | 1900                                                                              | 0                                                                                 | 1863                                                                                                                                                                | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 433                                                                                                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 827                                                                                                                                                                 | 287                                                                               | 801                                                                                 | 0                                                                                   | 501                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                 | 2                                                                                                                                                                   | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                                                                                                                                                                                                  | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                                                                                                | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 0                                                                                 | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2340                                                                                                                                                                                                                                                  | 0                                                                                 | 0                                                                                 | 1187                                                                                                                                                                | 412                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.46                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.00                                                                              | 0.15                                                                                                                                                                | 0.15                                                                              | 0.48                                                                                | 0.00                                                                                | 0.48                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                                                                                                                                                                                                  | 0                                                                                 | 0                                                                                 | 2673                                                                                                                                                                | 894                                                                               | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 433                                                                                                                                                                                                                                                   | 0                                                                                 | 0                                                                                 | 567                                                                                                                                                                 | 547                                                                               | 801                                                                                 | 0                                                                                   | 501                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                                                                                                                                                                                                  | 0                                                                                 | 0                                                                                 | 1770                                                                                                                                                                | 1705                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 4.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 24.3                                                                                                                                                                | 24.4                                                                              | 34.4                                                                                | 0.0                                                                                 | 19.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 4.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 24.3                                                                                                                                                                | 24.4                                                                              | 34.4                                                                                | 0.0                                                                                 | 19.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                                                                                                                                                                                       | 0.00                                                                              | 0.00                                                                              |                                                                                                                                                                     | 0.52                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2340                                                                                                                                                                                                                                                  | 0                                                                                 | 0                                                                                 | 814                                                                                                                                                                 | 785                                                                               | 847                                                                                 | 0                                                                                   | 756                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.19                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.00                                                                              | 0.70                                                                                                                                                                | 0.70                                                                              | 0.95                                                                                | 0.00                                                                                | 0.66                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2340                                                                                                                                                                                                                                                  | 0                                                                                 | 0                                                                                 | 814                                                                                                                                                                 | 785                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                              | 0.33                                                                                                                                                                | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.77                                                                                                                                                                                                                                                  | 0.00                                                                              | 0.00                                                                              | 0.92                                                                                                                                                                | 0.92                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 12.7                                                                                                                                                                                                                                                  | 0.0                                                                               | 0.0                                                                               | 28.6                                                                                                                                                                | 28.6                                                                              | 19.9                                                                                | 0.0                                                                                 | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 4.5                                                                                                                                                                 | 4.7                                                                               | 16.2                                                                                | 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                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 1.9                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                               | 12.9                                                                                                                                                                | 12.5                                                                              | 20.5                                                                                | 0.0                                                                                 | 8.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 12.9                                                                                                                                                                                                                                                  | 0.0                                                                               | 0.0                                                                               | 33.1                                                                                                                                                                | 33.3                                                                              | 36.1                                                                                | 0.0                                                                                 | 17.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | B                                                                                                                                                                                                                                                     |                                                                                   |                                                                                   | C                                                                                                                                                                   | C                                                                                 | D                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 433                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   | 1114                                                                                                                                                                |                                                                                   |                                                                                     | 1302                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 12.9                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   | 33.2                                                                                                                                                                |                                                                                   |                                                                                     | 28.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 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     |                                                                                   | 39.8                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   |                                                                                                                                                                     | 39.8                                                                              |                                                                                     | 40.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                     | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.0                                                                                                                                                                                                                                                  |                                                                                   |                                                                                   |                                                                                                                                                                     | 31.0                                                                              |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.0                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                     | 26.4                                                                              |                                                                                     | 36.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.7                                                                                                                                                                                                                                                   |                                                                                   |                                                                                   |                                                                                                                                                                     | 0.9                                                                               |                                                                                     | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   | 28.1                                                                              |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   | C                                                                                 |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Intersection               |       |        |        |        |        |        |      |      |      |      |      |      |
|----------------------------|-------|--------|--------|--------|--------|--------|------|------|------|------|------|------|
| Intersection Delay, s/veh  | 95.9  |        |        |        |        |        |      |      |      |      |      |      |
| Intersection LOS           | F     |        |        |        |        |        |      |      |      |      |      |      |
| Movement                   | SEL   | SET    | SER    | NWL    | NWT    | NWR    | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
| Lane Configurations        |       | ↔↔     |        |        | ↔↔     |        |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h         | 108   | 359    | 29     | 110    | 457    | 137    | 66   | 242  | 117  | 96   | 164  | 72   |
| Future Vol, veh/h          | 108   | 359    | 29     | 110    | 457    | 137    | 66   | 242  | 117  | 96   | 164  | 72   |
| Peak Hour Factor           | 0.88  | 0.88   | 0.88   | 0.88   | 0.88   | 0.88   | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %          | 2     | 2      | 2      | 2      | 2      | 2      | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                  | 123   | 408    | 33     | 125    | 519    | 156    | 75   | 275  | 133  | 109  | 186  | 82   |
| Number of Lanes            | 0     | 2      | 0      | 0      | 2      | 0      | 0    | 1    | 0    | 0    | 1    | 0    |
| Approach                   | SE    |        |        | NW     |        |        | NE   |      |      | SW   |      |      |
| Opposing Approach          | NW    |        |        | SE     |        |        | SW   |      |      | NE   |      |      |
| Opposing Lanes             | 2     |        |        | 2      |        |        | 1    |      |      | 1    |      |      |
| Conflicting Approach Left  | SW    |        |        | NE     |        |        | SE   |      |      | NW   |      |      |
| Conflicting Lanes Left     | 1     |        |        | 1      |        |        | 2    |      |      | 2    |      |      |
| Conflicting Approach Right | NE    |        |        | SW     |        |        | NW   |      |      | SE   |      |      |
| Conflicting Lanes Right    | 1     |        |        | 1      |        |        | 2    |      |      | 2    |      |      |
| HCM Control Delay          | 46.9  |        |        | 98.4   |        |        | 162  |      |      | 79.2 |      |      |
| HCM LOS                    | E     |        |        | F      |        |        | F    |      |      | F    |      |      |
| Lane                       | NELn1 | NWLn1  | NWLn2  | SELn1  | SELn2  | SWLn1  |      |      |      |      |      |      |
| Vol Left, %                | 16%   | 32%    | 0%     | 38%    | 0%     | 29%    |      |      |      |      |      |      |
| Vol Thru, %                | 57%   | 68%    | 63%    | 62%    | 86%    | 49%    |      |      |      |      |      |      |
| Vol Right, %               | 28%   | 0%     | 37%    | 0%     | 14%    | 22%    |      |      |      |      |      |      |
| Sign Control               | Stop  | Stop   | Stop   | Stop   | Stop   | Stop   |      |      |      |      |      |      |
| Traffic Vol by Lane        | 425   | 339    | 366    | 288    | 209    | 332    |      |      |      |      |      |      |
| LT Vol                     | 66    | 110    | 0      | 108    | 0      | 96     |      |      |      |      |      |      |
| Through Vol                | 242   | 229    | 229    | 180    | 180    | 164    |      |      |      |      |      |      |
| RT Vol                     | 117   | 0      | 137    | 0      | 29     | 72     |      |      |      |      |      |      |
| Lane Flow Rate             | 483   | 385    | 415    | 327    | 237    | 377    |      |      |      |      |      |      |
| Geometry Grp               | 2     | 7      | 7      | 7      | 7      | 2      |      |      |      |      |      |      |
| Degree of Util (X)         | 1.252 | 1.043  | 1.077  | 0.897  | 0.631  | 0.991  |      |      |      |      |      |      |
| Departure Headway (Hd)     | 9.568 | 10.585 | 10.135 | 10.668 | 10.366 | 10.321 |      |      |      |      |      |      |
| Convergence, Y/N           | Yes   | Yes    | Yes    | Yes    | Yes    | Yes    |      |      |      |      |      |      |
| Cap                        | 382   | 346    | 361    | 343    | 351    | 355    |      |      |      |      |      |      |
| Service Time               | 7.568 | 8.285  | 7.835  | 8.368  | 8.066  | 8.321  |      |      |      |      |      |      |
| HCM Lane V/C Ratio         | 1.264 | 1.113  | 1.15   | 0.953  | 0.675  | 1.062  |      |      |      |      |      |      |
| HCM Control Delay          | 162   | 94.1   | 102.4  | 59.8   | 29.2   | 79.2   |      |      |      |      |      |      |
| HCM Lane LOS               | F     | F      | F      | F      | D      | F      |      |      |      |      |      |      |
| HCM 95th-tile Q            | 20.5  | 12.5   | 13.8   | 8.7    | 4.1    | 11.2   |      |      |      |      |      |      |

