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Transportation Impact Analysis

Hayward Downtown Specific Plan

Hayward, California

Draft

October 2018

Transportation Impact Analysis

Hayward Downtown Specific Plan

Hayward, California

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Section 1
Executive Summary

EXECUTIVE SUMMARY

The proposed Downtown Hayward Specific Plan (Specific Plan) area encompasses 320 acres in northern Hayward and includes City Hall, historic Downtown, Downtown adjacent residential neighborhoods, the Downtown Hayward Bay Area Rapid Transit (BART) station, and the former Mervyn's headquarters site. The Plan area is bounded loosely to the west by Grand Street, to the south by E Street, to the east by 3rd Street and to the north by Hotel and Hazel Avenues.

The Specific Plan aims to achieve the community's vision of a resilient, safe, attractive, and vibrant historic Downtown by clearly defining land uses, delineating an inclusive multi-modal circulation system, integrating public open space, and establishing new regulations that better secure Downtown Hayward as a "destination" for visitors, residents, and investment. The Plan is designed to create a sense of place by preserving and enhancing these resources and setting the framework for development and investment that will help the City achieve its vision.

The Specific Plan proposes significant infill development in the Plan area with a mix of uses, as noted below. Please note, the proposed land use changes are the net difference compared to existing land uses.

- 3,427 multifamily residential units
- Approximately 96,598 square feet of office uses
- Approximately 777,485 of retail uses
- Approximately 1,506,095 of other non-residential uses

The Specific Plan also proposes multi-modal enhancements to the circulation network to make Downtown Hayward a more active, safe, and attractive environment to promote walking, biking, and transit as viable alternatives to driving. Circulation changes include extensive road diets across the Specific Plan area, converting the Downtown Loop to a two-way network, and converting the intersection of Mission Boulevard & Foothill Boulevard/Jackson Street to an oval roundabout. The Specific Plan also includes protected bike lanes and bike routes on area roadways and other improvements such as landscaped buffers, shorter blocks, more pedestrian crossings, and other pedestrian improvements.

While the circulation changes and land uses are proposed to be phased over time, the anticipated build-out year is 2040, which is treated as the Cumulative analysis year for this transportation impact study. Below is a summary of the proposed mitigations for the Specific Plan, and the significant and unavoidable impacts associated with implementation of the Specific Plan.

MITIGATION MEASURES

The following list summarizes the mitigation measures recommended as part of this proposed development.

- **Mitigation Measure #1:** Foothill Boulevard & City Center Drive (South) (Intersection #1)
    - Restripe the middle westbound shared through/right turn lane to a left turn lane
    - Restripe the westbound right turn lane to a shared through/right turn lane

  - Add a second southbound left turn lane
  - Add third northbound through lane
- **Mitigation Measure #2:** Foothill Boulevard & B Street (Intersection #3)
  - Install protected left turn signal phases for all approaches
  - Add a second southbound left turn lane
  - Add a second eastbound through lane
  - Add two westbound left turn lanes (three total) and a second westbound through lane
  - Add a third northbound through lane
  - Add a northbound right turn lane (with overlap phase)
- **Mitigation Measure #3:** Main Street & A Street (Intersection #6)
  - Add a second westbound left turn lane
  - Add two eastbound through lanes (three total)
  - Add a southbound right turn lane (with overlap phase)
  - Install protected left turn phases for the eastbound and westbound approaches
- **Mitigation Measure #4:** Mission Boulevard & A Street (Intersection #9)
  - Add a northbound right turn lane
  - Add a southbound right turn lane (with overlap phase)
  - Install protected left turn phases for the northbound and southbound approaches
  - Optimize signal timing
- **Mitigation Measure #5:** Mission Boulevard & B Street (Intersection #10)
  - Install protected left turn phases for the northbound and southbound approaches
  - Add a northbound right turn lane
  - Add a southbound right turn lane
- **Mitigation Measure #6:** Mission Boulevard & C Street (Intersection #11)
  - Optimize signal timing
  - Install protected left turn phases for all approaches
- **Mitigation Measure #7:** Mission Boulevard & D Street (Intersection #12)
  - Add an eastbound shared left/right turn lane between the eastbound left turn lane and right turn lanes
  - Add a southbound right turn lane.
- **Mitigation Measure #8:** Mission Boulevard & Foothill Boulevard/Jackson Street (Intersection #13)
  - Expand the roundabout to have three through lanes throughout
  - Add two uncontrolled/free right turn lanes exiting the roundabout at each leg
  - Expand each approaching leg to three lanes
  - Add a fourth right turn lane with a turn pocket at the westbound Jackson Street approach
- **Mitigation Measure #9:** Mission Boulevard & Fletcher Lane (Intersection #14)
  - Signal timing optimization
  - Add a northbound right turn lane
  - Add a second westbound left turn lane (which would require implementing split phases for the eastbound and westbound approaches)
  - Add a second eastbound right turn lane
  - Add a second northbound left turn lane

  - Install northbound and eastbound right turn overlap phases
- **Mitigation Measure #10:** Watkins Street & Jackson Street (Intersection #17)
  - Add a second southbound right turn lane (with overlap phase)
  - Add a second northbound left turn lane
  - Add a second eastbound left turn lane
  - Add a fourth westbound through lane (required to mitigate AM peak hour impact
- **Mitigation Measure #11:** Montgomery Street & B Street (Intersection #18)
  - Install a traffic signal
- **Mitigation Measure #12:** 2nd Street & City Center Drive (Intersection #21)
  - Optimize signal timing
  - Install an eastbound right turn overlap phase
- **Mitigation Measure #13:** 2nd Street & A Street (#22).
  - Add a second southbound left turn lane
  - Add right turn overlap phases at all approaches
  - Add a second eastbound through lane
  - Add a second westbound left turn lane
- **Mitigation Measure #14:** 2nd Street & B Street (Intersection #23)
  - Install permissive left turn signal phases for the eastbound and westbound approaches
  - Install eastbound and westbound right turn overlap phases,
  - Add a second eastbound left turn lane
  - Add a second southbound right turn lane
- **Mitigation Measure #15:** 2nd Street & D Street (Intersection #25)
  - Add a second eastbound left turn lane
  - Add a second southbound through lane
  - Add a westbound right turn lane
- **Mitigation Measure #16:** Foothill Boulevard & Hazel Avenue/City Center Drive (North) (Intersection #26)
  - Add a second eastbound left turn lane
  - Add a second southbound left turn lane
  - Add a second westbound right turn lane (with overlap phase)
  - Add a third northbound through lane
  - Restripe the eastbound shared through/right turn lane to a shared left/through/right lane (which would require implementing split phases for the eastbound and westbound approaches)
- **Mitigation Measure #17**: I-880 Northbound (Hesperian Boulevard to A Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #18**: I-880 Northbound (A Street to Winton Avenue)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #19**: I-880 Northbound (Winton Avenue to Jackson Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #20**: I-880 Northbound (South of Jackson)
  - Add a northbound vehicle lane along the segment

- **Mitigation Measure #21**: I-880 Southbound (Hesperian Boulevard to A Street)
    - Add a southbound vehicle lane along the segment
- **Mitigation Measure #22**: I-238 Eastbound (I-880 to SR-185)
    - Add an eastbound vehicle lane along the segment
- **Mitigation Measure #23**: I-580 Northbound (Strobridge Avenue to Redwood Road)
    - Add a northbound vehicle lane along the segment
- **Mitigation Measure #24**: Southbound Mission Boulevard (North of D Street)
    - Add a southbound vehicle lane along the segment
- **Mitigation Measure #25**: Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard)
    - Add a southbound vehicle lane along the segment
- **Mitigation Measure #26**: Westbound A Street (North of Mission Boulevard)
    - Add a westbound vehicle lane along the segment
- **Mitigation Measure #27**: Northbound Mission Boulevard (North of A Street)
    - Add a northbound vehicle lane along the segment
- **Mitigation Measure #28:** Northbound Mission Boulevard (North of D Street)
    - Add a northbound vehicle lane along the segment
- **Mitigation Measure #29**: Eastbound A Street (North of Foothill Boulevard)
    - Add an eastbound vehicle lane along the segment
- **Mitigation Measure #30**: Eastbound A Street (North of Mission Boulevard).
    - Add an eastbound vehicle lane along the segment

SIGNIFICANT AND UNAVOIDABLE IMPACTS

The following significant and unavoidable impacts were identified.

Foothill Boulevard & City Center Drive (South) (Intersection #1). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #1, with the following improvements, the intersection would operate within the standard at LOS E (58.9 seconds of delay) during the PM peak hour:

- Restripe the middle westbound shared through/right turn lane to a left turn lane
- Restripe the westbound right turn lane to a shared through/right turn lane
- Add a second southbound left turn lane
- Add third northbound through lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances, geometric constraints, and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Foothill Boulevard & B Street (Intersection #3). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #2, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (68.4 seconds of delay) and PM peak hour (55.1 seconds pf delay):

- Install protected left turn signal phases for all approaches
- Add a second southbound left turn lane
- Add a second eastbound through lane
- Add two westbound left turn lanes (three total) and a second westbound through lane
- Add a third northbound through lane
- Add a northbound right turn lane (with overlap phase)

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Main Street & A Street (Intersection #6). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #3, with the following improvements, the intersection would operate within the standard at LOS E (67.6 seconds of delay) during the AM peak hour:

- Add a second westbound left turn lane
- Add two eastbound through lanes (three total)
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the eastbound and westbound approaches

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & A Street (Intersection #9). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #4, with the following improvements, the intersection would operate within the

standard at LOS E during the AM peak hour (77.8 seconds of delay) and PM peak hour (77.9 seconds of delay):

- Add a northbound right turn lane
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the northbound and southbound approaches
- Optimize signal timing

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & B Street (Intersection #10). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #5, with the following improvements, the intersection would operate within the standard at LOS C during the AM peak hour (31.7 seconds of delay) and LOS E during the PM peak hour (76.6 seconds of delay):

- Install protected left turn phases for the northbound and southbound approaches
- Add a northbound right turn lane
- Add a southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & Foothill Boulevard/Jackson Street (Intersection #13). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #8, with the following improvements, the roundabout approaches/legs would operate within the standard at LOS E or better during the AM peak hour and PM peak hour:

- Expand the roundabout to have three through lanes throughout
- Add two uncontrolled/free right turn lanes exiting the roundabout at each leg
- Expand each approaching leg to three lanes
- Add a fourth right turn lane with a turn pocket at the westbound Jackson Street approach

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & Fletcher Lane (Intersection #14). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or more during the weekday AM peak hour and would cause the LOS to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #9, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (70.7 seconds of delay) and PM peak hour (67.6 seconds of delay):

- Signal timing optimization
- Add a northbound right turn lane
- Add a second westbound left turn lane (which would require implementing split phases for the eastbound and westbound approaches)
- Add a second eastbound right turn lane
- Add a second northbound left turn lane
- Install northbound and eastbound right turn overlap phases

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Watkins Street & Jackson Street (Intersection #17). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #10, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (60.5 seconds of delay) and PM peak hour (72.4 seconds of delay):

- Add a second southbound right turn lane (with overlap phase)
- Add a second northbound left turn lane
- Add a second eastbound left turn lane
- Add a fourth westbound through lane (required to mitigate AM peak hour impact

The addition of a fourth westbound through lane is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic

and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, the AM peak hour impact would be reduced to **less than significant** and the PM peak hour impact would remain **significant and unavoidable**.

2nd Street & A Street (Intersection #22). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and would cause delay already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday PM peak hour. Peak hour signal warrants are met during both peak hours. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #13, with the following improvements, the intersection would operate within the standard at LOS D during the AM peak hour (54.7 seconds of delay) and LOS E during the PM peak hour (58.5 seconds of delay):

- Add a second southbound left turn lane
- Add right turn overlap phases at all approaches
- Add a second eastbound through lane
- Add a second westbound left turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & B Street (Intersection #23). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #14, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (62.0 seconds of delay) and PM peak hour (79.0 seconds of delay):

- Install permissive left turn signal phases for the eastbound and westbound approaches
- Install eastbound and westbound right turn overlap phases,
- Add a second eastbound left turn lane
- Add a second southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & D Street (Intersection #25). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #15, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (78.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound through lane
- Add a westbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Foothill Boulevard & Hazel Avenue/City Center Drive (North) (Intersection #26). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #16, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (65.1 seconds of delay) and PM peak hour (72.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound left turn lane
- Add a second westbound right turn lane (with overlap phase)
- Add a third northbound through lane
- Restripe the eastbound shared through/right turn lane to a shared left/through/right lane (which would require implementing split phases for the eastbound and westbound approaches)

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

I-880 Northbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #17, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is

infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (A Street to Winton Avenue). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #18, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (Winton Avenue to Jackson Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #19, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (South of Jackson). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #20, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Southbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #21, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-238 Eastbound (I-880 to SR-185). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part

of Mitigation Measure #22, the addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-580 Northbound (Strobridge Avenue to Redwood Road). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #23, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #24, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #25, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Westbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #26, the addition of a westbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement

for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #27, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #28, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #29, the addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #30, the addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is

infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Mixed Flow Transit Operations. The Specific Plan would cause potentially significant impacts to the several intersections in the Plan area that are used by AC transit bus routes. Mitigation Measure #1 through Mitigation Measure #16 were identified to reduce these impacts to less than significant. However, mitigation measures were generally deemed infeasible at most intersections, and impacts could not be mitigated. These changes in operations at the intersections would affect mixed flow transit operations. Therefore, the impact of the Specific Plan on mixed flow transit operations would be considered **significant and unavoidable**.

Section 2
Introduction

INTRODUCTION

This report documents the transportation impact analysis for the Specific Plan and summarizes the methodology, findings, and conclusions of the analysis.

The purpose of the study is to assess potentially significant impacts resulting from the implementation of the Specific Plan on the surrounding transportation system and to identify measures to mitigate them. The study also serves as the basis for the transportation component of an Environmental Impact Report (EIR) that will be prepared for the Specific Plan.

PROPOSED PROJECT DESCRIPTION

The Specific Plan area encompasses 320 acres in northern Hayward and includes City Hall, historic Downtown, Downtown adjacent residential neighborhoods, the Downtown Hayward Bay Area Rapid Transit (BART) station, and the former Mervyn's headquarters site. The Plan area is bounded loosely to the west by Grand Street, to the south by E Street, to the east by 3rd Street and to the north by Hotel and Hazel Avenues. The project vicinity and Plan area are respectively shown in Figure 1 and Figure 2.

The Specific Plan aims to achieve the community's vision of a resilient, safe, attractive, and vibrant historic Downtown by clearly defining land uses, delineating an inclusive multi-modal circulation system, integrating public open space, and establishing new regulations that better secure Downtown Hayward as a "destination" for visitors, residents, and investment. The Plan is designed to create a sense of place by preserving and enhancing these resources and setting the framework for development and investment that will help the City achieve its vision.

The Specific Plan proposes significant infill development in the Plan area with a mix of uses. The land use plan is divided into five subareas (

Figure 3) each with a unique vision, form, and intensity and type of uses. The Specific Plan's proposed land use changes by Transportation Analysis Zones (TAZs) are shown in Table 1; a map of the TAZs in Downtown Hayward are shown in Figure 4. Please note, the proposed land use changes are the net difference compared to existing land uses.

Table 1: Proposed Changes to Land Uses by Traffic Analysis Zones

TAZ	Multifamily Residential Units	Office Square Feet	Retail Square Feet	Other Square Feet
656	444	36,734	295,657	572,151
657	16	506	4,075	7,941
659	81	2,622	21,105	41,127
660	22	456	3,669	7,150
661	63	3,254	26,194	50,044
662	240	14,801	119,128	230,145
663	260	2,187	17,603	33,304
665	111	1,762	14,181	27,635
666	138	589	4,738	9,232
667	716	4,129	33,235	64,766
668	12	260	2,096	4,085
669	62	2,643	21,270	41,448
670	153	5,155	41,488	80,847
671	111	1,762	14,181	27,635
672	60	939	7,559	14,731
673	109	4,070	32,758	63,836
682	333	2,187	17,603	33,304
685	39	1,641	13,204	25,732
688	458	10,901	87,741	170,982
Totals	**3,427**	**96,598**	**777,485**	**1,506,095**

Source: Lisa Wise Consulting, 2018
Note: Square foot amounts are estimated based on conversion from job estimates

