



July 19, 2019

Mr. Jeff Overton
Principal
Group 70
111 S. King Street, Suite 170
Honolulu, HI 96813

Subject: ***Construction Traffic Assessment for the Proposed Waiawa Solar Farm (Oahu, HI)***

Dear Mr. Overton:

Fehr & Peers has prepared a traffic assessment for a proposed solar farm to be constructed by Waiawa Solar Power LLC, a subsidiary of Clearway Energy Group LLC, in the Waiawa area on the island of O’ahu. This letter includes an assessment of the vehicle trip generation anticipated during both project construction and typical project operations, as well as an analysis of intersection operations to determine any traffic-related impacts from the project.

PROJECT DESCRIPTION

The proposed project is a new solar farm installation located in the Waiawa area, generally east of the H-2 Freeway/Ka Uka Boulevard interchange in Waipio and mauka of Waihona Street in Pearl City. Construction of the site will consist of a 36-megawatt (MW) installation within an area of approximately 200 acres of land. Accordingly, this assessment focuses on traffic impacts related to the construction and operations of the proposed facility. **Figure 1** shows the proposed site plan.

Once operational, the site will be primarily self-sustaining with minimal periodic maintenance required. The solar farm is anticipated to have no more than five employees on-site at any given time. No permanent employees will be on-site; however, employees will visit the site over the course of the year to conduct maintenance such as mowing and/or panel washing. As a result, the number of employee vehicle trips generated by the proposed project during typical operations is considered negligible (i.e. less than the standard daily variation in traffic during peak hours). The primary traffic concerns for the proposed project are associated with potential temporary construction traffic impacts.

Construction is expected to begin in the fourth quarter 2020 and continue into late 2021. Construction is anticipated to require a maximum of 175 workers on-site at a given time. Construction workers will be encouraged to carpool. Construction staff will be on-site between 6:00 AM to 5:00 PM Monday through Saturday. The construction work period will be from 7:00 AM to 5:00 PM. Similar to the construction of solar



facilities in other locations, the number of employees for the first three months and the last three months of construction will be lower with peak on-site employment occurring for the five to six months in the middle of the project schedule.

The number and types of vehicles planned to be involved during peak construction are described as follows:

- 20 heavy haul trucks (ex: 18-wheelers, water trucks, garbage trucks) per day
- 30 work trucks (ex: crew, foreman, superintendents) per day
- 100 worker personal vehicles per day

Because the project is scheduled to be completed by late 2021, the transportation analysis examines impacts using a Year 2021 baseline.

STUDY AREA

The proposed project is located just west of Pearl City, mauka of the H-1 freeway and east of the H-2 freeway/Ka Uka Boulevard interchange. The site is currently undeveloped. Surrounding roadways include Ka Uka Boulevard-Mililani Cemetery Road from the H2 freeway and Waihona Street. The traffic assessment evaluated the operations at the following four (4) intersections near the site:

1. Ka Uka Boulevard/H-2 SB Off-Ramp
2. Ka Uka Boulevard/H-2 SB On-Ramp
3. Ka Uka Boulevard/H-2 NB Off-Ramp
4. Kamehameha Highway/Waihona Street

STUDY SCENARIOS

The operations of the study intersections were evaluated during the busiest peak (one) hour in the morning (between 7:00 and 9:00 AM) and in the afternoon (between 4:00 and 6:00 PM). The peak hour for each intersection was determined by existing traffic count data. Traffic operations were evaluated for the following scenarios:

- **Existing (2019) Conditions** – The analysis of existing traffic conditions was based on 2019 intersection turning movement counts collected for the project during peak hours.
- **Construction Year (2020) Plus Project Construction Traffic Conditions** – Existing peak-hour volumes increased to account for growth in the area to the year of anticipated project construction in 2020. Traffic growth was estimated based on an annual one percent growth factor to account for



ambient growth. Analysis of Construction Year (2020) traffic conditions includes the addition of forecasted traffic from construction of the proposed project, inclusive of construction trucks and employee vehicles. Note that while construction staff will be on site starting at 6:00 AM, all project commute traffic was conservatively added to the AM peak hour count, which occurred between 7:00 and 9:00 AM.

- **Baseline (2021) No Project Conditions** – Existing peak-hour volumes increased to account for growth in the area to the year of anticipated project operations beginning in 2021. Traffic growth was estimated based on an annual one percent per year growth factor to account for ambient growth.
- **Baseline (2021) Plus Project Conditions** – Baseline (2021) Conditions plus the addition of project-generated traffic once the project is fully operational. Once operational, project-generated traffic from the solar site is anticipated to be no more than five (5) trips per day.

VEHICLE ACCESS

The proposed access point for construction traffic, including trucks and employees' personal vehicles, is at Ka Uka Boulevard-Mililani Cemetery Road, mauka of the H-2 Freeway, which connects to Waiawa Prison Road. **Figure 2** shows the access roads to the Waiawa solar site. The proposed solar site is within 1,395 acres of Urban District lands that are owned by Kamehameha Schools (KS Property). Access to the KS Property is over existing roads and through an existing driveway. As shown, minor road improvements are proposed south of Waiawa Prison Road west of the proposed solar site that would provide two points of connection to the project. The primary entrance and gate will be located on the southern end of the project boundary. This location is approximately three (3) miles from the Ka Uka Boulevard interchange and any temporary queuing at the project driveway would not impact freeway interchange operations. A secondary access point is along an existing 20-foot wide road, approximately 3,000 feet north of the primary entrance and gate. Once operational, employee and maintenance vehicles may access the site from a private road connection on Waihona Street via Kamehameha Highway.

Regional connections are provided to the H-2 freeway via Ka Uka Boulevard-Mililani Cemetery Road. Regional traffic would approach from either Ka Uka Boulevard (from the west) or from either direction on the H-2 Freeway and would turn onto Mililani Cemetery Road. Traveling north, vehicles on Mililani Cemetery Road would negotiate several curves before reaching the Waiawa Prison Road intersection where they would turn right (south) onto the existing road to the KS Property. Waiawa Prison Road is narrower than Mililani Cemetery Road but both facilities serve a limited amount of traffic. Construction employees will park within the KS Property along a temporary laydown yard within the project site to be accessed off the private road south of Waiawa Prison Road.



From a jurisdictional perspective, Ka Uka Boulevard in the immediate vicinity of the H-2 freeway is maintained and operated by the Hawaii Department of Transportation – Highways Division (HDOT). Mililani Cemetery Road is maintained by the City & County of Honolulu Department of Transportation Services (DTS), while Waiawa Prison Road is a private street with multiple owners.

Alternate access was considered from Waihona Street approximately 1,780 feet mauka of Kamehameha Highway. The intersection of Waihona Street and Kamehameha Highway was included in this traffic assessment. However, due to existing conditions and potential constraints, such as sight distance requirements and potential loss of on-street parking, consideration for this access point for construction was eliminated. However, this route may provide access to employee or maintenance vehicles once the site is operational.

ALTERNATIVE MODE ACCESS

The City and County of Honolulu and HDOT do not specify impact criteria for pedestrian, bicycle, and transit impacts. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit facilities, or 2) create walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility.

BICYCLE AND PEDESTRIAN TRAVEL

Given the undeveloped nature of the site and the low-density development of the immediate surrounding area, the potential conflict is low between site-generated traffic and non-automobile modes including walking and biking. North of the site at Ka Uka Boulevard east of the H-2 freeway, the amount of pedestrian and bicycle activity is negligible. Mililani Cemetery Road and Waiawa Prison Road both include vehicle travel lanes only and are not intended to accommodate separate bicycle and pedestrian travel. Given the long distances between the H-2 interchange and both the cemetery (approximately 1.2 miles) and the correctional facility (approximately 2.9 miles), significant use of non-automobile modes is not anticipated. In addition, no sidewalks or bike lanes are provided on the Ka Uka Boulevard overcrossing over H-2.

TRANSIT

Transit service in the study area consists of one route makai of H-2; no transit service is currently provided mauka of the freeway. The nearest existing transit stop to the site is the Moaniani Street/Ka Uka Boulevard bus stop served by TheBus route 433, which provides access between Waipahu and Waikale. Route 433 operates with 30-minute headways during the AM and PM peak hours. The planned Honolulu High Capacity Transit Corridor extends from Kapolei to Ala Moana Shopping Center and is expected to initiate service in



late 2020, with full operations anticipated in 2025. The closest stop to the site will be the Pearl Highlands station, located makai of Kamehameha Highway opposite Waihona Street. The Pearl Highlands station will serve as a regional transit hub and will include a park and ride facility, as well as a transfer station for buses from Central Oahu. The existing stop-controlled Waihona Street/Kamehameha Highway intersection will be signalized as part of the rail project and will improve overall access to the uses on Waihona Street.

While separate bicycle, pedestrian, and transit facilities are typically encouraged to reduce vehicle traffic, the rural circulation system, distant land uses in the vicinity of the site, and nature of the proposed project are typically not conducive to multi-modal travel.

EXISTING TRAFFIC VOLUMES

The addition of traffic from the proposed project may impact operations of intersections near the site during the anticipated 12-month construction period. To determine potential impacts, the operations of the four (4) study intersections were evaluated during weekday AM and PM peak hour conditions. Traffic counts were collected at the study intersections in February 2019. **Figure 3** illustrates the study intersections. Existing land configuration and signal controls were obtained through field observations. **Figure 4** presents the existing weekday AM and PM peak hour turning movement volumes.

CONSTRUCTION YEAR 2020 TRAFFIC VOLUMES

Project construction is expected to begin during the last quarter of year 2020. Forecasted construction traffic generated by the proposed project was added to the Construction Year 2020 volumes to determine the potential impacts. For the purpose of this analysis, existing (2019) traffic volumes were increased by an average growth factor of one percent and rounded to the nearest tenth to forecast the Construction Year 2020 traffic volumes. This methodology is consistent with other traffic studies completed for local and regional projects on Oahu. Given the limited existing traffic mauka of the H2 freeway, this approach to forecasting 2020 volumes is considered extremely conservative. For instance, at the intersection of H2 Northbound Ramps/Ka-Uka Boulevard, the existing westbound right turn traffic volume is four (4) vehicles in the AM peak hour. The forecast Construction Year (2020) traffic volume for the same movement, increased by one percent (or 0.4 trips) and rounded to the nearest tenth, brings the forecasted volume to 10 vehicles.



BASELINE YEAR 2021 TRAFFIC VOLUMES

The solar project is expected to be operational in year 2021. For the purpose of this analysis, existing (2019) traffic volumes were increased by an average growth factor of one percent per year and rounded to the nearest tenth to forecast the Baseline Year 2021 traffic volumes. Forecasted trip generation from the project during typical operations was added to the Baseline Year 2021 traffic volumes to determine if any impacts are anticipated. This methodology is consistent with other traffic studies completed for local and regional projects on Oahu. As explained previously, this approach to forecasting 2021 volumes is considered extremely conservative.

FORECAST PROJECT TRIP GENERATION

The primary traffic issue for solar farm projects is associated with the temporary construction traffic. Construction traffic comprises private vehicles driven by construction workers plus trips made by trucks delivering materials, hauling earth and debris, and providing other services (e.g., water trucks). In general, workers are assumed to make one inbound trip and one outbound trip for a total of two daily trips. Detailed information on construction activities was provided by Waiawa Solar Power LLC and included the number of trucks needed to deliver the photovoltaic panels, steel piles for mounting the panels, gravel for on-site roadways, etc. This information was used to estimate the total number of truck trips during the planned construction period of 12 months. It is important to note that this information is preliminary and will be refined once a specific contractor is selected to construct the project. At that time, a construction traffic management plan must be prepared for the City and County of Honolulu.

This traffic assessment report considered two scenarios. The first scenario represents Construction Year 2020 traffic volumes plus forecasted construction-related traffic with the assumption that 100 construction worker vehicles drive to and from the site within the KS Property. This analysis assumes all worker vehicles arrive during the AM peak hour and depart during the PM peak hour. Construction truck traffic was spread equitably throughout the hours of operation to reflect the rotation of trips typical for construction activity. Forecasted trip generation for the construction portion of the project is summarized in **Table 1** below.

**Table 1-Project Construction Trip Generation**

| Trip Type | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|-----------------------|-------------|--------------|------------|----------|--------------|----------|------------|
| | | Total | In | Out | Total | In | Out |
| Auto ¹ | 200 | 100 | 100 | 0 | 100 | 0 | 100 |
| Trucks ^{2,3} | 100 | 10 | 5 | 5 | 10 | 5 | 5 |
| Total | 300 | 110 | 105 | 5 | 110 | 5 | 105 |

¹ Assumes construction employees will be encouraged to carpool
² Assumes equipment, debris, hauling, excavation, etc. trucks arrive and depart during peak hours as well as off peak hours
³ This table reflects an estimated sum of 100 daily construction and work trucks. In the analysis (see Attachment A), a PCE factor of 2.5 per truck was applied to all truck trips assigned to the roadway network. The resulting PCE trip generation is 250 daily truck trips.

A Passenger Car Equivalent (PCE) factor of 2.5 vehicle trips per construction or work truck was applied to account for the larger impact and slower speeds of construction vehicles on the roadway network. As shown, the forecasted trip generation during construction is 300 daily trips, including 110 trips during the AM and 110 trips during the PM peak hour conditions.

The second scenario represents Baseline Year 2021 traffic volumes plus the addition of project-generated traffic once the solar site is fully constructed and operational. Once operational, the solar farm is anticipated to have a maximum of five (5) employees on site at any given time. As a result, the employee trips generated by the proposed project are nominal. The trip generation summary for the 2021 Plus Project scenario is presented in **Table 2** below.

Table 2-Project Operations Trip Generation

| Trip Type | Daily Trips | AM Peak Hour | | | PM Peak Hour | | |
|------------------------|-------------|--------------|----|-----|--------------|----|-----|
| | | Total | In | Out | Total | In | Out |
| Employees ¹ | 10 | 5 | 5 | 0 | 5 | 0 | 5 |

¹ Assumes five (5) employees on-site once project is operational

PROJECT TRIP DISTRIBUTION

Based on the available regional access points/interchanges and the fact that materials will be transported between the KS Property and the Grace Pacific Makakilo or Ameron Kapa'a quarries, all heavy trucks are expected to use the H-2 Freeway and turn right onto Ka Uka Boulevard from the H-2 Northbound Off-Ramp to access the site. Construction workers and employees are expected to come from throughout the island to travel to the proposed solar farm. The estimated trip distribution for construction worker vehicle trips is listed below:



- To/From the north—20%
- To/From the west—40%
- To/From the east—40%

Figure 5 illustrates the project trip distribution. Trip distribution percentages were applied to the forecasted trip generation for each scenario and assigned to the surrounding roadway network to assess potential traffic impacts in the area. The assignment of the project construction-related trips generated is shown on **Figure 6**.

INTERSECTION OPERATIONS ANALYSIS

The analysis of roadway operations performed for this study is based upon procedures presented in the *Highway Capacity Manual* (HCM), published by the Transportation Research Board. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents “at-capacity” operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. The computerized analysis of intersection operations was performed utilizing the SYNCHRO 10 traffic analysis software.

SIGNALIZED INTERSECTION ANALYSIS

HCM methodology defines LOS for signalized intersections in terms of delay, or more specifically, average stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption and lost travel time. This technique uses 1,900 vehicles per hour per lane (VPHPL) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks) and shared lane movements (i.e. through and right-turn movements originating from the same lane). The LOS criteria used for this technique are described in **Table 3**.



| Table 3 – Signalized Intersection Level of Service Criteria | |
|--|--|
| Average Stopped Delay Per Vehicle (seconds) | Level of Service (LOS) Characteristics |
| <10.0 | <i>LOS A</i> describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay. |
| 10.1 – 20.0 | <i>LOS B</i> describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for <i>LOS A</i> , causing higher levels of average delay. |
| 20.1 – 35.0 | <i>LOS C</i> describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping. |
| 35.1 – 55.0 | <i>LOS D</i> describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable. |
| 55.1 – 80.0 | <i>LOS E</i> is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences. |
| >80.0 | <i>LOS F</i> describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the <i>LOS D</i> capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay. |

UNSIGNALIZED INTERSECTION ANALYSIS

The HCM outlines methodology for unsignalized intersections, including two-way and all-way stop controlled intersections. The SYNCHRO 10 software supports this methodology and was utilized to produce LOS results. The LOS for a two-way stop controlled (TWSC) intersection is determined by the computed control delay and is defined for each minor movement. **Table 4** summarizes the LOS criteria for unsignalized intersections.

| Table 4 – Unsignalized Intersection Level of Service Criteria | |
|--|-------------------------------|
| Average Control Delay (sec/veh) | Level of Service (LOS) |
| <10 | A |
| >10 and \leq 15 | B |
| >15 and \leq 25 | C |
| >25 and \leq 35 | D |
| >35 and \leq 50 | E |
| >50 | F |



INTERSECTION IMPACT CRITERIA

The analysis compares existing traffic conditions to the Construction Year (2020) with project construction traffic scenario to determine if the addition of construction traffic to existing roadways is expected to result in a significant impact on the surrounding area. Similarly, the analysis of Baseline Year (2021) conditions compares future no-project operations with conditions when the project is fully built and operational to determine whether or not project implementation is expected to result in significant impacts. Based on previous studies conducted for both the City & County of Honolulu and HDOT, the minimum acceptable operating standard for a signalized intersection is LOS D. If the addition of project traffic is expected to degrade desirable service levels (LOS D or better) to lower than desirable service levels (LOS E or F) then the project is considered to have a project-specific impact. Impacts are also defined to occur when the addition of project traffic exacerbates locations already operating or projected to operate at LOS E or F. When evaluating intersection operations at any location, other factors are considered in the analysis, such as traffic volumes, volume-to-capacity (V/C) ratios, and potential secondary impacts to pedestrian, bicycle, and transit travel.

Significant impacts are categorized as either a project-specific or cumulative impact. For unsignalized intersections, the project is determined to have a significant *project-specific* impact if the addition of project traffic causes an unsignalized intersection to degrade from LOS D or better to LOS E or F during peak hours and if the peak hour traffic signal warrant is satisfied. An impact is considered a *cumulative* impact when it adds traffic to a study location that includes a controlled approach that operates at an undesired level (i.e., LOS E or F) and if the peak hour traffic signal warrant is satisfied. The use of the peak hour traffic signal warrant is one indication that an alternate traffic control device may be needed at a study location. Significant impacts typically apply to traffic operations after a project is developed and operative. Construction-related impacts are considered temporary and are addressed with provisional mitigation measures during construction.