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Baseline+Project PM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 261                                                                               | 967                                                                               | 585                                                                               | 69                                                                                | 87                                                                                | 370                                                                               |   |   |
| Future Volume (veh/h)        | 261                                                                               | 967                                                                               | 585                                                                               | 69                                                                                | 87                                                                                | 370                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 261                                                                               | 967                                                                               | 585                                                                               | 69                                                                                | 87                                                                                | 244                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 435                                                                               | 2580                                                                              | 1786                                                                              | 210                                                                               | 316                                                                               | 482                                                                               |   |   |
| Arrive On Green              | 0.13                                                                              | 0.73                                                                              | 0.56                                                                              | 0.56                                                                              | 0.18                                                                              | 0.18                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3284                                                                              | 376                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 261                                                                               | 967                                                                               | 324                                                                               | 330                                                                               | 87                                                                                | 244                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1796                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 5.0                                                                               | 7.1                                                                               | 6.9                                                                               | 6.9                                                                               | 3.0                                                                               | 8.9                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 5.0                                                                               | 7.1                                                                               | 6.9                                                                               | 6.9                                                                               | 3.0                                                                               | 8.9                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.21                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 435                                                                               | 2580                                                                              | 990                                                                               | 1005                                                                              | 316                                                                               | 482                                                                               |   |   |
| V/C Ratio(X)                 | 0.60                                                                              | 0.37                                                                              | 0.33                                                                              | 0.33                                                                              | 0.28                                                                              | 0.51                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 983                                                                               | 2580                                                                              | 990                                                                               | 1005                                                                              | 355                                                                               | 517                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.88                                                                              | 0.88                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 28.9                                                                              | 3.5                                                                               | 8.3                                                                               | 8.3                                                                               | 24.9                                                                              | 20.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.4                                                                               | 0.9                                                                               | 0.9                                                                               | 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     | 2.4                                                                               | 3.5                                                                               | 3.6                                                                               | 3.6                                                                               | 1.5                                                                               | 8.0                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 29.3                                                                              | 3.9                                                                               | 9.2                                                                               | 9.2                                                                               | 25.0                                                                              | 20.3                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1228                                                                              | 654                                                                               |                                                                                   | 331                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 9.3                                                                               | 9.2                                                                               |                                                                                   | 21.6                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 54.5                                                                              |                                                                                   | 15.5                                                                              | 11.9                                                                              | 42.7                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 48.0                                                                              |                                                                                   | 12.5                                                                              | 18.5                                                                              | 25.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 9.1                                                                               |                                                                                   | 10.9                                                                              | 7.0                                                                               | 8.9                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 12.4                                                                              |                                                                                   | 0.1                                                                               | 0.4                                                                               | 5.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 11.1                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Baseline+Project PM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 523                                                                               | 354                                                                               | 646                                                                               | 477                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 341                                                                                 | 0                                                                                   | 317                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 523                                                                               | 354                                                                               | 646                                                                               | 477                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 341                                                                                 | 0                                                                                   | 317                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 575                                                                               | 0                                                                                 | 710                                                                               | 524                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 375                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 810                                                                               | 362                                                                               | 781                                                                               | 2594                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 573                                                                                 | 0                                                                                   | 264                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.23                                                                              | 0.00                                                                              | 0.44                                                                              | 0.73                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 575                                                                               | 0                                                                                 | 710                                                                               | 524                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 375                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 20.5                                                                              | 2.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 8.2                                                                               | 0.0                                                                               | 20.5                                                                              | 2.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 810                                                                               | 362                                                                               | 781                                                                               | 2594                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 573                                                                                 | 0                                                                                   | 264                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.71                                                                              | 0.00                                                                              | 0.91                                                                              | 0.20                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.65                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2617                                                                              | 1171                                                                              | 1377                                                                              | 2594                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1414                                                                                | 0                                                                                   | 650                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 19.4                                                                              | 0.0                                                                               | 14.3                                                                              | 2.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 21.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 2.4                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 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                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 4.0                                                                               | 0.0                                                                               | 10.4                                                                              | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 19.9                                                                              | 0.0                                                                               | 16.7                                                                              | 2.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 21.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 575                                                                               |                                                                                   |                                                                                   | 1234                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.9                                                                              |                                                                                   |                                                                                   | 10.6                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 21.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 27.6                                                                              | 16.0                                                                              |                                                                                   | 11.1                                                                              |                                                                                   | 43.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 22.5                                                                              | 10.2                                                                              |                                                                                   | 7.6                                                                               |                                                                                   | 4.5                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.8                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 0.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
 3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Baseline+Project PM  
 10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 548                                                                               | 356                                                                               | 0                                                                                 | 859                                                                               | 357                                                                               | 220                                                                                 | 0                                                                                   | 681                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 548                                                                               | 356                                                                               | 0                                                                                 | 859                                                                               | 357                                                                               | 220                                                                                 | 0                                                                                   | 681                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 577                                                                               | 0                                                                                 | 0                                                                                 | 904                                                                               | 376                                                                               | 232                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1484                                                                              | 613                                                                               | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.61                                                                              | 0.00                                                                              | 0.00                                                                              | 0.61                                                                              | 0.61                                                                              | 0.32                                                                                | 0.00                                                                                | 0.32                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2538                                                                              | 1010                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 577                                                                               | 0                                                                                 | 0                                                                                 | 653                                                                               | 627                                                                               | 232                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1685                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 3.5                                                                               | 0.0                                                                               | 0.0                                                                               | 16.1                                                                              | 16.3                                                                              | 7.1                                                                                 | 0.0                                                                                 | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 3.5                                                                               | 0.0                                                                               | 0.0                                                                               | 16.1                                                                              | 16.3                                                                              | 7.1                                                                                 | 0.0                                                                                 | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.60                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1074                                                                              | 1023                                                                              | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.19                                                                              | 0.00                                                                              | 0.00                                                                              | 0.61                                                                              | 0.61                                                                              | 0.41                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1074                                                                              | 1023                                                                              | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                              | 0.62                                                                              | 0.00                                                                              | 0.00                                                                              | 0.91                                                                              | 0.91                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 6.1                                                                               | 0.0                                                                               | 0.0                                                                               | 8.6                                                                               | 8.6                                                                               | 18.5                                                                                | 0.0                                                                                 | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 2.3                                                                               | 2.5                                                                               | 0.2                                                                                 | 0.0                                                                                 | 39.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| 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     | 0.0                                                                               | 1.6                                                                               | 0.0                                                                               | 0.0                                                                               | 8.3                                                                               | 8.2                                                                               | 3.5                                                                                 | 0.0                                                                                 | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 6.2                                                                               | 0.0                                                                               | 0.0                                                                               | 10.9                                                                              | 11.1                                                                              | 18.7                                                                                | 0.0                                                                                 | 63.7                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 | B                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 577                                                                               |                                                                                   |                                                                                   | 1280                                                                              |                                                                                   |                                                                                     | 741                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                     | 49.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 45.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 41.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 41.0                                                                              |                                                                                     | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 18.3                                                                              |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 20.9                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 80.9 |
| Intersection LOS          | F    |

| Movement            | SEL  | SET  | SER  | NWL  | NWT  | NWR  | NEL  | NET  | NER  | SWL  | SWT  | SWR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔↔   |      |      | ↔↔   |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 140  | 405  | 44   | 135  | 369  | 80   | 31   | 295  | 121  | 110  | 195  | 64   |
| Future Vol, veh/h   | 140  | 405  | 44   | 135  | 369  | 80   | 31   | 295  | 121  | 110  | 195  | 64   |
| Peak Hour Factor    | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles, %   | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow           | 146  | 422  | 46   | 141  | 384  | 83   | 32   | 307  | 126  | 115  | 203  | 67   |
| Number of Lanes     | 0    | 2    | 0    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | SE   | NW   | NE    | SW   |
|----------------------------|------|------|-------|------|
| Opposing Approach          | NW   | SE   | SW    | NE   |
| Opposing Lanes             | 2    | 2    | 1     | 1    |
| Conflicting Approach Left  | SW   | NE   | SE    | NW   |
| Conflicting Lanes Left     | 1    | 1    | 2     | 2    |
| Conflicting Approach Right | NE   | SW   | NW    | SE   |
| Conflicting Lanes Right    | 1    | 1    | 2     | 2    |
| HCM Control Delay          | 57.9 | 50.6 | 148.6 | 83.7 |
| HCM LOS                    | F    | F    | F     | F    |

| Lane                   | NELn1 | NWLn1  | NWLn2 | SELn1  | SELn2  | SWLn1  |
|------------------------|-------|--------|-------|--------|--------|--------|
| Vol Left, %            | 7%    | 42%    | 0%    | 41%    | 0%     | 30%    |
| Vol Thru, %            | 66%   | 58%    | 70%   | 59%    | 82%    | 53%    |
| Vol Right, %           | 27%   | 0%     | 30%   | 0%     | 18%    | 17%    |
| Sign Control           | Stop  | Stop   | Stop  | Stop   | Stop   | Stop   |
| Traffic Vol by Lane    | 447   | 320    | 265   | 343    | 247    | 369    |
| LT Vol                 | 31    | 135    | 0     | 140    | 0      | 110    |
| Through Vol            | 295   | 185    | 185   | 203    | 203    | 195    |
| RT Vol                 | 121   | 0      | 80    | 0      | 44     | 64     |
| Lane Flow Rate         | 466   | 333    | 276   | 357    | 257    | 384    |
| Geometry Grp           | 2     | 7      | 7     | 7      | 7      | 2      |
| Degree of Util (X)     | 1.216 | 0.914  | 0.724 | 0.976  | 0.679  | 1.009  |
| Departure Headway (Hd) | 9.627 | 10.668 | 10.22 | 10.622 | 10.274 | 10.285 |
| Convergence, Y/N       | Yes   | Yes    | Yes   | Yes    | Yes    | Yes    |
| Cap                    | 382   | 343    | 355   | 342    | 354    | 357    |
| Service Time           | 7.627 | 8.368  | 7.92  | 8.322  | 7.974  | 8.285  |
| HCM Lane V/C Ratio     | 1.22  | 0.971  | 0.777 | 1.044  | 0.726  | 1.076  |
| HCM Control Delay      | 148.6 | 63     | 35.6  | 76.4   | 32.2   | 83.7   |
| HCM Lane LOS           | F     | F      | E     | F      | D      | F      |
| HCM 95th-tile Q        | 19    | 9.1    | 5.4   | 10.6   | 4.7    | 11.7   |

## Queues

Baseline+Project AM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 242  | 596  | 852  | 37   | 206  |
| v/c Ratio               | 0.49 | 0.22 | 0.40 | 0.15 | 0.39 |
| Control Delay           | 34.3 | 2.0  | 9.8  | 31.4 | 19.1 |
| Queue Delay             | 0.0  | 0.0  | 0.3  | 0.0  | 0.0  |
| Total Delay             | 34.3 | 2.0  | 10.1 | 31.4 | 19.1 |
| Queue Length 50th (ft)  | 56   | 23   | 111  | 16   | 64   |
| Queue Length 95th (ft)  | 91   | 33   | 167  | 43   | 113  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 1416 | 2764 | 2110 | 265  | 936  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 593  | 0    | 5    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.17 | 0.22 | 0.56 | 0.14 | 0.22 |
| Intersection Summary    |      |      |      |      |      |

## Queues

Baseline+Project AM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



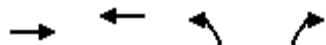
| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 350  | 190  | 685  | 1049 | 349  | 848  |
| v/c Ratio               | 0.59 | 0.12 | 0.70 | 0.39 | 0.61 | 0.54 |
| Control Delay           | 34.0 | 0.2  | 18.6 | 3.9  | 34.4 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 2.6  | 0.1  | 0.0  | 0.0  |
| Total Delay             | 34.0 | 0.2  | 21.2 | 4.0  | 34.4 | 1.3  |
| Queue Length 50th (ft)  | 77   | 0    | 203  | 61   | 76   | 0    |
| Queue Length 95th (ft)  | 135  | 0    | 449  | 135  | 125  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1901 | 1583 | 998  | 3535 | 1024 | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 196  | 964  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.18 | 0.12 | 0.85 | 0.41 | 0.34 | 0.54 |
| Intersection Summary    |      |      |      |      |      |      |

## Queues

Baseline+Project AM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 676  | 1114 | 801  | 501  |
| v/c Ratio               | 0.30 | 0.75 | 0.91 | 0.54 |
| Control Delay           | 10.6 | 22.4 | 33.8 | 7.7  |
| Queue Delay             | 0.0  | 3.1  | 0.0  | 0.0  |
| Total Delay             | 10.6 | 25.4 | 33.8 | 7.7  |
| Queue Length 50th (ft)  | 53   | 271  | 323  | 59   |
| Queue Length 95th (ft)  | 80   | 361  | #562 | 133  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 2230 | 1492 | 940  | 968  |
| Starvation Cap Reductn  | 0    | 270  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.30 | 0.91 | 0.85 | 0.52 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

## Queues

Baseline+Project PM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 261  | 967  | 654  | 87   | 370  |
| v/c Ratio               | 0.48 | 0.37 | 0.36 | 0.28 | 0.54 |
| Control Delay           | 29.1 | 3.9  | 11.1 | 26.6 | 12.4 |
| Queue Delay             | 0.0  | 0.2  | 0.1  | 0.0  | 0.0  |
| Total Delay             | 29.1 | 4.2  | 11.2 | 26.6 | 12.4 |
| Queue Length 50th (ft)  | 51   | 84   | 84   | 32   | 66   |
| Queue Length 95th (ft)  | m82  | 66   | 132  | 68   | 127  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 980  | 2587 | 1840 | 354  | 866  |
| Starvation Cap Reductn  | 0    | 815  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 197  | 0    | 8    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.27 | 0.55 | 0.40 | 0.25 | 0.43 |

## Intersection Summary

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



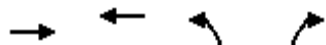
| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 575  | 389  | 710  | 524  | 375  | 348  |
| v/c Ratio               | 0.75 | 0.25 | 0.78 | 0.19 | 0.67 | 0.22 |
| Control Delay           | 37.3 | 0.4  | 25.7 | 3.0  | 39.4 | 0.3  |
| Queue Delay             | 0.0  | 0.0  | 11.3 | 0.0  | 0.0  | 0.0  |
| Total Delay             | 37.3 | 0.4  | 37.0 | 3.0  | 39.4 | 0.3  |
| Queue Length 50th (ft)  | 145  | 0    | 277  | 28   | 94   | 0    |
| Queue Length 95th (ft)  | 218  | 0    | #615 | 58   | 150  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1742 | 1583 | 914  | 3467 | 939  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 186  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.33 | 0.25 | 0.98 | 0.15 | 0.40 | 0.22 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.





| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 952  | 1280 | 232  | 509  |
| v/c Ratio               | 0.27 | 0.54 | 0.58 | 0.84 |
| Control Delay           | 3.1  | 6.7  | 28.7 | 22.4 |
| Queue Delay             | 0.0  | 0.2  | 0.0  | 0.0  |
| Total Delay             | 3.1  | 6.8  | 28.7 | 22.4 |
| Queue Length 50th (ft)  | 23   | 102  | 91   | 76   |
| Queue Length 95th (ft)  | 60   | 293  | 126  | 159  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 3512 | 2406 | 583  | 735  |
| Starvation Cap Reductn  | 0    | 361  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.27 | 0.63 | 0.40 | 0.69 |
| Intersection Summary    |      |      |      |      |