Figure 1: Regional Location

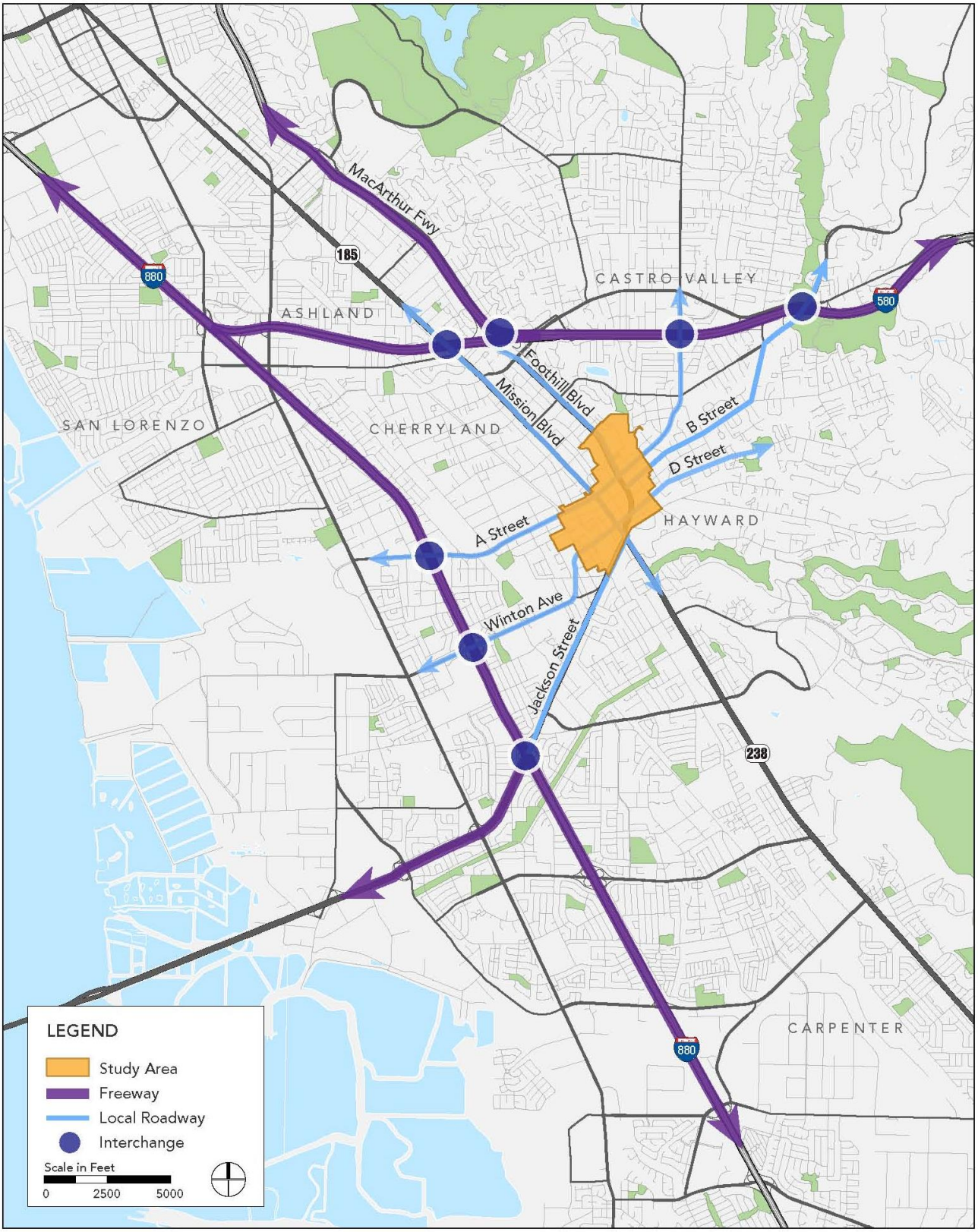


Figure 2: Specific Plan Area

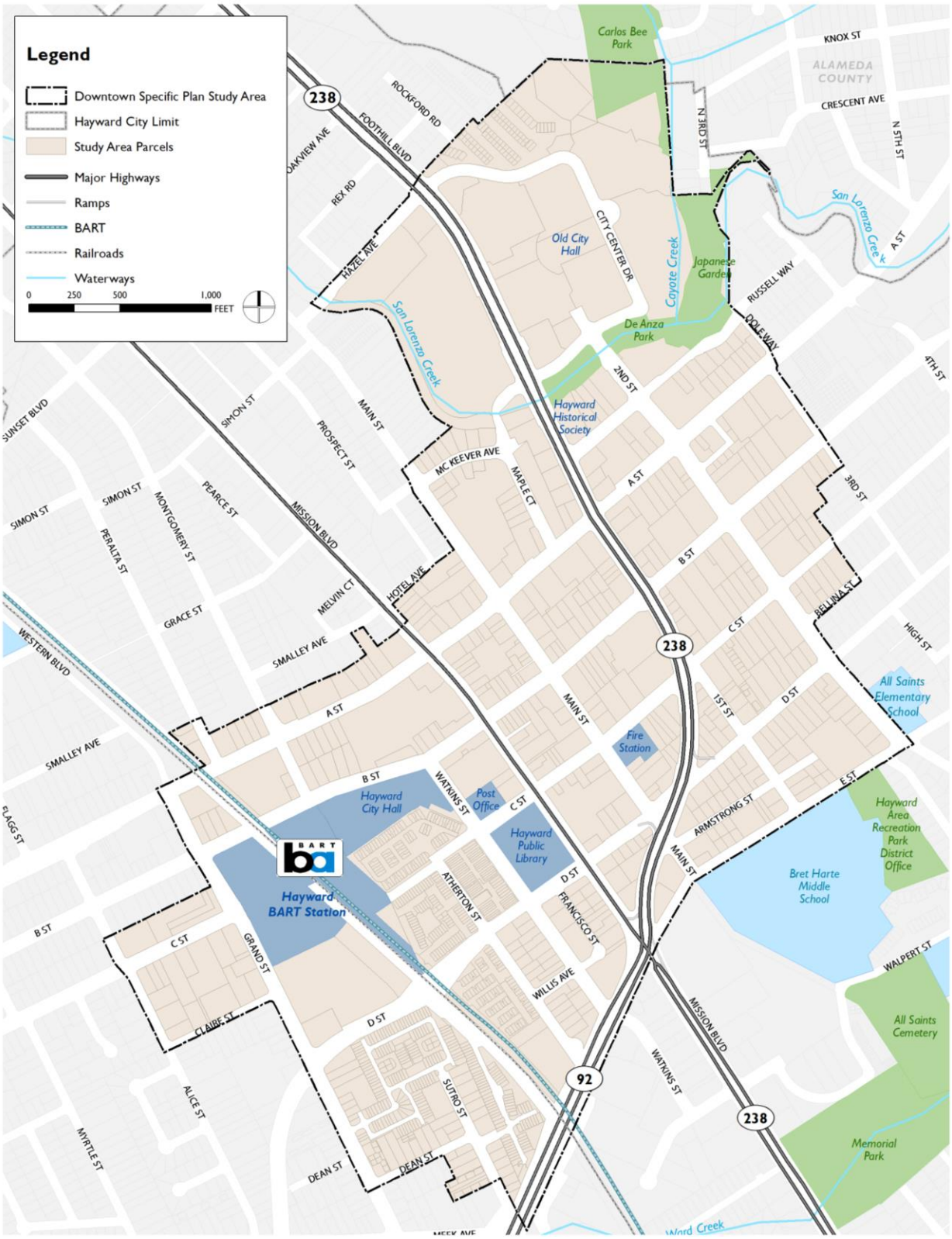


Figure 3: Specific Plan Subareas

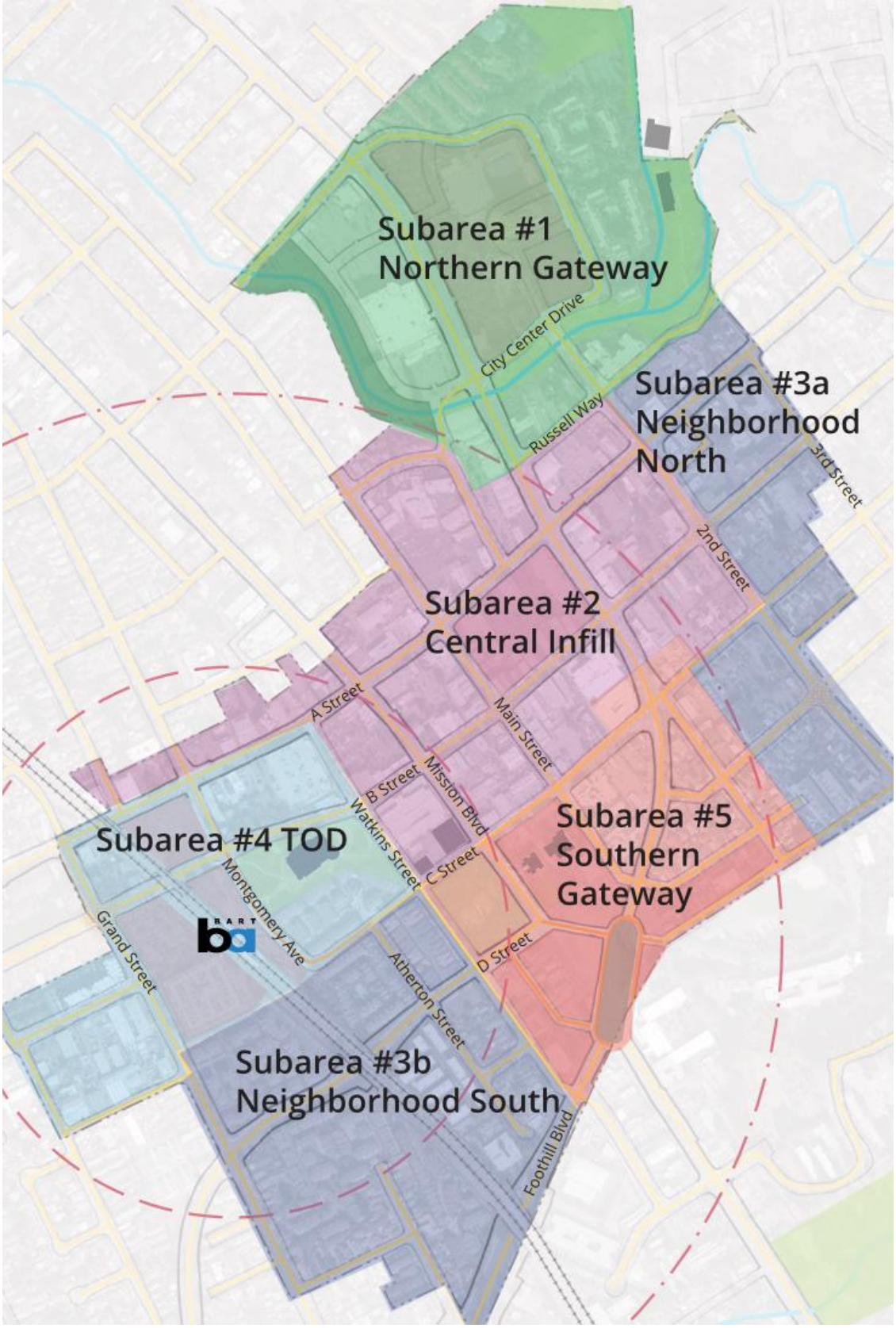
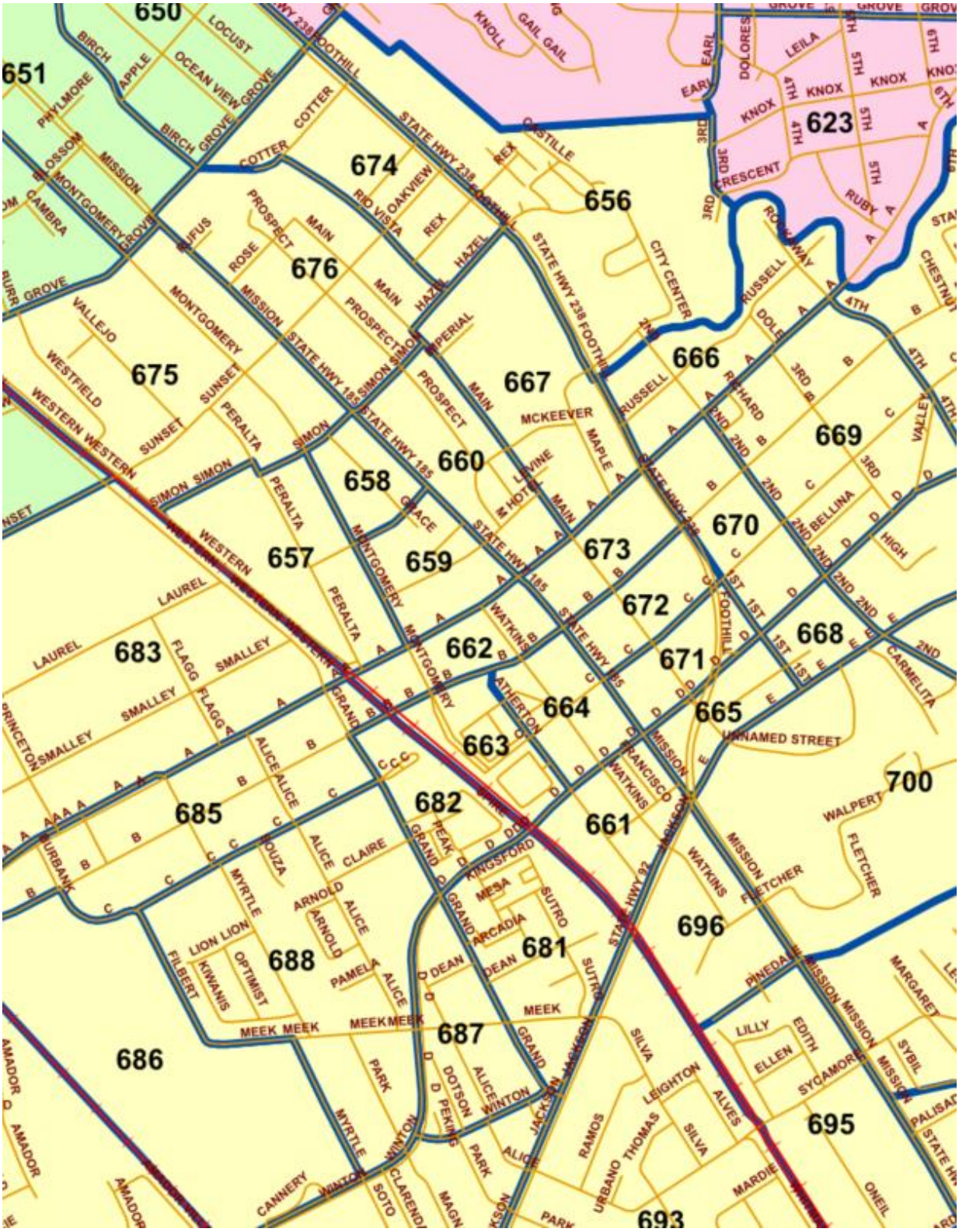


Figure 4: Downtown Hayward Transportation Analysis Zones



In addition to land use, the Specific Plan proposes multi-modal enhancements to the circulation network to make Downtown Hayward a more active, safe, and attractive environment to promote walking, biking, and transit as viable alternatives to driving. Circulation changes include extensive road diets across the Specific Plan area, converting the Downtown Loop to a two-way network, and converting the intersection of Mission Boulevard & Foothill Boulevard/Jackson Street to an oval roundabout (Figure 5). The Specific Plan also includes protected bike lanes and bike routes on area roadways (

Figure 6). Other improvements include landscaped buffers, shorter blocks, more pedestrian crossings, and other pedestrian improvements.

STUDY LOCATIONS

Study locations were developed in conjunction with the City of Hayward and based on comments provided by Alameda County Transportation Commission (Alameda CTC).

The following intersections were analyzed for traffic conditions during the AM peak hour and PM peak hour using City of Hayward significance criteria and are shown on Figure 7:

1. Foothill Boulevard & City Center Drive (South)
2. Foothill Boulevard & A Street
3. Foothill Boulevard & B Street
4. Foothill Boulevard & C Street
5. Foothill Boulevard & D Street
6. Main Street & A Street
7. Main Street & B Street
8. Main Street & C Street
9. Mission Boulevard & A Street
10. Mission Boulevard & B Street
11. Mission Boulevard & C Street
12. Mission Boulevard & D Street
13. Mission Boulevard & Foothill Boulevard/Jackson Street
14. Mission Boulevard & Fletcher Lane
15. Watkins Street & B Street
16. Watkins Street & C Street
17. Watkins Street & Jackson Street
18. Montgomery Street & B Street
19. Grand Street/Western Boulevard & A Street
20. Grand Street & B Street
21. 2nd Street & City Center Drive
22. 2nd Street & A Street
23. 2nd Street & B Street
24. 2nd Street & C Street
25. 2nd Street & D Street
26. Foothill Boulevard & Hazel Avenue/City Center Drive (North)

Based upon comments provided on the EIR Notice of Preparation (NOP) to comply with the Alameda CTC Congestion Management Plan (CMP) Land Use Analysis Program, the following (CMP) and Metropolitan Transportation System (MTS) freeway and arterial roadway segments were analyzed during the PM peak hour using Alameda CTC CMP protocol under the Cumulative scenarios:

- Interstate 238 (I-238)
    - I-880 to SR-185
- Interstate 580 (I-580)
    - 164th Avenue to I-238
    - Strobridge Avenue to Redwood Road
    - Redwood Road to Center Street
- Interstate 880 (I-880)
    - Hesperian Boulevard to A Street
    - A Street to Winton Avenue
    - Winton Avenue to Jackson Street
    - South of Jackson
- Mission Boulevard
    - North of A Street
    - North of D Street
    - South of Jackson Street/Foothill Boulevard
- Foothill Boulevard
    - North of City Center Drive (South)
    - South of A Street
    - North of D Street
- Jackson Street
    - West of Mission Boulevard
- Crow Canyon Road/ Grove Way
    - North of Castro Valley Boulevard
    - West of Center Street
- Winton Avenue
    - West of D Street
- A Street
    - North of Foothill Boulevard
    - North of Mission Boulevard

Figure 5: Proposed Circulation Network

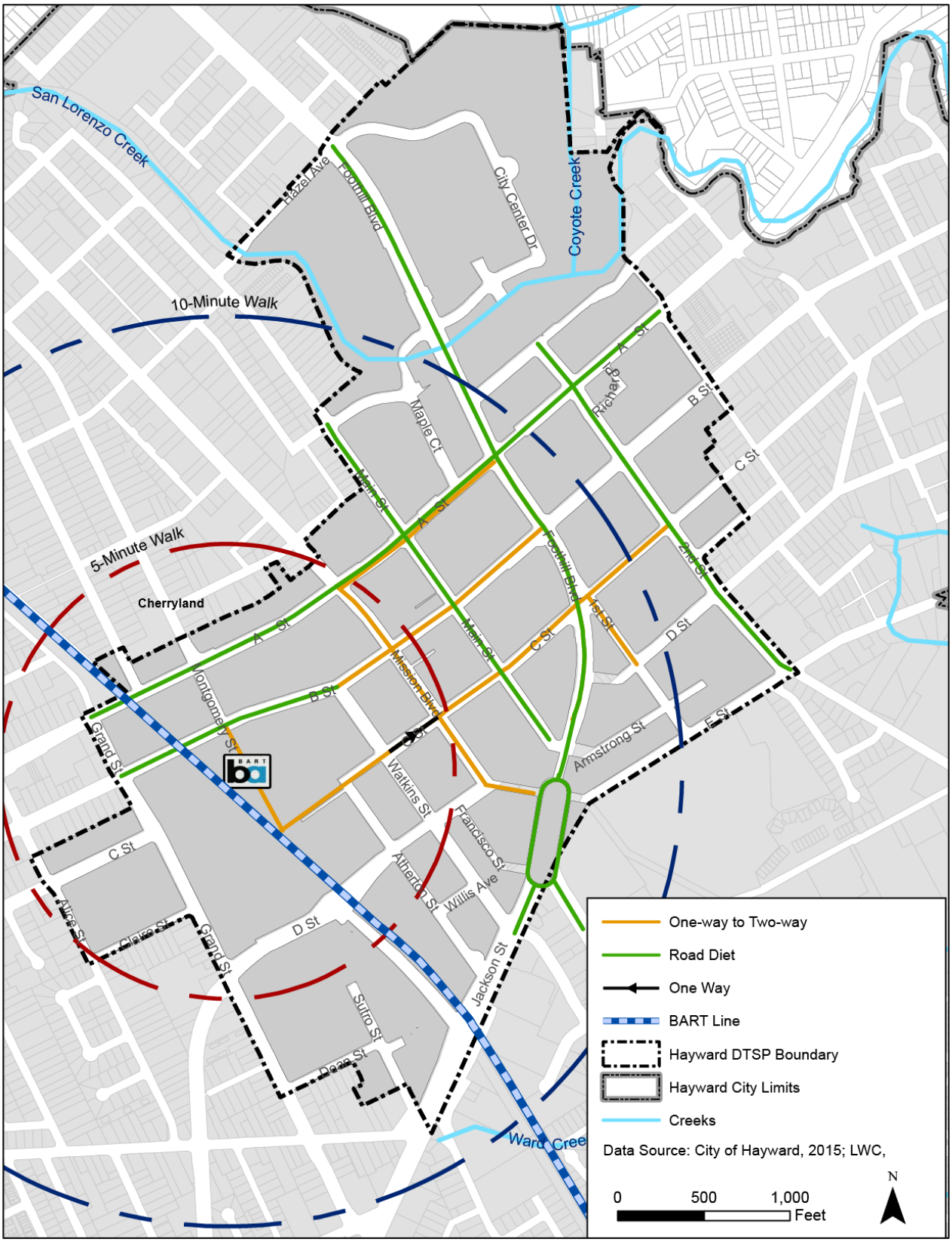


Figure 6: Proposed Bikeways

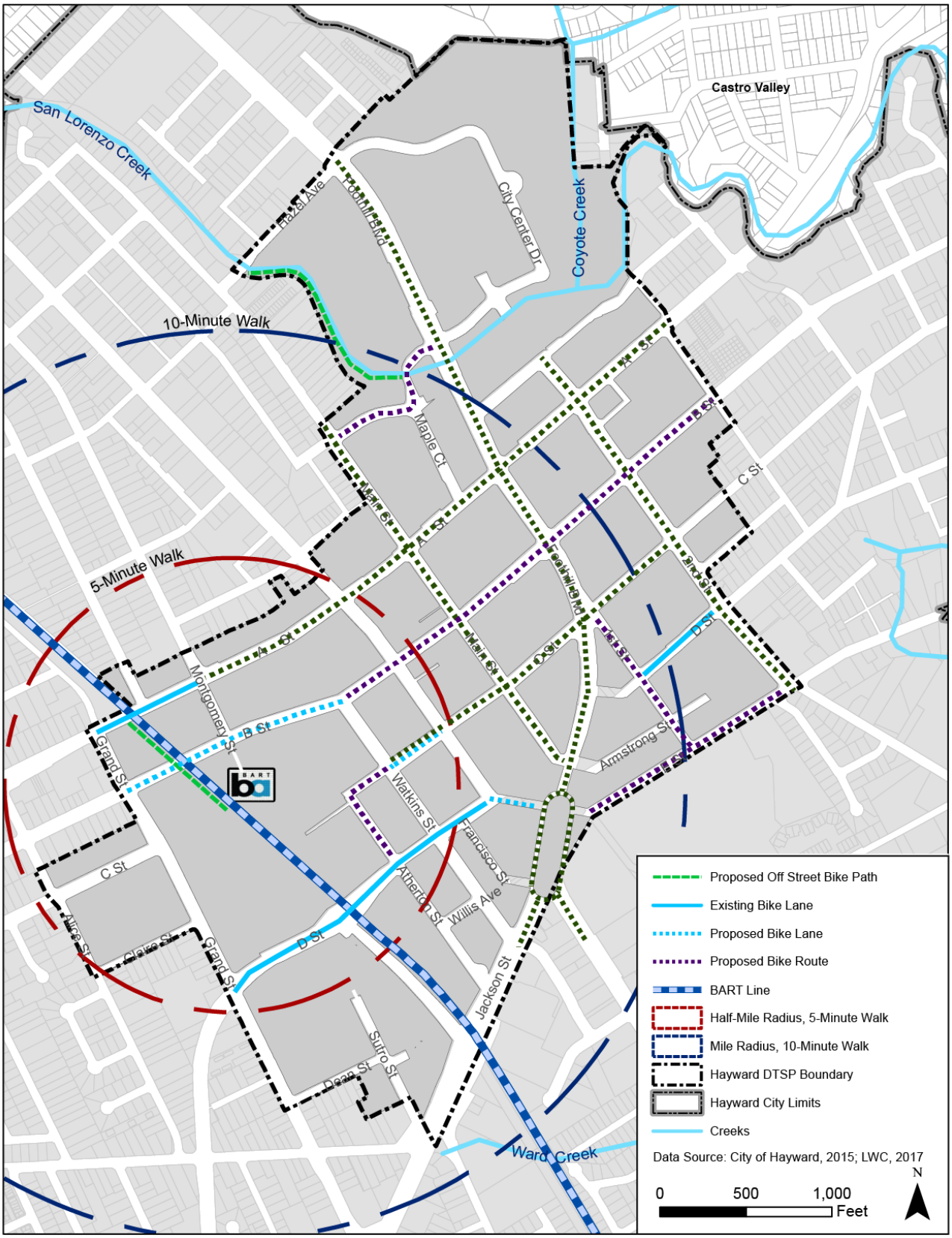
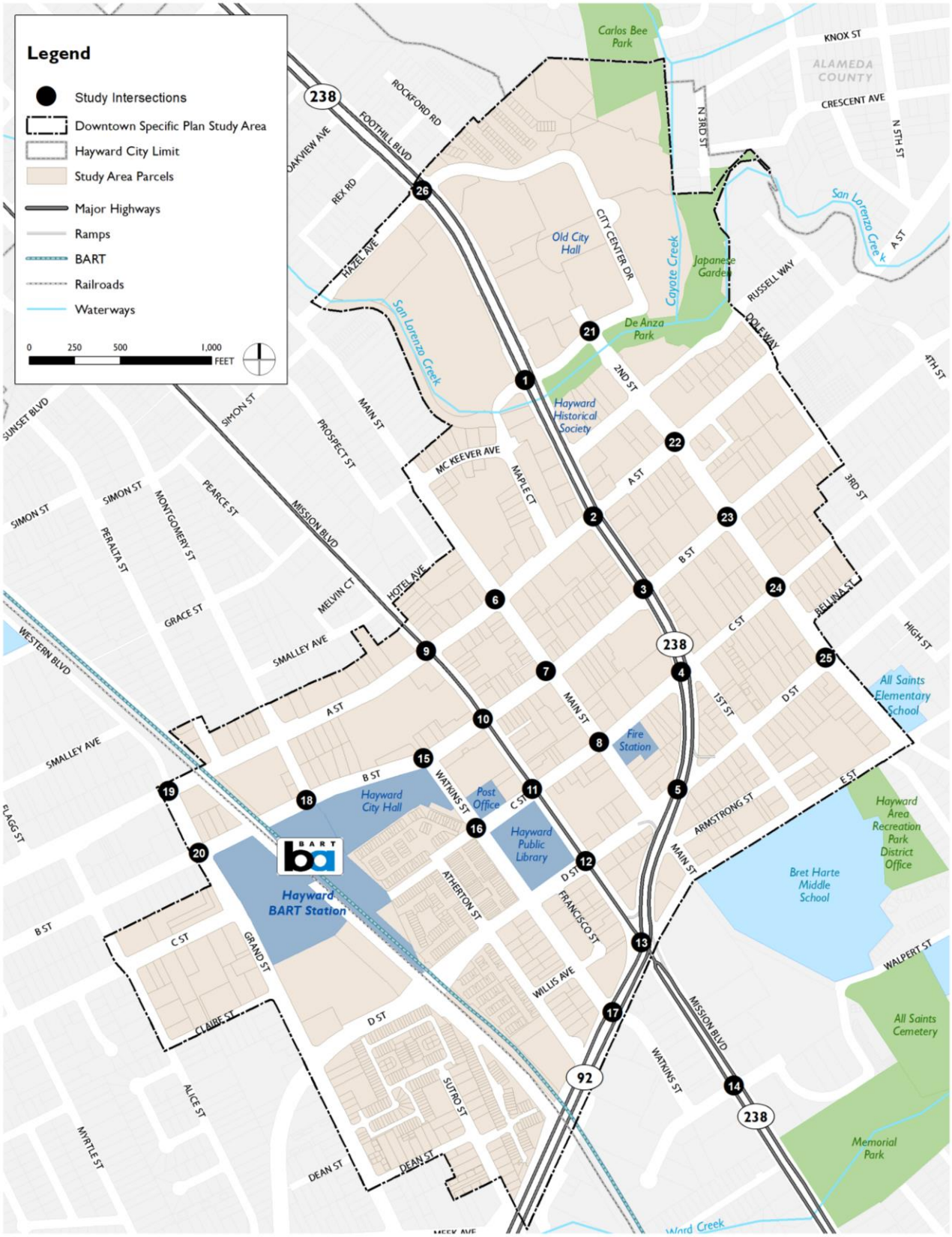


Figure 7: Study Intersections



ANALYSIS SCENARIOS

As part of the assessment, the following scenarios were developed and analyzed:

- Existing (2018) Conditions – Study intersections were analyzed using existing traffic counts. The City of Hayward provided 2014 and/or 2015 counts for 16 of the 26 study intersections; a yearly growth rate for the City based on Alameda County Transportation Commission (CTC) documentation was applied to represent 2018 conditions. New counts were collected for the remaining ten study intersections.
- Cumulative (2040) Conditions – This scenario represents the land uses, densities and circulation network changes for buildout of the general plan as defined by the ABAG Plan Bay Area Projections based on the Alameda CTC countywide travel demand model.
- Cumulative (2040) with Specific Plan Conditions – This represents the land uses, densities and circulation network changes for full buildout of the Specific Plan, utilizing the most recent version of the Alameda CTC countywide travel demand model.

This study has not considered an Existing with Specific Plan scenario because near-term development is not anticipated in the Specific Plan Area based on current market trends. Additionally, the City is currently focused on implementing planned development in the downtown area. Without a market to support development in the near term and most new development concentrated in the downtown area, the existing plus project scenario would not be representative of likely development in the near term so it was excluded from the analysis. Therefore, an Existing with Specific Plan analysis would not be of informational value.

Section 3
Existing Conditions

EXISTING CONDITIONS

PHYSICAL SETTING

This section summarizes existing mobility conditions in the Specific Plan area related to pedestrian, bicycle and transit circulation and traffic operations.