INTERSECTION LEVEL OF SERVICE (LOS) RESULTS

The analysis of intersection turning movement volumes was completed for all scenarios, including Existing (2019) Conditions, Construction Year (2020) with Project Construction Conditions, Baseline (2021) No Project Conditions, and Baseline (2021) Plus Project Conditions. The results of the intersection LOS analysis are summarized in **Table 5. Attachment A** includes the detailed LOS calculation worksheets. Volumes for Baseline (2021) Plus Project Conditions are shown on **Figure 7**.



Table 5 – Summary of Intersection Operations

| Intersection | Peak Hour | Existing 2019 Conditions | | 2020 Plus Project Construction | | 2021 No Project | | 2021 Plus Project | |
|--|-----------|--------------------------|------------------|--------------------------------|-----|-----------------|-----|-------------------|-----|
| | | Delay ¹ | LOS ² | Delay | LOS | Delay | LOS | Delay | LOS |
| Ka Uka Blvd/ H-2 SB Off Ramp | AM | 14.3 | B | 15.1 | B | 14.5 | B | 14.6 | B |
| | PM | 49.6 | D | 51.3 | D | 51.3 | D | 51.3 | D |
| Ka Uka Blvd/ H-2 SB On Ramp* | AM | 8.2 | A | 8.3 | A | 8.2 | A | 8.2 | A |
| | PM | 9.6 | A | 10.1 | B | 9.7 | A | 9.7 | A |
| Ka Uka Blvd/ H-2 NB Off Ramp | AM | 8.1 | A | 8.7 | A | 8.4 | A | 8.4 | A |
| | PM | 47.5 | D | 55.2 | E | 49.2 | D | 49.4 | D |
| Kamehameha Hwy/ Waihona St ³ | AM | 18.9 | C | 19.3 | C | 21.0 | C | 21.0 | C |
| | PM | 79.5 | F | 110.9 | F | 130.7 | F | 130.7 | F |

Source: Fehr & Peers, March 2019 * indicates unsignalized intersection

¹ Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections. The worst movement is presented for unsignalized intersections.

² LOS calculations performed using the *Highway Capacity Manual (HCM) 6th Edition* method.

³ The intersection of Kamehameha Hwy/Waihona Street was initially considered but then excluded as a construction access point; no construction-related traffic is assigned at this intersection.

LOS E or F operations highlighted in **bold**.

Currently, all study intersections operate at Level of Service (LOS) D or better during the peak hours, with the exception of Kamehameha Highway/Waihona Street, which is unsignalized and operates at LOS F during the PM peak hour. The intersection of Kamehameha Highway/Waihona Street was included in this traffic assessment. However, due to existing conditions and potential constraints, such as sight distance requirements and potential loss of on-street parking, consideration for this access point during project construction was eliminated. Therefore, the LOS F operations do not reflect any traffic impacts caused or influenced by the construction of the proposed solar project.

All intersections through which construction traffic is routed are forecast to operate at desirable LOS D or better during both peak hours under the construction traffic scenario with the exception of the Ka Uka Boulevard/H-2 Northbound Off-Ramp intersection, which is forecast to operate at LOS E during the PM peak hour under Construction Year (2020) plus Construction conditions. The forecasted delay is 0.2 seconds above the LOS D threshold during the PM peak hour. As discussed previously, ambient 2020 volumes are considered extremely conservative based on the forecast methodology of a one percent per year annual growth adjustment and rounded to the nearest tenth value. Some movements, such as the northbound through movement at the off-ramp, are expected to have negligible volumes but were analyzed with at least 10 trips during the peak hour based on the forecast methodology. Therefore, the LOS results are

considered exacerbated. Based on the trip generation projects for construction traffic, the intersection is anticipated to operate similarly to existing (LOS D) operations and any noticeable impacts will be temporary.

POTENTIAL CONSTRUCTION IMPACTS AND IMPROVEMENT OPTIONS

It is recommended that at least one of the following actions be included in the project's construction traffic management plan to maintain desirable intersection operations at the Ka Uka Boulevard interchange:

- Adjust work schedule shifts slightly so that worker trips are reduced during the PM peak hour. Existing traffic counts show that the PM peak hour at the H-2 southbound ramps occurs at 4:30 to 5:30 PM. Therefore, it is recommended that the volume of departures be reduced between 4:30 PM and 5:30 PM to avoid the busiest or peak traffic time.
- Encourage more carpooling greater than the currently proposed rate (1.75 workers per car) for workers
- Implement an employee shuttle service to bring workers to/from an off-site location

After construction, the operational solar site is anticipated to have a maximum of five (5) trips during each peak hour. This additional traffic would have a negligible effect on intersection turning movement operations at all study locations and the Baseline Year 2021 intersection delay and LOS would be imperceptible.

ROADWAY SEGMENT OPERATIONS

In addition to evaluating peak hour intersection operations, it is important to assess the potential impact of construction traffic on all of the access roadway segments leading to the KS Property. H-2 and Ka Uka Boulevard are higher capacity roadways that include typical lane widths and are built to higher standards than other roadways. Mililani Cemetery Road is a two-lane roadway with lane widths of approximately 12 feet plus shoulder areas along most of the segment between Ka Uka Boulevard and Waiawa Prison Road. Although the prison does not generate a significant amount of existing traffic, the addition of truck traffic to all of these facilities is not anticipated to result in any operational or apparent safety issues.

A potential issue is the relatively narrow width and alignment of Waiawa Prison Road, particularly for heavy vehicles transporting construction equipment and materials. The width of this roadway varies but is roughly 20 feet along several sections between Mililani Cemetery Road and the KS Property access driveway. In addition, there are several curves where sight distance and the adjacent shoulder width are limited. While this is not an issue for typical passenger vehicles or light duty trucks, it is possible that large trucks may conflict with opposing traffic on this roadway by reducing the available width. While the estimated volume



of project-generated truck traffic is 100 trips over the course of a day (i.e., 50 trucks traveling in and out of the site), this activity would occur over an extended period and there would be some new drivers on this road where driving conditions may not be familiar to them.

It is important to note that construction activities have previously occurred in the area that added heavy truck traffic to Waiawa Prison Road and Mililani Cemetery Road. This activity included the decommissioning of several reservoirs that required trucks to transport heavy material and water along these roadways. For a four-month period, at least two heavy trucks would make daily rounds on and off Waiawa Prison Road without incident. No significant operational or safety issues were identified by Kamehameha Schools' representatives who monitored the construction activities. In addition, Hawaiian Electric (HECO) recently used Kamehameha School lands as a laydown area for 138kV pole replacements with no known complaints during construction activity.

To minimize the potential for conflicts and to maintain adequate traffic operations, the contractor should prepare a construction traffic management plan that includes the following:

- Signage between the Ka Uka Boulevard interchange and the KS Property driveway on Waiawa Prison Road that trucks are traveling and entering/exiting the roadway.
- Ensure that adequate sight distance is provided for drivers on Waiawa Prison Road approaching and departing the KS Property driveway. Measures may include traffic control signage (ex. stop or yield signs) and removal of vegetation that impede standard approach, departure, and height sight distances.
- If needed, coordinate with the City and County of Honolulu to remove vegetation in the public right of way that might impede large construction vehicles on both Mililani Cemetery Road and Waiawa Prison Road.
- Manual traffic control on Waiawa Prison Road to manage construction and prison traffic and to minimize conflicts. This could include the use of radios, flag persons, and/or temporary signals and lighting to assist with the control of vehicles and the provision of adequate sight distance (as needed).
- Maintain access to the Waiawa Correctional Facility

CONCLUSION

The proposed project will generate a negligible amount of vehicle traffic when the solar farm is fully constructed and operational. During construction, construction-related activity is expected to generate approximately 300 daily vehicle trips, including 110 vehicle trips during each peak hour. According to the project sponsor Waiawa Solar Power LLC, a subsidiary of Clearway Energy Group LLC, construction activity

is planned occur for a 12-month period and any construction-related traffic impacts will be temporary. A detailed construction traffic management plan will be prepared prior to the start of construction to ensure that the project has a minimal impact to the transportation system during the construction period.

Based on the evaluation presented in this report and typical City & County of Honolulu Department of Planning and Permitting (DPP) requirements for assessing traffic-related impacts, the proposed point of access is sufficient for the anticipated construction traffic required to build the solar project provided measures are implemented to mitigate the temporary impacts. These measures include a construction traffic management plan that minimizes traffic during the peak commute hours to the extent possible, ensures adequate sight distance at the driveway access point, and informs other drivers on Waiawa Prison Road of construction activities and heavy vehicle traffic.

We appreciate the opportunity to assist you with this project. Please let us know if you have any questions on the information in this report.

Sincerely,

FEHR & PEERS



Sohrab Rashid, TE
Principal



Stephanie Cheng, AICP
Associate

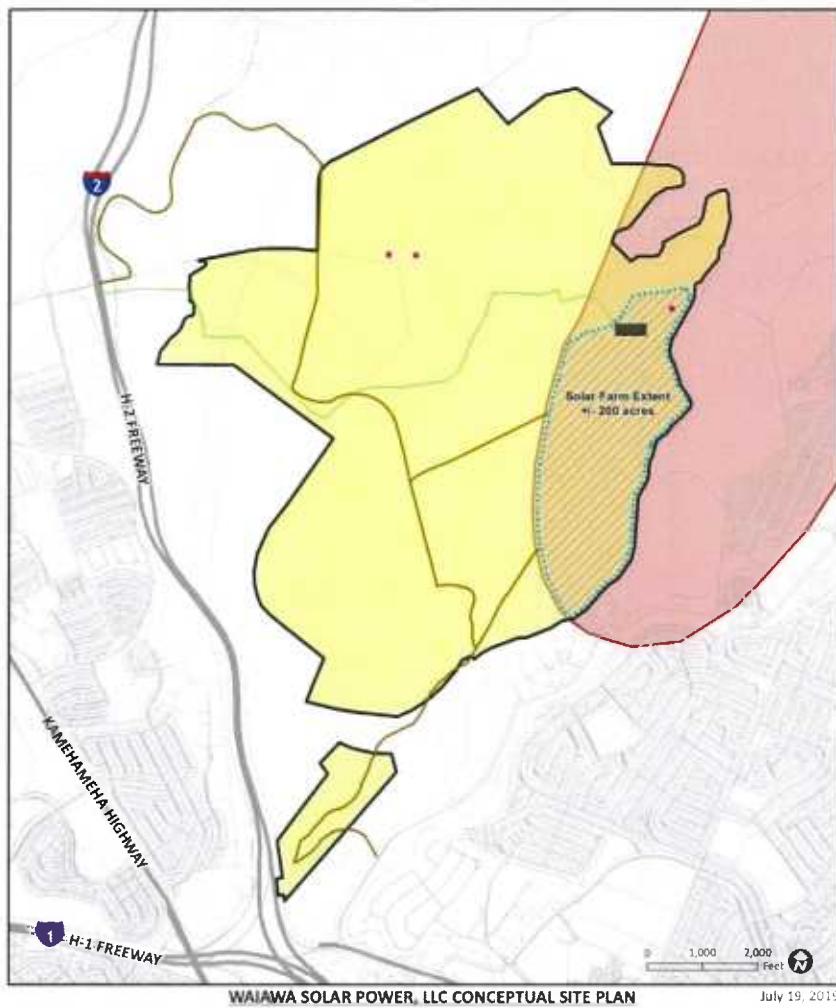
SD19-0299

Attachments:

- Figure 1 – Vicinity Map and Site Plan
- Figure 2 – Proposed Project Access Roads
- Figure 3 – Study Locations
- Figure 4 – Peak Hour Traffic Volumes and Lane Configurations – Existing Conditions
- Figure 5 – Project Construction Traffic Trip Distribution
- Figure 6 – Peak Hour Traffic Volumes and Lane Configurations – Project Construction Volumes
- Figure 7 – Peak Hour Traffic Volumes and Lane Configurations – 2020 Plus Construction
- Attachment A – Level of Service Analysis Worksheets

ATTACHMENT A: LEVEL OF SERVICE ANALYSIS WORKSHEETS





WAIAWA SOLAR POWER, LLC CONCEPTUAL SITE PLAN

July 19, 2019

Legend

- Solar Farm Extent, ~200 acres
- Utility Improvements Area (~ 2.5 acres)
- KS Waiawa Property (SLUD- Urban, Docket A87-610)
- Hydrologic Zone of Contribution (ZoC)
- Archaeological Preservation Area
- Gen-Tie Alignment
- Access Route

Disclaimer: This Graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

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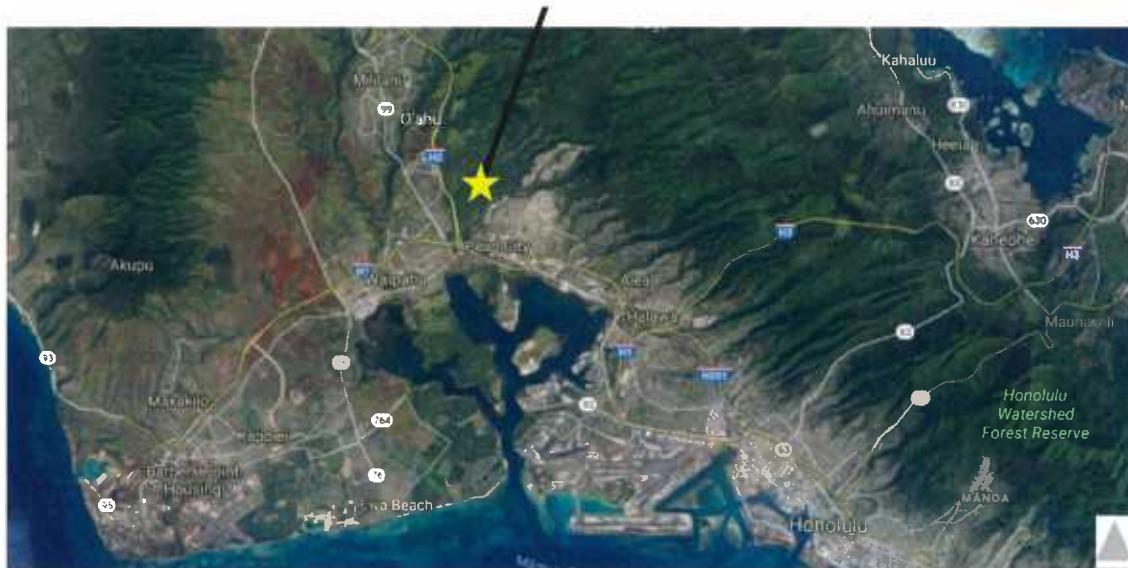


Figure 1
Vicinity Map and Site Plan



Clearway Energy - Waiawa Solar

Figure 2
Proposed Project Access Roads



Legend

- Study Intersection
- Access Road Improvements
- Waiawa Solar Site



Figure 3
Study Locations



Legend

● Study Intersection — Access Road Improvements ■ Waiawa Solar Site

| 1. H2 SB Off-Ramp/Ka Uka Blvd | 2. H2 SB On-Ramp/Ka Uka Blvd | 3. H2 NB Ramps/Ka Uka Blvd | 4. Waihona St/Kamehameha Hwy |
|---|--|---|---|
| <p>277 (324) 195 (209) 23 (10)</p> <p>260 (659) 236 (352)</p> <p>618 (715) → 40 (44)</p> <p>18 (42) ← 488 (756)</p> | <p>0 (0) 1 (0) 0 (0)</p> <p>1 (0) 496 (1,011) 17 (38)</p> <p>0 (0) 388 (692) 741 (789)</p> | <p>349 (668) → 39 (24)</p> <p>504 (1,006) ↑ 0 (3) ↓ 23 (24)</p> <p>H2 NB On Ramps</p> | <p>4 (16) 10 (43)</p> <p>39 (114) 89 (90)</p> <p>266 (52) 838 (1,382)</p> <p>Kamehameha Hwy</p> |

Figure 4
Peak Hour Traffic Volumes
and Lane Configurations -
Existing Conditions





Legend

- Study Intersection
- ↔ Waiawa Solar Site
- - - Access Road Improvements
- ↔ Car (Truck)



Figure 5
Project Construction Traffic Trip Distribution



Legend

● Study Intersection — Access Road Improvements ■ Waiawa Solar Site

Note: A Passenger Car Equivalent Factor (PCE) of 2.5 was applied to all construction generated truck trips

| 1. H2 SB Off-Ramp/Ka Uka Blvd | 2. H2 SB On-Ramp/Ka Uka Blvd | 3. H2 NB Ramps/Ka Uka Blvd | 4. Wiahona St/Kamehameha Hwy |
|---|--|--|--|
| 0 (0) → 0 (0) 0 (0) ← 0 (0) Ka Uka Blvd H2 SB Off-Ramp | 0 (0) → 0 (0) 0 (0) ← 0 (0) Ka Uka Blvd H2 SB On-Ramp | 0 (0) → 0 (0) 0 (0) ← 0 (0) Ka Uka Blvd H2 NB Ramps | 0 (0) → 0 (0) 0 (0) ← 0 (0) Kamehameha Hwy Wiahona St |

Figure 6
Peak Hour Traffic Volumes
and Lane Configurations -
Project Construction Volumes





Legend

- Study Intersection
- Access Road Improvements
- Waiawa Solar Site

Note: A Passenger Car Equivalent Factor (PCE) of 2.5 was applied to all construction generated truck trips