## Appendix E: Cumulative Conditions Synchro Worksheets

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Cumulative AM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 360                                                                               | 828                                                                               | 975                                                                               | 51                                                                                | 25                                                                                | 152                                                                               |   |   |
| Future Volume (veh/h)        | 360                                                                               | 828                                                                               | 975                                                                               | 51                                                                                | 25                                                                                | 152                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 360                                                                               | 828                                                                               | 975                                                                               | 51                                                                                | 25                                                                                | 26                                                                                |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 533                                                                               | 3035                                                                              | 2277                                                                              | 119                                                                               | 108                                                                               | 342                                                                               |   |   |
| Arrive On Green              | 0.05                                                                              | 0.28                                                                              | 0.67                                                                              | 0.67                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3515                                                                              | 179                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 360                                                                               | 828                                                                               | 504                                                                               | 522                                                                               | 25                                                                                | 26                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1831                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 8.2                                                                               | 14.5                                                                              | 10.7                                                                              | 10.7                                                                              | 1.1                                                                               | 1.0                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 8.2                                                                               | 14.5                                                                              | 10.7                                                                              | 10.7                                                                              | 1.1                                                                               | 1.0                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.10                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 533                                                                               | 3035                                                                              | 1177                                                                              | 1218                                                                              | 108                                                                               | 342                                                                               |   |   |
| V/C Ratio(X)                 | 0.68                                                                              | 0.27                                                                              | 0.43                                                                              | 0.43                                                                              | 0.23                                                                              | 0.08                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1420                                                                              | 3035                                                                              | 1177                                                                              | 1218                                                                              | 266                                                                               | 483                                                                               |   |   |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.76                                                                              | 0.76                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 36.0                                                                              | 9.3                                                                               | 6.3                                                                               | 6.3                                                                               | 35.8                                                                              | 25.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.2                                                                               | 1.1                                                                               | 1.1                                                                               | 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     | 4.0                                                                               | 7.2                                                                               | 5.6                                                                               | 5.7                                                                               | 0.5                                                                               | 1.0                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 36.4                                                                              | 9.5                                                                               | 7.4                                                                               | 7.4                                                                               | 36.2                                                                              | 25.0                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1188                                                                              | 1026                                                                              |                                                                                   | 51                                                                                |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 17.6                                                                              | 7.4                                                                               |                                                                                   | 30.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 72.1                                                                              |                                                                                   | 7.9                                                                               | 15.4                                                                              | 56.7                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 60.0                                                                              |                                                                                   | 10.5                                                                              | 31.5                                                                              | 24.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 16.5                                                                              |                                                                                   | 3.1                                                                               | 10.2                                                                              | 12.7                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 10.3                                                                              |                                                                                   | 0.0                                                                               | 0.7                                                                               | 6.4                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Cumulative AM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 422                                                                               | 175                                                                               | 669                                                                               | 1070                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 426                                                                                 | 0                                                                                   | 780                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 422                                                                               | 175                                                                               | 669                                                                               | 1070                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 426                                                                                 | 0                                                                                   | 780                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 459                                                                               | 0                                                                                 | 727                                                                               | 1163                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 463                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 720                                                                               | 322                                                                               | 795                                                                               | 2525                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 652                                                                                 | 0                                                                                   | 300                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.20                                                                              | 0.00                                                                              | 0.45                                                                              | 0.71                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.19                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 459                                                                               | 0                                                                                 | 727                                                                               | 1163                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 463                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 6.7                                                                               | 0.0                                                                               | 21.7                                                                              | 7.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 6.7                                                                               | 0.0                                                                               | 21.7                                                                              | 7.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 720                                                                               | 322                                                                               | 795                                                                               | 2525                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 652                                                                                 | 0                                                                                   | 300                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.64                                                                              | 0.00                                                                              | 0.91                                                                              | 0.46                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.71                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2536                                                                              | 1134                                                                              | 1334                                                                              | 2525                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1370                                                                                | 0                                                                                   | 630                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 20.6                                                                              | 0.0                                                                               | 14.6                                                                              | 3.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 3.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 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                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 11.3                                                                              | 3.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 21.0                                                                              | 0.0                                                                               | 18.2                                                                              | 3.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 459                                                                               |                                                                                   |                                                                                   | 1890                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 463                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.0                                                                              |                                                                                   |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 22.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 28.8                                                                              | 15.0                                                                              |                                                                                   | 12.7                                                                              |                                                                                   | 43.8                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 23.7                                                                              | 8.7                                                                               |                                                                                   | 9.1                                                                               |                                                                                   | 9.9                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.7                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 1.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
 3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Cumulative AM  
 10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 570                                                                               | 231                                                                               | 0                                                                                 | 809                                                                               | 347                                                                               | 884                                                                                 | 0                                                                                   | 801                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 570                                                                               | 231                                                                               | 0                                                                                 | 809                                                                               | 347                                                                               | 884                                                                                 | 0                                                                                   | 801                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 600                                                                               | 0                                                                                 | 0                                                                                 | 852                                                                               | 365                                                                               | 931                                                                                 | 0                                                                                   | 767                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 983                                                                               | 419                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.41                                                                              | 0.00                                                                              | 0.00                                                                              | 0.13                                                                              | 0.13                                                                              | 0.53                                                                                | 0.00                                                                                | 0.53                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2512                                                                              | 1032                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 600                                                                               | 0                                                                                 | 0                                                                                 | 622                                                                               | 595                                                                               | 931                                                                                 | 0                                                                                   | 767                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1681                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 27.6                                                                              | 27.8                                                                              | 41.4                                                                                | 0.0                                                                                 | 35.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 27.6                                                                              | 27.8                                                                              | 41.4                                                                                | 0.0                                                                                 | 35.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.61                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 719                                                                               | 683                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.29                                                                              | 0.00                                                                              | 0.00                                                                              | 0.87                                                                              | 0.87                                                                              | 0.99                                                                                | 0.00                                                                                | 0.91                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 719                                                                               | 683                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.64                                                                              | 0.00                                                                              | 0.00                                                                              | 0.87                                                                              | 0.87                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.0                                                                              | 0.0                                                                               | 0.0                                                                               | 32.5                                                                              | 32.6                                                                              | 18.5                                                                                | 0.0                                                                                 | 17.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 11.8                                                                              | 12.7                                                                              | 26.2                                                                                | 0.0                                                                                 | 13.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                               | 3.0                                                                               | 0.0                                                                               | 0.0                                                                               | 15.8                                                                              | 15.4                                                                              | 26.8                                                                                | 0.0                                                                                 | 18.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 16.2                                                                              | 0.0                                                                               | 0.0                                                                               | 44.3                                                                              | 45.3                                                                              | 44.7                                                                                | 0.0                                                                                 | 30.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 | D                                                                                 | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 600                                                                               |                                                                                   |                                                                                   | 1217                                                                              |                                                                                   |                                                                                     | 1698                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.2                                                                              |                                                                                   |                                                                                   | 44.8                                                                              |                                                                                   |                                                                                     | 38.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.5                                                                              |                                                                                     | 44.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 29.8                                                                              |                                                                                     | 43.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.4                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 36.8                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative AM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 108                                                                               | 579                                                                               | 37                                                                                | 192                                                                               | 660                                                                               | 165                                                                               | 95                                                                                  | 239                                                                                 | 250                                                                                 | 142                                                                                 | 177                                                                                 | 74                                                                                  |
| Future Volume (veh/h)        | 108                                                                               | 579                                                                               | 37                                                                                | 192                                                                               | 660                                                                               | 165                                                                               | 95                                                                                  | 239                                                                                 | 250                                                                                 | 142                                                                                 | 177                                                                                 | 74                                                                                  |
| 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                                                                                |                                                                                     | 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                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 123                                                                               | 658                                                                               | 42                                                                                | 218                                                                               | 750                                                                               | 188                                                                               | 108                                                                                 | 272                                                                                 | 284                                                                                 | 161                                                                                 | 201                                                                                 | 84                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 268                                                                               | 1352                                                                              | 86                                                                                | 350                                                                               | 1122                                                                              | 281                                                                               | 472                                                                                 | 334                                                                                 | 349                                                                                 | 256                                                                                 | 500                                                                                 | 209                                                                                 |
| Arrive On Green              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                |
| Sat Flow, veh/h              | 595                                                                               | 3379                                                                              | 215                                                                               | 743                                                                               | 2805                                                                              | 703                                                                               | 1090                                                                                | 836                                                                                 | 873                                                                                 | 849                                                                                 | 1249                                                                                | 522                                                                                 |
| Grp Volume(v), veh/h         | 123                                                                               | 344                                                                               | 356                                                                               | 218                                                                               | 473                                                                               | 465                                                                               | 108                                                                                 | 0                                                                                   | 556                                                                                 | 161                                                                                 | 0                                                                                   | 285                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 595                                                                               | 1770                                                                              | 1825                                                                              | 743                                                                               | 1770                                                                              | 1739                                                                              | 1090                                                                                | 0                                                                                   | 1709                                                                                | 849                                                                                 | 0                                                                                   | 1771                                                                                |
| Q Serve(g_s), s              | 8.1                                                                               | 6.5                                                                               | 6.5                                                                               | 11.5                                                                              | 9.9                                                                               | 9.8                                                                               | 3.5                                                                                 | 0.0                                                                                 | 12.9                                                                                | 5.1                                                                                 | 0.0                                                                                 | 5.1                                                                                 |
| Cycle Q Clear(g_c), s        | 18.0                                                                              | 6.5                                                                               | 6.5                                                                               | 18.0                                                                              | 9.9                                                                               | 9.8                                                                               | 8.7                                                                                 | 0.0                                                                                 | 12.9                                                                                | 18.0                                                                                | 0.0                                                                                 | 5.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.12                                                                              | 1.00                                                                              |                                                                                   | 0.40                                                                              | 1.00                                                                                |                                                                                     | 0.51                                                                                | 1.00                                                                                |                                                                                     | 0.29                                                                                |
| Lane Grp Cap(c), veh/h       | 268                                                                               | 708                                                                               | 730                                                                               | 350                                                                               | 708                                                                               | 695                                                                               | 472                                                                                 | 0                                                                                   | 683                                                                                 | 256                                                                                 | 0                                                                                   | 708                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                              | 0.49                                                                              | 0.49                                                                              | 0.62                                                                              | 0.67                                                                              | 0.67                                                                              | 0.23                                                                                | 0.00                                                                                | 0.81                                                                                | 0.63                                                                                | 0.00                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h        | 268                                                                               | 708                                                                               | 730                                                                               | 350                                                                               | 708                                                                               | 695                                                                               | 472                                                                                 | 0                                                                                   | 683                                                                                 | 256                                                                                 | 0                                                                                   | 708                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 18.9                                                                              | 10.1                                                                              | 10.0                                                                              | 17.5                                                                              | 11.1                                                                              | 10.8                                                                              | 12.7                                                                                | 0.0                                                                                 | 11.6                                                                                | 21.0                                                                                | 0.0                                                                                 | 9.5                                                                                 |
| Incr Delay (d2), s/veh       | 5.6                                                                               | 2.4                                                                               | 2.3                                                                               | 8.1                                                                               | 5.0                                                                               | 5.0                                                                               | 1.1                                                                                 | 0.0                                                                                 | 10.2                                                                                | 11.2                                                                                | 0.0                                                                                 | 1.7                                                                                 |
| 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     | 1.9                                                                               | 3.6                                                                               | 3.7                                                                               | 3.5                                                                               | 5.7                                                                               | 5.6                                                                               | 1.2                                                                                 | 0.0                                                                                 | 7.9                                                                                 | 2.8                                                                                 | 0.0                                                                                 | 2.8                                                                                 |
| LnGrp Delay(d),s/veh         | 24.5                                                                              | 12.4                                                                              | 12.3                                                                              | 25.7                                                                              | 16.0                                                                              | 15.8                                                                              | 13.9                                                                                | 0.0                                                                                 | 21.9                                                                                | 32.2                                                                                | 0.0                                                                                 | 11.2                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 823                                                                               |                                                                                   |                                                                                   | 1156                                                                              |                                                                                   |                                                                                     | 664                                                                                 |                                                                                     |                                                                                     | 446                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 14.2                                                                              |                                                                                   |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                     | 20.6                                                                                |                                                                                     |                                                                                     | 18.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 20.0                                                                              |                                                                                   | 14.9                                                                              |                                                                                   | 20.0                                                                              |                                                                                     | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.0                                                                               |                                                                                   | 1.3                                                                               |                                                                                   | 0.0                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Cumulative PM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 225                                                                               | 1194                                                                              | 844                                                                               | 64                                                                                | 106                                                                               | 458                                                                               |   |   |
| Future Volume (veh/h)        | 225                                                                               | 1194                                                                              | 844                                                                               | 64                                                                                | 106                                                                               | 458                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 225                                                                               | 1194                                                                              | 844                                                                               | 64                                                                                | 106                                                                               | 332                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 401                                                                               | 2503                                                                              | 1827                                                                              | 139                                                                               | 355                                                                               | 501                                                                               |   |   |
| Arrive On Green              | 0.08                                                                              | 0.47                                                                              | 0.55                                                                              | 0.55                                                                              | 0.20                                                                              | 0.20                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3428                                                                              | 253                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 225                                                                               | 1194                                                                              | 448                                                                               | 460                                                                               | 106                                                                               | 332                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1818                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 4.4                                                                               | 16.1                                                                              | 10.7                                                                              | 10.7                                                                              | 3.6                                                                               | 12.7                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 4.4                                                                               | 16.1                                                                              | 10.7                                                                              | 10.7                                                                              | 3.6                                                                               | 12.7                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.14                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 401                                                                               | 2503                                                                              | 970                                                                               | 996                                                                               | 355                                                                               | 501                                                                               |   |   |
| V/C Ratio(X)                 | 0.56                                                                              | 0.48                                                                              | 0.46                                                                              | 0.46                                                                              | 0.30                                                                              | 0.66                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 983                                                                               | 2503                                                                              | 970                                                                               | 996                                                                               | 355                                                                               | 501                                                                               |   |   |
| HCM Platoon Ratio            | 0.67                                                                              | 0.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.82                                                                              | 0.82                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 30.5                                                                              | 9.6                                                                               | 9.6                                                                               | 9.6                                                                               | 23.8                                                                              | 20.7                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.5                                                                               | 1.6                                                                               | 1.5                                                                               | 0.2                                                                               | 2.6                                                                               |   |   |
| 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                                                                               | 8.0                                                                               | 5.7                                                                               | 5.8                                                                               | 1.8                                                                               | 11.1                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 30.9                                                                              | 10.2                                                                              | 11.2                                                                              | 11.1                                                                              | 24.0                                                                              | 23.3                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1419                                                                              | 908                                                                               |                                                                                   | 438                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 13.4                                                                              | 11.1                                                                              |                                                                                   | 23.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 53.0                                                                              |                                                                                   | 17.0                                                                              | 11.1                                                                              | 41.9                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 48.0                                                                              |                                                                                   | 12.5                                                                              | 18.5                                                                              | 25.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 18.1                                                                              |                                                                                   | 14.7                                                                              | 6.4                                                                               | 12.7                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 14.6                                                                              |                                                                                   | 0.0                                                                               | 0.3                                                                               | 6.1                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