The Specific Plan area includes a mix of circulation routes, including two regional freeways, arterials, collectors, and local streets. The Specific Plan area includes Mission Boulevard, Foothill Boulevard, and Jackson Street. These streets are automobile-oriented facilities without immediate access to the Downtown BART Station. The area immediate within the Specific Plan area has connectivity barriers including intersecting drainage canals, wide one-way roadways which pose constraints for pedestrians and bicyclists, and skewed intersections.

The primary pedestrian destinations in the Specific Plan area are the Hayward BART Station and various retail uses. Bicyclists use the various on-street facilities for local and regional access through the Specific Plan area. The Hayward BART Station serves as the location of the AC Transit Intermodal Terminal. Most of the routes running through the study area connect to the Intermodal Terminal.

The existing roadway, transit, bicycle and pedestrian components of the transportation system within the study area are described below.

ROADWAY NETWORK

The roadway network within the Downtown Hayward Specific Plan Area is a loose grid that serves both regional and local trips to provide access and connectivity. From a regional context, the roadway network in Downtown Hayward is shaped by several adjacent interstates and highways that provide direct roadway connections to other portions of the Bay Area. These regional connections include to and from San Jose and the South Bay via Interstate 880 (I-880); to and from the San Francisco Peninsula via State Route 92 (SR-92); to and from the Tri-Valley (Dublin, Pleasanton, and San Ramon) via Interstate 580 (I-580), and to and from Oakland via I-880. Figure 1 shows the regional roadway context for Downtown Hayward.

As shown in Figure 1**Error! Reference source not found.**, several of the streets within the Downtown study area have interchange connections to these regional roadways, and are therefore affected by regional traffic patterns.

The following are the primary streets within the study area.

Freeway

Interstate 238 (I-238) is a six- to seven-lane freeway with a posted speed limit of 65 miles per hour. The east-west freeway serves as a connection between Interstate 880 and Interstates 580. The average daily

traffic on I-238 between the East 14th Street junction and the Hesperian Boulevard junction is between 105,000 and 147,000 vehicles per day (vpd)[1]. The Specific Plan area is served by the interchanges at East 14th Street and Hesperian Boulevard. Bicyclists and pedestrians are not allowed on this facility.

Interstate 580 (I-580) is an eight- to ten-lane freeway with a posted speed limit of 65 miles per hour. The north-south freeway connects Hayward with nearby cities, such as Oakland and Pleasanton, and regional destinations, such as Stockton. It also provides access to the greater freeway network with direct connections to Interstates 5, 205, 238, 680, 80 and 880, and State Routes 13, 24, and 94. The Specific Plan area is served by the interchanges at 150th Avenue. The average daily traffic on I-580 in the vicinity of the 150th Avenue interchange ranges between 120,100 and 160,000 vpd[1]. Bicyclists and pedestrians are not allowed on this facility.

Interstate 880 (I-880) is an eight- to ten-lane freeway with a posted speed limit of 65 miles per hour. The north-south freeway connects Hayward with nearby cities, such as Hayward and Oakland, and regional destinations, such as Fremont and San Jose. It also provides access to the greater freeway network with direct connections to Interstates 80, 580, 980, 238, US Highway 101, State Routes 92, 237 and 17. The Proposed Plan area is served by interchanges at Washington Avenue and off-ramps at Hesperian Boulevard. The average daily traffic on I-880 in the vicinity of the Washington Avenue interchange ranges between 172,000 and 237,000 vpd[1]. Bicyclists and pedestrians are not allowed on this facility.

Arterials

Foothill Boulevard is a north-south arterial street that provides access to downtown Hayward from I-580 and I-238. From the Mission Boulevard / Jackson Street intersection to A Street, Foothill Boulevard forms the eastern edge of the Loop and is a one-way northbound street with five to seven lanes. North of the Loop, Foothill Boulevard is a two-way street with six to eight through lanes. Foothill Boulevard is identified as a truck route in the Hayward 2040 General Plan.

Mission Boulevard is a north-south street that provides access to downtown Hayward from I-238 to the north and I-680 to the south. Formerly known as El Camino Real, the street connects the city of Hayward to Castro Valley and Fremont. From A Street to Foothill Boulevard, Mission Boulevard forms the western edge of the Loop and is a one-way southbound street with four to five through lanes. North and south of the Loop, Mission Boulevard is a two-way street with four to six through lanes. Mission Boulevard within the study area is identified as a truck route in the Hayward 2040 General Plan.

Jackson Street is a northeast-southwest arterial street that connects downtown Hayward with I-880 and the San Mateo Bridge to the San Francisco Peninsula. Within the downtown study area, Jackson Street is a two-way street with six through lanes. Jackson Street changes to Foothill Boulevard at the Mission Boulevard intersection. These two streets (Jackson and Foothill) form a continuous route between I-580

[1] 2015 Traffic Volumes, California Department of Transportation (Caltrans)
http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm

and the San Mateo Bridge, enabling regional traffic to pass through downtown Hayward. Jackson Street within the study area is identified as a truck route in the Hayward 2040 General Plan.

Collectors

A Street is an east-west collector street through downtown Hayward and provides access to City Hall, the Hayward BART station and I-880. From Foothill Boulevard to Mission Boulevard, A Street forms the northern edge of the Loop and is a one-way street with four westbound lanes. East and west of the Loop, A Street is a two-way street with four through lanes.

B Street is an east-west street through downtown Hayward that provides access to Castro Valley and I-580 to the east and the Hayward Amtrak station to the west. Within downtown, both the Hayward BART station and Hayward City Hall are located on B Street. Between Foothill Boulevard and Watkins Street, B Street is a one-way westbound street with two lanes (part of a one-way pair with C Street). On either side of this one-way segment, B Street is a two-way street with three through lanes.

C Street is an east-west street through that connects downtown Hayward with residential areas to the east. C Street provides access to Hayward City Hall and the Hayward BART station. From the Hayward BART station east to 2nd Street, C Street is a one-way eastbound street with two lanes. East of 2nd Street, B Street is a two-way street with two through lanes.

D Street is an east-west street that provides access to downtown Hayward from I-880 to the west and from residential areas to the east. D Street provides access to All Saints Elementary School, Hayward BART Station, and the Hayward Public Library. D Street varies from four and seven lanes within the study area. West of the downtown Hayward study area, D Street meets Winton Avenue, which continues to I-880 and industrial employment areas to the west.

Main Street is a north-south local street within downtown Hayward that extends to residential areas north of the study area. Main Street is the only north-south street within the one-way Loop formed by Mission Boulevard and Foothill Boulevard. Within the study area, Main Street is a two-way street with four through lanes.

2nd Street is a north-south collector street located in the eastern portion of the study area. 2nd Street provides access to the Hayward Area Recreation Park District Office, All Saints Elementary School, and DeAnza Park. 2nd Street is a two-way street with four to five lanes within the study area. 2nd Street is located one block east of Foothill Boulevard and serves as an alternate parallel route to Foothill for local trips.

TRANSIT FACILITIES

The Specific Plan area is served by a variety of transit types, including heavy rail, on-street buses, and on-demand paratransit shuttles. Local and regional transit operators include Alameda-Contra Costa County

Transit (AC Transit) and BART. These services are described below. The existing transit network is illustrated in Figure 8.

AC Transit

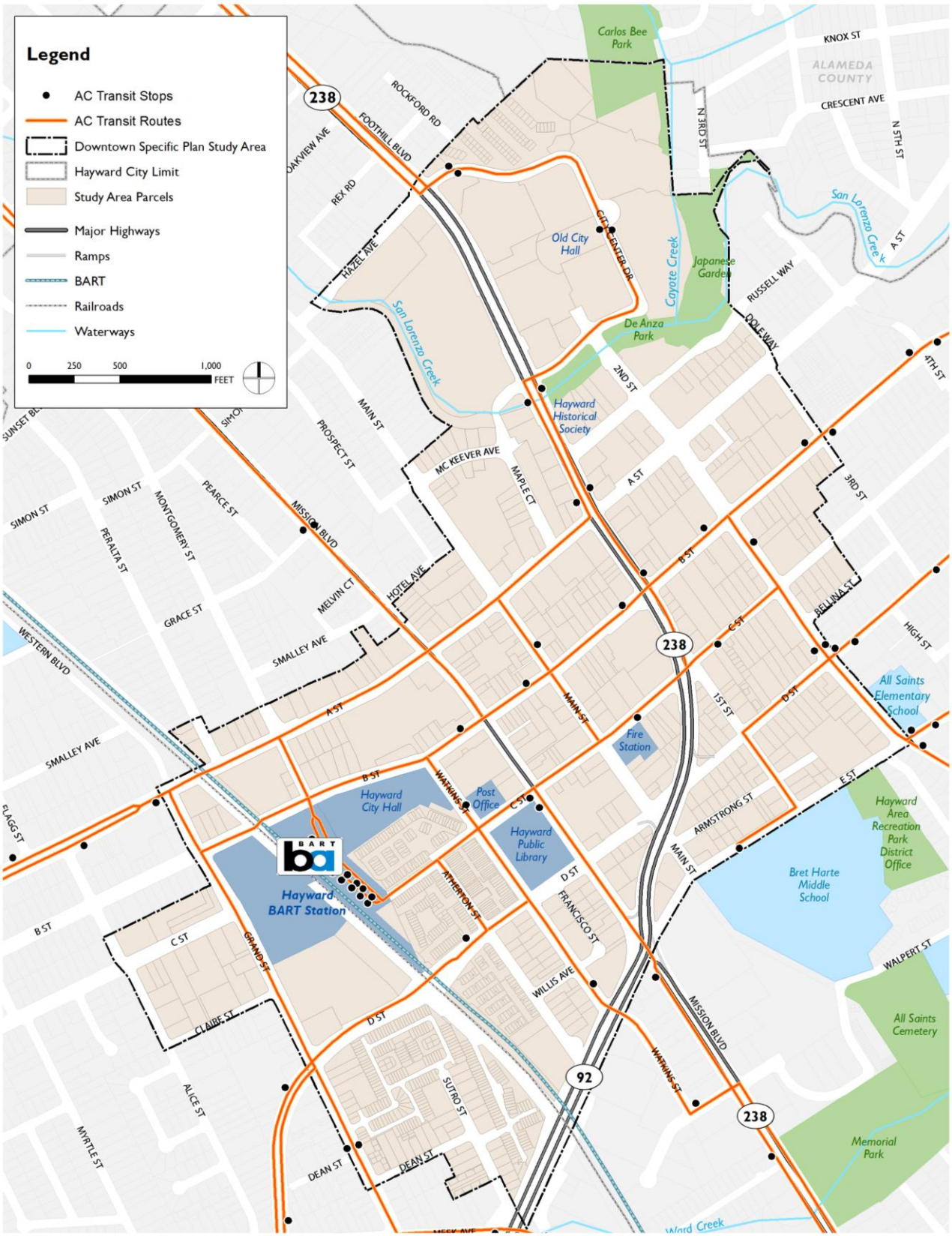
The Downtown Hayward BART station serves as the location of an AC Transit Intermodal Terminal, a key transfer point for BART-to-bus and bus-to-bus connections. The Intermodal Terminal currently has 20 bus bays serving 14 AC Transit routes. Existing (FY 2016-2017) transit service in the study area is summarized in Table 2**Error! Reference source not found.**. While the passenger amenities provided at curbside bus stops in the Specific Plan area can vary, a number of bus stops in the area provide amenities such as a shelter and/or seating.

Table 2: Existing AC Transit Weekday Service

Route	Beginning and End Points		Frequency (in minutes)	Average Daily Ridership[1]
M	Hayward BART	Hillsdale Caltrain	34-40	251
10	San Leandro BART	Hayward BART	15	3,148
28	San Leandro BART	Hayward BART	30	NA
34	Foothill Square	Hayward BART	30	NA
41	Hayward BART	Union Landing Transit Center	40	NA
56	Hayward BART	Union Landing Transit Center	40	NA
60	California State University East Bay	Chabot College	20	568
83	Hayward BART	South Hayward BART	30	445
86	Hayward BART	South Hayward BART	30	777
93	Bay Fair BART	Castro Valley BART	35-47	486
94	Stonebrae Elementary School	Hayward BART	65	134
95	Hayward BART	Fairview District	40	288
99	Hayward BART	Fremont BART	20	3,034
801	12th St. BART	Fremont BART	60	430

Source: AC Transit 2017 Annual Ridership and Route Performance Report; AC Transit Maps & Schedules web page.
Notes: NA indicates value not applicable.
[1] Average daily ridership provided in passengers per day based on automatic passenger count data for FY 2016-2017.

Figure 8: Existing Transit Facilities



Bay Area Rapid Transit (BART)

BART operates regional heavy rail service connecting San Francisco, San Mateo, Alameda and Contra Costa Counties. The Hayward BART station is located in the western portion of the downtown study area and is part of the Fremont/Richmond and Fremont/Daly City lines. Each line currently operates at 15-minute headways during peak periods, resulting in an average peak period frequency of 7.5 minutes at the Hayward station.

According to the September 2018 ridership information provided by BART, there are approximately 5,156 daily weekday boarding's at the Hayward BART Station. According to the *2008 BART Station Profile Study*, approximately 16% of people walked to the station, 10% rode transit, and 2% arrived by bike, and 70% arrived by car (52% drove alone, 13% were dropped off, and 5% carpooled). Nearly 20% of those driving alone to the station drove less than 0.5 mile (about a 10-minute walking trip), a distance that would generally be considered within the transit "walkshed." Major barriers to increasing non-auto mode share include circuitous routing, inadequate wayfinding, and safety and security concerns.

The Hayward station contains 1,473 parking spaces ($3 per day), the majority of which are located west of the BART corridor and accessed via Grand Street. Seventy spaces are reserved, while the remainder are available for a fee. The Hayward station also contains bike racks and 16 shared-use electronic bike lockers.

The planned extension of BART service from Fremont south to Silicon Valley is underway, with the first phase to the Warm Springs/South Fremont station currently under construction. This project will further enhance the importance of the Hayward BART station and improve the regional accessibility of downtown Hayward.

Other Services

Other transit services in and near downtown Hayward include Greyhound bus service, Amtrak Capital Corridor services, and shuttles operating from the Hayward BART station:

- **Greyhound Bus Service** – The Hayward Greyhound bus station is located on B Street within the downtown Hayward study area, across from the Hayward BART station.
- **Amtrak Capitol Corridor Service** – The Hayward Amtrak station is located approximately ¾ mile west of downtown Hayward near A Street. The Hayward Amtrak station is part of the Capitol Corridor operating between San Jose and Sacramento.
- **Shuttles** – Several shuttle services use the Hayward BART station to pick up and drop off passengers. Known shuttle operators include California State University East Bay (CSU East Bay) in Hayward, and Visa and Genentech on the San Francisco Peninsula. In addition to these existing services, the City of Hayward is completing a Shuttle Feasibility Study to evaluate potential shuttle connections between the Hayward BART station and other areas of the city. Areas under evaluation include:
    - the industrial employment district west of I-880,
    - the Cannery residential neighborhood west of downtown,
    - upper B Street,
    - the South Industrial Area,

- the South Hayward BART, and
- residential areas along Mission Boulevard to the south of downtown.

The addition of these transit connections to and from downtown provides an opportunity to strengthen the local accessibility of the study area.

BICYCLE FACILITIES

This section summarizes the existing bicycle network to provide a basis for potential strategies. Bikeways can be categorized into one of four facility types:

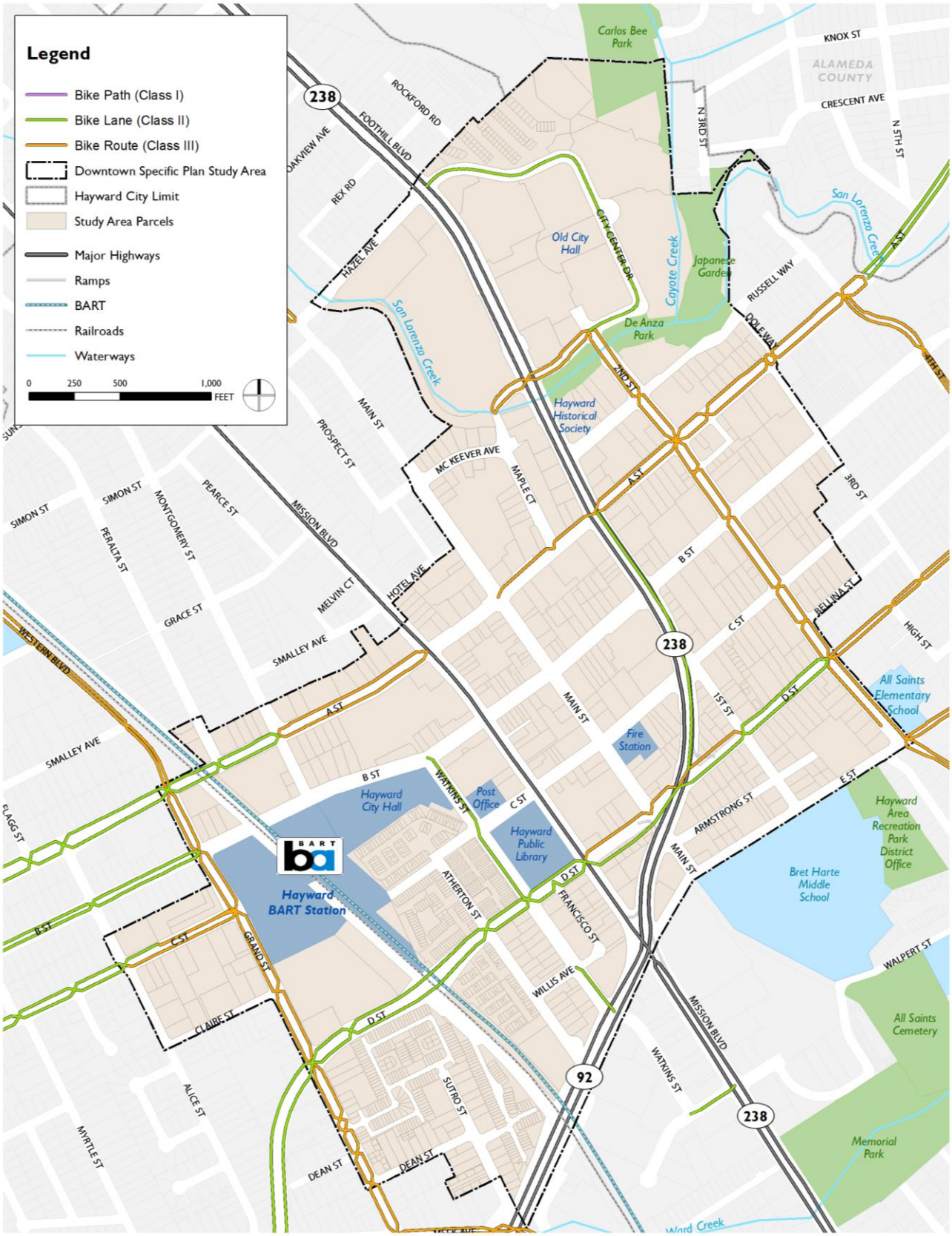
- **Bike Path or Shared-Use Path (Class I) -** A paved right-of-way for bicycle travel that is separate from any street or highway.
- **Bike Lane (Class II) -** A striped and stenciled lane for one-way bicycle travel on a street or highway. This facility could include a buffered space between the bike lane and vehicle lane.
- **Bike Route (Class III) -** A signed route along a street or highway wherein the bicyclist shares the right-of-way with motor vehicles.
- **Separated Bike Lane (Class IV) -** A bikeway for the exclusive use of bicycles including a separation required between the separated bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking. Class IV facilities may be located on both sides of the street or on one side of the street

Existing bicycle facilities within the Specific Plan area are illustrated in Figure 9 and discussed below:

- **City Center Drive:** Class II and Class III facilities.
- **A Street:** Class II facility west of Montgomery Street and discontinuous Class III facility east of Montgomery Street.
- **C Street:** Class II and Class III facilities.
- **D Street:** Class II and Class III facilities.
- **Grand Street:** Class III facility.
- **Foothill Boulevard:** Northbound Class II bike lane between A Street and D Street.
- **2nd Street:** Class III facility.

In addition to bikeways, the Hayward BART Station provides bicycle parking. Bicycle parking ranges from bike racks to 16 shared use electronic bike lockers located on the street level. The electronic lockers are available on a first-come, first–served basis. Various bike racks are also provided on Downtown Hayward sidewalks.

Figure 9: Existing Bicycle Facilities



PEDESTRIAN CONDITIONS

Within the study area, several elements already exist to support the creation of a safe and convenient pedestrian environment. At a basic level, almost all streets have sidewalks on both sides. Streets within the study area also contain buffers between the sidewalk and moving traffic, in the form of on-street parking, landscaping and/or street furnishings (for example, lighting and benches). Posted speed limits for study area streets are between 25 and 30 miles per hour, and at signalized intersections, basic pedestrian facilities, such as marked crosswalks and pedestrian signals, are provided. Several intersections include continental crosswalks.

As shown in Figure 10, curb ramps (diagonal or perpendicular) are provided at intersections within the study area. The majority of existing curb ramps within the study area are Americans with Disabilities Act (ADA)-compliant.

However, several challenges exist within the study area, as follows:

- Many arterial and collector streets within the downtown study area have wide cross sections that create long crossing distances for pedestrians. Specific examples include the intersections Foothill Boulevard & Hazel Avenue/City Center Drive (North), Foothill Boulevard & City Center Drive (South), Foothill Boulevard & C Street, Foothill Boulevard & D Street, and Mission Boulevard & Foothill Boulevard/Jackson Street. These longer pedestrian crossing distances, when coupled with high traffic volumes, can result in these streets being perceived by pedestrians as barriers. The opportunity exists through this Specific Plan to manage crossing distances through strategies, such as intersection bulbouts, realignment of marked crossing particularly at skewed intersections, and median refuge areas.
- Arterial and collector streets serving downtown Hayward generally have higher posted speed limits outside of downtown and lower posted speed limits of 25 to 30 miles per hour within the study area. However, the speed limit changes are not accompanied by physical design elements or cross section changes to support slower traffic flow and establish a lower design speed. The opportunity exists through this Specific Plan to create transitions along arterial and collector streets to encourage slower traffic speeds upon entering down-town.
- Water bodies such as Coyote Creek and San Lorenzo Creek create barriers that limit pedestrian connectivity. However, these features may also provide opportunities for adjacent trail facilities to establish new pedestrian circulation routes.

Figure 10: Existing Crosswalk Ramps

TRUCK ROUTES

Many of the existing businesses in the Specific Plan study area depend on efficient and convenient truck access. To facilitate truck traffic and avoid neighborhood conflicts, the City has designated certain thoroughfares as truck routes[2]. Foothill Boulevard, Jackson Street, Mission Boulevard, A Street, and D Street are designated truck routes in the study area.

EXISTING TRAFFIC CONDITIONS

Automobile operating conditions within the Specific Plan area are influenced by a variety of factors, including regional through traffic found along arterial routes and the network of local streets including the Loop. Driving conditions on the roadway network are measured through automobile Level of Service (LOS), which reflects motorists' and passengers' perceptions of traffic conditions. The following documents the LOS perceived by motorists traveling through the corridor today.

Level of Service Standards

Analyses for intersections in the study area were conducted using the Highway Capacity (HCM) 6th Edition methodology.[3] The HCM 6th Edition methodology assigns an LOS grade (from A to F) to an intersection based on the average control delay for vehicles at the intersection. Based on the latest City General Plan and Traffic Impact Study Guidelines, LOS E is the minimum acceptable level of service for intersections in Hayward. LOS grades and corresponding delay values under the HCM methodology are provided in Table 3.