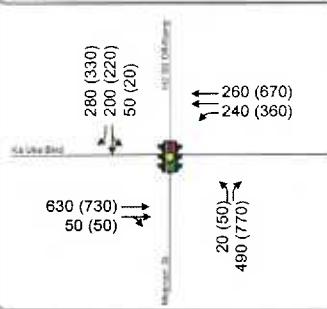
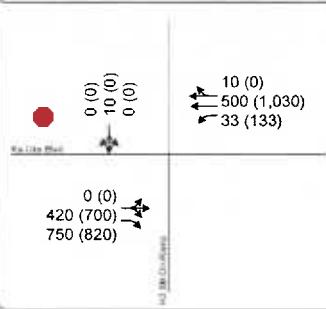
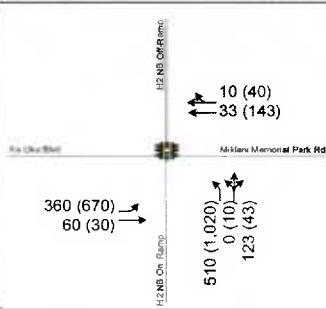
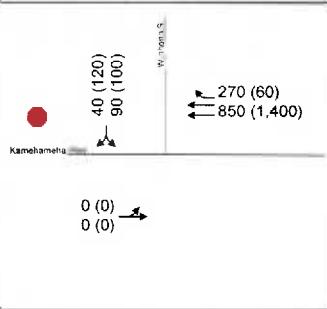
| 1. H2 SB Off-Ramp/Ka Uka Blvd | 2. H2 SB On-Ramp/Ka Uka Blvd | 3. H2 NB Ramps/Ka Uka Blvd | 4. Wiahona St/Kamehameha Hwy |
|--|---|--|--|
|  <p>Diagram showing traffic volumes at the H2 SB Off-Ramp/Ka Uka Blvd intersection. Key values include: H2 SB Off-Ramp to Ka Uka Blvd (260 (330)), Ka Uka Blvd to H2 SB Off-Ramp (200 (220)), H2 SB Off-Ramp to H2 SB On-Ramp (50 (20)), H2 SB On-Ramp to H2 SB Off-Ramp (240 (360)), H2 SB Off-Ramp to H2 SB On-Ramp (630 (730)), and H2 SB On-Ramp to H2 SB Off-Ramp (50 (50)).</p> |  <p>Diagram showing traffic volumes at the H2 SB On-Ramp/Ka Uka Blvd intersection. Key values include: H2 SB On-Ramp to H2 SB Off-Ramp (0 (0)), H2 SB Off-Ramp to H2 SB On-Ramp (10 (0)), H2 SB On-Ramp to H2 SB Off-Ramp (500 (1,030)), H2 SB Off-Ramp to H2 SB On-Ramp (33 (133)), H2 SB On-Ramp to H2 SB Off-Ramp (0 (0)), and H2 SB Off-Ramp to H2 SB On-Ramp (420 (700)).</p> |  <p>Diagram showing traffic volumes at the H2 NB Ramps/Ka Uka Blvd intersection. Key values include: H2 NB Ramps to Ka Uka Blvd (360 (670)), Ka Uka Blvd to H2 NB Ramps (60 (30)), H2 NB Ramps to H2 NB On-Ramp (10 (40)), H2 NB On-Ramp to H2 NB Ramps (33 (143)), H2 NB Ramps to H2 NB On-Ramp (510 (1,020)), and H2 NB On-Ramp to H2 NB Ramps (123 (43)).</p> |  <p>Diagram showing traffic volumes at the Wiahona St/Kamehameha Hwy intersection. Key values include: Wiahona St to Kamehameha Hwy (40 (120)), Kamehameha Hwy to Wiahona St (90 (100)), Wiahona St to Kamehameha Hwy (270 (60)), Kamehameha Hwy to Wiahona St (850 (1,400)), and Wiahona St to Kamehameha Hwy (0 (0)).</p> |

Figure 7
Peak Hour Traffic Volumes
and Lane Configurations -
2020 Plus Construction



ATTACHMENT A: LEVEL OF SERVICE ANALYSIS WORKSHEETS



HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/11/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|----------|----------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | | ↑ | | ↑ | ↑ |
| Traffic Volume (veh/h) | 0 | 618 | 40 | 236 | 260 | 0 | 18 | 0 | 488 | 23 | 195 | 277 |
| Future Volume (veh/h) | 0 | 618 | 40 | 236 | 260 | 0 | 18 | 0 | 488 | 23 | 195 | 277 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 657 | 40 | 251 | 277 | 0 | 19 | 0 | 5 | 24 | 207 | 111 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1090 | 66 | 327 | 2084 | 0 | 0 | 0 | 0 | 37 | 319 | 305 |
| Arrive On Green | 0.00 | 0.33 | 0.33 | 0.19 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.19 | 0.19 |
| Sat Flow, veh/h | 0 | 3441 | 204 | 1753 | 3503 | 0 | | 0 | | 192 | 1654 | 1585 |
| Grp Volume(v), veh/h | 0 | 343 | 354 | 251 | 277 | 0 | | 0.0 | | 231 | 0 | 111 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1749 | 1804 | 1753 | 1706 | 0 | | | | 1846 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 7.5 | 7.5 | 6.2 | 1.6 | 0.0 | | | | 5.3 | 0.0 | 2.8 |
| Cycle Q Clear(g_c), s | 0.0 | 7.5 | 7.5 | 6.2 | 1.6 | 0.0 | | | | 5.3 | 0.0 | 2.8 |
| Prop In Lane | 0.00 | | 0.11 | 1.00 | | 0.00 | | | | 0.10 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 569 | 587 | 327 | 2084 | 0 | | | | 356 | 0 | 305 |
| V/C Ratio(X) | 0.00 | 0.60 | 0.60 | 0.77 | 0.13 | 0.00 | | | | 0.65 | 0.00 | 0.36 |
| Avail Cap(c_a), veh/h | 0 | 2123 | 2190 | 978 | 6382 | 0 | | | | 1030 | 0 | 884 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 12.9 | 12.9 | 17.7 | 3.8 | 0.0 | | | | 17.0 | 0.0 | 16.0 |
| Incr Delay (d2), s/veh | 0.0 | 1.0 | 1.0 | 3.8 | 0.0 | 0.0 | | | | 2.0 | 0.0 | 0.7 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 2.7 | 2.8 | 2.6 | 0.4 | 0.0 | | | | 2.2 | 0.0 | 1.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.0 | 13.9 | 21.5 | 3.8 | 0.0 | | | | 19.0 | 0.0 | 16.7 |
| LnGrp LOS | A | B | B | C | A | A | | | | B | A | B |
| Approach Vol, veh/h | | 697 | | | 528 | | | | | | 342 | |
| Approach Delay, s/veh | | 13.9 | | | 12.2 | | | | | | 18.3 | |
| Approach LOS | | B | | | B | | | | | | B | |
| Timer - Assigned Phs | 3 | 4 | 6 | 8 | | | | | | | | |
| Phs Duration (G+Y+Rc), s | 13.0 | 19.4 | 13.3 | 32.4 | | | | | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 | 4.5 | | | | | | | | |
| Max Green Setting (Gmax), s | 25.5 | 55.5 | 25.5 | 85.5 | | | | | | | | |
| Max Q Clear Time (g_c+l1), s | 8.2 | 9.5 | 7.3 | 3.6 | | | | | | | | |
| Green Ext Time (p_c), s | 0.7 | 5.4 | 1.6 | 2.1 | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 14.3 | | | | | | | | | | |
| HCM 6th LOS | | B | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 388 | 741 | 17 | 496 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Future Vol, veh/h | 0 | 388 | 741 | 17 | 496 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 413 | 788 | 18 | 528 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | | | |
|----------------------|--------|--------|---|-------|--------|---|-------|------|-------|
| Conflicting Flow All | 529 | 0 | - | 413 | 0 | 0 | 978 | 978 | 265 |
| Stage 1 | - | - | - | - | - | - | 565 | 565 | - |
| Stage 2 | - | - | - | - | - | - | 413 | 413 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 6.63 | 8 | 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 | 7 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 | 7 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.95 | 3.319 |
| Pot Cap-1 Maneuver | 1036 | - | 0 | 1144 | - | - | 262 | 151 | 734 |
| Stage 1 | - | - | 0 | - | - | - | 533 | 349 | - |
| Stage 2 | - | - | 0 | - | - | - | 667 | 427 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1036 | - | - | 1144 | - | - | 258 | 0 | 734 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 258 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 524 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 667 | 0 | - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.3 | - |
| HCM LOS | - | - | - |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1036 | - | 1144 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.016 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.2 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/11/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↑ | | 0 | 0 | 0 |
| Traffic Volume (veh/h) | 349 | 39 | 0 | 0 | 10 | 4 | 504 | 0 | 23 | 0 | 0 | 0 |
| Future Volume (veh/h) | 349 | 39 | 0 | 0 | 10 | 4 | 504 | 0 | 23 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | | | |
| Work Zone On Approach | | No | | | No | | | | No | | | |
| Adj Sat Flow, veh/h/ln | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 388 | 43 | 0 | 0 | 11 | 1 | 580 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 769 | 681 | 0 | 0 | 1202 | 108 | 1040 | 559 | 0 | | | |
| Arrive On Green | 0.36 | 0.36 | 0.00 | 0.00 | 0.36 | 0.36 | 0.30 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1380 | 1870 | 0 | 0 | 3392 | 295 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 388 | 43 | 0 | 0 | 6 | 6 | 580 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1380 | 1870 | 0 | 0 | 1777 | 1817 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 6.7 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 3.8 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 6.7 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 3.8 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.16 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 769 | 681 | 0 | 0 | 647 | 662 | 1040 | 559 | 0 | | | |
| V/C Ratio(X) | 0.50 | 0.06 | 0.00 | 0.00 | 0.01 | 0.01 | 0.56 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1583 | 1784 | 0 | 0 | 1695 | 1734 | 7222 | 3884 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.6 | 5.5 | 0.0 | 0.0 | 5.4 | 5.4 | 7.9 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 0.0 | 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 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.1 | 5.6 | 0.0 | 0.0 | 5.4 | 5.4 | 8.4 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 431 | | | | 12 | | | 580 | | | | |
| Approach Delay, s/veh | 7.8 | | | | 5.4 | | | 8.4 | | | | |
| Approach LOS | A | | | | A | | | A | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | 12.5 | | 14.2 | | | 14.2 | | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | 4.5 | | | | | | |
| Max Green Setting (G _{max}), s | 55.5 | | 25.5 | | | 25.5 | | | | | | |
| Max Q Clear Time (g _{c+l1}), s | 5.8 | | 8.7 | | | 2.1 | | | | | | |
| Green Ext Time (p _c), s | 2.4 | | 1.4 | | | 0.0 | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | 8.1 | | | | | | | | | | | |
| HCM 6th LOS | A | | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 2.5

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

Lane Configurations



Traffic Vol, veh/h 0 0 838 266 89 39

Future Vol, veh/h 0 0 838 266 89 39

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - Yield

Storage Length - - 180 0 -

Veh in Median Storage, # 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 95 95 95 95 95 95

Heavy Vehicles, % 2 2 4 4 20 12

Mvmt Flow 0 0 882 280 94 41

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

Conflicting Flow All 882 0 - 0 882 441

Stage 1 - - - - 882 -

Stage 2 - - - - 0 -

Critical Hdwy 4.13 - - - 6.9 7.08

Critical Hdwy Stg 1 - - - - 6.1 -

Critical Hdwy Stg 2 - - - - 5.7 -

Follow-up Hdwy 2.219 - - - 3.69 3.414

Pot Cap-1 Maneuver 765 - - 0 273 542

Stage 1 - - - 0 333 -

Stage 2 - - - 0 - -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver 765 - - - 273 542

Mov Cap-2 Maneuver - - - - 273 -

Stage 1 - - - - 333 -

Stage 2 - - - - - -

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

HCM Control Delay, s 0 0 18.9

HCM LOS C

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-------|

Capacity (veh/h) 765 - - - 393

HCM Lane V/C Ratio - - - - 0.343

HCM Control Delay (s) 0 - - - 18.9

HCM Lane LOS A - - - C

HCM 95th %tile Q(veh) 0 - - - 1.5

HCM 6th Signalized Intersection Summary
1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/11/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|----------|----------|------|----------|------|----------|------|------|-------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑ | ↑↑ | ↑ |
| Traffic Volume (veh/h) | 0 | 715 | 44 | 352 | 659 | 0 | 42 | 0 | 756 | 10 | 209 | 324 |
| Future Volume (veh/h) | 0 | 715 | 44 | 352 | 659 | 0 | 42 | 0 | 756 | 10 | 209 | 324 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 769 | 44 | 378 | 709 | 0 | 45 | 0 | 219 | 11 | 225 | 30 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1246 | 71 | 402 | 2205 | 0 | 0 | 0 | 0 | 12 | 246 | 219 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 |
| Sat Flow, veh/h | 0 | 3510 | 195 | 1753 | 3647 | 0 | | 0 | | 87 | 1779 | 1585 |
| Grp Volume(v), veh/h | 0 | 400 | 413 | 378 | 709 | 0 | | 0.0 | | 236 | 0 | 30 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1777 | 1835 | 1753 | 1777 | 0 | | | | 1866 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 31.4 | 31.4 | 36.0 | 16.1 | 0.0 | | | | 21.2 | 0.0 | 2.8 |
| Cycle Q Clear(g_c), s | 0.0 | 31.4 | 31.4 | 36.0 | 16.1 | 0.0 | | | | 21.2 | 0.0 | 2.8 |
| Prop In Lane | 0.00 | | 0.11 | 1.00 | | 0.00 | | | | 0.05 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 648 | 669 | 402 | 2205 | 0 | | | | 258 | 0 | 219 |
| V/C Ratio(X) | 0.00 | 0.62 | 0.62 | 0.94 | 0.32 | 0.00 | | | | 0.91 | 0.00 | 0.14 |
| Avail Cap(c_a), veh/h | 0 | 648 | 669 | 521 | 2205 | 0 | | | | 280 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 44.3 | 44.3 | 64.3 | 15.3 | 0.0 | | | | 72.2 | 0.0 | 64.3 |
| Incr Delay (d2), s/veh | 0.0 | 1.8 | 1.7 | 22.0 | 0.4 | 0.0 | | | | 31.0 | 0.0 | 0.3 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 14.4 | 14.9 | 18.7 | 6.9 | 0.0 | | | | 12.5 | 0.0 | 1.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 46.0 | 46.0 | 86.3 | 15.7 | 0.0 | | | | 103.2 | 0.0 | 64.6 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 813 | | | 1087 | | | | | | 266 | |
| Approach Delay, s/veh | | 46.0 | | | 40.2 | | | | | | 98.9 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | | 43.5 | 66.5 | | 28.0 | | 110.0 | | | | | |
| Change Period (Y+Rc), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | | 50.5 | 50.5 | | 25.5 | | 105.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | | 38.0 | 33.4 | | 23.2 | | 18.1 | | | | | |
| Green Ext Time (p_c), s | | 1.0 | 5.1 | | 0.3 | | 6.3 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 49.6 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 692 | 789 | 38 | 1011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 692 | 789 | 38 | 1011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 744 | 848 | 41 | 1087 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|---|-------|--------|---|-------------------|
| Conflicting Flow All | 1087 | 0 | - | 744 | 0 | 0 | 1913 1913 544 |
| Stage 1 | - | - | - | - | - | - | 1169 1169 - |
| Stage 2 | - | - | - | - | - | - | 744 744 - |
| Critical Hdwy | 4.13 | - | - | 4.22 | - | - | 6.63 6.53 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 5.53 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 5.53 - |
| Follow-up Hdwy | 2.219 | - | - | 2.276 | - | - | 3.519 4.019 3.319 |
| Pot Cap-1 Maneuver | 640 | - | 0 | 829 | - | - | 67 68 484 |
| Stage 1 | - | - | 0 | - | - | - | 259 266 - |
| Stage 2 | - | - | 0 | - | - | - | 469 421 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 640 | - | - | 829 | - | - | 64 0 484 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 64 0 - |
| Stage 1 | - | - | - | - | - | - | 246 0 - |
| Stage 2 | - | - | - | - | - | - | 469 0 - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.3 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 640 | - | 829 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.049 | - | - | - |
| HCM Control Delay (s) | 0 | - | 9.6 | - | - | 0 |
| HCM Lane LOS | A | - | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/11/2019

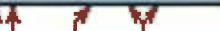
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|-------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | | | |
| Traffic Volume (veh/h) | 668 | 24 | 0 | 0 | 43 | 16 | 1006 | 3 | 24 | 0 | 0 | 0 |
| Future Volume (veh/h) | 668 | 24 | 0 | 0 | 43 | 16 | 1006 | 3 | 24 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | | | |
| Work Zone On Approach | | No | | | No | | | | No | | | |
| Adj Sat Flow, veh/h/in | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 696 | 25 | 0 | 0 | 45 | 10 | 1073 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 755 | 987 | 0 | 0 | 1559 | 335 | 1465 | 769 | 0 | | | |
| Arrive On Green | 0.54 | 0.54 | 0.00 | 0.00 | 0.54 | 0.54 | 0.41 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1349 | 1841 | 0 | 0 | 3003 | 625 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 696 | 25 | 0 | 0 | 27 | 28 | 1073 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/in | 1349 | 1841 | 0 | 0 | 1777 | 1758 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 85.5 | 1.1 | 0.0 | 0.0 | 1.2 | 1.3 | 43.1 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 86.8 | 1.1 | 0.0 | 0.0 | 1.2 | 1.3 | 43.1 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.36 | 1.00 | | | 0.00 | | |
| Lane Grp Cap(c), veh/h | 755 | 987 | 0 | 0 | 952 | 942 | 1465 | 769 | 0 | | | |
| V/C Ratio(X) | 0.92 | 0.03 | 0.00 | 0.00 | 0.03 | 0.03 | 0.73 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 830 | 1088 | 0 | 0 | 1050 | 1039 | 1465 | 769 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 39.1 | 18.6 | 0.0 | 0.0 | 18.6 | 18.6 | 42.2 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 14.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%), veh/in | 31.3 | 0.5 | 0.0 | 0.0 | 0.5 | 0.6 | 20.0 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 53.8 | 18.6 | 0.0 | 0.0 | 18.6 | 18.6 | 45.5 | 0.0 | 0.0 | | | |
| LnGrp LOS | D | B | A | A | B | B | D | A | A | | | |
| Approach Vol, veh/h | | 721 | | | 55 | | | 1073 | | | | |
| Approach Delay, s/veh | | 52.6 | | | 18.6 | | | 45.5 | | | | |
| Approach LOS | | D | | | B | | | D | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | 74.4 | | 95.6 | | | | 95.6 | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | | 100.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | 45.1 | | 88.8 | | | | 3.3 | | | | | |
| Green Ext Time (p _c), s | 4.2 | | 2.4 | | | | 0.4 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 47.5 | | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 10.2

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

Lane Configurations



Traffic Vol, veh/h 0 0 1382 52 90 114

Future Vol, veh/h 0 0 1382 52 90 114

Conflicting Peds, #/hr 0 0 0 0 1 1

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - Yield

Storage Length - - - 180 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 93 93 93 93 93 93