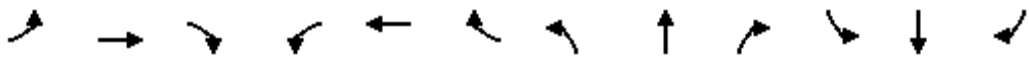
HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Cumulative PM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 697                                                                               | 428                                                                               | 935                                                                               | 548                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 394                                                                                 | 0                                                                                   | 317                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 697                                                                               | 428                                                                               | 935                                                                               | 548                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 394                                                                                 | 0                                                                                   | 317                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 766                                                                               | 0                                                                                 | 1027                                                                              | 602                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 433                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 911                                                                               | 408                                                                               | 851                                                                               | 2749                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 554                                                                                 | 0                                                                                   | 255                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.26                                                                              | 0.00                                                                              | 0.48                                                                              | 0.78                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.16                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 766                                                                               | 0                                                                                 | 1027                                                                              | 602                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 433                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 18.2                                                                              | 0.0                                                                               | 42.5                                                                              | 4.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 18.2                                                                              | 0.0                                                                               | 42.5                                                                              | 4.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 911                                                                               | 408                                                                               | 851                                                                               | 2749                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 554                                                                                 | 0                                                                                   | 255                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.84                                                                              | 0.00                                                                              | 1.21                                                                              | 0.22                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.78                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1618                                                                              | 724                                                                               | 851                                                                               | 2749                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 874                                                                                 | 0                                                                                   | 402                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 31.2                                                                              | 0.0                                                                               | 23.0                                                                              | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 35.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               | 103.9                                                                             | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 8.9                                                                               | 0.0                                                                               | 45.1                                                                              | 1.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 32.0                                                                              | 0.0                                                                               | 126.9                                                                             | 2.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 36.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | F                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 766                                                                               |                                                                                   |                                                                                   | 1629                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 433                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                   | 81.0                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 36.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 46.0                                                                              | 26.3                                                                              |                                                                                   | 16.3                                                                              |                                                                                   | 72.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 44.5                                                                              | 20.2                                                                              |                                                                                   | 12.7                                                                              |                                                                                   | 6.1                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.1                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 0.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 60.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Cumulative PM  
10/02/2020

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  |      |      | ↑↑   |      | ↑    |      | ↑    |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 783  | 356  | 0    | 1156 | 414  | 276  | 0    | 652  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 783  | 356  | 0    | 1156 | 414  | 276  | 0    | 652  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| 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                                                                                  | 1863 | 1900 | 0    | 1863 | 1900 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 824  | 0    | 0    | 1217 | 436  | 291  | 0    | 556  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 0    | 0    | 2    | 0    | 1    | 0    | 1    |     |     |     |
| Peak Hour Factor             | 0.95                                                                               | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3088 | 0    | 0    | 1565 | 545  | 570  | 0    | 509  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 0.61 | 0.00 | 0.00 | 0.20 | 0.20 | 0.32 | 0.00 | 0.32 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5421 | 0    | 0    | 2670 | 897  | 1774 | 0    | 1583 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 824  | 0    | 0    | 824  | 829  | 291  | 0    | 556  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1695 | 0    | 0    | 1770 | 1704 | 1774 | 0    | 1583 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 5.3  | 0.0  | 0.0  | 30.8 | 32.4 | 9.3  | 0.0  | 22.5 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 5.3  | 0.0  | 0.0  | 30.8 | 32.4 | 9.3  | 0.0  | 22.5 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 0.00 | 0.00 |      | 0.53 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3088 | 0    | 0    | 1074 | 1035 | 570  | 0    | 509  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.27 | 0.00 | 0.00 | 0.77 | 0.80 | 0.51 | 0.00 | 1.09 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3088 | 0    | 0    | 1074 | 1035 | 570  | 0    | 509  |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.53 | 0.00 | 0.00 | 0.79 | 0.79 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 6.4  | 0.0  | 0.0  | 23.3 | 24.0 | 19.3 | 0.0  | 23.8 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 4.2  | 5.2  | 0.3  | 0.0  | 67.4 |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 2.5  | 0.0  | 0.0  | 16.4 | 16.8 | 4.6  | 0.0  | 19.3 |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 6.6  | 0.0  | 0.0  | 27.5 | 29.2 | 19.6 | 0.0  | 91.2 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | C    | C    | B    |      | F    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 824  |      |      | 1653 |      |      | 847  |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 6.6  |      |      | 28.4 |      |      | 66.6 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | C    |      |      | E    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 45.5 |      |      |      | 45.5 |      | 24.5 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 4.5  |      |      |      | 4.5  |      | 3.5  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 41.0 |      |      |      | 41.0 |      | 21.0 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 7.3  |      |      |      | 34.4 |      | 24.5 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 1.3  |      |      |      | 1.8  |      | 0.0  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 32.7 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | C    |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative PM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 159                                                                               | 778                                                                               | 90                                                                                | 215                                                                               | 640                                                                               | 80                                                                                | 70                                                                                  | 305                                                                                 | 239                                                                                 | 113                                                                                 | 198                                                                                 | 69                                                                                  |
| Future Volume (veh/h)        | 159                                                                               | 778                                                                               | 90                                                                                | 215                                                                               | 640                                                                               | 80                                                                                | 70                                                                                  | 305                                                                                 | 239                                                                                 | 113                                                                                 | 198                                                                                 | 69                                                                                  |
| 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                                                                                |                                                                                     | 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                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 166                                                                               | 810                                                                               | 94                                                                                | 224                                                                               | 667                                                                               | 83                                                                                | 73                                                                                  | 318                                                                                 | 249                                                                                 | 118                                                                                 | 206                                                                                 | 72                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 330                                                                               | 1278                                                                              | 148                                                                               | 281                                                                               | 1268                                                                              | 158                                                                               | 478                                                                                 | 388                                                                                 | 304                                                                                 | 252                                                                                 | 528                                                                                 | 185                                                                                 |
| Arrive On Green              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                |
| Sat Flow, veh/h              | 709                                                                               | 3196                                                                              | 371                                                                               | 614                                                                               | 3169                                                                              | 394                                                                               | 1097                                                                                | 970                                                                                 | 759                                                                                 | 841                                                                                 | 1320                                                                                | 461                                                                                 |
| Grp Volume(v), veh/h         | 166                                                                               | 448                                                                               | 456                                                                               | 224                                                                               | 372                                                                               | 378                                                                               | 73                                                                                  | 0                                                                                   | 567                                                                                 | 118                                                                                 | 0                                                                                   | 278                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 709                                                                               | 1770                                                                              | 1797                                                                              | 614                                                                               | 1770                                                                              | 1793                                                                              | 1097                                                                                | 0                                                                                   | 1729                                                                                | 841                                                                                 | 0                                                                                   | 1781                                                                                |
| Q Serve(g_s), s              | 10.4                                                                              | 9.2                                                                               | 9.1                                                                               | 8.8                                                                               | 7.2                                                                               | 7.2                                                                               | 2.3                                                                                 | 0.0                                                                                 | 13.1                                                                                | 4.9                                                                                 | 0.0                                                                                 | 4.9                                                                                 |
| Cycle Q Clear(g_c), s        | 17.6                                                                              | 9.2                                                                               | 9.1                                                                               | 18.0                                                                              | 7.2                                                                               | 7.2                                                                               | 7.2                                                                                 | 0.0                                                                                 | 13.1                                                                                | 18.0                                                                                | 0.0                                                                                 | 4.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.21                                                                              | 1.00                                                                              |                                                                                   | 0.22                                                                              | 1.00                                                                                |                                                                                     | 0.44                                                                                | 1.00                                                                                |                                                                                     | 0.26                                                                                |
| Lane Grp Cap(c), veh/h       | 330                                                                               | 708                                                                               | 719                                                                               | 281                                                                               | 708                                                                               | 717                                                                               | 478                                                                                 | 0                                                                                   | 692                                                                                 | 252                                                                                 | 0                                                                                   | 713                                                                                 |
| V/C Ratio(X)                 | 0.50                                                                              | 0.63                                                                              | 0.63                                                                              | 0.80                                                                              | 0.53                                                                              | 0.53                                                                              | 0.15                                                                                | 0.00                                                                                | 0.82                                                                                | 0.47                                                                                | 0.00                                                                                | 0.39                                                                                |
| Avail Cap(c_a), veh/h        | 330                                                                               | 708                                                                               | 719                                                                               | 281                                                                               | 708                                                                               | 717                                                                               | 478                                                                                 | 0                                                                                   | 692                                                                                 | 252                                                                                 | 0                                                                                   | 713                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.0                                                                              | 10.8                                                                              | 10.7                                                                              | 20.1                                                                              | 10.3                                                                              | 10.1                                                                              | 12.1                                                                                | 0.0                                                                                 | 11.7                                                                                | 20.6                                                                                | 0.0                                                                                 | 9.4                                                                                 |
| Incr Delay (d2), s/veh       | 5.4                                                                               | 4.3                                                                               | 4.2                                                                               | 20.7                                                                              | 2.8                                                                               | 2.8                                                                               | 0.7                                                                                 | 0.0                                                                                 | 10.5                                                                                | 6.2                                                                                 | 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                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.5                                                                               | 5.2                                                                               | 5.3                                                                               | 4.4                                                                               | 4.0                                                                               | 4.0                                                                               | 0.8                                                                                 | 0.0                                                                                 | 8.1                                                                                 | 1.9                                                                                 | 0.0                                                                                 | 2.7                                                                                 |
| LnGrp Delay(d),s/veh         | 22.3                                                                              | 15.1                                                                              | 14.9                                                                              | 40.8                                                                              | 13.0                                                                              | 12.9                                                                              | 12.8                                                                                | 0.0                                                                                 | 22.2                                                                                | 26.7                                                                                | 0.0                                                                                 | 11.1                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 | B                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     | B                                                                                   |
| Approach Vol, veh/h          | 1070                                                                              |                                                                                   |                                                                                   |                                                                                   | 974                                                                               |                                                                                   |                                                                                     |                                                                                     | 640                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.4                                                                              |                                                                                   |                                                                                     |                                                                                     | 21.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 20.0                                                                              |                                                                                   | 15.1                                                                              |                                                                                   | 19.6                                                                              |                                                                                   | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               |                                                                                   | 1.2                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 18.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