Table 3: Intersection Level of Service Definitions

Average Delay Per Vehicle (Seconds)		LOS	Description of Traffic Conditions
Signalized	Unsignalized		
≤10.0	≤10.0	A	Free flowing. Most vehicles do not have to stop.
>10.0 and ≤20.0	>10.0 and ≤15.0	B	Minimal delays. Some vehicles have to stop, although waits are not bothersome.
>20.0 and ≤35.0	>15.0 and ≤25.0	C	Acceptable delays. Significant numbers of vehicles have to stop because of steady, high traffic volumes. Still, many pass without stopping.
>35.0 and ≤55.0	>25.0 and ≤35.0	D	Tolerable delays. Many vehicles have to stop. Drivers are aware of heavier traffic. Cars may have to wait through more than one red light. Queues begin to form, often on more than one approach.

[2] Source: https://www.hayward-ca.gov/sites/default/files/police/TruckRouteMap.pdf
[3] Due to HCM 6th Edition limitations in calculating LOS at intersections with non-standard phasing, two intersections were analyzed using HCM 2000 edition.

Average Delay Per Vehicle (Seconds)		LOS	Description of Traffic Conditions
Signalized	Unsignalized		
>55.0 and ≤80.0	>35.0 and ≤50.0	E	Significant delays. Cars may have to wait through more than one red light. Long queues form, sometimes on several approaches.
>80.0	>50.0	F	Excessive delays. Intersection is jammed. Many cars have to wait through more than one red light, or more than 60 seconds. Traffic may back up into "up-stream" intersections.

Source: Transportation Research Board, *Highway Capacity Manual* , Washington, D.C., 2000

Existing Intersection Levels of Service

Study intersections were analyzed using existing traffic counts. The City of Hayward provided 2014 and/or 2015 counts for 16 of the 26 study intersections; a yearly growth rate for the City based on Alameda County Transportation Commission (CTC) documentation[4] was applied to represent 2018 conditions. New counts were collected for the remaining ten study intersections. 2018 counts were collected during the summer season; given that this data was collected off-season, the data was compared to counts collected during the spring time and a growth rate was applied as needed. A 10% growth was applied to AM peak hour counts collected in 2018; no growth was applied to PM peak hour counts. Table 4 documents the year in which counts were collected for each of the study intersections.

Table 4: Existing Intersection Traffic Volume Dates

#	Intersection	Year
1	Foothill Boulevard & City Center Drive (South)	2015
2	Foothill Boulevard & A Street [a]	2015
3	Foothill Boulevard & B Street	2015
4	Foothill Boulevard & C Street	2018
5	Foothill Boulevard & D Street	2014
6	Main Street & A Street	2015
7	Main Street & B Street	2018
8	Main Street & C Street	2018
9	Mission Boulevard & A Street	2015
10	Mission Boulevard & B Street	2015
11	Mission Boulevard & C Street	2018

[4] Source: https://www.alamedactc.org/files/managed/Document/17533/AlamedaCTC_ModelDocumentation_FinalReport_20151109.pdf

#	Intersection	Year
12	Mission Boulevard & D Street	2014
13	Mission Boulevard & Foothill Boulevard/Jackson Street [a]	2014
14	Mission Boulevard & Fletcher Lane	2014
15	Watkins Street & B Street	2018
16	Watkins Street & C Street	2018
17	Watkins Street & Jackson Street	2018
18	Montgomery Street & B Street	2018
19	Grand Street/Western Boulevard & A Street	2018
20	Grand Street & B Street	2018
21	2nd Street & City Center Drive	2015
22	2nd Street & A Street	2014
23	2nd Street & B Street	2014
24	2nd Street & C Street	2014
25	2nd Street & D Street	2014
26	Foothill Boulevard & Hazel Avenue/City Center Drive (North)	2015

Table 5 summarizes LOS for the weekday AM and weekday PM peak hours. As shown in the table, most study intersections currently operate acceptably at LOS E or better. The following intersections perform unacceptably (LOS F):

- **#5 Foothill Boulevard & D Street:** AM peak hour and PM peak hour
- **#22 2nd Street & A Street:** PM peak hour

Table 5: Existing Intersection Level of Service

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Foothill Boulevard & City Center Drive (South)	Signal	22.0	C	46.0	D
2	Foothill Boulevard & A Street [a]	Signal	34.3	C	33.8	C
3	Foothill Boulevard & B Street	Signal	26.0	C	16.1	B
4	Foothill Boulevard & C Street	Signal	7.3	A	13.1	B
5	Foothill Boulevard & D Street	Signal	**93.8**	**F**	**95.2**	**F**

#	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
6	Main Street & A Street	Signal	23.6	C	28.4	C
7	Main Street & B Street	Signal	7.3	A	11.0	B
8	Main Street & C Street	Signal	11.1	B	11.2	B
9	Mission Boulevard & A Street	Signal	62.3	E	68.3	E
10	Mission Boulevard & B Street	Signal	23.4	C	21.0	C
11	Mission Boulevard & C Street	Signal	32.5	C	36.0	D
12	Mission Boulevard & D Street	Signal	32.3	C	35.7	D
13	Mission Boulevard & Foothill Boulevard/Jackson Street [a]	Signal	12.1	B	23.3	C
14	Mission Boulevard & Fletcher Lane	Signal	48.6	D	24.2	C
15	Watkins Street & B Street	Signal	17.8	B	18.3	B
16	Watkins Street & C Street	Signal	15.6	B	15.3	B
17	Watkins Street & Jackson Street	Signal	50.2	D	53.0	D
18	Montgomery Street & B Street	AWSC	9.8	A	10.0	A
19	Grand Street/Western Boulevard & A Street	Signal	21.2	C	18.1	B
20	Grand Street & B Street	Signal	34.4	C	39.6	D
21	2nd Street & City Center Drive	Signal	42.5	D	29.6	C
22	2nd Street & A Street	Signal	67.6	E	**95.5**	**F**
23	2nd Street & B Street	Signal	33.1	C	30.4	C
24	2nd Street & C Street	Signal	18.7	B	22.6	C
25	2nd Street & D Street	Signal	66.3	E	41.1	D
26	Foothill Boulevard & Hazel Avenue/City Center Drive (North)	Signal	33.9	C	39.6	D

Notes:
Bold denotes unacceptable LOS.
AWSC denotes all-way-stop-controlled.
[a] Denotes an intersection that was analyzed using the HCM 2000 methodology. All others were analyzed using HCM 6th Edition.

Figure 11: Existing AM & PM Peak Hour Traffic Volumes and Lane Geometries

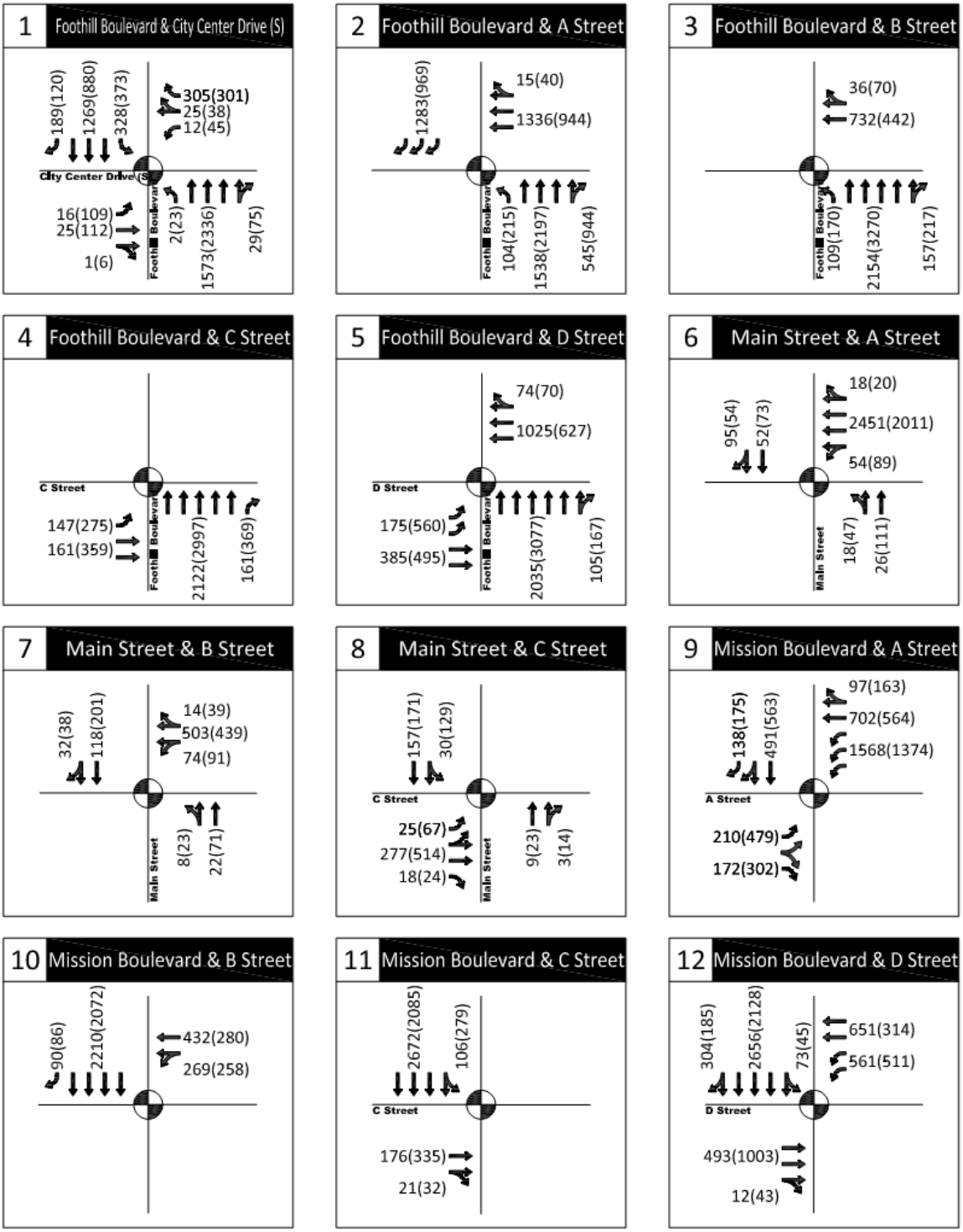


Figure 11: Existing AM & PM Peak Hour Traffic Volumes and Lane Geometries

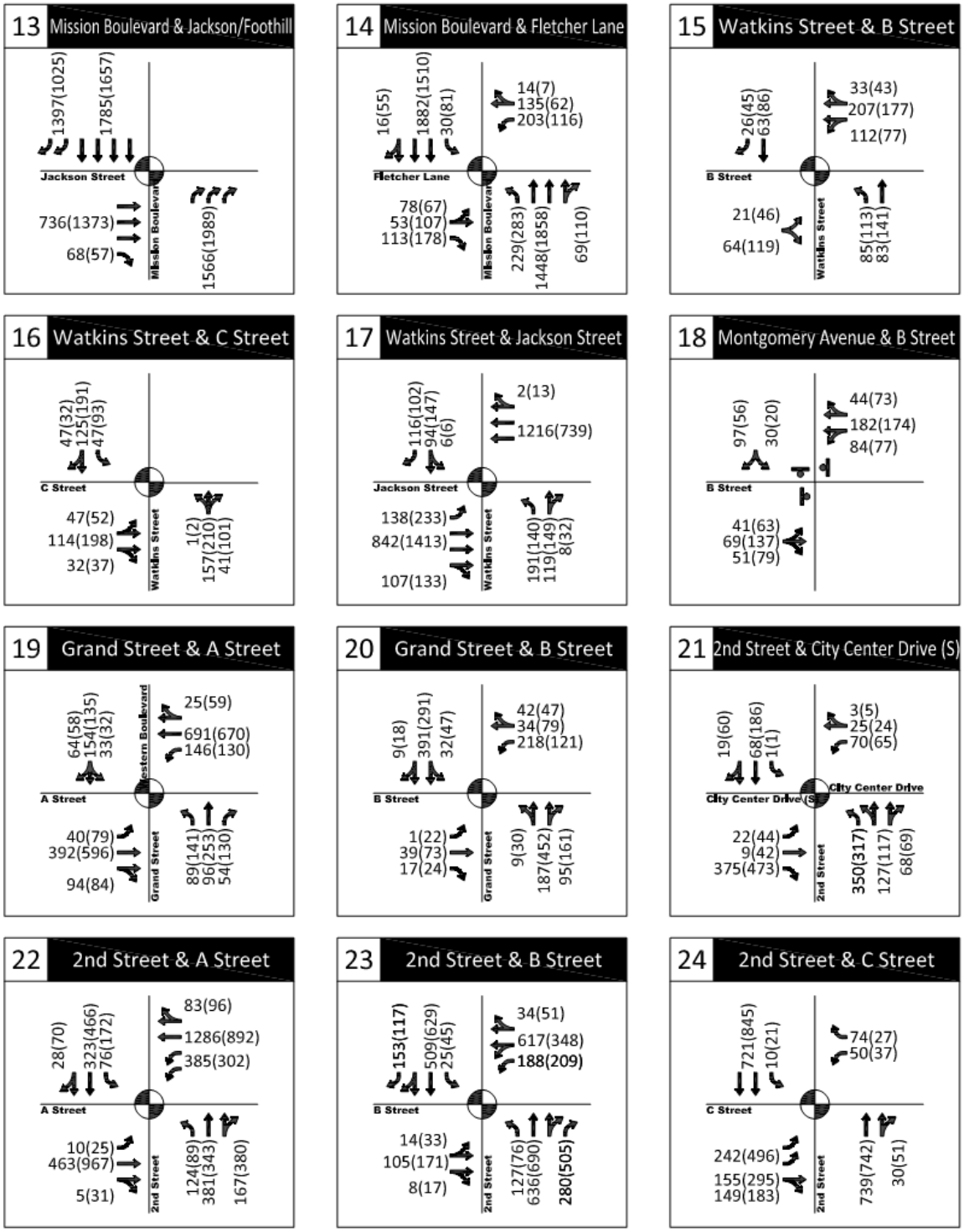
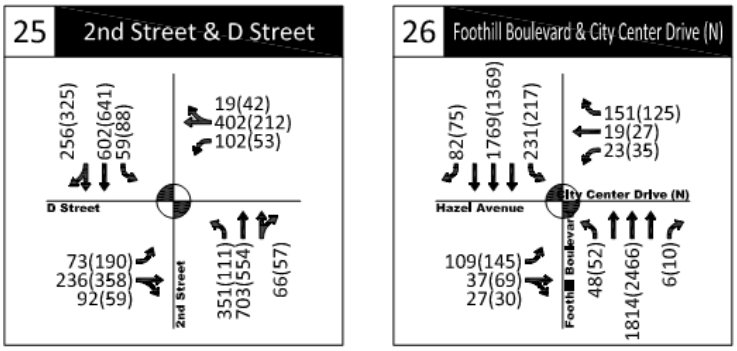


Figure 11: Existing AM & PM Peak Hour Traffic Volumes and Lane Geometries



Section 4 Regulatory Setting

REGULATORY SETTING

This section summarizes applicable local and municipal plans and regulations that apply to the study area. This information provides a context for the impact discussion related to the Proposed Plan's consistency with applicable policies, plans, laws and regulations.

FEDERAL

The US Department of Transportation (USDOT) provides a number of grant programs, primarily for the construction and upgrading of major highways and transit facilities. Many of these grants are administered by the state and regional governments. Use of federal grant funding also invokes the National Environmental Protection Act (NEPA) in some cases. The Federal Highway Administration (FHWA) sets design standards (such as interchange spacing) for interstate highways, such as Interstate 880. The Federal Railroad Administration within the USDOT establishes safety rules regarding the operation of railroads (e.g., maximum train speeds, maximum allowed highway crossing blockage time).

STATE POLICIES AND REGULATIONS

The California Department of Transportation (Caltrans) has jurisdiction over state highways in the Planning Area. Caltrans constructs and maintains all state highways and sets design standards that are often copied by local government. The Metropolitan Transportation Commission (MTC) is the state-designated metropolitan planning organization for the nine-county San Francisco Bay Area; it has authority for regional planning, distributing and administering federal and state funds for all modes of transportation, and assuring that projects are consistent with the Regional Transportation Plan.

Caltrans Authority of the State Highway System

Caltrans is responsible for planning, design, construction and maintenance of all interstate freeways and state routes. It sets design standards that are often used by local governments. In the study area, East 14th Street (State Route 185) is under Caltrans jurisdiction. Caltrans requirements are described in their Guide for Preparation of Traffic Impact Studies (Caltrans, 2002)[5], which covers the information needed for Caltrans to review the impacts to State highway facilities, including freeway and arterial segments, on- and off-ramps, and signalized intersections.

Caltrans builds, maintains, and operates the State Highway system in California with a goal to allow for the safe and efficient use of the State transportation system for all users. Caltrans has set standards for the operational goals of its facilities pertaining to intersection, arterial segment, and freeway segment level of service. These standards are set forth in the Caltrans Guide for the Preparation of Traffic Impact

[5] Guide for the Preparation of Traffic Impact Studies, Caltrans, December 2002.

Studies. This document establishes procedures to uniformly review the operational standards of Caltrans-maintained facilities in terms of measures of effectiveness.

Statewide Transportation Improvement Plan (STIP)

The Statewide Transportation Improvement Plan is a capital improvement program that plans transportation projects related to state facilities in California for the next five years. The program is updated every two years with new construction projects as more funding is provided. The California Transportation Commission approves the fund estimate and then Caltrans and regional planning agencies submit plans for transportation improvement projects. If the projects are programmed in the STIP, then relevant agencies can begin the implementation process.

California's Complete Streets Law

The Complete Streets Law was signed in by Governor Schwarzenegger as Assembly Bill 1358 and requires that cities include the needs of all users, including bicyclists and pedestrians, when updating local general plans. Caltrans specifically adopted Deputy Directive 64, which addresses the needs of people of all ages and abilities concerning transportation planning. It also recognizes that transportation improvement projects are opportunities to improve safety, access, and mobility for motorists, bicyclists, pedestrians, and transit users. The *Complete Streets Implementation Action Plan*[6] provides an overview of the program.

Senate Bill 743

On September 27, 2013, Senate Bill (SB) 743 was signed into law. The Legislature found that with the adoption of the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the State had signaled its commitment to encourage land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT) and thereby contribute to the reduction of greenhouse gas emissions (GHG), as required by the California Global Warming Solutions Act of 2006 (AB 32). Additionally, the Complete Streets Act (AB 1358), requires local governments to plan for a balanced, multimodal transportation network that meets the needs of all users. To further the State's commitment to the goals of SB 375, AB 32 and AB 1358, SB 743 adds Chapter 2.7, Modernization of Transportation Analysis for Transit-Oriented Infill Projects, to Division 13 (Section 21099) of the Public Resources Code.

SB 743 started a process that could fundamentally change transportation impact analysis as part of CEQA compliance. These changes will include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). Further, parking impacts will not be considered significant impacts on the environment for select development projects within infill areas with nearby frequent transit service. SB 743 includes amendments that revises the definition of "in-fill opportunity zones" to

[6] Complete Streets Implementation Action Plan, Caltrans, February 2010

allow cities and counties to opt out of traditional LOS standards established by congestion management programs (CMPs) and requires OPR to update the CEQA Guidelines and establish "criteria for determining the significance of transportation impacts of projects within transit priority areas. As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." OPR presented alternative metrics in a preliminary discussion draft in summer of 2014 and released a final advisory in April 2018. Key guidance includes:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis. Specifically, OPR recommends VMT per capita for residential projects and VMT per employee for office projects.
- OPR's recommended impact threshold for residential and office projects is VMT per capita fifteen percent below the city or regional average (whichever is applied). In other words, an office project that generates VMT per employee that is more than 85 percent of the regional VMT per employee could result in a significant impact. This threshold is in line with statewide greenhouse gas emission reduction targets.
- For retail projects, OPR recommends measuring the net decrease or increase in VMT in the study area with and without the project. The recommended impact threshold is any increase in total VMT.
- Lead agencies ultimately have the discretion to set or apply their own significance thresholds, provided they are based on significant evidence.
- Cities and counties still have the ability to use metrics such as LOS for other plans, studies, or network monitoring. However, LOS and similar metrics cannot constitute the sole basis for CEQA impacts.

OPR's guidelines are undergoing final rulemaking and review through the Natural Resource Agency and the Office of Administrative Law. Once the new rules are adopted in 2018, cities and other agencies will have a two-year opt-in period before SB 743 compliant CEQA analysis becomes mandatory.

REGIONAL POLICIES AND REGULATIONS

Metropolitan Transportation Commission (MTC)

The Metropolitan Transportation Commission is designated by the state as the regional transportation planning agency for the nine-county San Francisco Bay Area. MTC is responsible for updating the Regional Transportation Plan, which plans the future transit, highway, roadway, railroad, bicycle and pedestrian facilities. MTC portions out federal funding to local agencies for transportation projects and determines their compliance with the Regional Transportation Plan.

Regional Transportation Plan (RTP) and Sustainable Communities Strategy

MTC recently updated its Regional Transportation Plan which was adopted by ABAG and MTC in July 2017. This new plan, Plan Bay Area 2040[7], specifies how future transportation spending will occur through 2040. The new plan incorporates a California mandated Sustainable Communities Strategy. It also focuses on reducing greenhouse gas emissions as it relates to transportation, per the requirements set out in the California Sustainable Communities and Climate Protection Act of 2008. Part of this effort includes the goal to increase non-auto mode share. Other main transportation goals of the plan include reducing vehicle operating and maintenance costs due to pavement conditions and reduce per-rider transit delay due to aged infrastructure.

MTC: Transit-Oriented Development and Complete Streets Policies

MTC adopted Resolution 3434 in July 2005, which discusses its policy on transit-oriented development (TOD) for regional transit expansion projects. The goal of the policy is to improve the cost-benefits of transit expansions by ensuring those transportation agencies, local jurisdictions, and the public work together. The plan will specify corridor-level thresholds to determine minimum residential and commercial development adjacent to transit stations. The plan will also address key issues within TOD's, such as land use changes, access improvements, circulation improvements, and multi-modal design features.

MTC adopted Resolution 3765 in 2006 which states that future projects consider bicycle and pedestrian needs. Associated with this is a Routine Accommodation checklist, which developers must complete at the beginning stages of the project to ensure that all transportation modes have been accommodated for.

MTC adopted Resolution 4202 in 2015, which outlines project selection policies and project programming for the One Bay Area Grant program (OBAG 2). OBAG 2 dedicates funds to support Plan Bay Area, including Priority Development Area (PDA) Planning and Implementation. PDAs are places identified by Bay Area communities as areas for investment, new homes and job growth. The Bay Fair BART Transit Village is designated as a potential Transit Town Center PDA by the Association of Bay Area Governments (ABAG) as of July 2017.

Bay Area Rapid Transit (BART) District

BART provides regional access throughout the Bay Area. BART trains provide direct access between Contra Costa County, Alameda County, San Francisco County, and San Mateo County. Within the study area the Downtown Hayward BART station provides access to residents, businesses, and visitors.

[7] Plan Bay Area 2040, Metropolitan Transportation Commission, July 2017

BART Multimodal Access Design Guidelines (MADG)

BART is in the process of developing design guidelines and recommended standards for planning for pedestrian, bicycle, transit, and vehicle access within BART's stations areas. The Multimodal Access Design Guidelines[8] focus on design elements that create a safe and comfortable experience for station area users, prioritizing human activity.

BART Transit-Oriented Development Guidelines

BART developed guidelines for planning and development around BART stations in May 2017. These guidelines refer to several policies and principles, including BART's Transit-Oriented Development Policy[9]. It established BART's priorities for TOD on and near BART property and presents recommendations during the planning and development process.