Heavy Vehicles, % 2 2 2 4 1 3

Mvmt Flow 0 0 1486 56 97 123

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

Conflicting Flow All 1486 0 - 0 1487 744

Stage 1 - - - - 1486 -

Stage 2 - - - - 1 - -

Critical Hdwy 4.13 - - - 6.615 6.945

Critical Hdwy Stg 1 - - - - 5.815 -

Critical Hdwy Stg 2 - - - - 5.415 -

Follow-up Hdwy 2.219 - - - 3.5095 3.3285

Pot Cap-1 Maneuver 450 - - 0 126 356

Stage 1 - - - 0 176 -

Stage 2 - - - 0 1025 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver 450 - - - 126 356

Mov Cap-2 Maneuver - - - - 126 -

Stage 1 - - - - 176 -

Stage 2 - - - - 1025 -

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

HCM Control Delay, s 0 0 79.5

HCM LOS F

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-------|

Capacity (veh/h) 450 - - - 242

HCM Lane V/C Ratio - - - - 0.906

HCM Control Delay (s) 0 - - - 79.5

HCM Lane LOS A - - - F

HCM 95th %tile Q(veh) 0 - - - 7.8

HCM 6th Signalized Intersection Summary
1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/11/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|----------|----------|------|----------|------|----------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 618 | 40 | 236 | 260 | 0 | 18 | 0 | 488 | 43 | 195 | 277 |
| Future Volume (veh/h) | 0 | 618 | 40 | 236 | 260 | 0 | 18 | 0 | 488 | 43 | 195 | 277 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | No | | No |
| Adj Sat Flow, veh/h/in | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 657 | 39 | 251 | 277 | 0 | 19 | 0 | 47 | 46 | 207 | 46 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1084 | 64 | 326 | 2069 | 0 | 0 | 0 | 0 | 67 | 300 | 316 |
| Arrive On Green | 0.00 | 0.32 | 0.32 | 0.19 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.20 | 0.20 |
| Sat Flow, veh/h | 0 | 3447 | 199 | 1753 | 3503 | 0 | | 0 | | 334 | 1504 | 1585 |
| Grp Volume(v), veh/h | 0 | 342 | 354 | 251 | 277 | 0 | | 0.0 | | 253 | 0 | 46 |
| Grp Sat Flow(s), veh/h/in | 0 | 1749 | 1805 | 1753 | 1706 | 0 | | | | 1839 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 7.6 | 7.7 | 6.3 | 1.6 | 0.0 | | | | 5.9 | 0.0 | 1.1 |
| Cycle Q Clear(g_c), s | 0.0 | 7.6 | 7.7 | 6.3 | 1.6 | 0.0 | | | | 5.9 | 0.0 | 1.1 |
| Prop In Lane | 0.00 | | 0.11 | 1.00 | | 0.00 | | | | 0.18 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 565 | 583 | 326 | 2069 | 0 | | | | 367 | 0 | 316 |
| V/C Ratio(X) | 0.00 | 0.61 | 0.61 | 0.77 | 0.13 | 0.00 | | | | 0.69 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 0 | 2092 | 2159 | 964 | 6290 | 0 | | | | 1011 | 0 | 871 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 13.2 | 13.2 | 17.9 | 3.9 | 0.0 | | | | 17.2 | 0.0 | 15.3 |
| Incr Delay (d2), s/veh | 0.0 | 1.0 | 1.0 | 3.8 | 0.0 | 0.0 | | | | 2.3 | 0.0 | 0.2 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/in | 0.0 | 2.7 | 2.8 | 2.6 | 0.4 | 0.0 | | | | 2.5 | 0.0 | 0.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.3 | 14.2 | 21.8 | 3.9 | 0.0 | | | | 19.5 | 0.0 | 15.5 |
| LnGrp LOS | A | B | B | C | A | A | | | | B | A | B |
| Approach Vol, veh/h | | 696 | | | 528 | | | | | 299 | | |
| Approach Delay, s/veh | | 14.2 | | | 12.4 | | | | | 18.9 | | |
| Approach LOS | | B | | | B | | | | | B | | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | | 13.1 | 19.5 | | 13.8 | | 32.6 | | | | | |
| Change Period (Y+R _c), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | | 25.5 | 55.5 | | 25.5 | | 85.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | | 8.3 | 9.7 | | 7.9 | | 3.6 | | | | | |
| Green Ext Time (p _c), s | | 0.7 | 5.3 | | 1.5 | | 2.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 14.5 | | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |

Intersection

Int Delay, s/veh 0.3

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 408 | 741 | 30 | 496 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Future Vol, veh/h | 0 | 408 | 741 | 30 | 496 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 434 | 788 | 32 | 528 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|-------|------|--------|---|------------------|
| Conflicting Flow All | 529 | 0 | - | 434 | 0 | 0 | 1027 1027 265 |
| Stage 1 | - | - | - | - | - | - | 593 593 - |
| Stage 2 | - | - | - | - | - | - | 434 434 - |
| Critical Hdwy | 4.13 | - | 4.13 | - | - | - | 6.63 8 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 7 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 7 - |
| Follow-up Hdwy | 2.219 | - | 2.219 | - | - | - | 3.519 4.95 3.319 |
| Pot Cap-1 Maneuver | 1036 | - | 0 | 1124 | - | - | 245 139 734 |
| Stage 1 | - | - | 0 | - | - | - | 516 336 - |
| Stage 2 | - | - | 0 | - | - | - | 652 415 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1036 | - | 1124 | - | - | - | 238 0 734 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 238 0 - |
| Stage 1 | - | - | - | - | - | - | 502 0 - |
| Stage 2 | - | - | - | - | - | - | 652 0 - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.5 | - |
| HCM LOS | - | - | - |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1036 | - | 1124 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.028 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.3 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/11/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | | | |
| Traffic Volume (veh/h) | 349 | 59 | 0 | 0 | 23 | 4 | 504 | 0 | 116 | 0 | 0 | 0 |
| Future Volume (veh/h) | 349 | 59 | 0 | 0 | 23 | 4 | 504 | 0 | 116 | 0 | 0 | 0 |
| 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 | | | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | | | No | | | | No | | | |
| Adj Sat Flow, veh/h/ln | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 388 | 66 | 0 | 0 | 26 | 2 | 636 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 751 | 696 | 0 | 0 | 1246 | 95 | 1089 | 586 | 0 | | | |
| Arrive On Green | 0.37 | 0.37 | 0.00 | 0.00 | 0.37 | 0.37 | 0.31 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1360 | 1870 | 0 | 0 | 3441 | 254 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 388 | 66 | 0 | 0 | 14 | 14 | 636 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1360 | 1870 | 0 | 0 | 1777 | 1825 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 7.2 | 0.7 | 0.0 | 0.0 | 0.1 | 0.1 | 4.4 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 7.4 | 0.7 | 0.0 | 0.0 | 0.1 | 0.1 | 4.4 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.14 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 751 | 696 | 0 | 0 | 662 | 679 | 1089 | 586 | 0 | | | |
| V/C Ratio(X) | 0.52 | 0.09 | 0.00 | 0.00 | 0.02 | 0.02 | 0.58 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1457 | 1667 | 0 | 0 | 1584 | 1626 | 6746 | 3628 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 8.0 | 5.8 | 0.0 | 0.0 | 5.7 | 5.7 | 8.3 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.6 | 0.1 | 0.0 | 0.0 | 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 | 1.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.6 | 5.9 | 0.0 | 0.0 | 5.7 | 5.7 | 8.8 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 454 | | | | 28 | | | 636 | | | | |
| Approach Delay, s/veh | 8.2 | | | | 5.7 | | | 8.8 | | | | |
| Approach LOS | A | | | | A | | | A | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 13.5 | | 15.2 | | | | 15.2 | | | | | |
| Change Period (Y+Rc), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | 55.5 | | 25.5 | | | | 25.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | 6.4 | | 9.4 | | | | 2.1 | | | | | |
| Green Ext Time (p_c), s | 2.6 | | 1.5 | | | | 0.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 8.4 | | | | | | | | | | |
| HCM 6th LOS | | A | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 3

Movement EBL EBT WBT WBR SBL SBR

| | | | | | | |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 838 | 266 | 102 | 39 |
| Future Vol, veh/h | 0 | 0 | 838 | 266 | 102 | 39 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 20 | 12 |
| Mvmt Flow | 0 | 0 | 882 | 280 | 107 | 41 |

Major/Minor **Major1** **Major2** **Minor2**

| | | | | | | |
|----------------------|-------|---|---|---|------|-------|
| Conflicting Flow All | 882 | 0 | - | 0 | 882 | 441 |
| Stage 1 | - | - | - | - | 882 | - |
| Stage 2 | - | - | - | - | 0 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.9 | 7.08 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.1 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.7 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.69 | 3.414 |
| Pot Cap-1 Maneuver | 765 | - | - | 0 | 273 | 542 |
| Stage 1 | - | - | - | 0 | 333 | - |
| Stage 2 | - | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 765 | - | - | - | 273 | 542 |
| Mov Cap-2 Maneuver | - | - | - | - | 273 | - |
| Stage 1 | - | - | - | - | 333 | - |
| Stage 2 | - | - | - | - | - | - |

Approach EB WB SB

| | | | |
|----------------------|---|---|------|
| HCM Control Delay, s | 0 | 0 | 20.6 |
| HCM LOS | - | - | C |

Minor Lane/Major Mvmt EBL EBT WBT SBLn1

| | | | | |
|-----------------------|-----|---|---|-------|
| Capacity (veh/h) | 765 | - | - | 377 |
| HCM Lane V/C Ratio | - | - | - | 0.394 |
| HCM Control Delay (s) | 0 | - | - | 20.6 |
| HCM Lane LOS | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.8 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/11/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 715 | 44 | 352 | 659 | 0 | 42 | 0 | 756 | 10 | 209 | 324 |
| Future Volume (veh/h) | 0 | 715 | 44 | 352 | 659 | 0 | 42 | 0 | 756 | 10 | 209 | 324 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 769 | 44 | 378 | 709 | 0 | 45 | 0 | 219 | 11 | 225 | 30 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1246 | 71 | 402 | 2205 | 0 | 0 | 0 | 0 | 12 | 246 | 219 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 |
| Sat Flow, veh/h | 0 | 3510 | 195 | 1753 | 3647 | 0 | | 0 | | 87 | 1779 | 1585 |
| Grp Volume(v), veh/h | 0 | 400 | 413 | 378 | 709 | 0 | | 0.0 | | 236 | 0 | 30 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1777 | 1835 | 1753 | 1777 | 0 | | | | 1866 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 31.4 | 31.4 | 36.0 | 16.1 | 0.0 | | | | 21.2 | 0.0 | 2.8 |
| Cycle Q Clear(g_c), s | 0.0 | 31.4 | 31.4 | 36.0 | 16.1 | 0.0 | | | | 21.2 | 0.0 | 2.8 |
| Prop In Lane | 0.00 | | 0.11 | 1.00 | | 0.00 | | | | 0.05 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 648 | 669 | 402 | 2205 | 0 | | | | 258 | 0 | 219 |
| V/C Ratio(X) | 0.00 | 0.62 | 0.62 | 0.94 | 0.32 | 0.00 | | | | 0.91 | 0.00 | 0.14 |
| Avail Cap(c_a), veh/h | 0 | 648 | 669 | 521 | 2205 | 0 | | | | 280 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 44.3 | 44.3 | 64.3 | 15.3 | 0.0 | | | | 72.2 | 0.0 | 64.3 |
| Incr Delay (d2), s/veh | 0.0 | 1.8 | 1.7 | 22.0 | 0.4 | 0.0 | | | | 31.0 | 0.0 | 0.3 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 14.4 | 14.9 | 18.7 | 6.9 | 0.0 | | | | 12.5 | 0.0 | 1.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 46.0 | 46.0 | 86.3 | 15.7 | 0.0 | | | | 103.2 | 0.0 | 64.6 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 813 | | | 1087 | | | | | | 266 | |
| Approach Delay, s/veh | | 46.0 | | | 40.2 | | | | | | 98.9 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | | 43.5 | 66.5 | | 28.0 | | 110.0 | | | | | |
| Change Period (Y+Rc), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | | 50.5 | 50.5 | | 25.5 | | 105.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | | 38.0 | 33.4 | | 23.2 | | 18.1 | | | | | |
| Green Ext Time (p_c), s | | 1.0 | 5.1 | | 0.3 | | 6.3 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 49.6 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 692 | 789 | 131 | 1011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 692 | 789 | 131 | 1011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 744 | 848 | 141 | 1087 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|---|-------|--------|---|-------------------|
| Conflicting Flow All | 1087 | 0 | - | 744 | 0 | 0 | 2113 2113 544 |
| Stage 1 | - | - | - | - | - | - | 1369 1369 - |
| Stage 2 | - | - | - | - | - | - | 744 744 - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 6.63 6.53 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 5.53 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 5.53 - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 4.019 3.319 |
| Pot Cap-1 Maneuver | 640 | - | 0 | 861 | - | - | 49 51 484 |
| Stage 1 | - | - | 0 | - | - | - | 202 213 - |
| Stage 2 | - | - | 0 | - | - | - | 469 421 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 640 | - | - | 861 | - | - | 41 0 484 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 41 0 - |
| Stage 1 | - | - | - | - | - | - | 169 0 - |
| Stage 2 | - | - | - | - | - | - | 469 0 - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 1.1 | 0 |
| HCM LOS | - | - | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 640 | - | 861 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.164 | - | - | - |
| HCM Control Delay (s) | 0 | - | 10 | - | - | 0 |
| HCM Lane LOS | A | - | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | 0.6 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/11/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|-------|------|-------|------|------|-------|------|------|------|-----|-----|-----|
| Lane Configurations | ↑ ↗ | ↑ ↘ | | | ↑ ↗ | | ↑ ↗ | ↔ | | | | |
| Traffic Volume (veh/h) | 668 | 24 | 0 | 0 | 136 | 36 | 1006 | 3 | 37 | 0 | 0 | 0 |
| Future Volume (veh/h) | 668 | 24 | 0 | 0 | 136 | 36 | 1006 | 3 | 37 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | 1.00 | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | | | No | | | | No | | | |
| Adj Sat Flow, veh/h/in | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 696 | 25 | 0 | 0 | 142 | 23 | 1085 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 739 | 1088 | 0 | 0 | 1816 | 289 | 1268 | 666 | 0 | | | |
| Arrive On Green | 0.59 | 0.59 | 0.00 | 0.00 | 0.59 | 0.59 | 0.36 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1221 | 1841 | 0 | 0 | 3165 | 488 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 696 | 25 | 0 | 0 | 81 | 84 | 1085 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/in | 1221 | 1841 | 0 | 0 | 1777 | 1782 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 96.8 | 1.0 | 0.0 | 0.0 | 3.3 | 3.4 | 48.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 100.2 | 1.0 | 0.0 | 0.0 | 3.3 | 3.4 | 48.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.27 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 739 | 1088 | 0 | 0 | 1050 | 1054 | 1268 | 666 | 0 | | | |
| V/C Ratio(X) | 0.94 | 0.02 | 0.00 | 0.00 | 0.08 | 0.08 | 0.86 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 739 | 1088 | 0 | 0 | 1050 | 1054 | 1268 | 666 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 36.4 | 14.4 | 0.0 | 0.0 | 14.9 | 14.9 | 50.7 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 20.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.5 | 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/in | 32.6 | 0.4 | 0.0 | 0.0 | 1.4 | 1.5 | 23.0 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 56.5 | 14.4 | 0.0 | 0.0 | 14.9 | 14.9 | 58.3 | 0.0 | 0.0 | | | |
| LnGrp LOS | E | B | A | A | B | B | E | A | A | | | |
| Approach Vol, veh/h | 721 | | | | 165 | | | 1085 | | | | |
| Approach Delay, s/veh | 55.1 | | | | 14.9 | | | 58.3 | | | | |
| Approach LOS | E | | | | B | | | E | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | 65.0 | | 105.0 | | | 105.0 | | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | 4.5 | | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | 100.5 | | | | | | |
| Max Q Clear Time (g _{c+l1}), s | 50.0 | | 102.2 | | | 5.4 | | | | | | |
| Green Ext Time (p _c), s | 3.6 | | 0.0 | | | 1.1 | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | 53.5 | | | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 16.7

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | ↑ | ↑↑ | ↑ | ↑ | |
| Traffic Vol, veh/h | 0 | 0 | 1382 | 52 | 103 | 114 |
| Future Vol, veh/h | 0 | 0 | 1382 | 52 | 103 | 114 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 1 | 1 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 1 | 3 |
| Mvmt Flow | 0 | 0 | 1486 | 56 | 111 | 123 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|--------|----------|
| Conflicting Flow All | 1486 | 0 | - | 0 | 1487 744 |
| Stage 1 | - | - | - | - | 1486 - |
| Stage 2 | - | - | - | - | 1 - |
| Critical Hdwy | 4.13 | - | - | 6.615 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | 5.815 | - |
| Critical Hdwy Stg 2 | - | - | - | 5.415 | - |
| Follow-up Hdwy | 2.219 | - | - | 3.5095 | 3.3285 |
| Pot Cap-1 Maneuver | 450 | - | - | 0 | 126 356 |
| Stage 1 | - | - | - | 0 | 176 - |
| Stage 2 | - | - | - | 0 | 1025 - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | 450 | - | - | 126 | 356 |
| Mov Cap-2 Maneuver | - | - | - | 126 | - |
| Stage 1 | - | - | - | 176 | - |
| Stage 2 | - | - | - | 1025 | - |

| Approach | EB | WB | SB |
|----------------------|----|----|-------|
| HCM Control Delay, s | 0 | 0 | 122.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 450 | - | - | 221 |
| HCM Lane V/C Ratio | - | - | - | 1.056 |
| HCM Control Delay (s) | 0 | - | - | 122.7 |
| HCM Lane LOS | A | - | - | F |
| HCM 95th %tile Q(veh) | 0 | - | - | 10.2 |