Cumulative AM

1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 360  | 828  | 1026 | 25   | 152  |
| v/c Ratio               | 0.58 | 0.30 | 0.51 | 0.11 | 0.27 |
| Control Delay           | 36.3 | 2.1  | 12.3 | 30.9 | 16.7 |
| Queue Delay             | 0.0  | 0.3  | 1.1  | 0.0  | 0.0  |
| Total Delay             | 36.3 | 2.5  | 13.5 | 30.9 | 16.7 |
| Queue Length 50th (ft)  | 91   | 26   | 154  | 11   | 47   |
| Queue Length 95th (ft)  | m114 | m57  | 237  | 32   | 81   |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 1416 | 2792 | 2008 | 265  | 913  |
| Starvation Cap Reductn  | 0    | 1266 | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 686  | 0    | 2    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.25 | 0.54 | 0.78 | 0.09 | 0.17 |

## Intersection Summary

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

## Queues

Cumulative AM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 459  | 190  | 727  | 1163 | 463  | 848  |
| v/c Ratio               | 0.69 | 0.12 | 0.79 | 0.44 | 0.73 | 0.54 |
| Control Delay           | 37.3 | 0.2  | 25.6 | 4.9  | 38.8 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 13.1 | 0.1  | 0.0  | 0.0  |
| Total Delay             | 37.3 | 0.2  | 38.7 | 5.0  | 38.8 | 1.3  |
| Queue Length 50th (ft)  | 115  | 0    | 282  | 93   | 115  | 0    |
| Queue Length 95th (ft)  | 177  | 0    | #607 | 164  | 175  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1759 | 1583 | 923  | 3492 | 948  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 186  | 968  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.26 | 0.12 | 0.99 | 0.46 | 0.49 | 0.54 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

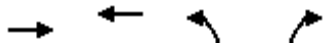
Queue shown is maximum after two cycles.

## Queues

Cumulative AM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 843  | 1217 | 931  | 767  |
| v/c Ratio               | 0.41 | 0.90 | 0.98 | 0.83 |
| Control Delay           | 14.4 | 28.9 | 45.5 | 22.4 |
| Queue Delay             | 0.0  | 47.2 | 0.0  | 0.0  |
| Total Delay             | 14.4 | 76.0 | 45.5 | 22.4 |
| Queue Length 50th (ft)  | 85   | 305  | 430  | 247  |
| Queue Length 95th (ft)  | 117  | #424 | #709 | #498 |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 2068 | 1373 | 949  | 921  |
| Starvation Cap Reductn  | 0    | 319  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.41 | 1.15 | 0.98 | 0.83 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Queues  
4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative AM  
10/06/2020



| Lane Group              | SEL  | SET  | NWL  | NWT  | NEL  | NET  | SWL  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 123  | 700  | 218  | 938  | 108  | 556  | 161  | 285  |
| v/c Ratio               | 0.75 | 0.50 | 0.88 | 0.66 | 0.26 | 0.73 | 0.82 | 0.38 |
| Control Delay           | 45.8 | 11.3 | 53.2 | 12.7 | 11.1 | 16.4 | 51.0 | 9.4  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 45.8 | 11.3 | 53.2 | 12.7 | 11.1 | 16.4 | 51.0 | 9.4  |
| Queue Length 50th (ft)  | 26   | 65   | 49   | 87   | 18   | 86   | 35   | 38   |
| Queue Length 95th (ft)  | #97  | 98   | #148 | 133  | 43   | #192 | #118 | 79   |
| Internal Link Dist (ft) |      | 496  |      | 552  |      | 1829 |      | 1881 |
| Turn Bay Length (ft)    |      |      |      |      |      |      |      |      |
| Base Capacity (vph)     | 165  | 1413 | 248  | 1422 | 421  | 762  | 196  | 746  |
| 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       | 0.75 | 0.50 | 0.88 | 0.66 | 0.26 | 0.73 | 0.82 | 0.38 |

Intersection Summary

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

## Queues

Cumulative PM

1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 225  | 1194 | 908  | 106  | 458  |
| v/c Ratio               | 0.37 | 0.48 | 0.53 | 0.30 | 0.66 |
| Control Delay           | 28.3 | 3.8  | 14.8 | 26.6 | 18.6 |
| Queue Delay             | 0.0  | 0.4  | 2.4  | 0.0  | 0.0  |
| Total Delay             | 28.3 | 4.2  | 17.2 | 26.6 | 18.6 |
| Queue Length 50th (ft)  | 48   | 62   | 125  | 39   | 141  |
| Queue Length 95th (ft)  | m61  | m76  | 228  | 80   | 183  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 980  | 2507 | 1711 | 354  | 849  |
| Starvation Cap Reductn  | 0    | 700  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 643  | 0    | 9    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.23 | 0.66 | 0.85 | 0.30 | 0.55 |

## Intersection Summary

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

## Queues

Cumulative PM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL   | WBT  | SBL  | SBR  |
|-------------------------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 766  | 470  | 1027  | 602  | 433  | 348  |
| v/c Ratio               | 0.81 | 0.30 | 1.24  | 0.22 | 0.73 | 0.22 |
| Control Delay           | 39.5 | 0.5  | 144.6 | 3.5  | 44.2 | 0.3  |
| Queue Delay             | 0.0  | 0.0  | 0.9   | 0.1  | 0.0  | 0.0  |
| Total Delay             | 39.5 | 0.5  | 145.4 | 3.6  | 44.2 | 0.3  |
| Queue Length 50th (ft)  | 217  | 0    | ~743  | 40   | 122  | 0    |
| Queue Length 95th (ft)  | 308  | 0    | #1206 | 75   | 190  | 0    |
| Internal Link Dist (ft) | 592  |      |       | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200   |      | 250  | 300  |
| Base Capacity (vph)     | 1577 | 1583 | 827   | 3283 | 849  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 112   | 1384 | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0     | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.49 | 0.30 | 1.44  | 0.32 | 0.51 | 0.22 |

## 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.

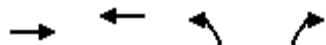
Queue shown is maximum after two cycles.

## Queues

Cumulative PM

3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 1199 | 1653 | 291  | 556  |
| v/c Ratio               | 0.38 | 0.78 | 0.55 | 0.92 |
| Control Delay           | 5.3  | 12.6 | 24.3 | 38.6 |
| Queue Delay             | 0.0  | 1.6  | 0.0  | 0.0  |
| Total Delay             | 5.3  | 14.2 | 24.3 | 38.6 |
| Queue Length 50th (ft)  | 67   | 327  | 94   | 144  |
| Queue Length 95th (ft)  | 83   | 416  | 170  | #341 |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 3182 | 2155 | 580  | 643  |
| Starvation Cap Reductn  | 0    | 313  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.38 | 0.90 | 0.50 | 0.86 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues  
4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative PM  
10/06/2020



| Lane Group              | SEL  | SET  | NWL   | NWT  | NEL  | NET  | SWL  | SWT  |
|-------------------------|------|------|-------|------|------|------|------|------|
| Lane Group Flow (vph)   | 166  | 904  | 224   | 750  | 73   | 567  | 118  | 278  |
| v/c Ratio               | 0.73 | 0.64 | 1.35  | 0.53 | 0.17 | 0.77 | 0.63 | 0.37 |
| Control Delay           | 36.5 | 13.0 | 214.2 | 11.5 | 10.0 | 19.7 | 31.4 | 9.6  |
| Queue Delay             | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 36.5 | 13.0 | 214.2 | 11.5 | 10.0 | 19.7 | 31.4 | 9.6  |
| Queue Length 50th (ft)  | 34   | 89   | ~80   | 68   | 11   | 102  | 23   | 39   |
| Queue Length 95th (ft)  | #118 | 137  | #181  | 108  | 31   | #248 | #89  | 81   |
| Internal Link Dist (ft) |      | 496  |       | 552  |      | 1829 |      | 1881 |
| Turn Bay Length (ft)    |      |      |       |      |      |      |      |      |
| Base Capacity (vph)     | 226  | 1413 | 166   | 1412 | 428  | 739  | 188  | 744  |
| 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       | 0.73 | 0.64 | 1.35  | 0.53 | 0.17 | 0.77 | 0.63 | 0.37 |

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.