BART Station Access Policy

BART adopted the BART Station Access Policy[10] in June 2016. This policy describes the process to which BART patrons arrive at the BART station and leave to their final destinations. The policy is meant to incorporate planning of the user's entire journey with partnering of local agencies to make the transition from BART to the final destination a smooth transition. It establishes an investment framework regarding walking, bicycling, transit, drop-off and pick-up, taxi, and parking based on station type.

BART: Policy on Joint Development and Replacement Parking

BART prepared a policy[11] on replacing BART parking in 2005 to address the growing issues that BART will face in the future to meet user demands. Ridership is expected to grow for BART in the coming years, which will require additional parking. Transit-oriented development also creates new issues to portioning out available land adjacent to BART stations. This policy provides guidelines on how to address the issues, a methodology for access and replacement parking analysis, and sample case studies. These policies will help to govern the redevelopment of the Bay Fair BART station site.

Alameda County Transportation Commission (CTC)

The Alameda County Transportation Commission (Alameda CTC) coordinates transportation planning efforts throughout Alameda County and programs local, regional, state and federal funding for project implementation. It prepares the Congestion Management Program (CMP), a plan mandated by California law to describe the strategies to address congestion problems on the CMP network, which includes state highways and principal arterials. The CMP requires analysis of Metropolitan Transportation System (MTS)

[8] BART Multimodal Access Design Guidelines, Nelson/Nygaard Consulting Associates and Fehr & Peers, July 2017
[9] BART Transit-Oriented Development Guidelines. Economic & Planning Systems and Nelson/Nygaard Consulting Associates, May 2017
[10] BART Station Access Policy, June 2016
[11] Replacement Parking for Joint Development: An Access Policy Methodology, Richard Wilson, April 2005

roadway and transit system and uses level of service standards as a means to measure congestion and has established LOS standards to determine how local governments meet the standards of the CMP.

Alameda CTC is the governing agency for the oversight on transportation projects and planning in Alameda County. These projects improve the highway corridors, arterial street network, public transit, and pedestrian and bicycle facilities. Long-range planning is outlined in the Alameda Countywide Transportation Plan[12] (CWTP), which looks at a 25-year horizon for the Alameda County transportation system. The Alameda CTC also develops the Transportation Expenditure Plan[13] to allocate necessary funding for future capital projects. The Alameda CWTP states the main goals are for the transportation system to be:

- Multimodal
- Accessible, Affordable, and Equitable for people of all ages, incomes, abilities, and geographies
- Integrated with land use patterns and local decision-making
- Connected across the county, within and across the network of streets, highways and transit, bicycle and pedestrian routes
- Reliable and Efficient
- Cost Effective
- Well Maintained
- Safe
- Supportive of a Healthy and Clean Environment

Alameda County Congestion Management Program

The Alameda County Congestion Management Program (CMP) specifically lays out the strategies to implement the Countywide Transportation Plan. The CMP[14] is updated every two years and sets guidelines on level of service standards, analysis of land uses on the transportation network, managing the transportation demand, and developing a seven-year Capital Improvement Program (CIP). The program also develops a travel demand model to assess the future impacts in the Cumulative year.

California Public Utilities Commission (CPUC)

CPUC has regulatory oversight authority over a number of design and operational aspects of railroads and at-grade highway crossings in the state. CPUC also administers a limited fund for constructing highway/rail grade separations.

[12] Alameda Countywide Transportation Plan, Nelson/Nygaard Consulting Associates, July 2016
[13] 2014 Alameda County Transportation Expenditure Plan, Alameda CTC, January 2014
[14] *Congestion Management Plan 2015*, Alameda CTC, October 2015

CITY OF HAYWARD POLICIES AND REGULATIONS

The City of Hayward is the local agency with discretion of the growth near the Downtown Specific Plan. The City has a General Plan that outlines the goals for future sustainable growth and the City of Hayward Municipal code enforces the rules and regulations. With the exception of State highways that are under Caltrans' jurisdiction, streets in the study area are generally under the jurisdiction of the City of Hayward.

Hayward 2040 General Plan

The City of Hayward adopted the 2040 General Plan in July 2014. The Mobility Element addresses the movement of people and goods in and around Hayward. The main goals of the Mobility Element are outlined below:

Goal M-1: P Provide a comprehensive, integrated, and connected network of transportation facilities and services for all modes of travel.

Goal M-2: Connect Hayward to regional and adjacent communities' transportation networks and reduce the impacts of regional through traffic in Hayward.

Goal M-3: Provide complete streets that balance the diverse needs of users of the public right-of-way

Goal M-4: Enhance and maintain local access and circulation, while protecting neighborhoods from through traffic.

Goal M-5: Provide a universally accessible, safe, convenient, and integrated pedestrian system that promotes walking.

Goal M-6: Create and maintain a safe, comprehensive, and integrated bicycle system and support facilities throughout the city that encourage bicycling that is accessible to all.

Goal M-7: Improve coordination among public agencies and transit providers to meet public transit needs and provide greater mobility.

Goal M-8: Encourage transportation demand management strategies and programs to reduce vehicular travel, traffic congestion, and parking demand.

Goal M-9: Provide and manage a balanced approach to parking that meets economic development and sustainability goals.

Goal M-10: Develop the airport to meet projected airside and landside facilities needs and improve the overall efficiency of operations as a reliever airport.

Goal M-11: Balance the safe and efficient movement of goods with local access and circulation needs.

Goal M-12: Maintain sufficient funding to provide for existing and future transportation facility and service needs, including the operation and maintenance of the transportation system.

Bicycle and Pedestrian Master Plan

The City's Bicycle Master Plan (2007) identified opportunities to improve and enhance bicycle facilities in Hayward. Currently, the City is undergoing the Bicycle and Pedestrian Master Plan update, which will build upon the 2007 study and also identify opportunities to improve the pedestrian experience in the city.

The 2007 Bicycle Master Plan contains the following goals, accompanied by specific objectives and policies:

Goal 1: To provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Hayward.

Goal 2: To provide the related facilities and services necessary to allow bicycle travel to assume a significant role as a local alternative mode of transportation and recreation.

Goal 3: To encourage the use of bicycle as a pleasant means of travel and recreation embodying physical, environmental and social benefits.

Section 5
Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis assesses how the study area's transportation system would operate with the implementation of the Proposed Downtown Specific Plan. The potential impacts were identified based on a set of significance criteria based on the California Environmental Quality Act (CEQA) guidelines and set forth by the City of Hayward, the California Department of Transportation, and the Alameda County Transportation Commission. These criteria are presented below after a discussion on traffic generated by the Specific Plan.

SPECIFIC PLAN TRAFFIC

A mix of residential and commercial land uses comprise the Specific Plan including:

- 3,427 multifamily residential units
- Approximately 96,598 square feet of office uses
- Approximately 777,485 of retail uses,
- Approximately 1,506,095 of other non-residential uses

Please note, the proposed land use changes are the net difference compared to existing uses.

Specific Plan Trip Generation

Trip generation for the Specific Plan was computed using the Alameda CTC countywide model. The model computes trips for all modes, including pedestrian, bicycle, transit, and automobile trips. In addition, the model computes internalization, mixed use reductions, pass-by trips, and mode split to transit and non-motorized modes. The model computes weekday daily, weekday AM and weekday PM peak hour trips.

Under Cumulative conditions (without the buildout of the Specific Plan), the model estimates the Specific Plan area would generate approximately 48,635 daily trips on a typical weekday. Under Cumulative plus Specific Plan conditions, the Plan area would increase by about 46,500 daily trips to a total of approximately 95,126 trips on a typical weekday.

Specific Plan Trip Distribution and Assignment

The Alameda CTC countywide model also was used to distribute Specific Plan trips to and from the Plan area as well as to assign Specific Plan trips to the roadway network. The model was updated to incorporate the Specific Plan's network changes (including lane reductions and one-way to two-way conversions).

Vehicle Miles Traveled

As part of the new CEQA Guidelines updated for SB 743, the new criteria to replace LOS "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks,

and a diversity of land uses." OPR presented alternative metrics in a preliminary discussion draft in summer of 2014 and released a final advisory in April 2018, which provided guidance for implementing VMT analysis as the most appropriate metric to evaluate a project's transportation impact. OPR's guidelines are undergoing final rulemaking and review through the Natural Resource Agency and the Office of Administrative Law. Once the new rules are adopted in 2018, cities and other agencies will have a two-year opt-in period before SB 743 compliant CEQA analysis becomes mandatory.

At this time, VMT requirements have not gone into effect. Therefore, this section provides a VMT discussion for informational purposes only and not as part of the CEQA findings of significance discussion.

The Alameda CTC countywide model was used to help evaluate the change in VMT for the Specific Plan. Total daily VMT and VMT per capita based on the model are presented in Table 6**Error! Reference source not found.**. As shown, VMT per capita for existing conditions is 22.2 miles per service population. By 2040, the VMT is forecast to increase to 27.1 miles per service population. The Proposed Plan reduces VMT to 23.3 miles per service population which is 4.9% higher than existing conditions but 13.9% lower than Cumulative conditions.

Table 6: VMT per Capita -- Existing and Projected (Specific Plan)

	Existing 2018	Cumulative 2040 No-Project	Cumulative 2040 Plus Specific Plan
Daily VMT	320,478	430,063	832,134
Total Service Population	14,434	15,894	35,736
Average Trip Length	**8.14**	**8.84**	**8.75**
VMT Per Capita	**22.2**	**27.1**	**23.3**
Source: ACTC Travel Demand Model; Kittelson & Associates, Inc., 2018			

STANDARDS OF SIGNIFICANCE

Significance criteria are used to establish what constitutes a significant impact by a plan or project. The CEQA Guidelines Appendix G, Environmental Checklist, state a project or plan would result in a significant impact if it would:

1. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit, non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
2. Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Intersection Operations Thresholds

The following significance thresholds were used to evaluate the effects of the Specific Plan on intersection operations.

The City of Hayward General Plan sets the LOS standard for intersections at LOS E or better.

For signalized intersections, the impact would be considered significant if:

- Project traffic would cause the LOS at an intersection to degrade from LOS E or better to LOS F.
- Project traffic would increase delay 5.0 seconds or more at an intersection operating LOS F under no project conditions.

For unsignalized intersections, in addition to reporting LOS, a determination was made if any of the following were met:

- Traffic Signal Warrant (peak hour)
- Pedestrian Signal Warrant
- STOP-sign Warrant
- The new trips added by the Proposed Plan increases the density by more than 5 passenger cars/mile/lane.

CMP Segment Operations Thresholds

Under cumulative conditions, CMP freeway and arterial segments were analyzed. The freeway mainline segments were analyzed using the methodology outlined in the Highway Capacity Manual (HCM) (Transportation Research Board, Washington, D.C., 2010) as implemented by the Highway Capacity Software (HCS) tool to calculate the density in terms of passenger cars per mile per lane for the study freeway segments. Table 7 shows the relationship of freeway density to level of service.

Table 7: Level of Service Definitions for Freeway Mainline Segment

Level of Service	Density (passenger vehicles per mile per lane)
A	≤11

B	>11-18
C	>18-26
D	>26-35
E	>35-45
F	>45 (Demand exceeds capacity.)

Source: Transportation Research Board, *Highway Capacity Manual,* Exhibit 10-7, Washington, D.C., 2010

Level of service analyses for designated Metropolitan Transportation System (MTS) arterial segments was performed based on the service volume table shown in Table 7. A volume to capacity ratio was calculated using the volumes from the Alameda CTC countywide model and using the LOS F service volume threshold shown in Table 7 as the estimate for roadway capacity.

The LOS standard for freeway and arterial segments in the Alameda CTC CMP is LOS E. For those segments operating below the standard without Specific Plan traffic, an impact would be considered significant when the addition of trips causes:

- The V/C ratio along a freeway or arterial segment to increase by 0.03 or more, or
- An increase in transit passengers by 1% or more on buses or trains already at maximum load capacity.

TRAFFIC VOLUME FORECASTING APPROACH

This section documents the assumptions and approach used for the traffic forecast modeling as part of the transportation impact analysis for the Downtown Specific Plan.

The Alameda CTC Countywide Model was updated in 2018 with more recent network and land use assumptions based on the Alameda Countywide Transportation Plan (CWTP) and ABAG Projections 2017 Plan Bay Area. The new model has a 2010 base year and a 2040 horizon year. It is important to understand that the model includes forecasted development for the entire Bay Area region, not only for Hayward. As demonstrated by the analysis of Cumulative conditions, representing the Existing Hayward General Plan scenario, even with no additional growth or development in the Plan area, traffic on roadway and freeway segments in Hayward would increase substantially due to regional growth.

Approach

This transportation analysis is based on the most recent version of the Alameda CTC countywide model. The zonal detail, street network, and land uses within the Alameda CTC Countywide Model include some modification better represent the General Plan buildout within Hayward. Transportation analysis zone (TAZ) boundaries within the Plan area were not adjusted.

The model was used to generate, distribute, apply mode split and assign traffic to develop the traffic forecasts for the analysis of the effects of the Specific Plan on traffic operations in and around the Plan

area and compare those effect to Cumulative conditions using significance thresholds established by the City and Alameda CTC to identify potential impacts. This approach captures not only the increased traffic associated with the Specific land uses and the rerouting of traffic associated with the Specific Plan network changes, but also the diversion of existing and future background traffic as a result of the future growth.

In addition to automobile trips, truck trips are accounted for in the traffic analysis for the Specific Plan. Land use assumptions in the traffic model include truck trips in the fleet mix, and the model distributes those truck trips on regional and local roadways according to the land uses, and it accounts for truck routes within Hayward. Key truck destinations accounted for in the model include the Port of Oakland, Oakland Airport and other large manufacturing destinations in the bay area. Therefore, the traffic analysis reflects projected future truck trips based on land use changes for the Specific Plan. Noise, air quality, and GHG modeling are based on traffic analysis. Therefore, any noise, air quality, or GHG analyses performed based on the traffic analysis developed as part of this transportation impact study would reasonably reflect projected future auto and truck trips.

Transportation-related project impacts were analyzed for the following scenarios for weekday AM and weekday PM peak hour conditions:

- Cumulative (2040) Conditions – This scenario represents the land uses, densities and circulation network changes for full buildout of the general plan.
- Cumulative (2040) with Specific Plan Conditions – This represents the land uses, densities and circulation network changes for full buildout of the Specific Plan, utilizing the Alameda CTC countywide model.

The Cumulative (year 2040) traffic volumes were developed using the most recent version of the Countywide Model to estimate the increment of growth over the 22-year period between 2018 and 2040, both in Hayward and in the region as a whole, to add to the existing volumes

Model Forecasts

The model was implemented, and traffic outputs were extracted at the study locations for the base year and future year. These forecasts were used to develop a growth increment that was added to the 2018 counts to represent the Cumulative and Cumulative plus Specific Plan conditions. Given the model has an earlier horizon year of 2010 as the base year, a straight-line interpolation between 2010 and 2040 was performed to represent 2018 and coincide with the existing year for traffic counts .

Adjustments were made to the model forecasts to account for the Specific Plan horizon year of 2040. The growth increment in traffic volumes from 2018 to 2040 from the model forecasts were added to the existing counts to represent Cumulative conditions.

Suitable incremental adjustments were made at the intersection level per National Cooperative Highway Research Program (NCHRP) Report 255[15] methods to reduce any model error at study intersections or segments between the existing year model and the counts, consistent with the methodology used for other transportation impact studies in Hayward, such as for the 2012 general plan update.

ITEM 1: CIRCULATION SYSTEM PERFORMANCE

Analyses of Cumulative (year 2040) conditions, without and with the Specific Plan, were performed to study how the transportation system near the Plan Area would operate under Cumulative conditions and with the full build-out of the Specific Plan.

Cumulative Intersection Operations

The weekday AM and PM peak hour intersection turning movement volumes and lane configurations for Cumulative conditions without and with the Specific Plan are provided in Figure 12 and Figure 13. The information was used to evaluate intersection operations and identify potential impacts by the Specific Plan based on the City's significance thresholds, as described previously. The analysis results are summarized in Table 8. Plus Project LOS results for Mission Boulevard & Foothill Boulevard/Jackson Street (#13) are provided separately in Table 9; each approach was assessed individually.

[15] Highway Traffic Data for Urbanized Area Project Planning and Design, Transportation Research Board, 1992.

Figure 12: Cumulative No Project AM & PM Peak Hour Traffic Volumes and Lane Geometries

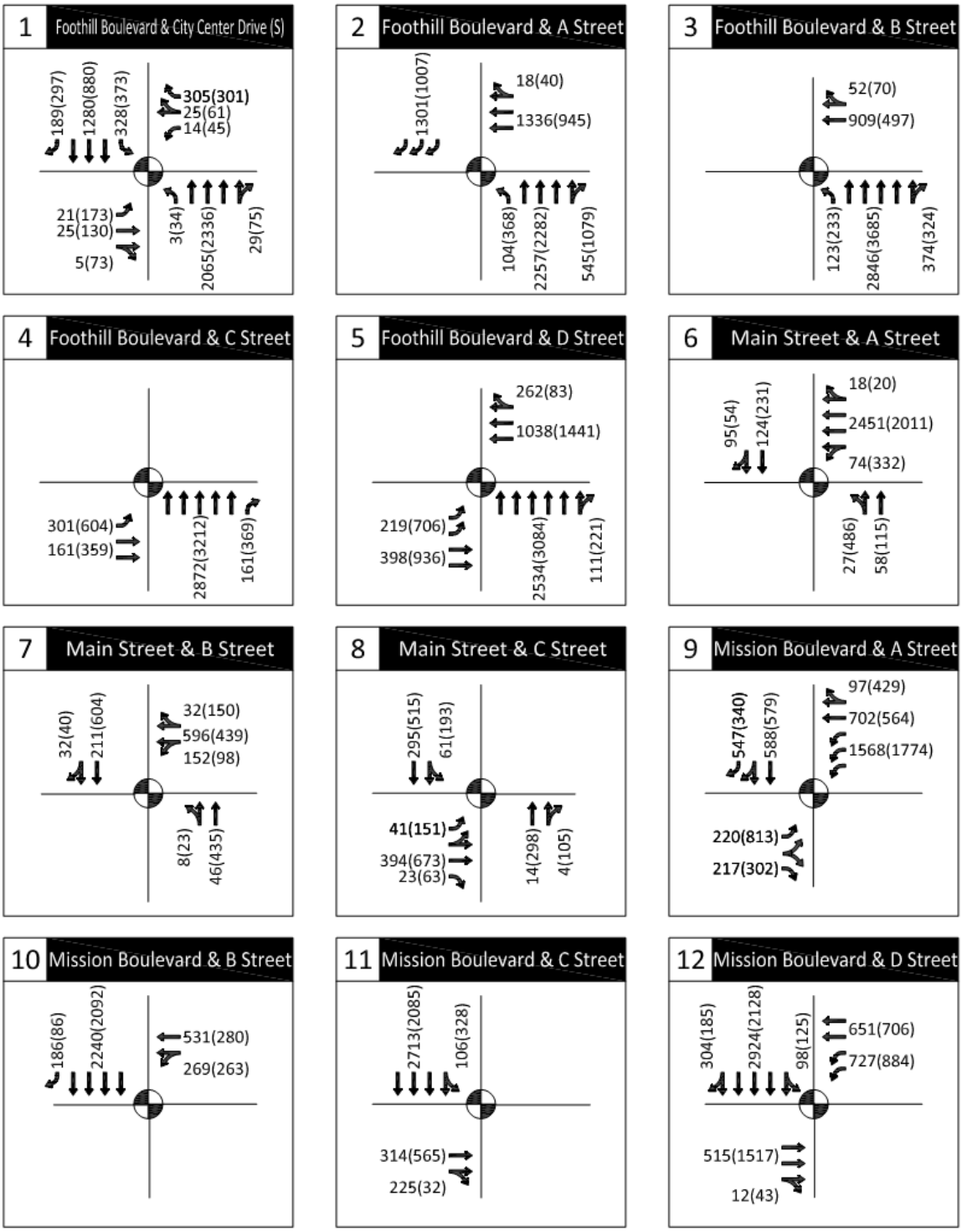


Figure 12: Cumulative No Project AM & PM Peak Hour Traffic Volumes and Lane Geometries

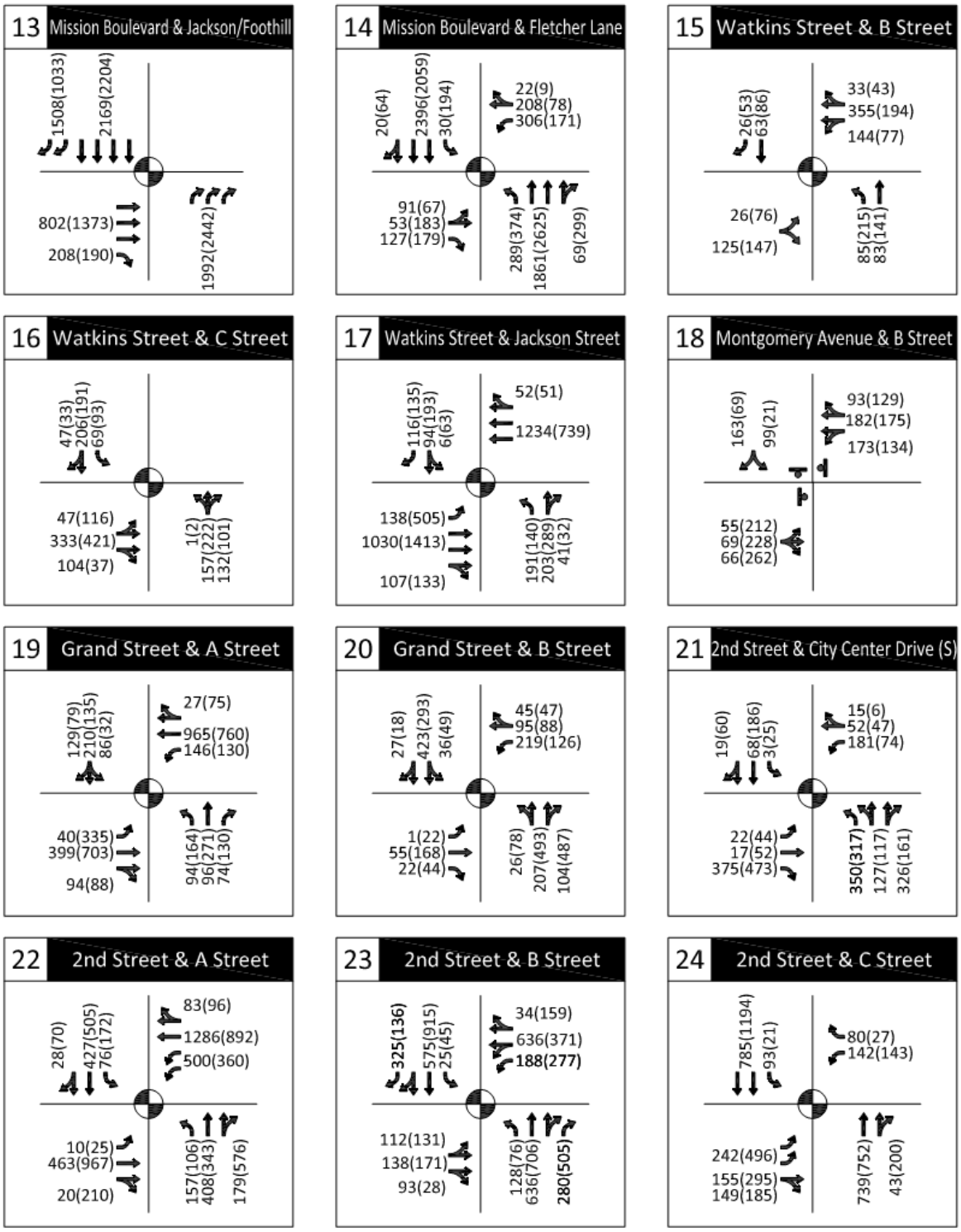


Figure 12: Cumulative No Project AM & PM Peak Hour Traffic Volumes and Lane Geometries