HCM 6th Signalized Intersection Summary
1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 630 | 50 | 240 | 260 | 0 | 20 | 0 | 490 | 30 | 200 | 280 |
| Future Volume (veh/h) | 0 | 630 | 50 | 240 | 260 | 0 | 20 | 0 | 490 | 30 | 200 | 280 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/in | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 670 | 49 | 255 | 277 | 0 | 21 | 0 | 28 | 32 | 213 | 45 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1095 | 80 | 330 | 2100 | 0 | 0 | 0 | 0 | 47 | 310 | 306 |
| Arrive On Green | 0.00 | 0.33 | 0.33 | 0.19 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.19 | 0.19 |
| Sat Flow, veh/h | 0 | 3397 | 241 | 1753 | 3503 | 0 | | 0 | | 241 | 1603 | 1585 |
| Grp Volume(v), veh/h | 0 | 354 | 365 | 255 | 277 | 0 | | 0.0 | | 245 | 0 | 45 |
| Grp Sat Flow(s), veh/h/in | 0 | 1749 | 1797 | 1753 | 1706 | 0 | | | | 1844 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.6 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Cycle Q Clear(g_c), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.6 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Prop In Lane | 0.00 | | 0.13 | 1.00 | | 0.00 | | | | 0.13 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 579 | 596 | 330 | 2100 | 0 | | | | 356 | 0 | 306 |
| V/C Ratio(X) | 0.00 | 0.61 | 0.61 | 0.77 | 0.13 | 0.00 | | | | 0.69 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 0 | 2064 | 2121 | 951 | 6205 | 0 | | | | 1000 | 0 | 859 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 13.2 | 13.2 | 18.1 | 3.8 | 0.0 | | | | 17.6 | 0.0 | 15.8 |
| Incr Delay (d2), s/veh | 0.0 | 1.0 | 1.0 | 3.9 | 0.0 | 0.0 | | | | 2.4 | 0.0 | 0.2 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/in | 0.0 | 2.9 | 2.9 | 2.7 | 0.4 | 0.0 | | | | 2.5 | 0.0 | 0.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.2 | 14.2 | 22.0 | 3.8 | 0.0 | | | | 20.0 | 0.0 | 16.0 |
| LnGrp LOS | A | B | B | C | A | A | | | | C | A | B |
| Approach Vol, veh/h | | 719 | | | 532 | | | | | | 290 | |
| Approach Delay, s/veh | | 14.2 | | | 12.5 | | | | | | 19.4 | |
| Approach LOS | | B | | | B | | | | | | B | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | | 13.4 | 20.1 | | 13.6 | | 33.4 | | | | | |
| Change Period (Y+Rc), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | | 25.5 | 55.5 | | 25.5 | | 85.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | | 8.5 | 10.0 | | 7.8 | | 3.6 | | | | | |
| Green Ext Time (p_c), s | | 0.7 | 5.6 | | 1.5 | | 2.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 14.6 | | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 400 | 750 | 20 | 500 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Future Vol, veh/h | 0 | 400 | 750 | 20 | 500 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | None | - | - | None | - | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | 16974 | - | - | 0 | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 426 | 798 | 21 | 532 | 11 | 0 | 0 | 0 | 0 | 11 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|-------|------|--------|-------|---------------|
| Conflicting Flow All | 543 | 0 | - | 426 | 0 | 0 | 1006 1006 272 |
| Stage 1 | - | - | - | - | - | 580 | 580 |
| Stage 2 | - | - | - | - | - | 426 | 426 |
| Critical Hdwy | 4.13 | - | 4.13 | - | - | 6.63 | 8 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | 5.83 | 7 |
| Critical Hdwy Stg 2 | - | - | - | - | - | 5.43 | 7 |
| Follow-up Hdwy | 2.219 | - | 2.219 | - | - | 3.519 | 4.95 3.319 |
| Pot Cap-1 Maneuver | 1024 | - | 0 | 1132 | - | - | 252 144 726 |
| Stage 1 | - | - | 0 | - | - | 524 | 342 |
| Stage 2 | - | - | 0 | - | - | 658 | 420 |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1024 | - | 1132 | - | - | 247 | 0 726 |
| Mov Cap-2 Maneuver | - | - | - | - | - | 247 | 0 |
| Stage 1 | - | - | - | - | - | 514 | 0 |
| Stage 2 | - | - | - | - | - | 658 | 0 |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.3 | - |
| HCM LOS | - | - | - |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1024 | - | 1132 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.019 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.2 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | | | |
| Traffic Volume (veh/h) | 360 | 40 | 0 | 0 | 20 | 10 | 510 | 0 | 30 | 0 | 0 | 0 |
| Future Volume (veh/h) | 360 | 40 | 0 | 0 | 20 | 10 | 510 | 0 | 30 | 0 | 0 | 0 |
| 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 | | | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/in | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 400 | 44 | 0 | 0 | 22 | 5 | 585 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 769 | 709 | 0 | 0 | 1099 | 241 | 1031 | 555 | 0 | | | |
| Arrive On Green | 0.38 | 0.38 | 0.00 | 0.00 | 0.38 | 0.38 | 0.30 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1361 | 1870 | 0 | 0 | 2991 | 635 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 400 | 44 | 0 | 0 | 13 | 14 | 585 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/in | 1361 | 1870 | 0 | 0 | 1777 | 1756 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 7.2 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 3.9 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 7.4 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 3.9 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.36 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 769 | 709 | 0 | 0 | 674 | 666 | 1031 | 555 | 0 | | | |
| V/C Ratio(X) | 0.52 | 0.06 | 0.00 | 0.00 | 0.02 | 0.02 | 0.57 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1504 | 1718 | 0 | 0 | 1633 | 1613 | 6955 | 3740 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.7 | 5.5 | 0.0 | 0.0 | 5.4 | 5.4 | 8.3 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 0.0 | 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/in | 1.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.2 | 5.5 | 0.0 | 0.0 | 5.4 | 5.4 | 8.7 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 444 | | | | 27 | | 585 | | | | | |
| Approach Delay, s/veh | 8.0 | | | | 5.4 | | 8.7 | | | | | |
| Approach LOS | A | | | | A | | A | | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 12.7 | | 15.0 | | | | 15.0 | | | | | |
| Change Period (Y+Rc), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | 55.5 | | 25.5 | | | | 25.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | 5.9 | | 9.4 | | | | 2.1 | | | | | |
| Green Ext Time (p_c), s | 2.4 | | 1.4 | | | | 0.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 8.3 | | | | | | | | | | |
| HCM 6th LOS | | | A | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 2.6

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

| | | | | | | |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 850 | 270 | 90 | 40 |
| Future Vol, veh/h | 0 | 0 | 850 | 270 | 90 | 40 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 20 | 12 |
| Mvmt Flow | 0 | 0 | 895 | 284 | 95 | 42 |

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

| | | | | | | |
|----------------------|-------|---|---|---|------|-------|
| Conflicting Flow All | 895 | 0 | - | 0 | 895 | 448 |
| Stage 1 | - | - | - | - | 895 | - |
| Stage 2 | - | - | - | - | 0 | - |
| Critical Hdwy | 4.13 | - | - | - | 6.9 | 7.08 |
| Critical Hdwy Stg 1 | - | - | - | - | 6.1 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.7 | - |
| Follow-up Hdwy | 2.219 | - | - | - | 3.69 | 3.414 |
| Pot Cap-1 Maneuver | 756 | - | - | 0 | 268 | 536 |
| Stage 1 | - | - | - | 0 | 327 | - |
| Stage 2 | - | - | - | 0 | - | - |
| Platoon blocked, % | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 756 | - | - | - | 268 | 536 |
| Mov Cap-2 Maneuver | - | - | - | - | 268 | - |
| Stage 1 | - | - | - | - | 327 | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

| | | | |
|----------------------|---|---|------|
| HCM Control Delay, s | 0 | 0 | 19.3 |
| HCM LOS | - | - | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-------|

| | | | | |
|-----------------------|-----|---|---|-------|
| Capacity (veh/h) | 756 | - | - | 387 |
| HCM Lane V/C Ratio | - | - | - | 0.354 |
| HCM Control Delay (s) | 0 | - | - | 19.3 |
| HCM Lane LOS | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.6 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|-------|-------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Traffic Volume (veh/h) | 0 | 730 | 50 | 360 | 670 | 0 | 50 | 0 | 770 | 20 | 220 | 330 |
| Future Volume (veh/h) | 0 | 730 | 50 | 360 | 670 | 0 | 50 | 0 | 770 | 20 | 220 | 330 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | No | | No |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 785 | 51 | 387 | 720 | 0 | 54 | 0 | 252 | 22 | 237 | 52 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1218 | 79 | 411 | 2205 | 0 | 0 | 0 | 0 | 24 | 254 | 237 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 0 | 3481 | 220 | 1753 | 3647 | 0 | | 0 | | 158 | 1704 | 1585 |
| Grp Volume(v), veh/h | 0 | 412 | 424 | 387 | 720 | 0 | | 0.0 | | 259 | 0 | 52 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1777 | 1831 | 1753 | 1777 | 0 | | | | 1862 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.4 | 0.0 | | | | 23.4 | 0.0 | 4.9 |
| Cycle Q Clear(g_c), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.4 | 0.0 | | | | 23.4 | 0.0 | 4.9 |
| Prop In Lane | 0.00 | | 0.12 | 1.00 | | 0.00 | | | | 0.08 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 639 | 658 | 411 | 2205 | 0 | | | | 278 | 0 | 237 |
| V/C Ratio(X) | 0.00 | 0.64 | 0.64 | 0.94 | 0.33 | 0.00 | | | | 0.93 | 0.00 | 0.22 |
| Avail Cap(c_a), veh/h | 0 | 639 | 658 | 521 | 2205 | 0 | | | | 279 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 45.4 | 45.4 | 63.9 | 15.3 | 0.0 | | | | 71.4 | 0.0 | 63.6 |
| Incr Delay (d2), s/veh | 0.0 | 2.2 | 2.2 | 22.6 | 0.4 | 0.0 | | | | 35.9 | 0.0 | 0.5 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 15.2 | 15.6 | 19.2 | 7.0 | 0.0 | | | | 14.1 | 0.0 | 2.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 47.6 | 47.5 | 86.5 | 15.7 | 0.0 | | | | 107.4 | 0.0 | 64.1 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 836 | | | 1107 | | | | | | 311 | |
| Approach Delay, s/veh | | 47.6 | | | 40.5 | | | | | | 100.1 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | | 44.4 | 65.6 | | 29.9 | | 110.0 | | | | | |
| Change Period (Y+Rc), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | | 50.5 | 50.5 | | 25.5 | | 105.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | | 38.9 | 34.8 | | 25.4 | | 18.4 | | | | | |
| Green Ext Time (p_c), s | | 1.0 | 5.1 | | 0.0 | | 6.4 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 51.3 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 700 | 820 | 40 | 1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 700 | 820 | 40 | 1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 753 | 882 | 43 | 1108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|---|-------|--------|---|-------------------|
| Conflicting Flow All | 1108 | 0 | - | 753 | 0 | 0 | 1947 1947 554 |
| Stage 1 | - | - | - | - | - | - | 1194 1194 - |
| Stage 2 | - | - | - | - | - | - | 753 753 - |
| Critical Hdwy | 4.13 | - | - | 4.22 | - | - | 6.63 6.53 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 5.53 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 5.53 - |
| Follow-up Hdwy | 2.219 | - | - | 2.276 | - | - | 3.519 4.019 3.319 |
| Pot Cap-1 Maneuver | 628 | - | 0 | 822 | - | - | 63 64 477 |
| Stage 1 | - | - | 0 | - | - | - | 251 259 - |
| Stage 2 | - | - | 0 | - | - | - | 464 417 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 628 | - | - | 822 | - | - | 60 0 477 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 60 0 - |
| Stage 1 | - | - | - | - | - | - | 238 0 - |
| Stage 2 | - | - | - | - | - | - | 464 0 - |

| Approach | EB | WB | SB |
|-----------------------|-----|-----|-------------------|
| HCM Control Delay, s | 0 | 0.4 | 0 |
| HCM LOS | - | - | A |
| <hr/> | | | |
| Minor Lane/Major Mvmt | EBL | EBT | WBL WBT WBR SBLn1 |
| Capacity (veh/h) | 628 | - | 822 - - |
| HCM Lane V/C Ratio | - | - | 0.052 - - |
| HCM Control Delay (s) | 0 | - | 9.6 - - 0 |
| HCM Lane LOS | A | - | A - - A |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 - - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|-------|------|------|------|-------|------|------|-----|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | 0 | 0 | 0 |
| Traffic Volume (veh/h) | 670 | 30 | 0 | 0 | 50 | 20 | 1020 | 10 | 30 | 0 | 0 | 0 |
| Future Volume (veh/h) | 670 | 30 | 0 | 0 | 50 | 20 | 1020 | 10 | 30 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | 1.00 | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/in | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 698 | 31 | 0 | 0 | 52 | 12 | 1097 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 757 | 999 | 0 | 0 | 1566 | 349 | 1441 | 757 | 0 | | | |
| Arrive On Green | 0.54 | 0.54 | 0.00 | 0.00 | 0.54 | 0.54 | 0.40 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1338 | 1841 | 0 | 0 | 2981 | 644 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 698 | 31 | 0 | 0 | 31 | 33 | 1097 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/in | 1338 | 1841 | 0 | 0 | 1777 | 1754 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 86.5 | 1.3 | 0.0 | 0.0 | 1.4 | 1.5 | 45.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 87.9 | 1.3 | 0.0 | 0.0 | 1.4 | 1.5 | 45.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.37 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 757 | 999 | 0 | 0 | 964 | 952 | 1441 | 757 | 0 | | | |
| V/C Ratio(X) | 0.92 | 0.03 | 0.00 | 0.00 | 0.03 | 0.03 | 0.76 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 822 | 1088 | 0 | 0 | 1050 | 1037 | 1441 | 757 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 38.6 | 18.1 | 0.0 | 0.0 | 18.1 | 18.1 | 43.5 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 15.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%), veh/in | 31.4 | 0.6 | 0.0 | 0.0 | 0.6 | 0.6 | 20.9 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 53.7 | 18.1 | 0.0 | 0.0 | 18.1 | 18.1 | 47.4 | 0.0 | 0.0 | | | |
| LnGrp LOS | D | B | A | A | B | B | D | A | A | | | |
| Approach Vol, veh/h | | 729 | | | 64 | | | 1097 | | | | |
| Approach Delay, s/veh | | 52.2 | | | 18.1 | | | 47.4 | | | | |
| Approach LOS | | D | | | B | | | D | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | 73.3 | | 96.7 | | | | 96.7 | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | | 100.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | 47.0 | | 89.9 | | | | 3.5 | | | | | |
| Green Ext Time (p _c), s | 4.1 | | 2.3 | | | | 0.4 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 48.3 | | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |
| Notes: | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 15.1

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | ↑ | ↑ | ↑ | ↑ | ↑ |
| Traffic Vol, veh/h | 0 | 0 | 1400 | 60 | 100 | 120 |
| Future Vol, veh/h | 0 | 0 | 1400 | 60 | 100 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 1 | 1 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 1 | 3 |
| Mvmt Flow | 0 | 0 | 1505 | 65 | 108 | 129 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------|
| Conflicting Flow All | 1505 | 0 | - |
| Stage 1 | - | - | 1505 |
| Stage 2 | - | - | 1 |
| Critical Hdwy | 4.13 | - | - |
| Critical Hdwy Stg 1 | - | - | 5.815 |
| Critical Hdwy Stg 2 | - | - | 5.415 |
| Follow-up Hdwy | 2.219 | - | - |
| Pot Cap-1 Maneuver | 443 | - | 0 123 351 |
| Stage 1 | - | - | 0 172 |
| Stage 2 | - | - | 0 1025 |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 443 | - | 123 351 |
| Mov Cap-2 Maneuver | - | - | 123 |
| Stage 1 | - | - | 172 |
| Stage 2 | - | - | 1025 |

| Approach | EB | WB | SB |
|----------------------|----|----|-------|
| HCM Control Delay, s | 0 | 0 | 110.9 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 443 | - | - | 231 |
| HCM Lane V/C Ratio | - | - | - | 1.024 |
| HCM Control Delay (s) | 0 | - | - | 110.9 |
| HCM Lane LOS | A | - | - | F |
| HCM 95th %tile Q(veh) | 0 | - | - | 9.8 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|----------|----------|------|----------|------|----------|------|------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑↑ | ↑↑ | ↑↑ |
| Traffic Volume (veh/h) | 0 | 630 | 50 | 240 | 260 | 0 | 20 | 0 | 490 | 50 | 200 | 280 |
| Future Volume (veh/h) | 0 | 630 | 50 | 240 | 260 | 0 | 20 | 0 | 490 | 50 | 200 | 280 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 670 | 49 | 255 | 277 | 0 | 21 | 0 | 62 | 53 | 213 | 47 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1083 | 79 | 329 | 2076 | 0 | 0 | 0 | 0 | 75 | 303 | 326 |
| Arrive On Green | 0.00 | 0.33 | 0.33 | 0.19 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 |
| Sat Flow, veh/h | 0 | 3397 | 241 | 1753 | 3503 | 0 | | 0 | | 366 | 1471 | 1585 |
| Grp Volume(v), veh/h | 0 | 354 | 365 | 255 | 277 | 0 | | 0.0 | | 266 | 0 | 47 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1749 | 1797 | 1753 | 1706 | 0 | | | | 1837 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 8.3 | 8.3 | 6.7 | 1.7 | 0.0 | | | | 6.5 | 0.0 | 1.2 |
| Cycle Q Clear(g_c), s | 0.0 | 8.3 | 8.3 | 6.7 | 1.7 | 0.0 | | | | 6.5 | 0.0 | 1.2 |
| Prop In Lane | 0.00 | | 0.13 | 1.00 | | 0.00 | | | | 0.20 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 573 | 589 | 329 | 2076 | 0 | | | | 378 | 0 | 326 |
| V/C Ratio(X) | 0.00 | 0.62 | 0.62 | 0.78 | 0.13 | 0.00 | | | | 0.70 | 0.00 | 0.14 |
| Avail Cap(c_a), veh/h | 0 | 2005 | 2061 | 924 | 6029 | 0 | | | | 968 | 0 | 835 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 13.7 | 13.7 | 18.7 | 4.0 | 0.0 | | | | 17.8 | 0.0 | 15.7 |
| Incr Delay (d2), s/veh | 0.0 | 1.1 | 1.1 | 3.9 | 0.0 | 0.0 | | | | 2.4 | 0.0 | 0.2 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 3.0 | 3.1 | 2.8 | 0.4 | 0.0 | | | | 2.7 | 0.0 | 0.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.8 | 14.8 | 22.6 | 4.1 | 0.0 | | | | 20.2 | 0.0 | 15.9 |
| LnGrp LOS | A | B | B | C | A | A | | | | C | A | B |
| Approach Vol, veh/h | | 719 | | | 532 | | | | | | 313 | |
| Approach Delay, s/veh | | 14.8 | | | 13.0 | | | | | | 19.6 | |
| Approach LOS | | B | | | B | | | | | | B | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | | 13.6 | 20.4 | | 14.5 | | 33.9 | | | | | |
| Change Period (Y+R _c), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | | 25.5 | 55.5 | | 25.5 | | 85.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | | 8.7 | 10.3 | | 8.5 | | 3.7 | | | | | |
| Green Ext Time (p _c), s | | 0.7 | 5.6 | | 1.6 | | 2.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 15.1 | | | | | | | | | | |
| HCM 6th LOS | | B | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.3