## Appendix F: Cumulative with Project Conditions Synchro Worksheets

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Cumulative+Project AM  
10/02/2020

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 256                                                                               | 828                                                                               | 975                                                                               | 25                                                                                | 39                                                                                | 210                                                                               |   |   |
| Future Volume (veh/h)        | 256                                                                               | 828                                                                               | 975                                                                               | 25                                                                                | 39                                                                                | 210                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 256                                                                               | 828                                                                               | 975                                                                               | 25                                                                                | 39                                                                                | 84                                                                                |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 421                                                                               | 2953                                                                              | 2378                                                                              | 61                                                                                | 150                                                                               | 327                                                                               |   |   |
| Arrive On Green              | 0.04                                                                              | 0.28                                                                              | 0.67                                                                              | 0.67                                                                              | 0.08                                                                              | 0.08                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3619                                                                              | 90                                                                                | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 256                                                                               | 828                                                                               | 489                                                                               | 511                                                                               | 39                                                                                | 84                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1847                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 5.9                                                                               | 14.7                                                                              | 10.0                                                                              | 10.0                                                                              | 1.6                                                                               | 3.6                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 14.7                                                                              | 10.0                                                                              | 10.0                                                                              | 1.6                                                                               | 3.6                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.05                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 421                                                                               | 2953                                                                              | 1194                                                                              | 1246                                                                              | 150                                                                               | 327                                                                               |   |   |
| V/C Ratio(X)                 | 0.61                                                                              | 0.28                                                                              | 0.41                                                                              | 0.41                                                                              | 0.26                                                                              | 0.26                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 1420                                                                              | 2953                                                                              | 1194                                                                              | 1246                                                                              | 266                                                                               | 431                                                                               |   |   |
| HCM Platoon Ratio            | 0.33                                                                              | 0.33                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.81                                                                              | 0.81                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 36.5                                                                              | 10.1                                                                              | 5.9                                                                               | 5.9                                                                               | 34.3                                                                              | 26.6                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.2                                                                               | 1.0                                                                               | 1.0                                                                               | 0.3                                                                               | 0.2                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                               | 7.3                                                                               | 5.1                                                                               | 5.3                                                                               | 0.8                                                                               | 3.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 36.9                                                                              | 10.3                                                                              | 6.9                                                                               | 6.9                                                                               | 34.6                                                                              | 26.7                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1084                                                                              | 1000                                                                              |                                                                                   | 123                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 16.6                                                                              | 6.9                                                                               |                                                                                   | 29.2                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 70.2                                                                              |                                                                                   | 9.8                                                                               | 12.8                                                                              | 57.5                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 60.0                                                                              |                                                                                   | 10.5                                                                              | 31.5                                                                              | 24.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 16.7                                                                              |                                                                                   | 5.6                                                                               | 7.9                                                                               | 12.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 10.3                                                                              |                                                                                   | 0.1                                                                               | 0.5                                                                               | 6.5                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 12.9                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |



HCM 2010 Signalized Intersection Summary  
2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Cumulative+Project AM  
10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 396                                                                               | 175                                                                               | 691                                                                               | 1084                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 400                                                                                 | 0                                                                                   | 780                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 396                                                                               | 175                                                                               | 691                                                                               | 1084                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 400                                                                                 | 0                                                                                   | 780                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 430                                                                               | 0                                                                                 | 751                                                                               | 1178                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 435                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 712                                                                               | 319                                                                               | 817                                                                               | 2558                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 623                                                                                 | 0                                                                                   | 287                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.20                                                                              | 0.00                                                                              | 0.46                                                                              | 0.72                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.18                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 430                                                                               | 0                                                                                 | 751                                                                               | 1178                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 435                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 6.3                                                                               | 0.0                                                                               | 22.6                                                                              | 7.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 6.3                                                                               | 0.0                                                                               | 22.6                                                                              | 7.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 712                                                                               | 319                                                                               | 817                                                                               | 2558                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 623                                                                                 | 0                                                                                   | 287                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.60                                                                              | 0.00                                                                              | 0.92                                                                              | 0.46                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.70                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2508                                                                              | 1122                                                                              | 1319                                                                              | 2558                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1355                                                                                | 0                                                                                   | 623                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 20.8                                                                              | 0.0                                                                               | 14.4                                                                              | 3.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 21.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 4.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 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                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 3.1                                                                               | 0.0                                                                               | 11.9                                                                              | 3.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 21.1                                                                              | 0.0                                                                               | 19.1                                                                              | 3.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 430                                                                               |                                                                                   |                                                                                   | 1929                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 435                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 22.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 29.8                                                                              | 15.0                                                                              |                                                                                   | 12.3                                                                              |                                                                                   | 44.8                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 24.6                                                                              | 8.3                                                                               |                                                                                   | 8.8                                                                               |                                                                                   | 9.9                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.6                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 1.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
 3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

Cumulative+Project AM  
 10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 518                                                                               | 231                                                                               | 0                                                                                 | 845                                                                               | 369                                                                               | 884                                                                                 | 0                                                                                   | 749                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 518                                                                               | 231                                                                               | 0                                                                                 | 845                                                                               | 369                                                                               | 884                                                                                 | 0                                                                                   | 749                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 545                                                                               | 0                                                                                 | 0                                                                                 | 889                                                                               | 388                                                                               | 931                                                                                 | 0                                                                                   | 694                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 977                                                                               | 424                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.41                                                                              | 0.00                                                                              | 0.00                                                                              | 0.13                                                                              | 0.13                                                                              | 0.53                                                                                | 0.00                                                                                | 0.53                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2499                                                                              | 1043                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 545                                                                               | 0                                                                                 | 0                                                                                 | 652                                                                               | 625                                                                               | 931                                                                                 | 0                                                                                   | 694                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1679                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 5.7                                                                               | 0.0                                                                               | 0.0                                                                               | 29.1                                                                              | 29.4                                                                              | 41.4                                                                                | 0.0                                                                                 | 29.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 5.7                                                                               | 0.0                                                                               | 0.0                                                                               | 29.1                                                                              | 29.4                                                                              | 41.4                                                                                | 0.0                                                                                 | 29.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.62                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 719                                                                               | 682                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.26                                                                              | 0.00                                                                              | 0.00                                                                              | 0.91                                                                              | 0.92                                                                              | 0.99                                                                                | 0.00                                                                                | 0.83                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2066                                                                              | 0                                                                                 | 0                                                                                 | 719                                                                               | 682                                                                               | 942                                                                                 | 0                                                                                   | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.67                                                                              | 0.00                                                                              | 0.00                                                                              | 0.88                                                                              | 0.88                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 15.8                                                                              | 0.0                                                                               | 0.0                                                                               | 33.2                                                                              | 33.3                                                                              | 18.5                                                                                | 0.0                                                                                 | 15.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 15.7                                                                              | 17.4                                                                              | 26.2                                                                                | 0.0                                                                                 | 6.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 17.4                                                                              | 17.0                                                                              | 26.8                                                                                | 0.0                                                                                 | 14.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 16.0                                                                              | 0.0                                                                               | 0.0                                                                               | 48.9                                                                              | 50.7                                                                              | 44.7                                                                                | 0.0                                                                                 | 22.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 | D                                                                                 | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 545                                                                               |                                                                                   |                                                                                   | 1277                                                                              |                                                                                   |                                                                                     | 1625                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                   | 49.8                                                                              |                                                                                   |                                                                                     | 35.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.5                                                                              |                                                                                     | 44.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 31.0                                                                              |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 31.4                                                                              |                                                                                     | 43.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 37.5                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative+Project AM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 108                                                                               | 579                                                                               | 30                                                                                | 185                                                                               | 660                                                                               | 165                                                                               | 98                                                                                  | 247                                                                                 | 253                                                                                 | 142                                                                                 | 164                                                                                 | 74                                                                                  |
| Future Volume (veh/h)        | 108                                                                               | 579                                                                               | 30                                                                                | 185                                                                               | 660                                                                               | 165                                                                               | 98                                                                                  | 247                                                                                 | 253                                                                                 | 142                                                                                 | 164                                                                                 | 74                                                                                  |
| 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                                                                                |                                                                                     | 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                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 123                                                                               | 658                                                                               | 34                                                                                | 210                                                                               | 750                                                                               | 188                                                                               | 111                                                                                 | 281                                                                                 | 288                                                                                 | 161                                                                                 | 186                                                                                 | 84                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 268                                                                               | 1370                                                                              | 71                                                                                | 353                                                                               | 1122                                                                              | 281                                                                               | 484                                                                                 | 338                                                                                 | 346                                                                                 | 246                                                                                 | 487                                                                                 | 220                                                                                 |
| Arrive On Green              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                |
| Sat Flow, veh/h              | 595                                                                               | 3424                                                                              | 177                                                                               | 749                                                                               | 2805                                                                              | 703                                                                               | 1105                                                                                | 844                                                                                 | 866                                                                                 | 839                                                                                 | 1216                                                                                | 549                                                                                 |
| Grp Volume(v), veh/h         | 123                                                                               | 340                                                                               | 352                                                                               | 210                                                                               | 473                                                                               | 465                                                                               | 111                                                                                 | 0                                                                                   | 569                                                                                 | 161                                                                                 | 0                                                                                   | 270                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 595                                                                               | 1770                                                                              | 1832                                                                              | 749                                                                               | 1770                                                                              | 1739                                                                              | 1105                                                                                | 0                                                                                   | 1710                                                                                | 839                                                                                 | 0                                                                                   | 1766                                                                                |
| Q Serve(g_s), s              | 8.1                                                                               | 6.4                                                                               | 6.4                                                                               | 11.6                                                                              | 9.9                                                                               | 9.8                                                                               | 3.6                                                                                 | 0.0                                                                                 | 13.4                                                                                | 4.6                                                                                 | 0.0                                                                                 | 4.8                                                                                 |
| Cycle Q Clear(g_c), s        | 18.0                                                                              | 6.4                                                                               | 6.4                                                                               | 18.0                                                                              | 9.9                                                                               | 9.8                                                                               | 8.4                                                                                 | 0.0                                                                                 | 13.4                                                                                | 18.0                                                                                | 0.0                                                                                 | 4.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                              |                                                                                   | 0.40                                                                              | 1.00                                                                                |                                                                                     | 0.51                                                                                | 1.00                                                                                |                                                                                     | 0.31                                                                                |
| Lane Grp Cap(c), veh/h       | 268                                                                               | 708                                                                               | 733                                                                               | 353                                                                               | 708                                                                               | 695                                                                               | 484                                                                                 | 0                                                                                   | 684                                                                                 | 246                                                                                 | 0                                                                                   | 706                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                              | 0.48                                                                              | 0.48                                                                              | 0.60                                                                              | 0.67                                                                              | 0.67                                                                              | 0.23                                                                                | 0.00                                                                                | 0.83                                                                                | 0.65                                                                                | 0.00                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 268                                                                               | 708                                                                               | 733                                                                               | 353                                                                               | 708                                                                               | 695                                                                               | 484                                                                                 | 0                                                                                   | 684                                                                                 | 246                                                                                 | 0                                                                                   | 706                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 18.9                                                                              | 10.0                                                                              | 10.0                                                                              | 17.2                                                                              | 11.1                                                                              | 10.8                                                                              | 12.5                                                                                | 0.0                                                                                 | 11.8                                                                                | 21.3                                                                                | 0.0                                                                                 | 9.4                                                                                 |
| Incr Delay (d2), s/veh       | 5.6                                                                               | 2.3                                                                               | 2.3                                                                               | 7.2                                                                               | 5.0                                                                               | 5.0                                                                               | 1.1                                                                                 | 0.0                                                                                 | 11.3                                                                                | 12.7                                                                                | 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                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.9                                                                               | 3.6                                                                               | 3.7                                                                               | 3.3                                                                               | 5.7                                                                               | 5.6                                                                               | 1.2                                                                                 | 0.0                                                                                 | 8.3                                                                                 | 2.8                                                                                 | 0.0                                                                                 | 2.6                                                                                 |
| LnGrp Delay(d),s/veh         | 24.5                                                                              | 12.3                                                                              | 12.2                                                                              | 24.4                                                                              | 16.0                                                                              | 15.8                                                                              | 13.6                                                                                | 0.0                                                                                 | 23.1                                                                                | 34.0                                                                                | 0.0                                                                                 | 10.9                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 815                                                                               |                                                                                   |                                                                                   | 1148                                                                              |                                                                                   |                                                                                     | 680                                                                                 |                                                                                     |                                                                                     | 431                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   | 17.5                                                                              |                                                                                   |                                                                                     | 21.5                                                                                |                                                                                     |                                                                                     | 19.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                     | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 20.0                                                                              |                                                                                   | 15.4                                                                              |                                                                                   | 20.0                                                                              |                                                                                     | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 0.0                                                                               |                                                                                   | 1.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 1: Hillsdale Blvd & Campus Dr