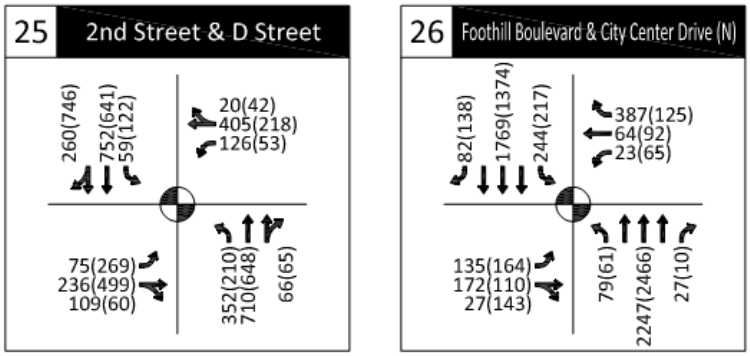


Figure 13: Cumulative Plus Specific Plan AM & PM Peak Hour Traffic Volumes and Lane Geometries

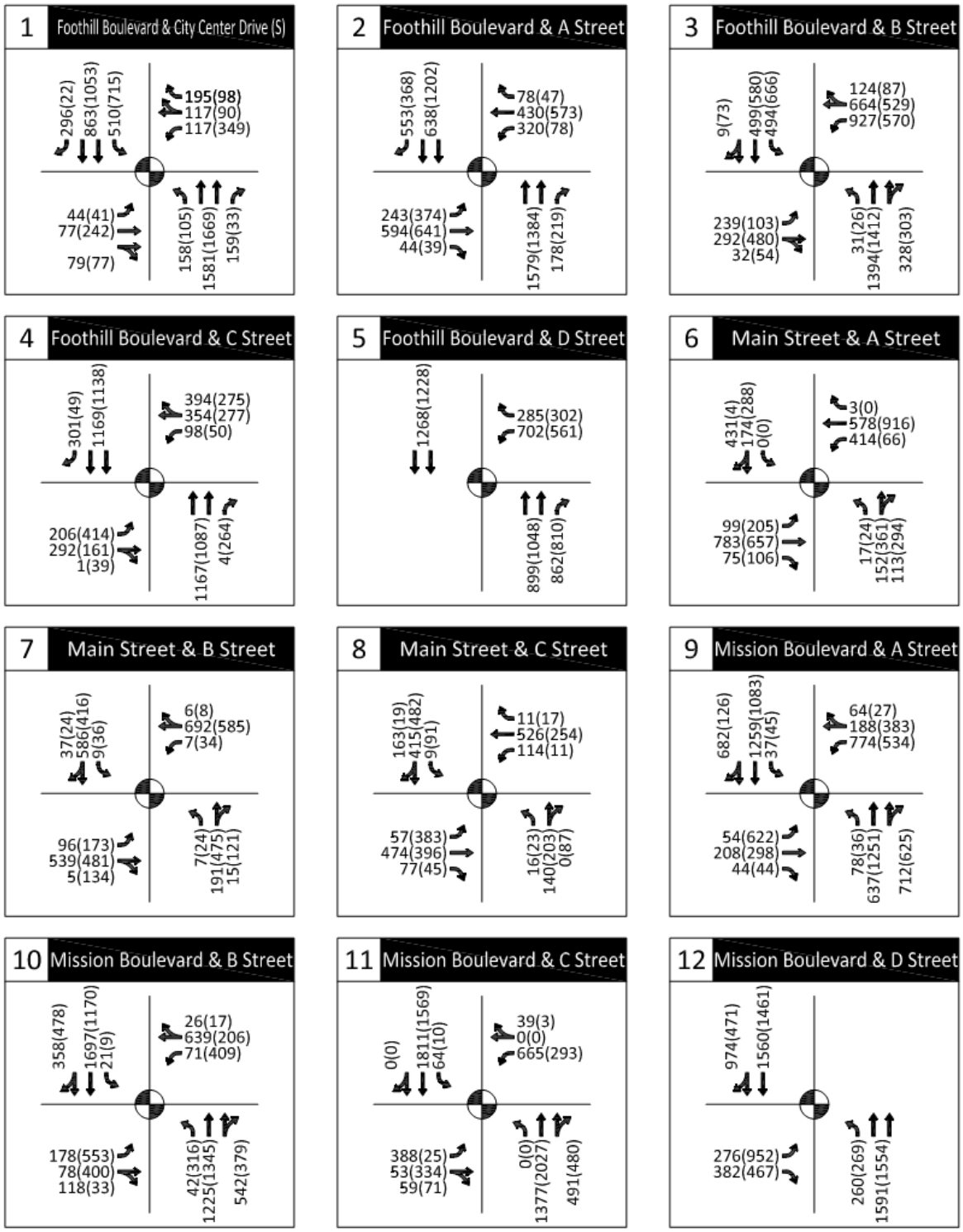


Figure 13: Cumulative Plus Specific Plan AM & PM Peak Hour Traffic Volumes and Lane Geometries

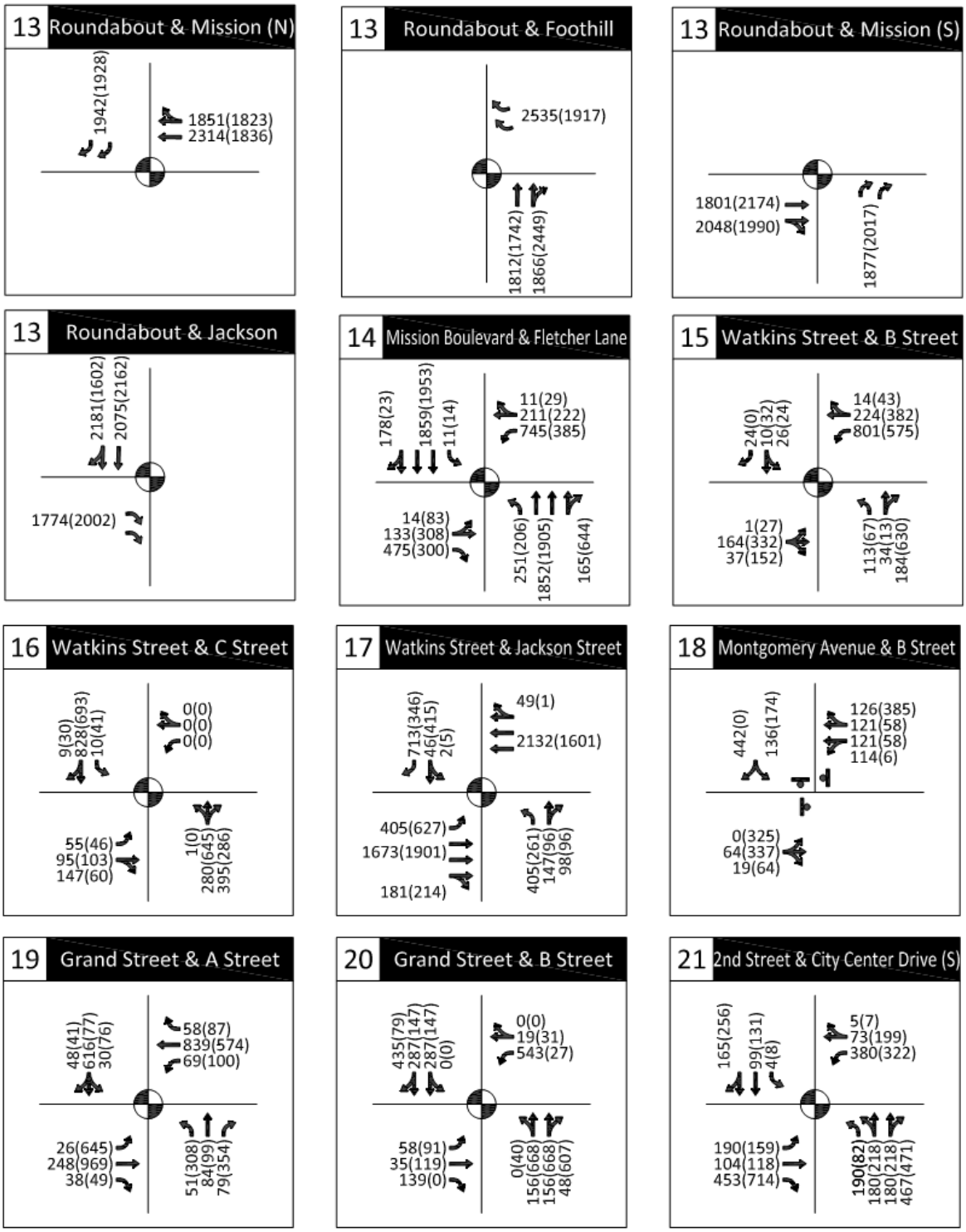
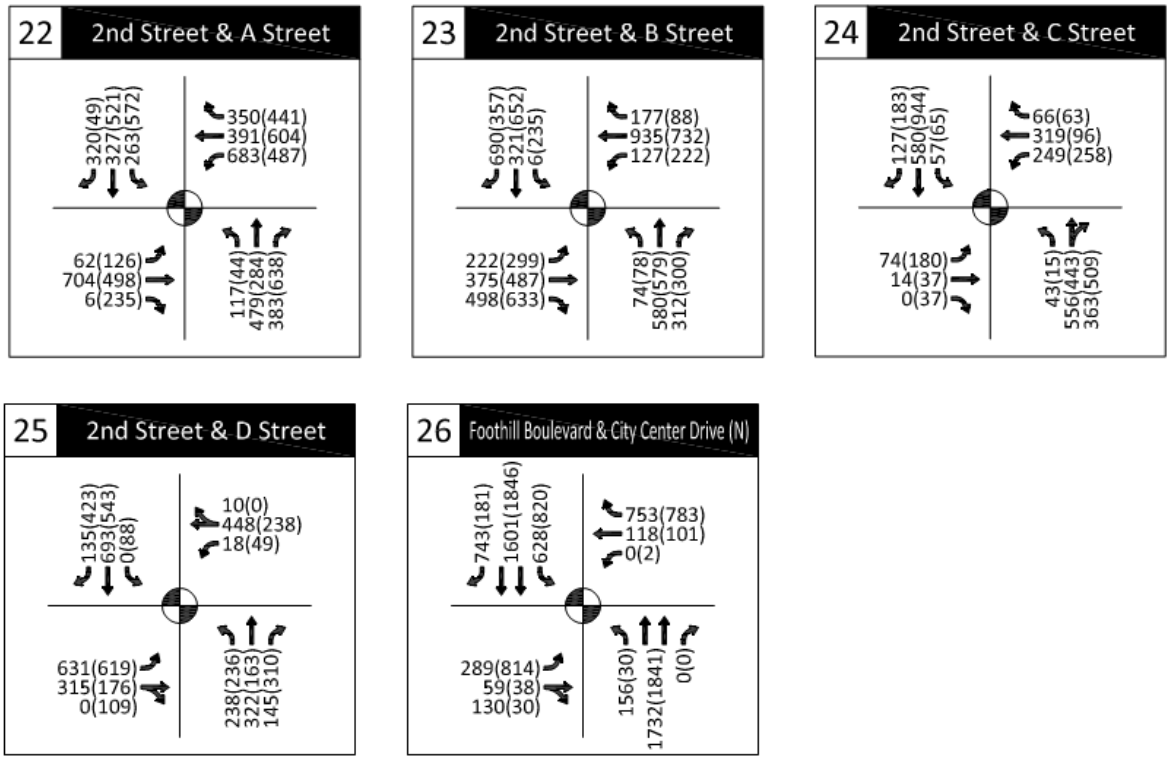


Figure 13: Cumulative Plus Specific Plan AM & PM Peak Hour Traffic Volumes and Lane Geometries



Under Cumulative conditions, the following four intersections are projected to operate beyond the standard at LOS F during the weekday AM and/or weekday PM peak hours:

- Foothill Boulevard & D Street (#5) – PM peak hour
- Mission Boulevard & Fletcher Lane (#14) – AM peak hour
- Montgomery Street & B Street (#18) – PM peak hour
- 2nd Street & A Street (#22) – PM peak hour
- 2nd Street & D Street (#25) – AM peak hour and PM peak hour

All other intersections would operate acceptably within the standard during the weekday AM and weekday PM peak hours.

With the addition of Proposed Project traffic, the following intersections would be significantly impacted based on the City's significance thresholds:

- Foothill Boulevard & City Center Drive (South) (#1)
    - PM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
- Foothill Boulevard & B Street (#3)
    - AM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
    - PM peak hour: Operations degrade from acceptable LOS B to unacceptable LOS F.
- Main Street & A Street (#6)
    - AM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
- Mission Boulevard & A Street (#9)
    - AM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.
    - PM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.
- Mission Boulevard & B Street (#10)
    - AM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
    - PM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
- Mission Boulevard & C Street (#11)
    - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
    - PM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
- Mission Boulevard & D Street (#12)
    - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
    - PM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.
- Mission Boulevard & Foothill Boulevard/Jackson Street (#13)
    - AM peak hour: Operations degrade from acceptable LOS B at the intersection level to unacceptable LOS F for all approaches.
    - PM peak hour: Operations degrade from acceptable LOS D at the intersection level to unacceptable LOS F for all approaches.
- Mission Boulevard & Fletcher Lane (#14)
    - AM peak hour: The intersection operates at LOS F without the project, and the addition of the project results in an increase in delay of 5.0 seconds or greater.
    - PM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.

- Watkins Street & Jackson Street (#17)
  - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
  - PM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.
- Montgomery Street & B Street (#18)
  - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
  - PM peak hour: The intersection operates at LOS F without the project, and the addition of the project results in an increase in delay of 5.0 seconds or greater.
  - Peak hour signal warrant is met during both peak hours.
- 2nd Street & City Center Drive (#21)
  - AM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
  - PM peak hour: Operations degrade from acceptable LOS C to unacceptable LOS F.
- 2nd Street & A Street (#22)
  - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
  - PM peak hour: The intersection operates at LOS F without the project, and the addition of the project results in an increase in delay of 5.0 seconds or greater.
- 2nd Street & B Street (#23)
  - AM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
  - PM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.
- 2nd Street & D Street (#25)
  - AM peak hour: The intersection operates at LOS F without the project, and the addition of the project results in an increase in delay of 5.0 seconds or greater.
- Foothill Boulevard & Hazel Avenue/City Center Drive (North) (#26)
  - AM peak hour: Operations degrade from acceptable LOS E to unacceptable LOS F.
  - PM peak hour: Operations degrade from acceptable LOS D to unacceptable LOS F.

Table 8: Intersection Level of Service for Cumulative Conditions, without and with Specific Plan

#	Intersection	Control	Peak Hour	Cumulative Conditions		Cumulative plus Specific Plan		
				Delay	LOS	Delay	LOS	Change
1	Foothill Boulevard & City Center Drive (South)	Signal	AM	24.1	C	58.8	E	34.7
			PM	52.4	D	**>100.0**	**F**	>100.0
2	Foothill Boulevard & A Street [a]	Signal	AM	37.3	D	72.7	E	35.4
			PM	36.1	D	65.1	E	29.0
3	Foothill Boulevard & B Street	Signal	AM	33.6	C	**>100.0**	**F**	>100.0
			PM	18.0	B	**>100.0**	**F**	>100.0
4	Foothill Boulevard & C Street	Signal	AM	10.7	B	24.2	C	13.5
			PM	24.7	C	19.4	B	-5.3
5	Foothill Boulevard & D Street	Signal	AM	57.9	E	51.2	D	-6.7
			PM	**94.2**	**F**	38.0	D	-56.2

#	Intersection	Control	Peak Hour	Cumulative Conditions		Cumulative plus Specific Plan		
				Delay	LOS	Delay	LOS	Change
6	Main Street & A Street	Signal	AM	24.2	C	**>100.0**	**F**	>100.0
			PM	62.4	E	66.5	E	4.1
7	Main Street & B Street	Signal	AM	8.6	A	17.6	B	9.0
			PM	14.7	B	24.0	C	9.3
8	Main Street & C Street	Signal	AM	12.5	B	14.6	B	2.1
			PM	14.0	B	14.9	B	0.9
9	Mission Boulevard & A Street	Signal	AM	64.1	E	**>100.0**	**F**	>75.0
			PM	67.6	E	**>100.0**	**F**	>50.0
10	Mission Boulevard & B Street	Signal	AM	25.7	C	**>100.0**	**F**	>100.0
			PM	21.0	C	**>100.0**	**F**	>100.0
11	Mission Boulevard & C Street	Signal	AM	44.5	D	**96.8**	**F**	>50.0
			PM	42.8	D	**>100.0**	**F**	>75.0
12	Mission Boulevard & D Street	Signal	AM	39.3	D	**>100.0**	**F**	>75.0
			PM	63.3	E	**>100.0**	**F**	>50.0
13	Mission Boulevard & Foothill Boulevard/ Jackson Street [a]	Signal	AM	16.8	B	See Table 9		
			PM	45.3	D			
14	Mission Boulevard & Fletcher Lane	Signal	AM	**>100.0**	**F**	**>100.0**	**F**	>100.0
			PM	69.1	E	**>100.0**	**F**	>100.0
15	Watkins Street & B Street	Signal	AM	20.1	C	50.6	D	30.5
			PM	24.5	C	68.7	E	44.2
16	Watkins Street & C Street	Signal	AM	13.1	B	22.3	C	9.2
			PM	13.1	B	19.9	B	6.8
17	Watkins Street & Jackson Street	Signal	AM	48.8	D	**>100.0**	**F**	>100.0
			PM	59.2	E	**>100.0**	**F**	>75.0
18	Montgomery Street & B Street	AWSC	AM	25.7	D	**73.2**	**F**	47.5
			PM	**52.0**	**F**	**>100.0**	**F**	>50.0
19	Grand Street/Western Boulevard & A Street	Signal	AM	25.8	C	61.6	E	35.8
			PM	29.7	C	67.1	E	37.4
20	Grand Street & B Street	Signal	AM	30.2	C	51.5	D	21.3
			PM	29.3	C	30.9	C	1.6

#	Intersection	Control	Peak Hour	Cumulative Conditions		Cumulative plus Specific Plan		
				Delay	LOS	Delay	LOS	Change
21	2nd Street & City Center Drive	Signal	AM	31.6	C	**>100.0**	**F**	>50.0
			PM	31.3	C	**>100.0**	**F**	>75.0
22	2nd Street & A Street	Signal	AM	45.6	D	**>100.0**	**F**	>100.0
			PM	**88.1**	**F**	**>100.0**	**F**	>100.0
23	2nd Street & B Street	Signal	AM	39.7	D	**>100.0**	**F**	>100.0
			PM	37.7	D	**>100.0**	**F**	>100.0
24	2nd Street & C Street	Signal	AM	17.3	B	49.5	D	32.2
			PM	23.6	C	70.9	E	47.3
25	2nd Street & D Street	Signal	AM	**82.6**	**F**	**>100.0**	**F**	>100.0
			PM	**>100.0**	**F**	97.9	F	-8.4
26	Foothill Boulevard & Hazel Avenue/City Center Drive (North)	Signal	AM	78.1	E	**>100.0**	**F**	>100.0
			PM	54.6	D	**>100.0**	**F**	>100.0

Source: Kittelson & Associates, 2018
Notes:
[a] These intersections were analyzed using the HCM 2000 methodology. All others were analyzed using HCM 6th Edition.
Bold signifies unacceptable LOS.
Shading indicates significant impact.

Table 9: Mission Boulevard & Foothill Boulevard/Jackson Street Level of Service with Specific Plan

Roundabout Leg [a]	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
North Leg (Mission Blvd.)	**>100.0**	**F**	**>100.0**	**F**
East Leg (Foothill Blvd.)	**>100.0**	**F**	**>100.0**	**F**
South Leg (Mission Blvd.)	**>100.0**	**F**	**>100.0**	**F**
West Leg (Jackson St.)	**>100.0**	**F**	**>100.0**	**F**

Source: Kittelson & Associates, 2018
Notes:
[a] Each approach was analyzed using the HCM 2000 methodology.
Bold signifies unacceptable LOS.
Shading indicates significant impact.

Cumulative Intersection Impacts and Mitigation Measures

Potentially significant impacts of the Specific Plan were identified using the City's significance thresholds for intersection operations described in the Standards of Significance section. The potentially significant impacts and the associated mitigation measures are discussed below.

Foothill Boulevard & City Center Drive (South) (#1). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impact is **significant**.

> **Mitigation Measure #1**. With the following improvements, the intersection would operate within the standard at LOS E (58.9 seconds of delay) during the PM peak hour:
>
> - Restripe the middle westbound shared through/right turn lane to a left turn lane
> - Restripe the westbound right turn lane to a shared through/right turn lane
> - Add a second southbound left turn lane
> - Add third northbound through lane
>
> This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances, geometric constraints, and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Foothill Boulevard & B Street (#3). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

> **Mitigation Measure #2.** With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (68.4 seconds of delay) and PM peak hour (55.1 seconds pf delay):
>
> - Install protected left turn signal phases for all approaches
> - Add a second southbound left turn lane
> - Add a second eastbound through lane
> - Add two westbound left turn lanes (three total) and a second westbound through lane
> - Add a third northbound through lane
> - Add a northbound right turn lane (with overlap phase)
>
> This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the

proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Main Street & A Street (#6). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**.

Mitigation Measure #3: With the following improvements, the intersection would operate within the standard at LOS E (67.6 seconds of delay) during the AM peak hour:

- Add a second westbound left turn lane
- Add two eastbound through lanes (three total)
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the eastbound and westbound approaches

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & A Street (#9). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #4: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (77.8 seconds of delay) and PM peak hour (77.9 seconds of delay):

- Add a northbound right turn lane
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the northbound and southbound approaches
- Optimize signal timing

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & B Street (#10). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #5: With the following improvements, the intersection would operate within the standard at LOS C during the AM peak hour (31.7 seconds of delay) and LOS E during the PM peak hour (76.6 seconds of delay):

- Install protected left turn phases for the northbound and southbound approaches
- Add a northbound right turn lane
- Add a southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & C Street (#11). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #6: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (79.5 seconds of delay) and PM peak hour (68.7 seconds of delay):

- Optimize signal timing
- Install protected left turn phases for all approaches

Therefore, this impact would be reduced to **less than significant**.

Mission Boulevard & D Street (#12). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #7: With the following improvements, the intersection would operate within the standard at LOS D during the AM peak hour (47.1 seconds of delay) and PM peak hour (43.2 seconds of delay):

- Add an eastbound shared left/right turn lane between the eastbound left turn lane and right turn lanes
- Add a southbound right turn lane.

Therefore, this impact would be reduced to **less than significant**.