Movement

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 420 | 750 | 33 | 500 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Future Vol, veh/h | 0 | 420 | 750 | 33 | 500 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 447 | 798 | 35 | 532 | 11 | 0 | 0 | 0 | 0 | 11 | 0 |

Major/Minor

| | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|--------|-----|--------|-------|------------|
| Conflicting Flow All | 543 | 0 | - | 447 | 0 | 0 | |
| Stage 1 | - | - | - | - | - | 608 | 608 |
| Stage 2 | - | - | - | - | - | 447 | 447 |
| Critical Hdwy | 4.13 | - | 4.13 | - | - | 6.63 | 8 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | 5.83 | 7 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | 5.43 | 7 - |
| Follow-up Hdwy | 2.219 | - | 2.219 | - | - | 3.519 | 4.95 3.319 |
| Pot Cap-1 Maneuver | 1024 | - | 0 1111 | - | - | 235 | 132 726 |
| Stage 1 | - | - | 0 | - | - | 507 | 329 - |
| Stage 2 | - | - | 0 | - | - | 643 | 408 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1024 | - | 1111 | - | - | 227 | 0 726 |
| Mov Cap-2 Maneuver | - | - | - | - | - | 227 | 0 - |
| Stage 1 | - | - | - | - | - | 491 | 0 - |
| Stage 2 | - | - | - | - | - | 643 | 0 - |

Approach

| | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.5 | |
| HCM LOS | | | - |

Minor Lane/Major Mvmt

| | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1024 | - | 1111 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.032 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.3 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

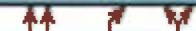
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|------|------|------|------|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | | | |
| Traffic Volume (veh/h) | 360 | 60 | 0 | 0 | 33 | 10 | 510 | 0 | 123 | 0 | 0 | 0 |
| Future Volume (veh/h) | 360 | 60 | 0 | 0 | 33 | 10 | 510 | 0 | 123 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | 1.00 | | |
| Work Zone On Approach | No | | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 400 | 67 | 0 | 0 | 37 | 4 | 647 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 750 | 720 | 0 | 0 | 1248 | 133 | 1087 | 585 | 0 | | | |
| Arrive On Green | 0.39 | 0.39 | 0.00 | 0.00 | 0.39 | 0.39 | 0.31 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1344 | 1870 | 0 | 0 | 3334 | 345 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 400 | 67 | 0 | 0 | 20 | 21 | 647 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1344 | 1870 | 0 | 0 | 1777 | 1808 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 7.8 | 0.7 | 0.0 | 0.0 | 0.2 | 0.2 | 4.7 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 8.1 | 0.7 | 0.0 | 0.0 | 0.2 | 0.2 | 4.7 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.19 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 750 | 720 | 0 | 0 | 684 | 696 | 1087 | 585 | 0 | | | |
| V/C Ratio(X) | 0.53 | 0.09 | 0.00 | 0.00 | 0.03 | 0.03 | 0.60 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1384 | 1603 | 0 | 0 | 1522 | 1549 | 6486 | 3488 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 8.2 | 5.8 | 0.0 | 0.0 | 5.7 | 5.7 | 8.6 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.6 | 0.1 | 0.0 | 0.0 | 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 | 1.5 | 0.2 | 0.0 | 0.0 | 0.1 | 0.1 | 1.3 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.8 | 5.9 | 0.0 | 0.0 | 5.7 | 5.7 | 9.2 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 467 | | | | 41 | | | 647 | | | | |
| Approach Delay, s/veh | 8.4 | | | | 5.7 | | | 9.2 | | | | |
| Approach LOS | A | | | | A | | | A | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | 13.8 | | 16.0 | | | 16.0 | | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | 4.5 | | | | | | |
| Max Green Setting (G _{max}), s | 55.5 | | 25.5 | | | 25.5 | | | | | | |
| Max Q Clear Time (g _{c+l1}), s | 6.7 | | 10.1 | | | 2.2 | | | | | | |
| Green Ext Time (p _c), s | 2.7 | | 1.6 | | | 0.1 | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 8.7 | | | | | | | | | | |
| HCM 6th LOS | | A | | | | | | | | | | |
| Notes: | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 2.6

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

Lane Configurations



Traffic Vol, veh/h 0 0 850 270 90 40

Future Vol, veh/h 0 0 850 270 90 40

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - Yield

Storage Length - - - 180 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 95 95 95 95 95 95

Heavy Vehicles, % 2 2 4 4 20 12

Mvmt Flow 0 0 895 284 95 42

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

Conflicting Flow All 895 0 - 0 895 448

Stage 1 - - - - 895 -

Stage 2 - - - - 0 -

Critical Hdwy 4.13 - - - 6.9 7.08

Critical Hdwy Stg 1 - - - - 6.1 -

Critical Hdwy Stg 2 - - - - 5.7 -

Follow-up Hdwy 2.219 - - - 3.69 3.414

Pot Cap-1 Maneuver 756 - - 0 268 536

Stage 1 - - - 0 327 -

Stage 2 - - - 0 - -

Platoon blocked, % - -

Mov Cap-1 Maneuver 756 - - - 268 536

Mov Cap-2 Maneuver - - - - 268 -

Stage 1 - - - - 327 -

Stage 2 - - - - - -

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

HCM Control Delay, s 0 0 19.3

HCM LOS C

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-------|

Capacity (veh/h) 756 - - 387

HCM Lane V/C Ratio - - - 0.354

HCM Control Delay (s) 0 - - 19.3

HCM Lane LOS A - - C

HCM 95th %tile Q(veh) 0 - - 1.6

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|------|------|----------|------|------|----------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 730 | 50 | 360 | 670 | 0 | 50 | 0 | 770 | 20 | 220 | 330 |
| Future Volume (veh/h) | 0 | 730 | 50 | 360 | 670 | 0 | 50 | 0 | 770 | 20 | 220 | 330 |
| 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 785 | 51 | 387 | 720 | 0 | 54 | 0 | 252 | 22 | 237 | 52 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1218 | 79 | 411 | 2205 | 0 | 0 | 0 | 0 | 24 | 254 | 237 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 0 | 3481 | 220 | 1753 | 3647 | 0 | | 0 | | 158 | 1704 | 1585 |
| Grp Volume(v), veh/h | 0 | 412 | 424 | 387 | 720 | 0 | | 0.0 | | 259 | 0 | 52 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1777 | 1831 | 1753 | 1777 | 0 | | | | 1862 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.4 | 0.0 | | | | 23.4 | 0.0 | 4.9 |
| Cycle Q Clear(g_c), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.4 | 0.0 | | | | 23.4 | 0.0 | 4.9 |
| Prop In Lane | 0.00 | | 0.12 | 1.00 | | 0.00 | | | | 0.08 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 639 | 658 | 411 | 2205 | 0 | | | | 278 | 0 | 237 |
| V/C Ratio(X) | 0.00 | 0.64 | 0.64 | 0.94 | 0.33 | 0.00 | | | | 0.93 | 0.00 | 0.22 |
| Avail Cap(c_a), veh/h | 0 | 639 | 658 | 521 | 2205 | 0 | | | | 279 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 45.4 | 45.4 | 63.9 | 15.3 | 0.0 | | | | 71.4 | 0.0 | 63.6 |
| Incr Delay (d2), s/veh | 0.0 | 2.2 | 2.2 | 22.6 | 0.4 | 0.0 | | | | 35.9 | 0.0 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 15.2 | 15.6 | 19.2 | 7.0 | 0.0 | | | | 14.1 | 0.0 | 2.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 0.0 | 47.6 | 47.5 | 86.5 | 15.7 | 0.0 | | | | 107.4 | 0.0 | 64.1 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 836 | | | 1107 | | | | | | 311 | |
| Approach Delay, s/veh | | 47.6 | | | 40.5 | | | | | | 100.1 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | 3 | 4 | | | 6 | | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 44.4 | 65.6 | | | 29.9 | | | 110.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | | 4.5 | | | 4.5 | | | | |
| Max Green Setting (Gmax), s | 50.5 | 50.5 | | | 25.5 | | | 105.5 | | | | |
| Max Q Clear Time (g_c+l1), s | 38.9 | 34.8 | | | 25.4 | | | 18.4 | | | | |
| Green Ext Time (p_c), s | 1.0 | 5.1 | | | 0.0 | | | 6.4 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 51.3 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 700 | 820 | 133 | 1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 700 | 820 | 133 | 1030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 753 | 882 | 143 | 1108 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | | | Minor2 | | |
|----------------------|--------|--------|---|-------|--------|---|-------------------|
| Conflicting Flow All | 1108 | 0 | - | 753 | 0 | 0 | 2147 2147 554 |
| Stage 1 | - | - | - | - | - | - | 1394 1394 - |
| Stage 2 | - | - | - | - | - | - | 753 753 - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | 6.63 6.53 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 5.53 - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 5.53 - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 4.019 3.319 |
| Pot Cap-1 Maneuver | 628 | - | 0 | 855 | - | - | 47 48 477 |
| Stage 1 | - | - | 0 | - | - | - | 196 208 - |
| Stage 2 | - | - | 0 | - | - | - | 464 417 - |
| Platoon blocked, % | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 628 | - | - | 855 | - | - | 39 0 477 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 39 0 - |
| Stage 1 | - | - | - | - | - | - | 163 0 - |
| Stage 2 | - | - | - | - | - | - | 464 0 - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 1.1 | 0 |
| HCM LOS | - | - | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 628 | - | 855 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.167 | - | - | - |
| HCM Control Delay (s) | 0 | - | 10.1 | - | - | 0 |
| HCM Lane LOS | A | - | B | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | 0.6 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|-------|------|-------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 670 | 30 | 0 | 0 | 143 | 40 | 1020 | 10 | 43 | 0 | 0 | 0 |
| Future Volume (veh/h) | 670 | 30 | 0 | 0 | 143 | 40 | 1020 | 10 | 43 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | | | |
| Work Zone On Approach | | No | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/in | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 698 | 31 | 0 | 0 | 149 | 26 | 1109 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 731 | 1088 | 0 | 0 | 1794 | 307 | 1268 | 666 | 0 | | | |
| Arrive On Green | 0.59 | 0.59 | 0.00 | 0.00 | 0.59 | 0.59 | 0.36 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1210 | 1841 | 0 | 0 | 3128 | 519 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 698 | 31 | 0 | 0 | 86 | 89 | 1109 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/in | 1210 | 1841 | 0 | 0 | 1777 | 1777 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 96.8 | 1.2 | 0.0 | 0.0 | 3.5 | 3.7 | 49.5 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 100.5 | 1.2 | 0.0 | 0.0 | 3.5 | 3.7 | 49.5 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.29 | 1.00 | | | 0.00 | | |
| Lane Grp Cap(c), veh/h | 731 | 1088 | 0 | 0 | 1050 | 1050 | 1268 | 666 | 0 | | | |
| V/C Ratio(X) | 0.95 | 0.03 | 0.00 | 0.00 | 0.08 | 0.08 | 0.87 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 731 | 1088 | 0 | 0 | 1050 | 1050 | 1268 | 666 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 37.2 | 14.4 | 0.0 | 0.0 | 14.9 | 15.0 | 51.2 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 22.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.6 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%), veh/in | 33.8 | 0.5 | 0.0 | 0.0 | 1.5 | 1.6 | 23.8 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 59.9 | 14.5 | 0.0 | 0.0 | 15.0 | 15.0 | 59.8 | 0.0 | 0.0 | | | |
| LnGrp LOS | E | B | A | A | B | B | E | A | A | | | |
| Approach Vol, veh/h | | 729 | | | 175 | | | 1109 | | | | |
| Approach Delay, s/veh | | 58.0 | | | 15.0 | | | 59.8 | | | | |
| Approach LOS | | E | | | B | | | E | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | 65.0 | | 105.0 | | | | 105.0 | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | | 100.5 | | | | | |
| Max Q Clear Time (g _{c+1}), s | 51.5 | | 102.5 | | | | 5.7 | | | | | |
| Green Ext Time (p _c), s | 3.3 | | 0.0 | | | | 1.2 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 55.2 | | | | | | | | | | |
| HCM 6th LOS | | E | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 15.1

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 1400 | 60 | 100 | 120 |
| Future Vol, veh/h | 0 | 0 | 1400 | 60 | 100 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 1 | 1 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 1 | 3 |
| Mvmt Flow | 0 | 0 | 1505 | 65 | 108 | 129 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|--------|----------|
| Conflicting Flow All | 1505 | 0 | - | 0 | 1506 754 |
| Stage 1 | - | - | - | 1505 | - |
| Stage 2 | - | - | - | 1 | - |
| Critical Hdwy | 4.13 | - | - | 6.615 | 6.945 |
| Critical Hdwy Stg 1 | - | - | - | 5.815 | - |
| Critical Hdwy Stg 2 | - | - | - | 5.415 | - |
| Follow-up Hdwy | 2.219 | - | - | 3.5095 | 3.3285 |
| Pot Cap-1 Maneuver | 443 | - | - | 0 | 123 351 |
| Stage 1 | - | - | - | 0 | 172 - |
| Stage 2 | - | - | - | 0 | 1025 - |
| Platoon blocked, % | - | - | - | - | - |
| Mov Cap-1 Maneuver | 443 | - | - | 123 | 351 |
| Mov Cap-2 Maneuver | - | - | - | 123 | - |
| Stage 1 | - | - | - | 172 | - |
| Stage 2 | - | - | - | 1025 | - |

| Approach | EB | WB | SB |
|----------------------|----|----|-------|
| HCM Control Delay, s | 0 | 0 | 110.9 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 443 | - | - | 231 |
| HCM Lane V/C Ratio | - | - | - | 1.024 |
| HCM Control Delay (s) | 0 | - | - | 110.9 |
| HCM Lane LOS | A | - | - | F |
| HCM 95th %tile Q(veh) | 0 | - | - | 9.8 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|----------|----------|------|------|----------|------|------|----------|------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑↑ | ↑↑ | ↑↑ |
| Traffic Volume (veh/h) | 0 | 630 | 50 | 240 | 270 | 0 | 20 | 0 | 500 | 30 | 200 | 290 |
| Future Volume (veh/h) | 0 | 630 | 50 | 240 | 270 | 0 | 20 | 0 | 500 | 30 | 200 | 290 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 670 | 49 | 255 | 287 | 0 | 21 | 0 | 42 | 32 | 213 | 46 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1095 | 80 | 330 | 2100 | 0 | 0 | 0 | 0 | 47 | 310 | 306 |
| Arrive On Green | 0.00 | 0.33 | 0.33 | 0.19 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.19 | 0.19 |
| Sat Flow, veh/h | 0 | 3397 | 241 | 1753 | 3503 | 0 | | 0 | | 241 | 1603 | 1585 |
| Grp Volume(v), veh/h | 0 | 354 | 365 | 255 | 287 | 0 | | 0.0 | | 245 | 0 | 46 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1749 | 1797 | 1753 | 1706 | 0 | | | | 1844 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.7 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Cycle Q Clear(g_c), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.7 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Prop In Lane | 0.00 | | 0.13 | 1.00 | | 0.00 | | | | 0.13 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 579 | 596 | 330 | 2100 | 0 | | | | 356 | 0 | 306 |
| V/C Ratio(X) | 0.00 | 0.61 | 0.61 | 0.77 | 0.14 | 0.00 | | | | 0.69 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 0 | 2063 | 2121 | 950 | 6204 | 0 | | | | 999 | 0 | 859 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 13.2 | 13.2 | 18.1 | 3.8 | 0.0 | | | | 17.6 | 0.0 | 15.8 |
| Incr Delay (d2), s/veh | 0.0 | 1.1 | 1.0 | 3.9 | 0.0 | 0.0 | | | | 2.4 | 0.0 | 0.2 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 2.9 | 2.9 | 2.7 | 0.4 | 0.0 | | | | 2.5 | 0.0 | 0.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.2 | 14.2 | 22.0 | 3.8 | 0.0 | | | | 20.0 | 0.0 | 16.0 |
| LnGrp LOS | A | B | B | C | A | A | | | | C | A | B |
| Approach Vol, veh/h | | 719 | | | 542 | | | | | | 291 | |
| Approach Delay, s/veh | | 14.2 | | | 12.4 | | | | | | 19.4 | |
| Approach LOS | | B | | | B | | | | | | B | |
| Timer - Assigned Phs | 3 | 4 | | | 6 | | | 8 | | | | |
| Phs Duration (G+Y+R _c), s | | 13.4 | 20.1 | | 13.6 | | | 33.4 | | | | |
| Change Period (Y+R _c), s | | 4.5 | 4.5 | | 4.5 | | | 4.5 | | | | |
| Max Green Setting (G _{max}), s | | 25.5 | 55.5 | | 25.5 | | | 85.5 | | | | |
| Max Q Clear Time (g _{c+11}), s | | 8.5 | 10.0 | | 7.8 | | | 3.7 | | | | |
| Green Ext Time (p _c), s | | 0.7 | 5.6 | | 1.5 | | | 2.2 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 14.5 | | | | | | | | | | |
| HCM 6th LOS | | B | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 400 | 760 | 20 | 510 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Future Vol, veh/h | 0 | 400 | 760 | 20 | 510 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 426 | 809 | 21 | 543 | 11 | 0 | 0 | 0 | 0 | 11 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | |
|---------------------|----------------------|---------|---------|---------------|------|------|--------|------|-------|
| | Conflicting Flow All | Stage 1 | Stage 2 | Critical Hdwy | 4.13 | 4.13 | 6.63 | 8 | 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 | 7 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 | 7 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | 3.519 | 4.95 | 3.319 |
| Pot Cap-1 Maneuver | 1014 | - | 0 | 1132 | - | - | 248 | 141 | 721 |
| Stage 1 | - | - | 0 | - | - | - | 517 | 337 | - |
| Stage 2 | - | - | 0 | - | - | - | 658 | 420 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1014 | - | - | 1132 | - | - | 243 | 0 | 721 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 243 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 507 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 658 | 0 | - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.3 | - |
| HCM LOS | - | - | - |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1014 | - | 1132 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.019 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.2 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|------|------|------|------|-----|-----|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 360 | 40 | 0 | 0 | 20 | 10 | 520 | 0 | 30 | 0 | 0 | 0 |
| Future Volume (veh/h) | 360 | 40 | 0 | 0 | 20 | 10 | 520 | 0 | 30 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Work Zone On Approach | | No | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 400 | 44 | 0 | 0 | 22 | 5 | 596 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 766 | 708 | 0 | 0 | 1097 | 240 | 1043 | 561 | 0 | | | |
| Arrive On Green | 0.38 | 0.38 | 0.00 | 0.00 | 0.38 | 0.38 | 0.30 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1361 | 1870 | 0 | 0 | 2991 | 635 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 400 | 44 | 0 | 0 | 13 | 14 | 596 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1361 | 1870 | 0 | 0 | 1777 | 1756 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 7.3 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 4.1 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 7.4 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 4.1 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.36 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 766 | 708 | 0 | 0 | 673 | 665 | 1043 | 561 | 0 | | | |
| V/C Ratio(X) | 0.52 | 0.06 | 0.00 | 0.00 | 0.02 | 0.02 | 0.57 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1491 | 1704 | 0 | 0 | 1618 | 1599 | 6895 | 3708 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.8 | 5.5 | 0.0 | 0.0 | 5.4 | 5.4 | 8.3 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.6 | 0.0 | 0.0 | 0.0 | 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 | 1.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.3 | 5.6 | 0.0 | 0.0 | 5.5 | 5.5 | 8.8 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 444 | | | | 27 | | | 596 | | | | |
| Approach Delay, s/veh | 8.1 | | | | 5.5 | | | 8.8 | | | | |
| Approach LOS | A | | | | A | | | A | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | 12.9 | | 15.1 | | | | 15.1 | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | 55.5 | | 25.5 | | | | 25.5 | | | | | |
| Max Q Clear Time (g _{c+1}), s | 6.1 | | 9.4 | | | | 2.1 | | | | | |
| Green Ext Time (p _c), s | 2.4 | | 1.4 | | | | 0.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 8.4 | | | | | | | | | | |
| HCM 6th LOS | | A | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 2.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|----------|-----|-----|-----|-----|-----|-----|
|----------|-----|-----|-----|-----|-----|-----|