Cumulative+Project PM  
10/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 283                                                                               | 1194                                                                              | 844                                                                               | 79                                                                                | 87                                                                                | 382                                                                               |   |   |
| Future Volume (veh/h)        | 283                                                                               | 1194                                                                              | 844                                                                               | 79                                                                                | 87                                                                                | 382                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| 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       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 283                                                                               | 1194                                                                              | 844                                                                               | 79                                                                                | 87                                                                                | 256                                                                               |   |   |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 463                                                                               | 2563                                                                              | 1789                                                                              | 167                                                                               | 324                                                                               | 503                                                                               |   |   |
| Arrive On Green              | 0.09                                                                              | 0.49                                                                              | 0.55                                                                              | 0.55                                                                              | 0.18                                                                              | 0.18                                                                              |   |   |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              | 3365                                                                              | 306                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 283                                                                               | 1194                                                                              | 456                                                                               | 467                                                                               | 87                                                                                | 256                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              | 1770                                                                              | 1809                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 5.5                                                                               | 15.7                                                                              | 11.0                                                                              | 11.0                                                                              | 2.9                                                                               | 9.2                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 5.5                                                                               | 15.7                                                                              | 11.0                                                                              | 11.0                                                                              | 2.9                                                                               | 9.2                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 463                                                                               | 2563                                                                              | 968                                                                               | 989                                                                               | 324                                                                               | 503                                                                               |   |   |
| V/C Ratio(X)                 | 0.61                                                                              | 0.47                                                                              | 0.47                                                                              | 0.47                                                                              | 0.27                                                                              | 0.51                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 983                                                                               | 2563                                                                              | 968                                                                               | 989                                                                               | 355                                                                               | 530                                                                               |   |   |
| HCM Platoon Ratio            | 0.67                                                                              | 0.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 0.79                                                                              | 0.79                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 30.1                                                                              | 9.0                                                                               | 9.7                                                                               | 9.7                                                                               | 24.6                                                                              | 19.4                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.5                                                                               | 1.6                                                                               | 1.6                                                                               | 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     | 2.7                                                                               | 7.8                                                                               | 5.8                                                                               | 5.9                                                                               | 1.5                                                                               | 8.3                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 30.5                                                                              | 9.5                                                                               | 11.3                                                                              | 11.3                                                                              | 24.7                                                                              | 19.7                                                                              |   |   |
| LnGrp LOS                    | C                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1477                                                                              | 923                                                                               |                                                                                   | 343                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 13.5                                                                              | 11.3                                                                              |                                                                                   | 21.0                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 54.2                                                                              |                                                                                   | 15.8                                                                              | 12.4                                                                              | 41.8                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               | 5.0                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 48.0                                                                              |                                                                                   | 12.5                                                                              | 18.5                                                                              | 25.0                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 17.7                                                                              |                                                                                   | 11.2                                                                              | 7.5                                                                               | 13.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 14.7                                                                              |                                                                                   | 0.1                                                                               | 0.4                                                                               | 6.1                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |

HCM 2010 Signalized Intersection Summary  
 2: SR 92 WB On Ramp/SR 92 WB Off Ramp & Hillsdale Blvd

Cumulative+Project PM  
 10/02/2020

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                 | ↑↑                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑                                                                                   |
| Traffic Volume (veh/h)       | 0                                                                                 | 712                                                                               | 428                                                                               | 906                                                                               | 529                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 317                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 712                                                                               | 428                                                                               | 906                                                                               | 529                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 317                                                                                 |
| 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                                                                              |                                                                                   | 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                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 782                                                                               | 0                                                                                 | 996                                                                               | 581                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 449                                                                                 | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 925                                                                               | 414                                                                               | 840                                                                               | 2738                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 568                                                                                 | 0                                                                                   | 261                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.26                                                                              | 0.00                                                                              | 0.47                                                                              | 0.77                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3632                                                                              | 1583                                                                              | 1774                                                                              | 3632                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 1583                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 782                                                                               | 0                                                                                 | 996                                                                               | 581                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 449                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1770                                                                              | 1583                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1583                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 18.8                                                                              | 0.0                                                                               | 42.5                                                                              | 4.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 18.8                                                                              | 0.0                                                                               | 42.5                                                                              | 4.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 11.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 925                                                                               | 414                                                                               | 840                                                                               | 2738                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 568                                                                                 | 0                                                                                   | 261                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.85                                                                              | 0.00                                                                              | 1.19                                                                              | 0.21                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.79                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1596                                                                              | 714                                                                               | 840                                                                               | 2738                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 862                                                                                 | 0                                                                                   | 397                                                                                 |
| 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                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 31.4                                                                              | 0.0                                                                               | 23.6                                                                              | 2.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 36.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.8                                                                               | 0.0                                                                               | 95.7                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 9.2                                                                               | 0.0                                                                               | 42.9                                                                              | 1.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 5.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 32.3                                                                              | 0.0                                                                               | 119.4                                                                             | 2.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 37.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 |                                                                                   | F                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 782                                                                               |                                                                                   |                                                                                   | 1577                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 449                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 32.3                                                                              |                                                                                   |                                                                                   | 76.4                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 37.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 46.0                                                                              | 27.0                                                                              |                                                                                   | 16.8                                                                              |                                                                                   | 73.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | * 5                                                                               |                                                                                   | 3.5                                                                               |                                                                                   | 5.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 41.0                                                                              | * 39                                                                              |                                                                                   | 21.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 44.5                                                                              | 20.8                                                                              |                                                                                   | 13.2                                                                              |                                                                                   | 6.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.2                                                                               |                                                                                   | 0.1                                                                               |                                                                                   | 0.7                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 57.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
 3: SR 92 EB Off Ramp/SR 92 EB On Ramp & Hillsdale Blvd

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 10/02/2020

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 812                                                                               | 356                                                                               | 0                                                                                 | 1109                                                                              | 385                                                                               | 276                                                                                 | 0                                                                                   | 681                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 812                                                                               | 356                                                                               | 0                                                                                 | 1109                                                                              | 385                                                                               | 276                                                                                 | 0                                                                                   | 681                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 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                                                                                 | 1863                                                                              | 1900                                                                              | 0                                                                                 | 1863                                                                              | 1900                                                                              | 1863                                                                                | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 855                                                                               | 0                                                                                 | 0                                                                                 | 1167                                                                              | 405                                                                               | 291                                                                                 | 0                                                                                   | 602                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 0                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1576                                                                              | 535                                                                               | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.61                                                                              | 0.00                                                                              | 0.00                                                                              | 0.20                                                                              | 0.20                                                                              | 0.32                                                                                | 0.00                                                                                | 0.32                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5421                                                                              | 0                                                                                 | 0                                                                                 | 2689                                                                              | 881                                                                               | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 855                                                                               | 0                                                                                 | 0                                                                                 | 787                                                                               | 785                                                                               | 291                                                                                 | 0                                                                                   | 602                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1695                                                                              | 0                                                                                 | 0                                                                                 | 1770                                                                              | 1707                                                                              | 1774                                                                                | 0                                                                                   | 1583                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 5.6                                                                               | 0.0                                                                               | 0.0                                                                               | 29.2                                                                              | 30.3                                                                              | 9.3                                                                                 | 0.0                                                                                 | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 5.6                                                                               | 0.0                                                                               | 0.0                                                                               | 29.2                                                                              | 30.3                                                                              | 9.3                                                                                 | 0.0                                                                                 | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.00                                                                              | 0.00                                                                              |                                                                                   | 0.52                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1074                                                                              | 1037                                                                              | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.28                                                                              | 0.00                                                                              | 0.00                                                                              | 0.73                                                                              | 0.76                                                                              | 0.51                                                                                | 0.00                                                                                | 1.18                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3088                                                                              | 0                                                                                 | 0                                                                                 | 1074                                                                              | 1037                                                                              | 570                                                                                 | 0                                                                                   | 509                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.33                                                                              | 0.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.51                                                                              | 0.00                                                                              | 0.00                                                                              | 0.83                                                                              | 0.83                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 6.5                                                                               | 0.0                                                                               | 0.0                                                                               | 22.7                                                                              | 23.1                                                                              | 19.3                                                                                | 0.0                                                                                 | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 3.7                                                                               | 4.3                                                                               | 0.3                                                                                 | 0.0                                                                                 | 100.9                                                                               |                                                                                     |                                                                                     |                                                                                     |
| 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     | 0.0                                                                               | 2.6                                                                               | 0.0                                                                               | 0.0                                                                               | 15.4                                                                              | 15.6                                                                              | 4.6                                                                                 | 0.0                                                                                 | 24.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 6.6                                                                               | 0.0                                                                               | 0.0                                                                               | 26.4                                                                              | 27.4                                                                              | 19.6                                                                                | 0.0                                                                                 | 124.7                                                                               |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 | B                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 855                                                                               |                                                                                   |                                                                                   | 1572                                                                              |                                                                                   |                                                                                     | 893                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 26.9                                                                              |                                                                                   |                                                                                     | 90.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 45.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.5                                                                               |                                                                                     | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 41.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 41.0                                                                              |                                                                                     | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                     | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 1.8                                                                               |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 38.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative+Project PM  
10/02/2020

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | SEL                                                                               | SET                                                                               | SER                                                                               | NWL                                                                               | NWT                                                                               | NWR                                                                               | NEL                                                                                 | NET                                                                                 | NER                                                                                 | SWL                                                                                 | SWT                                                                                 | SWR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 159                                                                               | 778                                                                               | 93                                                                                | 221                                                                               | 640                                                                               | 80                                                                                | 66                                                                                  | 295                                                                                 | 235                                                                                 | 113                                                                                 | 204                                                                                 | 69                                                                                  |
| Future Volume (veh/h)        | 159                                                                               | 778                                                                               | 93                                                                                | 221                                                                               | 640                                                                               | 80                                                                                | 66                                                                                  | 295                                                                                 | 235                                                                                 | 113                                                                                 | 204                                                                                 | 69                                                                                  |
| 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                                                                                |                                                                                     | 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                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 166                                                                               | 810                                                                               | 97                                                                                | 230                                                                               | 667                                                                               | 83                                                                                | 69                                                                                  | 307                                                                                 | 245                                                                                 | 118                                                                                 | 212                                                                                 | 72                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 330                                                                               | 1274                                                                              | 152                                                                               | 280                                                                               | 1268                                                                              | 158                                                                               | 474                                                                                 | 384                                                                                 | 307                                                                                 | 263                                                                                 | 532                                                                                 | 181                                                                                 |
| Arrive On Green              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                              | 0.40                                                                              | 0.43                                                                              | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                | 0.40                                                                                | 0.40                                                                                | 0.43                                                                                |
| Sat Flow, veh/h              | 709                                                                               | 3184                                                                              | 381                                                                               | 612                                                                               | 3169                                                                              | 394                                                                               | 1091                                                                                | 961                                                                                 | 767                                                                                 | 852                                                                                 | 1331                                                                                | 452                                                                                 |
| Grp Volume(v), veh/h         | 166                                                                               | 450                                                                               | 457                                                                               | 230                                                                               | 372                                                                               | 378                                                                               | 69                                                                                  | 0                                                                                   | 552                                                                                 | 118                                                                                 | 0                                                                                   | 284                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 709                                                                               | 1770                                                                              | 1795                                                                              | 612                                                                               | 1770                                                                              | 1793                                                                              | 1091                                                                                | 0                                                                                   | 1727                                                                                | 852                                                                                 | 0                                                                                   | 1783                                                                                |
| Q Serve(g_s), s              | 10.4                                                                              | 9.2                                                                               | 9.2                                                                               | 8.8                                                                               | 7.2                                                                               | 7.2                                                                               | 2.2                                                                                 | 0.0                                                                                 | 12.6                                                                                | 5.4                                                                                 | 0.0                                                                                 | 5.1                                                                                 |
| Cycle Q Clear(g_c), s        | 17.6                                                                              | 9.2                                                                               | 9.2                                                                               | 18.0                                                                              | 7.2                                                                               | 7.2                                                                               | 7.2                                                                                 | 0.0                                                                                 | 12.6                                                                                | 18.0                                                                                | 0.0                                                                                 | 5.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.21                                                                              | 1.00                                                                              |                                                                                   | 0.22                                                                              | 1.00                                                                                |                                                                                     | 0.44                                                                                | 1.00                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 330                                                                               | 708                                                                               | 718                                                                               | 280                                                                               | 708                                                                               | 717                                                                               | 474                                                                                 | 0                                                                                   | 691                                                                                 | 263                                                                                 | 0                                                                                   | 713                                                                                 |
| V/C Ratio(X)                 | 0.50                                                                              | 0.64                                                                              | 0.64                                                                              | 0.82                                                                              | 0.53                                                                              | 0.53                                                                              | 0.15                                                                                | 0.00                                                                                | 0.80                                                                                | 0.45                                                                                | 0.00                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h        | 330                                                                               | 708                                                                               | 718                                                                               | 280                                                                               | 708                                                                               | 717                                                                               | 474                                                                                 | 0                                                                                   | 691                                                                                 | 263                                                                                 | 0                                                                                   | 713                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 17.0                                                                              | 10.9                                                                              | 10.7                                                                              | 20.2                                                                              | 10.3                                                                              | 10.1                                                                              | 12.2                                                                                | 0.0                                                                                 | 11.6                                                                                | 20.1                                                                                | 0.0                                                                                 | 9.5                                                                                 |
| Incr Delay (d2), s/veh       | 5.4                                                                               | 4.3                                                                               | 4.3                                                                               | 23.1                                                                              | 2.8                                                                               | 2.8                                                                               | 0.6                                                                                 | 0.0                                                                                 | 9.4                                                                                 | 5.5                                                                                 | 0.0                                                                                 | 1.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.5                                                                               | 5.2                                                                               | 5.3                                                                               | 4.6                                                                               | 4.0                                                                               | 4.0                                                                               | 0.7                                                                                 | 0.0                                                                                 | 7.7                                                                                 | 1.8                                                                                 | 0.0                                                                                 | 2.8                                                                                 |
| LnGrp Delay(d),s/veh         | 22.3                                                                              | 15.2                                                                              | 15.0                                                                              | 43.4                                                                              | 13.0                                                                              | 12.9                                                                              | 12.8                                                                                | 0.0                                                                                 | 21.0                                                                                | 25.6                                                                                | 0.0                                                                                 | 11.1                                                                                |
| LnGrp LOS                    | C                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 | B                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     | B                                                                                   |
| Approach Vol, veh/h          | 1073                                                                              |                                                                                   |                                                                                   |                                                                                   | 980                                                                               |                                                                                   |                                                                                     | 621                                                                                 |                                                                                     |                                                                                     | 402                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 16.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                     | 20.1                                                                                |                                                                                     |                                                                                     | 15.4                                                                                |                                                                                     |
| Approach LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                              |                                                                                   | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 20.0                                                                              |                                                                                   | 14.6                                                                              |                                                                                   | 19.6                                                                              |                                                                                   | 20.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               |                                                                                   | 1.4                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 18.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