Mission Boulevard & Foothill Boulevard/Jackson Street (#13). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #8: With the following improvements, the roundabout approaches/legs would operate within the standard at LOS E or better during the AM peak hour and PM peak hour:

- Expand the roundabout to have three through lanes throughout
- Add two uncontrolled/free right turn lanes exiting the roundabout at each leg
- Expand each approaching leg to three lanes
- Add a fourth right turn lane with a turn pocket at the westbound Jackson Street approach

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & Fletcher Lane (#14). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or more during the weekday AM peak hour and would cause the LOS to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #9: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (70.7 seconds of delay) and PM peak hour (67.6 seconds of delay):

- Signal timing optimization
- Add a northbound right turn lane
- Add a second westbound left turn lane (which would require implementing split phases for the eastbound and westbound approaches)
- Add a second eastbound right turn lane
- Add a second northbound left turn lane
- Install northbound and eastbound right turn overlap phases

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Watkins Street & Jackson Street (#17). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #10: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (60.5 seconds of delay) and PM peak hour (72.4 seconds of delay):

- Add a second southbound right turn lane (with overlap phase)
- Add a second northbound left turn lane
- Add a second eastbound left turn lane
- Add a fourth westbound through lane (required to mitigate AM peak hour impact

The addition of a fourth westbound through lane is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, the AM peak hour impact would be reduced to **less than significant** and the PM peak hour impact would remain **significant and unavoidable**.

Montgomery Street & B Street (#18). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and would cause delay already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday PM peak hour. Peak hour signal warrants are met during both peak hours. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #11: With the following improvement, the intersection would operate within the standard at LOS C during the AM peak hour (23.9 seconds of delay) and LOS D during the PM peak hour (44.3 seconds of delay)

- Install a traffic signal

Therefore, this impact would be reduced to **less than significant**.

2nd Street & City Center Drive (#21). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #12: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (71.2 seconds of delay) and PM peak hour (79.2 seconds of delay):

- Optimize signal timing
- Install an eastbound right turn overlap phase

Therefore, this impact would be reduced to **less than significant**.

2nd Street & A Street (#22). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and would cause delay already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday PM peak hour. Peak hour signal warrants are met during both peak hours. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #13: With the following improvements, the intersection would operate within the standard at LOS D during the AM peak hour (54.7 seconds of delay) and LOS E during the PM peak hour (58.5 seconds of delay):

- Add a second southbound left turn lane
- Add right turn overlap phases at all approaches
- Add a second eastbound through lane
- Add a second westbound left turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & B Street (#23). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #14: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (62.0 seconds of delay) and PM peak hour (79.0 seconds of delay):

- Install permissive left turn signal phases for the eastbound and westbound approaches
- Install eastbound and westbound right turn overlap phases,
- Add a second eastbound left turn lane
- Add a second southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & D Street (#25). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**.

Mitigation Measure #15: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (78.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound through lane
- Add a westbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Foothill Boulevard & Hazel Avenue/City Center Drive (North) (#26). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**.

Mitigation Measure #16: With the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (65.1 seconds of delay) and PM peak hour (72.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound left turn lane
- Add a second westbound right turn lane (with overlap phase)
- Add a third northbound through lane
- Restripe the eastbound shared through/right turn lane to a shared left/through/right lane (which would require implementing split phases for the eastbound and westbound approaches)

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

ITEM 2: CONGESTION MANAGEMENT PROGRAM

Alameda CTC Congestion Management Program (CMP) Land Use Analysis was performed to identify potential impacts of the Specific Plan on the Metropolitan Transportation System (MTS) roadway network and the MTS transit operators. The potential impacts of the Proposed Plan to bicyclists and pedestrians are discussed in the Item 6: Bicycle, Pedestrian, and Transit Facilities Performance section of this report. MTS roadways in the study area include I-238, I-580, I-880, Mission Boulevard, Foothill Boulevard, Jackson Street, Crow Canyon Road/Grove Way, Winton Avenue, and A Street. Since the Specific Plan is not anticipated to commence until after 2020, CMP analysis was only performed for 2040 conditions when buildout of the Plan is completed.

MTS Roadway Segments

Traffic forecasts for Year 2040 conditions were extracted at the selected MTS roadway segments from the latest version of the Alameda CTC countywide model. The Specific Plan volumes at the roadway segments were developed by incorporating the Specific Plan land use and street network improvements into the model.

Level of service analyses for selected MTS freeway and arterial segments were performed in accordance to methodologies discussed under the Level of Service Standards section. The LOS results along with peak hour volumes and density on the freeway analysis segments for the Year 2040 Cumulative conditions, with and without Specific Plan, are provided in Table 10 and on the MTS arterial segments in Table 11.

MTS Freeway Segments

Under Year 2040 Cumulative conditions, the following segments would operate at LOS F, which is beyond the standard, during the PM peak hour:

- I-880 Northbound (Hesperian Boulevard to A Street)
- I-880 Northbound (A Street to Winton Avenue)
- I-880 Northbound (Winton Avenue to Jackson Street)
- I-880 Northbound (South of Jackson Street)
- I-880 Southbound (A Street to Winton Avenue)
- I-880 Southbound (Winton Avenue to Jackson Street)
- I-880 Southbound (South of Jackson Street)
- I-238 Eastbound (I-880 to SR-185)
- I-580 Northbound (164th Avenue to I-238)
- I-580 Northbound (Strobridge Avenue to Redwood Road)
- I-580 Northbound (Redwood Road to Center Street)

With the addition of Specific Plan traffic and street network improvements, the following CMP freeway segments would be significantly impacted:

- I-880 Northbound (Hesperian Boulevard to A Street): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- I-880 Northbound (A Street to Winton Avenue): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- I-880 Northbound (Winton Avenue to Jackson Street): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- I-880 Northbound (South of Jackson): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- I-880 Southbound (Hesperian Boulevard to A Street): Operations degrade from acceptable LOS E to unacceptable LOS F.
- I-238 Eastbound (I-880 to SR-185): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- I-580 Northbound (Strobridge Avenue to Redwood Road): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.

Table 10: MTS Freeway PM Peak Hour LOS, 2040 Cumulative Conditions, without and with Specific Plan

Location	Year 2040 Cumulative Conditions			Year 2040 Cumulative with Specific Plan Conditions			
	Volume[1]	Density[2]	LOS	Volume	Density	LOS	Change in V/C
I-880 Northbound							
Hesperian Boulevard to A Street	9,497	**82.6**	**F**	10,866	**167.2**	**F**	0.144
A Street to Winton Avenue	10,456	**160.9**	**F**	11,975	**399.2**	**F**	0.145
Winton Avenue to Jackson Street	10,327	**93.9**	**F**	11,555	**165.1**	**F**	0.119
South of Jackson Street	8,017	**72.9**	**F**	8,942	**127.7**	**F**	0.115
I-880 Southbound							
Hesperian Boulevard to A Street	8,734	42.6	E	8,958	**47.1**	**F**	0.026
A Street to Winton Avenue	9,107	**82.8**	**F**	9,367	**98.6**	**F**	0.029
Winton Avenue to Jackson Street	8,582	**46.4**	**F**	8,780	**50.2**	**F**	0.023
South of Jackson	7,435	**51.3**	**F**	7,562	**56.0**	**F**	0.017
I-238 Eastbound							
I-880 to SR-185	5,424	**45.2**	**F**	6,033	**64.9**	**F**	0.112
I-238 Westbound							
I-880 to SR-185	3,917	28.4	D	4,143	32.9	D	0.058
I-580 Northbound							
164th Avenue to I-238	8,459	**58.7**	**F**	8,600	**63.2**	**F**	0.017
Strobridge Avenue to Redwood Road	10,907	**109.1**	**F**	11,333	**128.8**	**F**	0.039
Redwood Road to Center Street	10,972	**144.4**	**F**	11,252	**165.5**	**F**	0.026

Location	Year 2040 Cumulative Conditions			Year 2040 Cumulative with Specific Plan Conditions			
	Volume[1]	Density[2]	LOS	Volume	Density	LOS	Change in V/C
I-580 Southbound							
164th Avenue to I-238	6,075	26.2	D	6,097	26.3	D	0.004
Strobridge Avenue to Redwood Road	5,834	25.6	C	5,937	26.0	D	0.018
Redwood Road to Center Street	6,155	28.5	D	6,123	28.3	D	-0.005

Source: Kittelson & Associates, Inc., 2018
[1]Volume = Passenger Cars per Hour (pcph)
[2]Density = Passenger Cars per Mile per Lane (pcpmpl)
Bold text indicates substandard operations.
Shading indicates significant impact.

MTS Arterial Segments

The MTS arterial segment analysis results are presented in Table 11**Error! Reference source not found.**. As shown in the table, the following arterial segments would operate beyond the standard under Year 2040 Cumulative conditions during the PM peak hour:

- Southbound Mission Boulevard (North of D Street)
- Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard)
- Southbound Foothill Boulevard (North of City Center Drive (South))
- Southbound Jackson Street (West of Mission Boulevard)
- Northbound Mission Boulevard (South of Jackson Street/Foothill Boulevard)
- Northbound Foothill Boulevard (North of City Center Drive (South))
- Northbound Foothill Boulevard (North of D Street)
- Northbound Jackson Street (West of Mission Boulevard)
- Northbound Crow Canyon Road/Grove Way (North of Castro Valley Boulevard)
- Eastbound Winton Avenue (West of D Street)

With the addition of Specific Plan traffic and street network improvements, the following CMP arterial segments would be significantly impacted:

- Southbound Mission Boulevard (North of D Street): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard): The segment operates at LOS F without the project, and the addition of the project results in an increase in V/C of 0.03 or greater.
- Westbound A Street, North of Mission Boulevard): Operations degrade from acceptable LOS E to unacceptable LOS F.
- Northbound Mission Boulevard (North of A Street): Operations degrade from acceptable LOS D to unacceptable LOS F.
- Northbound Mission Boulevard (North of D Street): Operations degrade to unacceptable LOS F.

- Eastbound A Street (North of Foothill Boulevard): Operations degrade from acceptable LOS D to unacceptable LOS F.
- Eastbound A Street (North of Mission Boulevard): Operations degrade to unacceptable LOS F.

Table 11: MTS Arterial PM Peak Hour LOS, 2040 Cumulative Conditions, without and with Specific Plan

Segment	Year 2040 Cumulative Conditions		Year 2040 Cumulative with Specific Plan Conditions		V/C Change
	Volume	LOS	Volume	LOS	
Southbound/Westbound					
Mission Boulevard, North of A Street	1,118	D	1,255	D	0.09
Mission Boulevard, North of D Street	3,922	**F**	1,933	**F**	0.18
Mission Boulevard, South of Jackson Street/Foothill Boulevard	2,844	**F**	1,990	**F**	0.13
Foothill Boulevard, North of City Center Drive (South)	2,633	**F**	1,790	E	-0.35
Foothill Boulevard, South of A Street	-	-	1,592	E	1.00
Foothill Boulevard, North of D Street	-	-	1,499	E	0.94
Jackson Street, West of Mission Boulevard	2,679	**F**	2,136	E	-0.23
Crow Canyon Road/Grove Way, North of Castro Valley Boulevard	1,059	D	1,000	E	-0.04
Crow Canyon Road/Grove Way, West of Center Street	619	B	530	B	-0.06
Winton Avenue, West of D Street	937	C	1,047	C	0.07
A Street, North of Foothill Boulevard	1,541	D	697	D	-0.09
A Street, North of Mission Boulevard	3,202	E	944	**F**	0.24
Northbound/Eastbound					
Mission Boulevard, North of A Street	1,384	D	1,900	**F**	0.34
Mission Boulevard, North of D Street	-	-	2,506	**F**	1.57
Mission Boulevard, South of Jackson Street/Foothill Boulevard	3,525	**F**	2,017	**F**	-0.12
Foothill Boulevard, North of City Center Drive (South)	2,963	**F**	1,809	E	-0.48
Foothill Boulevard, South of A Street	4,360	E	1,602	E	0.02
Foothill Boulevard, North of D Street	4,911	**F**	1,351	D	-0.24
Jackson Street, West of Mission Boulevard	3,158	**F**	2,743	**F**	-0.17
Crow Canyon Road/Grove Way, North of Castro Valley Boulevard	2,133	**F**	2,136	**F**	0.01
Crow Canyon Road/Grove Way, West of Center Street	1,036	D	1,056	D	0.01
Winton Avenue, West of D Street	2,297	**F**	2,051	**F**	-0.15
A Street, North of Foothill Boulevard	1,299	D	860	**F**	0.26
A Street, North of Mission Boulevard	-	-	968	**F**	1.21

Source: Kittelson & Associates, Inc., 2018

Bold text indicates substandard operations.
Shaded cell indicated a significant impact.

MTS Roadway Segment Impacts and Mitigation Measures

Mitigation measures were identified for CMP roadway segments potentially impacted by the addition of traffic from the proposed Specific Plan. Mitigation measures that were considered consisted of additional travel lanes. These potential mitigation measures were determined to be infeasible based on the constrained right-of-way that precludes widening or the addition of vehicular capacity at these locations. Widening or addition of vehicular capacity would also increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes at some locations. This would conflict with the proposed Specific Plan goals and policies to support alternative modes.

In addition, other feasible mitigation measures, such as trip reduction or Transportation Demand Management Plan (TDM) programs, were considered. However, while the Specific Plan provides for TDM to encourage residential and employer TDM programs for new projects in the Specific Plan area, the effectiveness of TDM programs cannot be guaranteed. Therefore, it cannot be guaranteed TDM programs would reduce impacts to a level below significance.

Beyond road widenings, there are no feasible improvements that could be implemented within the available right-of-way of the significantly affected segments that would reduce impacts.

I-880 Northbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #17:** The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (A Street to Winton Avenue). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #18:** The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (Winton Avenue to Jackson Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #19:** The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (South of Jackson). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #20:** The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Southbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #21:** The addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-238 Eastbound (I-880 to SR-185). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #22:** The addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-580 Northbound (Strobridge Avenue to Redwood Road). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #23:** The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #24:** The addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #25:** The addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Westbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

> **Mitigation Measure #26:** The addition of a westbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible

due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

Mitigation Measure #27: The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

Mitigation Measure #28: The addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

Mitigation Measure #29: The addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of

proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**.

Mitigation Measure #30: The addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Transit Operations

The two primary transit agencies serving downtown Hayward are AC Transit and BART. Amtrak service via the Capitol Corridor passes through the area at the Hayward Amtrak station, located approximately ¾ miles west of downtown Hayward near A Street. AC Transit has numerous routes serving the Plan area: M, 10, 28, 34, 41, 56, 60, 83, 86, 93, 94, 95, 99, and 801. The Hayward BART Station (part of the Fremont/Richmond and Fremont/Daly City lines) directly serves the Specific Plan area.

Effects of Vehicle Traffic on Mixed Flow Transit Operations

An assessment was made to determine if vehicle trips generated by the Specific Plan would cause congestion that reduces transit vehicle operations. AC Transit currently operates 14 bus lines in the area. As discussed previously, the Specific Plan would cause potentially significant impacts to the following intersections in the Plan area that are used by AC transit bus routes:

- Foothill Boulevard & City Center Drive (South) (#1)
- Foothill Boulevard & B Street (#3)
- Main Street & A Street (#6)
- Mission Boulevard & A Street (#9)
- Mission Boulevard & B Street (#10)
- Mission Boulevard & C Street (#11)
- Mission Boulevard & D Street (#12)
- Mission Boulevard & Foothill Boulevard/Jackson Street (#13)
- Mission Boulevard & Fletcher Lane (#14)
- Watkins Street & Jackson Street (#17)

- Montgomery Street & B Street (#18)
- 2nd Street & City Center Drive (#21)
- 2nd Street & B Street (#23)
- 2nd Street & D Street (#25)
- Foothill Boulevard & Hazel Avenue/City Center Drive (North) (#26)

As discussed previously, the Specific Plan would also cause potentially significant impacts to the following CMP roadway segments in the Plan area that are used by AC transit bus routes:

- Southbound Mission Boulevard (North of D Street)
- Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard)
- Northbound Mission Boulevard (North of A Street)

Mitigation Measure #1 through Mitigation Measure #16 were identified to reduce the intersection impacts to less than significant. However, mitigation measures were generally deemed infeasible at most intersections, and impacts could not be mitigated. Mitigation Measures #24, #25, and #27 were identified to reduce the CMP segment impacts to less than significant but were also deemed infeasible. These changes in operations at the intersections and roadway segments would affect mixed flow transit operations. Therefore, the impact of the Specific Plan on mixed flow transit operations would be considered **significant and unavoidable**.

Transit Capacity

In addition to the impact of vehicles on transit operations, the CMP guidelines require a determination for whether a proposed Plan would cause the existing transit service to exceed its available capacity. All combined AC Transit routes and were considered for these purposes.

AC Transit

The Specific Plan is estimated to generate 2,196 new AC Transit bus trips per day compared to the 2040 no-project with approximately 220 occurring in each peak hour. Given these trips are spread on multiple routes from/to Hayward (14 routes) each operating at an average headway of approximately 35 minutes in the peak hour, the Specific Plan is likely to contribute an average of under 5.0 additional passengers per bus, which is not expected to exceed AC Transit's capacity at the maximum load segments within Hayward. Therefore, the impacts of the Specific Plan on AC Transit service would be considered **less than significant**.

BART

The Hayward BART station is located within the Plan area. According to the September 2018 ridership information provided by BART, there are approximately 5,156 daily weekday boarding's at the Hayward BART Station. Under Cumulative conditions, the model estimates this will increase to 24,531 daily weekday boardings. Under Cumulative plus Specific Plan conditions, the model estimates this will further increase to 25,979 daily weekday boardings. As presented in Table 12, the Specific Plan is expected to

increase daily BART ridership in 2040 by 1,448 new riders at the station, with approximately 145 trips (10%) occurring during the weekday AM peak hour and approximately 145 trips (10%) occurring during the weekday PM peak hour. BART service would be fully operational to San Jose by the Cumulative (2040) year. Based on three routes that will pass through Hayward, and assuming nine trains per hour in each direction, the Specific Plan would contribute on average eight additional passengers per train. The capacity of each train is 1,000 seated and standing passengers. Per BART's 2008 Station Profile Study, the maximum load factors during the peak hours on BART are at 100 percent. Assuming this condition continues with the future expanded service, the projected ridership increase due to the Specific Plan of eight passengers per train would increase BART ridership on trains at the Hayward Station by less than one percent. Therefore, the impacts of the Proposed Plan would be considered **less than significant**.

Table 12: Weekday Peak Hour Specific Plan Trips on BART

Specific Plan Trips	BART Trains	Additional Passengers per Train	Percent Increase in Passengers per Train[1]
145	18	8	0.8%

Source: Kittelson & Associates, 2018
[1] Train capacity assumed to be 1,000 passengers

Transit Access and Egress

Since the Specific Plan proposes pedestrian improvements in the study area, including to the Hayward BART Station and local bus stops, the Specific Plan would provide the same adequate pedestrian connection or better pedestrian connectivity between land uses and transit. Therefore, the impacts of the Specific Plan to transit access and egress would be considered **less than significant**.

Future Transit Service

Future transit service to Hayward would include the BART extension to San Jose. Specific Plan improvements would not preclude implementation of this planned service improvement. Therefore, the impacts of the Specific Plan to future transit service would be considered **less than significant**.

Consistency with Adopted Plans

The Specific Plan's consistency with transit operators' adopted plans was assessed. The Specific Plan is not expected to generate additional BART trips to a point that would exceed the current maximum load capacity of the BART trains by more than one percent. Implementation of the Specific Plan also would not affect any future plans established by BART. AC Transit's future plans also would not be inhibited by the Specific Plan. Therefore, the impacts of the Specific Plan to planned improvements to BART and AC Transit service would be considered **less than significant**.

ITEM 3: INFLUENCE AIR TRAVEL PATTERNS

While the Plan area is located approximately seven miles southeast of the Oakland International Airport and two miles east of the Hayward Executive Airport, the nature of the Specific Plan as a plan for mixed-use residential and commercial development is such that it would not result in a change in air traffic patterns. Therefore, the impacts of the Specific Plan to air travel patterns would be considered **less than significant**.

ITEM 4: DESIGN AND INCOMPATIBLE USE HAZARDS

The types of land uses included in the Specific Plan are generally similar to existing and surrounding uses and thereby are compatible with the existing uses in the Plan area and in the surrounding area. Therefore, the impact of the Specific Plan with respect to hazards as a result of incompatible uses would be considered **less than significant**.

The City will work on a project level to identify new connections within the Plan area, as included in the Specific Plan. A thorough review of all street network connections will be performed during the course of implementation of the Specific Plan to ensure that all future street network designs comply with City standards. Therefore, the impact of the Specific Plan with respect to design hazards would be considered **less than significant**.

ITEM 5: EMERGENCY ACCESS

The Specific Plan involves changes to lane configurations due to road diets and one-way to two-way reconfigurations in downtown Hayward. The design of roadways would be reviewed by the Hayward Police Department and Alameda County Fire Department to ensure emergency access standards are met. A thorough review of all street network connections will be performed during the course of implementation of the proposed Specific Plan to ensure that all future street network designs comply with City standards. Therefore, the impact of the proposed Specific Plan with respect to emergency access would be **less than significant**.

ITEM 6: ADOPTED POLICIES, PLANS, AND PROGRAMS REGARDING PUBLIC TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES

This section discusses potential impacts to bicyclists, pedestrians, and transit passengers.

Bicycle and Pedestrian Impacts

The Alameda Countywide Bicycle Plan, Countywide Pedestrian Plan, and Countywide Transit Plan, all enacted by the Alameda CTC, as well as Plan Bay Area: Strategy for a Sustainable Region, the 2040 Regional Transportation Plan enacted by the MTC in 2013, contain strategies designed to support alternative modes of transportation, including walking, bicycling, and public transit. The Specific Plan

identifies and prioritizes improvements to enhance the pedestrian and bicycle environment. Please note, Alameda CTC is currently in the process of developing a new Countywide Active Transportation Plan.

The Specific Plan includes strategies that, once adopted, would implement the following strategies from the Alameda Countywide Bicycle Plan, Countywide Pedestrian Plan, and Countywide Transit Plan, and would ensure adequate bicycle, pedestrian, and public transit facilities are available in the Plan area.

- **Countywide Bicycle Plan Strategy 1.7**: Encourage local jurisdictions to adopt policies, guidelines, standards and regulations that result in bicycle-friendly communities, and, where applicable, transit-oriented land use development; and provide them with technical assistance and resources to do so
- **Countywide Pedestrian Plan Strategy 1.8**: Encourage local jurisdictions to adopt policies, guidelines, standards and regulations that result in pedestrian-friendly communities, and, where applicable, transit-oriented land use development; and provide them with technical assistance and resources to do so
- **Countywide Transit Plan, Streets Plus Strategy #2**: Encourage transit-oriented community planning along transit corridors and transit-dense areas

The Proposed Plan is a plan for mixed-use development with pedestrian and bicycle improvements and accessible to several transit facilities. Therefore, by its nature it implements the above strategies. As described in the Specific Plan, delineating an inclusive multi-modal circulation system is integrated throughout the Plan. The Specific Plan proposes multi-modal enhancements to the circulation network to make Downtown Hayward a more active, safe, and attractive environment to promote walking, biking, and transit as viable alternatives to driving. Circulation changes include extensive road diets across the Specific Plan area, converting the Downtown Loop to a two-way network, and converting the intersection of Mission Boulevard & Foothill Boulevard/Jackson Street to an oval roundabout. The Specific Plan also includes protected bike lanes and bike routes on area roadways. Other improvements include landscaped buffers, shorter blocks, more pedestrian crossings, and other pedestrian improvements. Therefore, implementation of the Specific Plan would support the strategies mentioned above and would not conflict with plans, programs and policies regarding bicycle, pedestrian, or transit facilities, or decrease the performance and safety of such facilities. Therefore, impacts to bicyclists, pedestrians, and transit service providers resulting from implementation of the Specific Plan would be considered **less than significant**.

CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the proposed mitigations for the Specific Plan and summarizes the significant and unavoidable impacts.

MITIGATIONS

The following list summarizes the mitigation measures recommended as part of the Specific Plan to mitigate Cumulative impacts.