| | | | | | | |
|---------------------|--|--|--|--|--|--|
| Lane Configurations | | | | | | |
|---------------------|--|--|--|--|--|--|

| | | | | | | |
|--------------------|---|---|-----|-----|-----|----|
| Traffic Vol, veh/h | 0 | 0 | 860 | 280 | 100 | 40 |
|--------------------|---|---|-----|-----|-----|----|

| | | | | | | |
|-------------------|---|---|-----|-----|-----|----|
| Future Vol, veh/h | 0 | 0 | 860 | 280 | 100 | 40 |
|-------------------|---|---|-----|-----|-----|----|

| | | | | | | |
|------------------------|---|---|---|---|---|---|
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
|------------------------|---|---|---|---|---|---|

| | | | | | | |
|--------------|------|------|------|------|------|------|
| Sign Control | Free | Free | Free | Free | Stop | Stop |
|--------------|------|------|------|------|------|------|

| | | | | | | |
|----------------|---|------|---|------|---|-------|
| RT Channelized | - | None | - | Free | - | Yield |
|----------------|---|------|---|------|---|-------|

| | | | | | | |
|----------------|---|---|---|-----|---|---|
| Storage Length | - | - | - | 180 | 0 | - |
|----------------|---|---|---|-----|---|---|

| | | | | | | |
|--------------------------|---|---|---|---|---|---|
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
|--------------------------|---|---|---|---|---|---|

| | | | | | | |
|----------|---|---|---|---|---|---|
| Grade, % | - | 0 | 0 | - | 0 | - |
|----------|---|---|---|---|---|---|

| | | | | | | |
|------------------|----|----|----|----|----|----|
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
|------------------|----|----|----|----|----|----|

| | | | | | | |
|-------------------|---|---|---|---|----|----|
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 20 | 12 |
|-------------------|---|---|---|---|----|----|

| | | | | | | |
|-----------|---|---|-----|-----|-----|----|
| Mvmt Flow | 0 | 0 | 905 | 295 | 105 | 42 |
|-----------|---|---|-----|-----|-----|----|

| Major/Minor | Major1 | Major2 | Minor2 |
|-------------|--------|--------|--------|
|-------------|--------|--------|--------|

| | | | | | | |
|----------------------|-----|---|---|---|-----|-----|
| Conflicting Flow All | 905 | 0 | - | 0 | 905 | 453 |
|----------------------|-----|---|---|---|-----|-----|

| | | | | | | |
|---------|---|---|---|---|-----|---|
| Stage 1 | - | - | - | - | 905 | - |
|---------|---|---|---|---|-----|---|

| | | | | | | |
|---------|---|---|---|---|---|---|
| Stage 2 | - | - | - | - | 0 | - |
|---------|---|---|---|---|---|---|

| | | | | | | |
|---------------|------|---|---|---|-----|------|
| Critical Hdwy | 4.13 | - | - | - | 6.9 | 7.08 |
|---------------|------|---|---|---|-----|------|

| | | | | | | |
|---------------------|---|---|---|---|-----|---|
| Critical Hdwy Stg 1 | - | - | - | - | 6.1 | - |
|---------------------|---|---|---|---|-----|---|

| | | | | | | |
|---------------------|---|---|---|---|-----|---|
| Critical Hdwy Stg 2 | - | - | - | - | 5.7 | - |
|---------------------|---|---|---|---|-----|---|

| | | | | | | |
|----------------|-------|---|---|---|------|-------|
| Follow-up Hdwy | 2.219 | - | - | - | 3.69 | 3.414 |
|----------------|-------|---|---|---|------|-------|

| | | | | | | |
|--------------------|-----|---|---|---|-----|-----|
| Pot Cap-1 Maneuver | 749 | - | - | 0 | 264 | 532 |
|--------------------|-----|---|---|---|-----|-----|

| | | | | | | |
|---------|---|---|---|---|-----|---|
| Stage 1 | - | - | - | 0 | 323 | - |
|---------|---|---|---|---|-----|---|

| | | | | | | |
|---------|---|---|---|---|---|---|
| Stage 2 | - | - | - | 0 | - | - |
|---------|---|---|---|---|---|---|

| | | | | | | |
|--------------------|---|---|---|---|---|---|
| Platoon blocked, % | - | - | - | - | - | - |
|--------------------|---|---|---|---|---|---|

| | | | | | | |
|--------------------|-----|---|---|---|-----|-----|
| Mov Cap-1 Maneuver | 749 | - | - | - | 264 | 532 |
|--------------------|-----|---|---|---|-----|-----|

| | | | | | | |
|--------------------|---|---|---|---|-----|---|
| Mov Cap-2 Maneuver | - | - | - | - | 264 | - |
|--------------------|---|---|---|---|-----|---|

| | | | | | | |
|---------|---|---|---|---|-----|---|
| Stage 1 | - | - | - | - | 323 | - |
|---------|---|---|---|---|-----|---|

| | | | | | | |
|---------|---|---|---|---|---|---|
| Stage 2 | - | - | - | - | - | - |
|---------|---|---|---|---|---|---|

| Approach | EB | WB | SB |
|----------|----|----|----|
|----------|----|----|----|

| | | | |
|----------------------|---|---|----|
| HCM Control Delay, s | 0 | 0 | 21 |
|----------------------|---|---|----|

| | | | |
|---------|---|---|---|
| HCM LOS | - | - | C |
|---------|---|---|---|

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
|-----------------------|-----|-----|-----|-------|

| | | | | |
|------------------|-----|---|---|-----|
| Capacity (veh/h) | 749 | - | - | 370 |
|------------------|-----|---|---|-----|

| | | | | |
|--------------------|---|---|---|-------|
| HCM Lane V/C Ratio | - | - | - | 0.398 |
|--------------------|---|---|---|-------|

| | | | | |
|-----------------------|---|---|---|----|
| HCM Control Delay (s) | 0 | - | - | 21 |
|-----------------------|---|---|---|----|

| | | | | |
|--------------|---|---|---|---|
| HCM Lane LOS | A | - | - | C |
|--------------|---|---|---|---|

| | | | | |
|-----------------------|---|---|---|-----|
| HCM 95th %tile Q(veh) | 0 | - | - | 1.9 |
|-----------------------|---|---|---|-----|

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑ | ↑↑ | ↑↑ |
| Traffic Volume (veh/h) | 0 | 730 | 50 | 360 | 680 | 0 | 50 | 0 | 780 | 20 | 220 | 340 |
| Future Volume (veh/h) | 0 | 730 | 50 | 360 | 680 | 0 | 50 | 0 | 780 | 20 | 220 | 340 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 785 | 51 | 387 | 731 | 0 | 54 | 0 | 263 | 22 | 237 | 68 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1218 | 79 | 411 | 2205 | 0 | 0 | 0 | 0 | 24 | 254 | 237 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 0 | 3481 | 220 | 1753 | 3647 | 0 | | 0 | | 158 | 1704 | 1585 |
| Grp Volume(v), veh/h | 0 | 412 | 424 | 387 | 731 | 0 | | 0.0 | | 259 | 0 | 68 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1777 | 1831 | 1753 | 1777 | 0 | | | | 1862 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.7 | 0.0 | | | | 23.4 | 0.0 | 6.5 |
| Cycle Q Clear(g_c), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.7 | 0.0 | | | | 23.4 | 0.0 | 6.5 |
| Prop In Lane | 0.00 | | 0.12 | 1.00 | | 0.00 | | | | 0.08 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 639 | 658 | 411 | 2205 | 0 | | | | 278 | 0 | 237 |
| V/C Ratio(X) | 0.00 | 0.64 | 0.64 | 0.94 | 0.33 | 0.00 | | | | 0.93 | 0.00 | 0.29 |
| Avail Cap(c_a), veh/h | 0 | 639 | 658 | 521 | 2205 | 0 | | | | 279 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 45.4 | 45.4 | 63.9 | 15.4 | 0.0 | | | | 71.4 | 0.0 | 64.3 |
| Incr Delay (d2), s/veh | 0.0 | 2.2 | 2.2 | 22.6 | 0.4 | 0.0 | | | | 35.9 | 0.0 | 0.7 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 15.2 | 15.6 | 19.2 | 7.1 | 0.0 | | | | 14.1 | 0.0 | 2.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 47.6 | 47.5 | 86.5 | 15.8 | 0.0 | | | | 107.4 | 0.0 | 64.9 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 836 | | | 1118 | | | | | | 327 | |
| Approach Delay, s/veh | | 47.6 | | | 40.3 | | | | | | 98.5 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | | 44.4 | 65.6 | | 29.9 | | 110.0 | | | | | |
| Change Period (Y+R _c), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | | 50.5 | 50.5 | | 25.5 | | 105.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | | 38.9 | 34.8 | | 25.4 | | 18.7 | | | | | |
| Green Ext Time (p _c), s | | 1.0 | 5.1 | | 0.0 | | 6.6 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 51.3 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 710 | 820 | 40 | 1040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 710 | 820 | 40 | 1040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 763 | 882 | 43 | 1118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|
| | 1118 | 0 | - | 763 | 0 | 0 | 1967 | 1967 | 559 |
| Conflicting Flow All | - | - | - | - | - | - | 1204 | 1204 | - |
| Stage 1 | - | - | - | - | - | - | 763 | 763 | - |
| Stage 2 | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | 4.13 | - | - | 4.22 | - | - | 6.63 | 6.53 | 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 | 5.53 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.276 | - | - | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver | 623 | - | 0 | 815 | - | - | 62 | 62 | 473 |
| Stage 1 | - | - | 0 | - | - | - | 248 | 256 | - |
| Stage 2 | - | - | 0 | - | - | - | 459 | 412 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 623 | - | - | 815 | - | - | 59 | 0 | 473 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 59 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 235 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 459 | 0 | - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.4 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 623 | - | 815 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.053 | - | - | - |
| HCM Control Delay (s) | 0 | - | 9.7 | - | - | 0 |
| HCM Lane LOS | A | - | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|-------|------|------|-------|------|------|------|------|-----|-----|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 680 | 30 | 0 | 0 | 50 | 20 | 1030 | 10 | 30 | 0 | 0 | 0 |
| Future Volume (veh/h) | 680 | 30 | 0 | 0 | 50 | 20 | 1030 | 10 | 30 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | 1.00 | | |
| Work Zone On Approach | No | | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 708 | 31 | 0 | 0 | 52 | 12 | 1108 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 766 | 1011 | 0 | 0 | 1586 | 354 | 1417 | 744 | 0 | | | |
| Arrive On Green | 0.55 | 0.55 | 0.00 | 0.00 | 0.55 | 0.55 | 0.40 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1338 | 1841 | 0 | 0 | 2981 | 644 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 708 | 31 | 0 | 0 | 31 | 33 | 1108 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1338 | 1841 | 0 | 0 | 1777 | 1754 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 87.7 | 1.3 | 0.0 | 0.0 | 1.4 | 1.5 | 46.2 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 89.2 | 1.3 | 0.0 | 0.0 | 1.4 | 1.5 | 46.2 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.37 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 766 | 1011 | 0 | 0 | 976 | 964 | 1417 | 744 | 0 | | | |
| V/C Ratio(X) | 0.92 | 0.03 | 0.00 | 0.00 | 0.03 | 0.03 | 0.78 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 822 | 1088 | 0 | 0 | 1050 | 1037 | 1417 | 744 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 38.1 | 17.6 | 0.0 | 0.0 | 17.6 | 17.6 | 44.8 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 15.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.4 | 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 | 31.9 | 0.6 | 0.0 | 0.0 | 0.6 | 0.6 | 21.6 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 53.5 | 17.6 | 0.0 | 0.0 | 17.6 | 17.6 | 49.1 | 0.0 | 0.0 | | | |
| LnGrp LOS | D | B | A | A | B | B | D | A | A | | | |
| Approach Vol, veh/h | | 739 | | | 64 | | | 1108 | | | | |
| Approach Delay, s/veh | | 52.0 | | | 17.6 | | | 49.1 | | | | |
| Approach LOS | | D | | | B | | | D | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | 72.1 | | 97.9 | | | 97.9 | | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | 4.5 | | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | 100.5 | | | | | | |
| Max Q Clear Time (g _{c+11}), s | 48.2 | | 91.2 | | | 3.5 | | | | | | |
| Green Ext Time (p _c), s | 3.9 | | 2.2 | | | 0.4 | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 49.2 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 17.6

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | ↑ | ↑ | ↑ | Y | Y |
| Traffic Vol, veh/h | 0 | 0 | 1410 | 60 | 100 | 120 |
| Future Vol, veh/h | 0 | 0 | 1410 | 60 | 100 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 1 | 1 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 1 | 3 |
| Mvmt Flow | 0 | 0 | 1516 | 65 | 108 | 129 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------------|
| Conflicting Flow All | 1516 | 0 | 0 1517 759 |
| Stage 1 | - | - | - 1516 - |
| Stage 2 | - | - | - 1 - |
| Critical Hdwy | 4.13 | - | - 6.615 6.945 |
| Critical Hdwy Stg 1 | - | - | - 5.815 - |
| Critical Hdwy Stg 2 | - | - | - 5.415 - |
| Follow-up Hdwy | 2.219 | - | - 3.5095 3.3285 |
| Pot Cap-1 Maneuver | 439 | - | 0 121 348 |
| Stage 1 | - | - | 0 170 - |
| Stage 2 | - | - | 0 1025 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 439 | - | 121 348 |
| Mov Cap-2 Maneuver | - | - | 121 - |
| Stage 1 | - | - | - 170 - |
| Stage 2 | - | - | - 1025 - |