## Queues

Cumulative+Project AM

1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 256  | 828  | 1000 | 39   | 210  |
| v/c Ratio               | 0.50 | 0.30 | 0.48 | 0.16 | 0.40 |
| Control Delay           | 37.6 | 2.1  | 10.9 | 31.4 | 20.7 |
| Queue Delay             | 0.0  | 0.3  | 1.7  | 0.0  | 0.0  |
| Total Delay             | 37.6 | 2.4  | 12.6 | 31.4 | 20.7 |
| Queue Length 50th (ft)  | 65   | 26   | 140  | 17   | 72   |
| Queue Length 95th (ft)  | m92  | 54   | 207  | 44   | 121  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 1416 | 2750 | 2082 | 265  | 932  |
| Starvation Cap Reductn  | 0    | 1206 | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 860  | 0    | 3    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.18 | 0.54 | 0.82 | 0.15 | 0.23 |

## Intersection Summary

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

## Queues

Cumulative+Project AM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 430  | 190  | 751  | 1178 | 435  | 848  |
| v/c Ratio               | 0.67 | 0.12 | 0.80 | 0.44 | 0.71 | 0.54 |
| Control Delay           | 36.5 | 0.2  | 25.1 | 4.6  | 38.0 | 1.3  |
| Queue Delay             | 0.0  | 0.0  | 14.2 | 0.1  | 0.0  | 0.0  |
| Total Delay             | 36.5 | 0.2  | 39.3 | 4.7  | 38.0 | 1.3  |
| Queue Length 50th (ft)  | 106  | 0    | 281  | 89   | 105  | 0    |
| Queue Length 95th (ft)  | 163  | 0    | #612 | 157  | 162  | 0    |
| Internal Link Dist (ft) | 592  |      |      | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200  |      | 250  | 300  |
| Base Capacity (vph)     | 1794 | 1583 | 941  | 3509 | 967  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 185  | 956  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.24 | 0.12 | 0.99 | 0.46 | 0.45 | 0.54 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

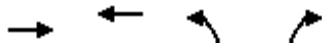
Queue shown is maximum after two cycles.

## Queues

Cumulative+Project AM

3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 788  | 1277 | 931  | 694  |
| v/c Ratio               | 0.38 | 0.94 | 0.98 | 0.74 |
| Control Delay           | 13.5 | 35.5 | 46.3 | 16.2 |
| Queue Delay             | 0.0  | 45.3 | 0.0  | 0.0  |
| Total Delay             | 13.5 | 80.8 | 46.3 | 16.2 |
| Queue Length 50th (ft)  | 75   | 326  | 430  | 184  |
| Queue Length 95th (ft)  | 105  | #460 | #709 | 330  |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 2071 | 1371 | 946  | 933  |
| Starvation Cap Reductn  | 0    | 292  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.38 | 1.18 | 0.98 | 0.74 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues  
4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative+Project AM  
10/06/2020



| Lane Group              | SEL  | SET  | NWL  | NWT  | NEL  | NET  | SWL  | SWT  |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 123  | 692  | 210  | 938  | 111  | 569  | 161  | 270  |
| v/c Ratio               | 0.75 | 0.49 | 0.83 | 0.66 | 0.26 | 0.75 | 0.86 | 0.36 |
| Control Delay           | 45.8 | 11.3 | 45.7 | 12.7 | 11.0 | 17.2 | 58.9 | 9.0  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 45.8 | 11.3 | 45.7 | 12.7 | 11.0 | 17.2 | 58.9 | 9.0  |
| Queue Length 50th (ft)  | 26   | 64   | 46   | 87   | 18   | 90   | 36   | 35   |
| Queue Length 95th (ft)  | #97  | 97   | #140 | 133  | 44   | #222 | #121 | 73   |
| Internal Link Dist (ft) |      | 496  |      | 552  |      | 1829 |      | 1881 |
| Turn Bay Length (ft)    |      |      |      |      |      |      |      |      |
| Base Capacity (vph)     | 165  | 1414 | 252  | 1422 | 435  | 762  | 187  | 746  |
| 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       | 0.75 | 0.49 | 0.83 | 0.66 | 0.26 | 0.75 | 0.86 | 0.36 |

Intersection Summary

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

## Queues

Cumulative+Project PM

## 1: Hillsdale Blvd &amp; Campus Dr

10/06/2020



| Lane Group              | EBL  | EBT  | WBT  | SBL  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 283  | 1194 | 923  | 87   | 382  |
| v/c Ratio               | 0.49 | 0.47 | 0.52 | 0.26 | 0.57 |
| Control Delay           | 31.8 | 3.4  | 13.8 | 25.9 | 16.8 |
| Queue Delay             | 0.0  | 0.4  | 0.7  | 0.0  | 0.0  |
| Total Delay             | 31.8 | 3.8  | 14.4 | 25.9 | 16.8 |
| Queue Length 50th (ft)  | 62   | 58   | 133  | 32   | 103  |
| Queue Length 95th (ft)  | m80  | m71  | 208  | 68   | 163  |
| Internal Link Dist (ft) |      | 270  | 767  | 1297 |      |
| Turn Bay Length (ft)    | 155  |      |      | 150  | 150  |
| Base Capacity (vph)     | 980  | 2530 | 1759 | 354  | 849  |
| Starvation Cap Reductn  | 0    | 734  | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 453  | 0    | 6    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.29 | 0.66 | 0.71 | 0.25 | 0.45 |

## Intersection Summary

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

## Queues

Cumulative+Project PM

## 2: SR 92 WB On Ramp/SR 92 WB Off Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | EBR  | WBL   | WBT  | SBL  | SBR  |
|-------------------------|------|------|-------|------|------|------|
| Lane Group Flow (vph)   | 782  | 470  | 996   | 581  | 449  | 348  |
| v/c Ratio               | 0.82 | 0.30 | 1.22  | 0.21 | 0.74 | 0.22 |
| Control Delay           | 39.9 | 0.5  | 136.1 | 3.6  | 45.0 | 0.3  |
| Queue Delay             | 0.0  | 0.0  | 0.9   | 0.0  | 0.0  | 0.0  |
| Total Delay             | 39.9 | 0.5  | 137.0 | 3.6  | 45.0 | 0.3  |
| Queue Length 50th (ft)  | 225  | 0    | ~724  | 40   | 129  | 0    |
| Queue Length 95th (ft)  | 317  | 0    | #1174 | 73   | 200  | 0    |
| Internal Link Dist (ft) | 592  |      |       | 325  |      |      |
| Turn Bay Length (ft)    |      |      | 200   |      | 250  | 300  |
| Base Capacity (vph)     | 1557 | 1583 | 817   | 3251 | 839  | 1583 |
| Starvation Cap Reductn  | 0    | 0    | 117   | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0     | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0     | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.50 | 0.30 | 1.42  | 0.18 | 0.54 | 0.22 |

## 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.

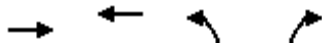
Queue shown is maximum after two cycles.

## Queues

Cumulative+Project PM

## 3: SR 92 EB Off Ramp/SR 92 EB On Ramp &amp; Hillsdale Blvd

10/06/2020



| Lane Group              | EBT  | WBT  | NBL  | NBR  |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph)   | 1230 | 1572 | 291  | 602  |
| v/c Ratio               | 0.41 | 0.78 | 0.50 | 0.94 |
| Control Delay           | 6.0  | 13.0 | 22.3 | 42.6 |
| Queue Delay             | 0.0  | 1.9  | 0.0  | 0.0  |
| Total Delay             | 6.0  | 14.9 | 22.3 | 42.6 |
| Queue Length 50th (ft)  | 68   | 281  | 97   | 182  |
| Queue Length 95th (ft)  | 87   | 381  | 170  | #397 |
| Internal Link Dist (ft) | 325  | 270  |      |      |
| Turn Bay Length (ft)    |      |      |      | 400  |
| Base Capacity (vph)     | 3079 | 2080 | 595  | 647  |
| Starvation Cap Reductn  | 0    | 338  | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.40 | 0.90 | 0.49 | 0.93 |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Queues  
4: Hillsdale Blvd & Alameda de Las Pulgas

Cumulative+Project PM  
10/06/2020



| Lane Group              | SEL  | SET  | NWL   | NWT  | NEL  | NET  | SWL  | SWT  |
|-------------------------|------|------|-------|------|------|------|------|------|
| Lane Group Flow (vph)   | 166  | 907  | 230   | 750  | 69   | 552  | 118  | 285  |
| v/c Ratio               | 0.73 | 0.64 | 1.39  | 0.53 | 0.16 | 0.75 | 0.59 | 0.38 |
| Control Delay           | 36.5 | 13.0 | 228.6 | 11.5 | 10.0 | 18.6 | 27.9 | 9.8  |
| Queue Delay             | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 36.5 | 13.0 | 228.6 | 11.5 | 10.0 | 18.6 | 27.9 | 9.8  |
| Queue Length 50th (ft)  | 34   | 89   | ~84   | 68   | 11   | 98   | 23   | 40   |
| Queue Length 95th (ft)  | #118 | 138  | #185  | 108  | 30   | #238 | #86  | 84   |
| Internal Link Dist (ft) |      | 496  |       | 552  |      | 1829 |      | 1881 |
| Turn Bay Length (ft)    |      |      |       |      |      |      |      |      |
| Base Capacity (vph)     | 226  | 1413 | 166   | 1412 | 421  | 739  | 199  | 743  |
| 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       | 0.73 | 0.64 | 1.39  | 0.53 | 0.16 | 0.75 | 0.59 | 0.38 |

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.