| Approach | EB | WB | SB |
|----------------------|----|----|-------|
| HCM Control Delay, s | 0 | 0 | 130.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 439 | - | - | 219 |
| HCM Lane V/C Ratio | - | - | - | 1.08 |
| HCM Control Delay (s) | 0 | - | - | 130.7 |
| HCM Lane LOS | A | - | - | F |
| HCM 95th %tile Q(veh) | 0 | - | - | 10.6 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|----------|----------|------|----------|------|----------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑↑ | ↑↑ | ↑↑ |
| Traffic Volume (veh/h) | 0 | 630 | 50 | 240 | 270 | 0 | 20 | 0 | 500 | 31 | 200 | 290 |
| Future Volume (veh/h) | 0 | 630 | 50 | 240 | 270 | 0 | 20 | 0 | 500 | 31 | 200 | 290 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1841 | 1796 | 0 | 1737 | 0 | 1811 | 1856 | 1856 | 1870 |
| Adj Flow Rate, veh/h | 0 | 670 | 49 | 255 | 287 | 0 | 21 | 0 | 43 | 33 | 213 | 46 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Percent Heavy Veh, % | 0 | 4 | 4 | 4 | 7 | 0 | 11 | 0 | 6 | 3 | 3 | 2 |
| Cap, veh/h | 0 | 1094 | 80 | 330 | 2099 | 0 | 0 | 0 | 0 | 48 | 310 | 307 |
| Arrive On Green | 0.00 | 0.33 | 0.33 | 0.19 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.19 | 0.19 |
| Sat Flow, veh/h | 0 | 3397 | 241 | 1753 | 3503 | 0 | | 0 | | 247 | 1596 | 1585 |
| Grp Volume(v), veh/h | 0 | 354 | 365 | 255 | 287 | 0 | | 0.0 | | 246 | 0 | 46 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1749 | 1797 | 1753 | 1706 | 0 | | | | 1843 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.7 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Cycle Q Clear(g_c), s | 0.0 | 8.0 | 8.0 | 6.5 | 1.7 | 0.0 | | | | 5.8 | 0.0 | 1.1 |
| Prop In Lane | 0.00 | | 0.13 | 1.00 | | 0.00 | | | | 0.13 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 579 | 595 | 330 | 2099 | 0 | | | | 357 | 0 | 307 |
| V/C Ratio(X) | 0.00 | 0.61 | 0.61 | 0.77 | 0.14 | 0.00 | | | | 0.69 | 0.00 | 0.15 |
| Avail Cap(c_a), veh/h | 0 | 2060 | 2118 | 949 | 6195 | 0 | | | | 998 | 0 | 858 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 13.2 | 13.2 | 18.2 | 3.8 | 0.0 | | | | 17.7 | 0.0 | 15.8 |
| Incr Delay (d2), s/veh | 0.0 | 1.1 | 1.0 | 3.9 | 0.0 | 0.0 | | | | 2.4 | 0.0 | 0.2 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 2.9 | 3.0 | 2.7 | 0.4 | 0.0 | | | | 2.5 | 0.0 | 0.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 14.3 | 14.2 | 22.0 | 3.8 | 0.0 | | | | 20.0 | 0.0 | 16.0 |
| LnGrp LOS | A | B | B | C | A | A | | | | C | A | B |
| Approach Vol, veh/h | | 719 | | | 542 | | | | | | 292 | |
| Approach Delay, s/veh | | 14.3 | | | 12.4 | | | | | | 19.4 | |
| Approach LOS | | B | | | B | | | | | | B | |
| Timer - Assigned Phs | 3 | 4 | | 6 | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | | 13.4 | 20.1 | | 13.6 | | 33.5 | | | | | |
| Change Period (Y+R _c), s | | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | | 25.5 | 55.5 | | 25.5 | | 85.5 | | | | | |
| Max Q Clear Time (g _{c+l1}), s | | 8.5 | 10.0 | | 7.8 | | 3.7 | | | | | |
| Green Ext Time (p _c), s | | 0.7 | 5.6 | | 1.5 | | 2.2 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 14.6 | | | | | | | | | | |
| HCM 6th LOS | | B | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|-------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 401 | 760 | 20 | 510 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Future Vol, veh/h | 0 | 401 | 760 | 20 | 510 | 10 | 0 | 0 | 0 | 0 | 10 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | - | 16974 | - | - | 0 |
| Grade, % | - | 0 | - | - | 0 | - | - | - | 0 | - | - | 0 |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 3 | 5 | 2 | 5 | 100 | 2 | 2 | 2 | 2 | 100 | 2 |
| Mvmt Flow | 0 | 427 | 809 | 21 | 543 | 11 | 0 | 0 | 0 | 0 | 11 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | | |
|----------------------|----------------------|---------|---------|---------------|---------------------|---------------------|----------------|--------------------|---------|-------|
| | Conflicting Flow All | Stage 1 | Stage 2 | Critical Hdwy | Critical Hdwy Stg 1 | Critical Hdwy Stg 2 | Follow-up Hdwy | Pot Cap-1 Maneuver | Stage 1 | |
| Conflicting Flow All | 554 | 0 | - | 427 | 0 | 0 | - | 1018 | 1018 | 277 |
| Stage 1 | - | - | - | - | - | - | - | 591 | 591 | - |
| Stage 2 | - | - | - | - | - | - | - | 427 | 427 | - |
| Critical Hdwy | 4.13 | - | - | 4.13 | - | - | - | 6.63 | 8 | 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | 5.83 | 7 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | 5.43 | 7 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.219 | - | - | - | 3.519 | 4.95 | 3.319 |
| Pot Cap-1 Maneuver | 1014 | - | 0 | 1131 | - | - | - | 248 | 141 | 721 |
| Stage 1 | - | - | 0 | - | - | - | - | 517 | 337 | - |
| Stage 2 | - | - | 0 | - | - | - | - | 657 | 419 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1014 | - | - | 1131 | - | - | - | 243 | 0 | 721 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | 243 | 0 | - |
| Stage 1 | - | - | - | - | - | - | - | 507 | 0 | - |
| Stage 2 | - | - | - | - | - | - | - | 657 | 0 | - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.3 | - |
| HCM LOS | - | - | - |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|------|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 1014 | - | 1131 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.019 | - | - | - |
| HCM Control Delay (s) | 0 | - | 8.2 | - | - | - |
| HCM Lane LOS | A | - | A | - | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|----------|------|----------|------|------|------|----------|------|------|------|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↔ | | 0 | 0 | 0 |
| Traffic Volume (veh/h) | 360 | 41 | 0 | 0 | 20 | 10 | 520 | 0 | 34 | 0 | 0 | 0 |
| Future Volume (veh/h) | 360 | 41 | 0 | 0 | 20 | 10 | 520 | 0 | 34 | 0 | 0 | 0 |
| 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 | | 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 | | |
| Work Zone On Approach | | No | | | No | | | | No | | | |
| Adj Sat Flow, veh/h/ln | 1841 | 1870 | 0 | 0 | 1870 | 1870 | 1826 | 1870 | 1826 | | | |
| Adj Flow Rate, veh/h | 400 | 46 | 0 | 0 | 22 | 5 | 601 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 4 | 2 | 0 | 0 | 2 | 2 | 5 | 2 | 5 | | | |
| Cap, veh/h | 765 | 708 | 0 | 0 | 1097 | 241 | 1048 | 564 | 0 | | | |
| Arrive On Green | 0.38 | 0.38 | 0.00 | 0.00 | 0.38 | 0.38 | 0.30 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1361 | 1870 | 0 | 0 | 2991 | 635 | 3478 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 400 | 46 | 0 | 0 | 13 | 14 | 601 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1361 | 1870 | 0 | 0 | 1777 | 1756 | 1739 | 1870 | 0 | | | |
| Q Serve(g_s), s | 7.3 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 4.1 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 7.5 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 4.1 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.36 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 765 | 708 | 0 | 0 | 673 | 665 | 1048 | 564 | 0 | | | |
| V/C Ratio(X) | 0.52 | 0.06 | 0.00 | 0.00 | 0.02 | 0.02 | 0.57 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1484 | 1696 | 0 | 0 | 1611 | 1592 | 6862 | 3690 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.8 | 5.6 | 0.0 | 0.0 | 5.5 | 5.5 | 8.3 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.6 | 0.0 | 0.0 | 0.0 | 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 | 1.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 8.4 | 5.6 | 0.0 | 0.0 | 5.5 | 5.5 | 8.8 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | 446 | | | | 27 | | | 601 | | | | |
| Approach Delay, s/veh | 8.1 | | | | 5.5 | | | 8.8 | | | | |
| Approach LOS | | A | | | | A | | | A | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 13.0 | | 15.2 | | | | 15.2 | | | | | |
| Change Period (Y+Rc), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (Gmax), s | 55.5 | | 25.5 | | | | 25.5 | | | | | |
| Max Q Clear Time (g_c+l1), s | 6.1 | | 9.5 | | | | 2.1 | | | | | |
| Green Ext Time (p_c), s | 2.5 | | 1.5 | | | | 0.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 8.4 | | | | | | | | | | |
| HCM 6th LOS | | | A | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 2.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | ↑ | ↑↑ | ↑ | ↑ | |
| Traffic Vol, veh/h | 0 | 0 | 860 | 280 | 100 | 40 |
| Future Vol, veh/h | 0 | 0 | 860 | 280 | 100 | 40 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 20 | 12 |
| Mvmt Flow | 0 | 0 | 905 | 295 | 105 | 42 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 905 | 0 | - |
| Stage 1 | - | - | 905 |
| Stage 2 | - | - | 0 |
| Critical Hdwy | 4.13 | - | 6.9 7.08 |
| Critical Hdwy Stg 1 | - | - | 6.1 - |
| Critical Hdwy Stg 2 | - | - | 5.7 - |
| Follow-up Hdwy | 2.219 | - | 3.69 3.414 |
| Pot Cap-1 Maneuver | 749 | - | 0 264 532 |
| Stage 1 | - | - | 0 323 - |
| Stage 2 | - | - | 0 - - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 749 | - | 264 532 |
| Mov Cap-2 Maneuver | - | - | 264 - |
| Stage 1 | - | - | 323 - |
| Stage 2 | - | - | - - |

| Approach | EB | WB | SB |
|----------------------|----|----|----|
| HCM Control Delay, s | 0 | 0 | 21 |
| HCM LOS | - | - | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 749 | - | - | 370 |
| HCM Lane V/C Ratio | - | - | - | 0.398 |
| HCM Control Delay (s) | 0 | - | - | 21 |
| HCM Lane LOS | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.9 |

HCM 6th Signalized Intersection Summary

1: Moaniani St/H2 SB Off-Ramo & Ka Uka Blvd

03/13/2019

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|----------|----------|------|----------|------|----------|------|------|------|-------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Traffic Volume (veh/h) | 0 | 730 | 50 | 360 | 680 | 0 | 50 | 0 | 780 | 20 | 220 | 340 |
| Future Volume (veh/h) | 0 | 730 | 50 | 360 | 680 | 0 | 50 | 0 | 780 | 20 | 220 | 340 |
| Initial Q (Q _b), 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 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 0 | 1870 | 1870 | 1841 | 1870 | 0 | 1826 | 0 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 0 | 785 | 51 | 387 | 731 | 0 | 54 | 0 | 263 | 22 | 237 | 68 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 4 | 2 | 0 | 5 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1218 | 79 | 411 | 2205 | 0 | 0 | 0 | 0 | 24 | 254 | 237 |
| Arrive On Green | 0.00 | 0.36 | 0.36 | 0.23 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.15 | 0.15 |
| Sat Flow, veh/h | 0 | 3481 | 220 | 1753 | 3647 | 0 | | 0 | | 158 | 1704 | 1585 |
| Grp Volume(v), veh/h | 0 | 412 | 424 | 387 | 731 | 0 | | 0.0 | | 259 | 0 | 68 |
| Grp Sat Flow(s), veh/h/ln | 0 | 1777 | 1831 | 1753 | 1777 | 0 | | | | 1862 | 0 | 1585 |
| Q Serve(g_s), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.7 | 0.0 | | | | 23.4 | 0.0 | 6.5 |
| Cycle Q Clear(g_c), s | 0.0 | 32.8 | 32.8 | 36.9 | 16.7 | 0.0 | | | | 23.4 | 0.0 | 6.5 |
| Prop In Lane | 0.00 | | 0.12 | 1.00 | | 0.00 | | | | 0.08 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 639 | 658 | 411 | 2205 | 0 | | | | 278 | 0 | 237 |
| V/C Ratio(X) | 0.00 | 0.64 | 0.64 | 0.94 | 0.33 | 0.00 | | | | 0.93 | 0.00 | 0.29 |
| Avail Cap(c_a), veh/h | 0 | 639 | 658 | 521 | 2205 | 0 | | | | 279 | 0 | 238 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 45.4 | 45.4 | 63.9 | 15.4 | 0.0 | | | | 71.4 | 0.0 | 64.3 |
| Incr Delay (d2), s/veh | 0.0 | 2.2 | 2.2 | 22.6 | 0.4 | 0.0 | | | | 35.9 | 0.0 | 0.7 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%), veh/ln | 0.0 | 15.2 | 15.6 | 19.2 | 7.1 | 0.0 | | | | 14.1 | 0.0 | 2.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 0.0 | 47.6 | 47.5 | 86.5 | 15.8 | 0.0 | | | | 107.4 | 0.0 | 64.9 |
| LnGrp LOS | A | D | D | F | B | A | | | | F | A | E |
| Approach Vol, veh/h | | 836 | | | 1118 | | | | | | 327 | |
| Approach Delay, s/veh | | 47.6 | | | 40.3 | | | | | | 98.5 | |
| Approach LOS | | D | | | D | | | | | | F | |
| Timer - Assigned Phs | 3 | 4 | | 6 | | 8 | | | | | | |
| Phs Duration (G+Y+R _c), s | 44.4 | 65.6 | | 29.9 | | 110.0 | | | | | | |
| Change Period (Y+R _c), s | 4.5 | 4.5 | | 4.5 | | 4.5 | | | | | | |
| Max Green Setting (G _{max}), s | 50.5 | 50.5 | | 25.5 | | 105.5 | | | | | | |
| Max Q Clear Time (g _{c+1}), s | 38.9 | 34.8 | | 25.4 | | 18.7 | | | | | | |
| Green Ext Time (p _c), s | 1.0 | 5.1 | | 0.0 | | 6.6 | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 51.3 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |

Intersection

Int Delay, s/veh 0.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 710 | 820 | 44 | 1040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 710 | 820 | 44 | 1040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop |
| RT Channelized | - | - | Free | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | 80 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 763 | 882 | 47 | 1118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|
| | 1118 | 0 | - | 763 | 0 | 0 | 1975 | 1975 | 559 |
| Conflicting Flow All | - | - | - | - | - | - | 1212 | 1212 | - |
| Stage 1 | - | - | - | - | - | - | 763 | 763 | - |
| Stage 2 | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | 4.13 | - | - | 4.22 | - | - | 6.63 | 6.53 | 6.93 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.83 | 5.53 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.43 | 5.53 | - |
| Follow-up Hdwy | 2.219 | - | - | 2.276 | - | - | 3.519 | 4.019 | 3.319 |
| Pot Cap-1 Maneuver | 623 | - | 0 | 815 | - | - | 61 | 62 | 473 |
| Stage 1 | - | - | 0 | - | - | - | 245 | 254 | - |
| Stage 2 | - | - | 0 | - | - | - | 459 | 412 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 623 | - | - | 815 | - | - | 57 | 0 | 473 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 57 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 231 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 459 | 0 | - |

| Approach | EB | WB | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.4 | 0 |
| HCM LOS | A | A | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBL | WBT | WBR | SBLn1 |
|-----------------------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 623 | - | 815 | - | - | - |
| HCM Lane V/C Ratio | - | - | 0.058 | - | - | - |
| HCM Control Delay (s) | 0 | - | 9.7 | - | 0 | - |
| HCM Lane LOS | A | - | A | - | A | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | - | - | - |

HCM 6th Signalized Intersection Summary

3: H2 NB Off-Ramp/H2 NB On-Ramp & Ka Uka Blvd/Mililani Memorial Park Rd

03/13/2019

| Movement | EBL | EBT | EBC | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|------|------|-------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations | ↑ | ↑ | | | ↑↑ | | ↑ | ↑ | | | | |
| Traffic Volume (veh/h) | 680 | 30 | 0 | 0 | 54 | 21 | 1030 | 10 | 30 | 0 | 0 | 0 |
| Future Volume (veh/h) | 680 | 30 | 0 | 0 | 54 | 21 | 1030 | 10 | 30 | 0 | 0 | 0 |
| Initial Q (Q _b), 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 | 1.00 | | |
| Work Zone On Approach | No | | | | No | | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1841 | 0 | 0 | 1870 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 708 | 31 | 0 | 0 | 56 | 13 | 1108 | 0 | 0 | | | |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | | | |
| Percent Heavy Veh, % | 2 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 766 | 1016 | 0 | 0 | 1592 | 357 | 1407 | 739 | 0 | | | |
| Arrive On Green | 0.55 | 0.55 | 0.00 | 0.00 | 0.55 | 0.55 | 0.39 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1332 | 1841 | 0 | 0 | 2977 | 647 | 3563 | 1870 | 0 | | | |
| Grp Volume(v), veh/h | 708 | 31 | 0 | 0 | 34 | 35 | 1108 | 0 | 0 | | | |
| Grp Sat Flow(s), veh/h/ln | 1332 | 1841 | 0 | 0 | 1777 | 1754 | 1781 | 1870 | 0 | | | |
| Q Serve(g_s), s | 88.2 | 1.3 | 0.0 | 0.0 | 1.5 | 1.6 | 46.4 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 89.7 | 1.3 | 0.0 | 0.0 | 1.5 | 1.6 | 46.4 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 0.37 | 1.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 766 | 1016 | 0 | 0 | 981 | 968 | 1407 | 739 | 0 | | | |
| V/C Ratio(X) | 0.92 | 0.03 | 0.00 | 0.00 | 0.03 | 0.04 | 0.79 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 817 | 1088 | 0 | 0 | 1050 | 1037 | 1407 | 739 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(l) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 37.9 | 17.3 | 0.0 | 0.0 | 17.4 | 17.4 | 45.2 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 15.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%), veh/ln | 31.9 | 0.6 | 0.0 | 0.0 | 0.6 | 0.7 | 21.7 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 53.5 | 17.3 | 0.0 | 0.0 | 17.4 | 17.4 | 49.7 | 0.0 | 0.0 | | | |
| LnGrp LOS | D | B | A | A | B | B | D | A | A | | | |
| Approach Vol, veh/h | | 739 | | | 69 | | | 1108 | | | | |
| Approach Delay, s/veh | | 52.0 | | | 17.4 | | | 49.7 | | | | |
| Approach LOS | | D | | | B | | | D | | | | |
| Timer - Assigned Phs | 2 | | 4 | | | | 8 | | | | | |
| Phs Duration (G+Y+R _c), s | 71.6 | | 98.4 | | | | 98.4 | | | | | |
| Change Period (Y+R _c), s | 4.5 | | 4.5 | | | | 4.5 | | | | | |
| Max Green Setting (G _{max}), s | 60.5 | | 100.5 | | | | 100.5 | | | | | |
| Max Q Clear Time (g _{c+1}), s | 48.4 | | 91.7 | | | | 3.6 | | | | | |
| Green Ext Time (p _c), s | 3.9 | | 2.1 | | | | 0.4 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | 49.4 | | | | | | | | | | |
| HCM 6th LOS | | D | | | | | | | | | | |
| Notes | | | | | | | | | | | | |
| User approved volume balancing among the lanes for turning movement. | | | | | | | | | | | | |

Intersection

Int Delay, s/veh 17.6

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|-------|
| Lane Configurations | | ↑ | ↑↑ | ↑ | Y | |
| Traffic Vol, veh/h | 0 | 0 | 1410 | 60 | 100 | 120 |
| Future Vol, veh/h | 0 | 0 | 1410 | 60 | 100 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 1 | 1 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | Free | - | Yield |
| Storage Length | - | - | - | 180 | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 1 | 3 |
| Mvmt Flow | 0 | 0 | 1516 | 65 | 108 | 129 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|-----------------|
| Conflicting Flow All | 1516 | 0 | 0 1517 759 |
| Stage 1 | - | - | - 1516 - |
| Stage 2 | - | - | - 1 - |
| Critical Hdwy | 4.13 | - | - 6.615 6.945 |
| Critical Hdwy Stg 1 | - | - | - 5.815 - |
| Critical Hdwy Stg 2 | - | - | - 5.415 - |
| Follow-up Hdwy | 2.219 | - | - 3.5095 3.3285 |
| Pot Cap-1 Maneuver | 439 | - | 0 121 348 |
| Stage 1 | - | - | 0 170 - |
| Stage 2 | - | - | 0 1025 - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 439 | - | 121 348 |
| Mov Cap-2 Maneuver | - | - | 121 - |
| Stage 1 | - | - | - 170 - |
| Stage 2 | - | - | - 1025 - |

| Approach | EB | WB | SB |
|----------------------|----|----|-------|
| HCM Control Delay, s | 0 | 0 | 130.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | SBLn1 |
|-----------------------|-----|-----|-----|-------|
| Capacity (veh/h) | 439 | - | - | 219 |
| HCM Lane V/C Ratio | - | - | - | 1.08 |
| HCM Control Delay (s) | 0 | - | - | 130.7 |
| HCM Lane LOS | A | - | - | F |
| HCM 95th %tile Q(veh) | 0 | - | - | 10.6 |