- **Mitigation Measure #1:** Foothill Boulevard & City Center Drive (South) (Intersection #1)
    - Restripe the middle westbound shared through/right turn lane to a left turn lane
    - Restripe the westbound right turn lane to a shared through/right turn lane
    - Add a second southbound left turn lane
    - Add third northbound through lane
- **Mitigation Measure #2:** Foothill Boulevard & B Street (Intersection #3)
    - Install protected left turn signal phases for all approaches
    - Add a second southbound left turn lane
    - Add a second eastbound through lane
    - Add two westbound left turn lanes (three total) and a second westbound through lane
    - Add a third northbound through lane
    - Add a northbound right turn lane (with overlap phase)
- **Mitigation Measure #3:** Main Street & A Street (Intersection #6)
    - Add a second westbound left turn lane
    - Add two eastbound through lanes (three total)
    - Add a southbound right turn lane (with overlap phase)
    - Install protected left turn phases for the eastbound and westbound approaches
- **Mitigation Measure #4:** Mission Boulevard & A Street (Intersection #9)
    - Add a northbound right turn lane
    - Add a southbound right turn lane (with overlap phase)
    - Install protected left turn phases for the northbound and southbound approaches
    - Optimize signal timing
- **Mitigation Measure #5:** Mission Boulevard & B Street (Intersection #10)
    - Install protected left turn phases for the northbound and southbound approaches
    - Add a northbound right turn lane
    - Add a southbound right turn lane
- **Mitigation Measure #6:** Mission Boulevard & C Street (Intersection #11)
    - Optimize signal timing
    - Install protected left turn phases for all approaches
- **Mitigation Measure #7:** Mission Boulevard & D Street (Intersection #12)
    - Add an eastbound shared left/right turn lane between the eastbound left turn lane and right turn lanes

  - Add a southbound right turn lane.
- **Mitigation Measure #8:** Mission Boulevard & Foothill Boulevard/Jackson Street (Intersection #13)
  - Expand the roundabout to have three through lanes throughout
  - Add two uncontrolled/free right turn lanes exiting the roundabout at each leg
  - Expand each approaching leg to three lanes
  - Add a fourth right turn lane with a turn pocket at the westbound Jackson Street approach
- **Mitigation Measure #9:** Mission Boulevard & Fletcher Lane (Intersection #14)
  - Signal timing optimization
  - Add a northbound right turn lane
  - Add a second westbound left turn lane (which would require implementing split phases for the eastbound and westbound approaches)
  - Add a second eastbound right turn lane
  - Add a second northbound left turn lane
  - Install northbound and eastbound right turn overlap phases
- **Mitigation Measure #10:** Watkins Street & Jackson Street (Intersection #17)
  - Add a second southbound right turn lane (with overlap phase)
  - Add a second northbound left turn lane
  - Add a second eastbound left turn lane
  - Add a fourth westbound through lane (required to mitigate AM peak hour impact
- **Mitigation Measure #11:** Montgomery Street & B Street (Intersection #18)
  - Install a traffic signal
- **Mitigation Measure #12:** 2nd Street & City Center Drive (Intersection #21)
  - Optimize signal timing
  - Install an eastbound right turn overlap phase
- **Mitigation Measure #13:** 2nd Street & A Street (#22).
  - Add a second southbound left turn lane
  - Add right turn overlap phases at all approaches
  - Add a second eastbound through lane
  - Add a second westbound left turn lane
- **Mitigation Measure #14:** 2nd Street & B Street (Intersection #23)
  - Install permissive left turn signal phases for the eastbound and westbound approaches
  - Install eastbound and westbound right turn overlap phases,
  - Add a second eastbound left turn lane
  - Add a second southbound right turn lane
- **Mitigation Measure #15:** 2nd Street & D Street (Intersection #25)
  - Add a second eastbound left turn lane
  - Add a second southbound through lane
  - Add a westbound right turn lane
- **Mitigation Measure #16:** Foothill Boulevard & Hazel Avenue/City Center Drive (North) (Intersection #26)
  - Add a second eastbound left turn lane
  - Add a second southbound left turn lane

  - Add a second westbound right turn lane (with overlap phase)
  - Add a third northbound through lane
  - Restripe the eastbound shared through/right turn lane to a shared left/through/right lane (which would require implementing split phases for the eastbound and westbound approaches)
- **Mitigation Measure #17**: I-880 Northbound (Hesperian Boulevard to A Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #18**: I-880 Northbound (A Street to Winton Avenue)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #19**: I-880 Northbound (Winton Avenue to Jackson Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #20**: I-880 Northbound (South of Jackson)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #21**: I-880 Southbound (Hesperian Boulevard to A Street)
  - Add a southbound vehicle lane along the segment
- **Mitigation Measure #22**: I-238 Eastbound (I-880 to SR-185)
  - Add an eastbound vehicle lane along the segment
- **Mitigation Measure #23**: I-580 Northbound (Strobridge Avenue to Redwood Road)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #24**: Southbound Mission Boulevard (North of D Street)
  - Add a southbound vehicle lane along the segment
- **Mitigation Measure #25**: Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard)
  - Add a southbound vehicle lane along the segment
- **Mitigation Measure #26**: Westbound A Street (North of Mission Boulevard)
  - Add a westbound vehicle lane along the segment
- **Mitigation Measure #27**: Northbound Mission Boulevard (North of A Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #28:** Northbound Mission Boulevard (North of D Street)
  - Add a northbound vehicle lane along the segment
- **Mitigation Measure #29**: Eastbound A Street (North of Foothill Boulevard)
  - Add an eastbound vehicle lane along the segment
- **Mitigation Measure #30**: Eastbound A Street (North of Mission Boulevard).
  - Add an eastbound vehicle lane along the segment

SIGNIFICANT AND UNAVOIDABLE IMPACTS

Foothill Boulevard & City Center Drive (South) (Intersection #1). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #1, with the following improvements, the intersection would operate within the standard at LOS E (58.9 seconds of delay) during the PM peak hour:

- Restripe the middle westbound shared through/right turn lane to a left turn lane
- Restripe the westbound right turn lane to a shared through/right turn lane
- Add a second southbound left turn lane
- Add third northbound through lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances, geometric constraints, and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Foothill Boulevard & B Street (Intersection #3). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #2, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (68.4 seconds of delay) and PM peak hour (55.1 seconds pf delay):

- Install protected left turn signal phases for all approaches
- Add a second southbound left turn lane
- Add a second eastbound through lane
- Add two westbound left turn lanes (three total) and a second westbound through lane
- Add a third northbound through lane
- Add a northbound right turn lane (with overlap phase)

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Main Street & A Street (Intersection #6). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #3, with the following improvements, the intersection would operate within the standard at LOS E (67.6 seconds of delay) during the AM peak hour:

- Add a second westbound left turn lane
- Add two eastbound through lanes (three total)
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the eastbound and westbound approaches

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & A Street (Intersection #9). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #4, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (77.8 seconds of delay) and PM peak hour (77.9 seconds of delay):

- Add a northbound right turn lane
- Add a southbound right turn lane (with overlap phase)
- Install protected left turn phases for the northbound and southbound approaches
- Optimize signal timing

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & B Street (Intersection #10). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #5, with the following improvements, the intersection would operate within the standard at LOS C during the AM peak hour (31.7 seconds of delay) and LOS E during the PM peak hour (76.6 seconds of delay):

- Install protected left turn phases for the northbound and southbound approaches
- Add a northbound right turn lane
- Add a southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & Foothill Boulevard/Jackson Street (Intersection #13). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during

the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #8, with the following improvements, the roundabout approaches/legs would operate within the standard at LOS E or better during the AM peak hour and PM peak hour:

- Expand the roundabout to have three through lanes throughout
- Add two uncontrolled/free right turn lanes exiting the roundabout at each leg
- Expand each approaching leg to three lanes
- Add a fourth right turn lane with a turn pocket at the westbound Jackson Street approach

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Mission Boulevard & Fletcher Lane (Intersection #14). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or more during the weekday AM peak hour and would cause the LOS to degrade from acceptable to unacceptable during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #9, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (70.7 seconds of delay) and PM peak hour (67.6 seconds of delay):

- Signal timing optimization
- Add a northbound right turn lane
- Add a second westbound left turn lane (which would require implementing split phases for the eastbound and westbound approaches)
- Add a second eastbound right turn lane
- Add a second northbound left turn lane
- Install northbound and eastbound right turn overlap phases

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Watkins Street & Jackson Street (Intersection #17). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #10, with the following improvements, the intersection would operate within

the standard at LOS E during the AM peak hour (60.5 seconds of delay) and PM peak hour (72.4 seconds of delay):

- Add a second southbound right turn lane (with overlap phase)
- Add a second northbound left turn lane
- Add a second eastbound left turn lane
- Add a fourth westbound through lane (required to mitigate AM peak hour impact

The addition of a fourth westbound through lane is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, the AM peak hour impact would be reduced to **less than significant** and the PM peak hour impact would remain **significant and unavoidable**.

2nd Street & A Street (Intersection #22). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and would cause delay already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday PM peak hour. Peak hour signal warrants are met during both peak hours. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #13, with the following improvements, the intersection would operate within the standard at LOS D during the AM peak hour (54.7 seconds of delay) and LOS E during the PM peak hour (58.5 seconds of delay):

- Add a second southbound left turn lane
- Add right turn overlap phases at all approaches
- Add a second eastbound through lane
- Add a second westbound left turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & B Street (Intersection #23). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #14, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (62.0 seconds of delay) and PM peak hour (79.0 seconds of delay):

- Install permissive left turn signal phases for the eastbound and westbound approaches

- Install eastbound and westbound right turn overlap phases,
- Add a second eastbound left turn lane
- Add a second southbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

2nd Street & D Street (Intersection #25). The addition of Proposed Project traffic would cause the intersection delay of an intersection already exceeding the LOS standard to increase by 5.0 seconds or greater during the weekday AM peak hour. Therefore, the Proposed Project impact is **significant**. As part of Mitigation Measure #15, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (78.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound through lane
- Add a westbound right turn lane

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

Foothill Boulevard & Hazel Avenue/City Center Drive (North) (Intersection #26). The addition of Proposed Project traffic would cause the LOS of an intersection to degrade from acceptable to unacceptable during the weekday AM peak hour and during the weekday PM peak hour. Therefore, the Proposed Project impacts are **significant**. As part of Mitigation Measure #16, with the following improvements, the intersection would operate within the standard at LOS E during the AM peak hour (65.1 seconds of delay) and PM peak hour (72.7 seconds of delay):

- Add a second eastbound left turn lane
- Add a second southbound left turn lane
- Add a second westbound right turn lane (with overlap phase)
- Add a third northbound through lane
- Restripe the eastbound shared through/right turn lane to a shared left/through/right lane (which would require implementing split phases for the eastbound and westbound approaches)

This mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, these impacts would remain **significant and unavoidable**.

I-880 Northbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #17, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (A Street to Winton Avenue). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #18, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (Winton Avenue to Jackson Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #19, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Northbound (South of Jackson). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #20, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-880 Southbound (Hesperian Boulevard to A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #21, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-238 Eastbound (I-880 to SR-185). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #22, the addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

I-580 Northbound (Strobridge Avenue to Redwood Road). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #23, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the requirement for right-of-way acquisition. In addition, this facility is under the jurisdiction of Caltrans so the implementation and timing of the mitigation measure is not under the City's control. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #24, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Southbound Mission Boulevard (South of Jackson Street/Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment V/C ratio to increase by 0.03 during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #25, the addition of a southbound vehicle lane along the segment would reduce the segment LOS to within the standard.

However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Westbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS E to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #26, the addition of a westbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of A Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #27, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Northbound Mission Boulevard (North of D Street). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #28, the addition of a northbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Foothill Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate from LOS D to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #29, the addition of an eastbound vehicle lane along

the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Eastbound A Street (North of Mission Boulevard). The addition of Specific Plan traffic and street network improvements would cause the segment LOS to deteriorate to LOS F during the weekday PM peak hour, which exceeds the Alameda CTC's standard for CMP roadways. Therefore, the Specific Plan impact is **significant**. As part of Mitigation Measure #30, the addition of an eastbound vehicle lane along the segment would reduce the segment LOS to within the standard. However, this mitigation measure is infeasible due to the resultant increase in pedestrian crossing distances and the requirement for right-of-way acquisition. In addition, widening the road and increasing vehicular capacity would increase exposure of pedestrians and bicyclists to vehicular traffic and would impede the construction of proposed protected bike lanes. This would conflict with the proposed Specific Plan goals and policies to support alternative modes. Therefore, this impact would remain **significant and unavoidable**.

Mixed Flow Transit Operations. The Specific Plan would cause potentially significant impacts to the several intersections in the Plan area that are used by AC transit bus routes. Mitigation Measure #1 through Mitigation Measure #16 were identified to reduce these impacts to less than significant. However, mitigation measures were generally deemed infeasible at most intersections, and impacts could not be mitigated. These changes in operations at the intersections would affect mixed flow transit operations. Therefore, the impact of the Specific Plan on mixed flow transit operations would be considered **significant and unavoidable**.

Appendix 1: Existing Traffic Count Data

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: 4 - Foothill Blvd/1st St & C St
Date: 7/24/2018
Site Code: 14753101

	Foothill Blvd Southbound					C St Westbound					1st St Northwestbound					Foothill Blvd Northbound					C St Eastbound				
Start Time	Right	Thru	Left to 1st St	Left	U-Turn	Right	Thru	Left	Left to 1st St	U-Turn	Right to C St	Right to Foothill Blvd	Left to C St	Left to Foothill Blvd	U-Turn	Right to 1st St	Right	Thru	Left	U-Turn	Right	Right to 1st St	Thru	Left	U-Turn
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	127	0	0	0	0	7	6	0
07:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	118	0	0	0	0	9	7	0
07:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	138	0	0	0	0	6	4	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	133	0	0	0	0	6	11	0
07:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	132	0	0	0	0	10	9	0
07:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	168	0	0	0	1	11	6	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	131	0	0	0	0	4	8	0
07:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	170	0	0	0	0	9	10	0
07:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	161	0	0	0	0	9	7	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	152	0	0	0	0	6	8	0
07:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13	166	0	0	0	0	15	13	0
07:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	107	0	0	0	1	13	3	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	175	0	0	0	0	12	5	0
08:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10	162	0	0	0	0	11	12	0
08:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	161	0	0	0	0	11	17	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	186	0	0	0	0	9	6	0
08:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	125	0	0	0	0	17	17	0
08:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	195	0	0	0	0	14	6	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	163	0	0	0	2	14	10	0
08:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	143	0	0	0	0	11	11	0
08:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	193	0	0	0	0	12	13	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	17	150	0	0	0	1	9	13	0
08:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	143	0	0	0	0	14	14	0
08:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	133	0	0	0	0	12	10	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**278**	**3632**	**0**	**0**	**0**	**5**	**251**	**226**	**0**

Peak Hour: 8:00 AM - 9:00 AM
Peak 15: 8:25 AM - 8:40 AM
PHF: 0.960098

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: 4 - Foothill Blvd/1st St & C St
Date: 7/24/2018
Site Code: 14753102

	Foothill Blvd Southbound					C St Westbound					1st St Northwestbound					Foothill Blvd Northbound					C St Eastbound				
Start Time	Right	Thru	Left to 1st St	Left	U-Turn	Right	Thru	Left	Left to 1st St	U-Turn	Right to C St	Right to Foothill Blvd	Left to C St	Left to Foothill Blvd	U-Turn	Right to 1st St	Right	Thru	Left	U-Turn	Right	Right to 1st St	Thru	Left	U-Turn
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	197	0	0	0	0	27	30	0
04:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	36	241	0	0	0	0	36	18	0
04:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	248	0	0	0	2	25	18	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	179	0	0	0	3	31	25	0
04:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	19	214	0	0	0	0	32	21	0
04:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	39	274	0	0	0	1	30	23	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	247	0	0	0	2	31	24	0
04:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	239	0	0	0	2	38	25	0
04:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	34	277	0	0	0	0	19	17	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	22	247	0	0	0	0	35	26	0
04:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	35	244	0	0	0	1	29	15	0
04:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	288	0	0	0	0	32	23	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	271	0	0	0	1	30	19	0
05:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	22	228	0	0	0	1	28	22	0
05:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	222	0	0	0	0	24	30	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	254	0	0	0	4	28	28	0
05:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	206	0	0	0	0	35	23	0
05:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	276	0	0	0	2	26	18	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	202	0	0	0	1	39	23	0
05:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	265	0	0	0	1	39	12	0
05:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	230	0	0	0	0	33	28	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	36	306	0	0	0	4	22	13	0
05:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	206	0	0	0	2	34	25	0
05:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	264	0	0	0	2	26	16	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**676**	**5825**	**0**	**0**	**0**	**29**	**729**	**522**	**0**

Peak Hour: 4:25 PM - 5:25 PM
Peak 15: 4:25 PM - 4:40 PM
PHF: 0.959809

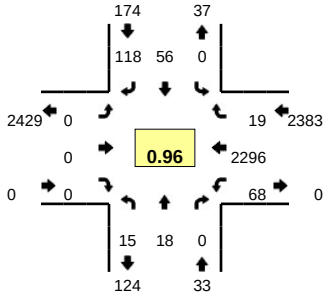
Type of peak hour being reported: Intersection Peak

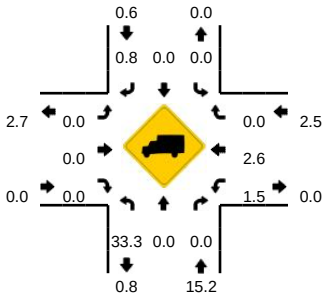
Method for determining peak hour: Total Entering Volume

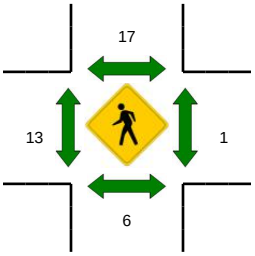
LOCATION: 6 - Main St -- A St
CITY/STATE: Hayward, CA

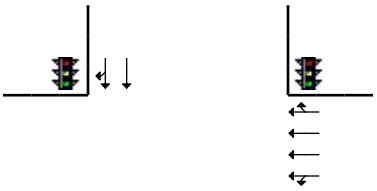
QC JOB #: 14753421
DATE: Tue, Jul 24 2018

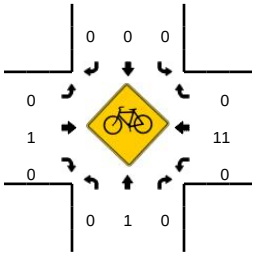
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:35 AM -- 8:50 AM

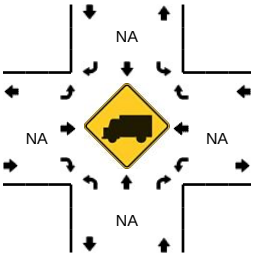


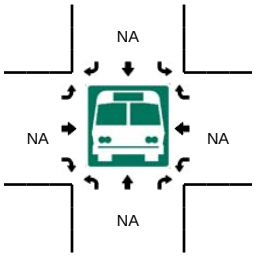












5-Min Count Period Beginning At	6 - Main St (Northbound)				6 - Main St (Southbound)				A St (Eastbound)				A St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	2	4	0	0	0	0	0	2	143	0	0	152	
7:05 AM	2	3	0	0	0	3	11	0	0	0	0	0	2	168	0	0	189	
7:10 AM	0	1	0	0	0	1	8	0	0	0	0	0	1	144	0	0	155	
7:15 AM	0	1	0	0	0	7	8	0	0	0	0	0	3	154	1	0	174	
7:20 AM	3	0	0	0	0	3	3	0	0	0	0	0	3	168	0	0	180	
7:25 AM	2	0	0	0	0	3	9	0	0	0	0	0	1	143	2	0	160	
7:30 AM	1	1	0	0	0	2	7	0	0	0	0	0	1	196	0	0	208	
7:35 AM	1	0	0	0	0	1	7	0	0	0	0	0	4	197	1	0	211	
7:40 AM	2	2	0	0	0	4	11	0	0	0	0	0	1	216	1	0	237	
7:45 AM	1	2	0	0	0	4	13	0	0	0	0	0	2	191	2	0	215	
7:50 AM	2	1	0	0	0	4	13	0	0	0	0	0	3	216	2	0	241	
7:55 AM	0	1	0	0	0	5	8	0	0	0	0	0	3	220	1	0	238	2360
8:00 AM	0	0	0	0	0	9	9	0	0	0	0	0	3	159	2	0	182	2390
8:05 AM	2	5	0	0	0	3	5	0	0	0	0	0	8	165	1	0	189	2390
8:10 AM	0	0	0	0	0	8	14	0	0	0	0	0	4	197	3	0	226	2461
8:15 AM	3	0	0	0	0	6	14	0	0	0	0	0	9	192	3	0	227	2514
8:20 AM	0	0	0	0	0	5	9	0	0	0	0	0	9	190	0	0	213	2547
8:25 AM	0	3	0	0	0	2	12	0	0	0	0	0	2	152	0	0	171	2558
8:30 AM	2	2	0	0	0	3	9	0	0	0	0	0	3	206	3	0	228	2578
8:35 AM	2	3	0	0	0	2	7	0	0	0	0	0	9	180	0	0	203	2570
8:40 AM	1	1	0	0	0	6	12	0	0	0	0	0	11	185	1	0	217	2550
8:45 AM	3	2	0	0	0	3	6	0	0	0	0	0	4	234	3	0	255	2590
8:50 AM	1	1	0	0	0	5	7	0	0	0	0	0	3	220	2	0	239	2588
8:55 AM	0	3	0	0	0	5	4	0	0	0	0	0	12	179	2	0	205	2555

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	24	0	0	0	44	100	0	0	0	0	0	96	2396	16	0	2700
Heavy Trucks	8	0	0		0	0	4		0	0	0		4	52	0		68
Pedestrians		16				12				8				0			36
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

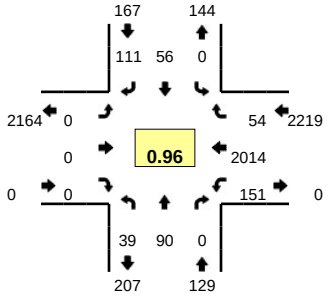
LOCATION: 6 - Main St -- A St

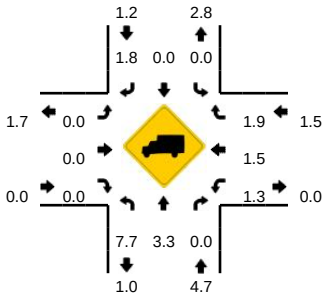
CITY/STATE: Hayward, CA

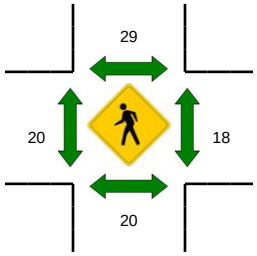
QC JOB #: 14753422

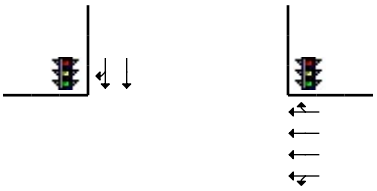
DATE: Tue, Jul 24 2018

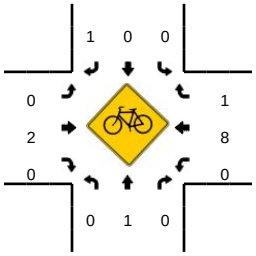
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:35 PM -- 5:50 PM

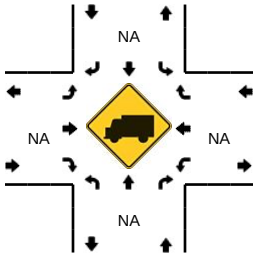


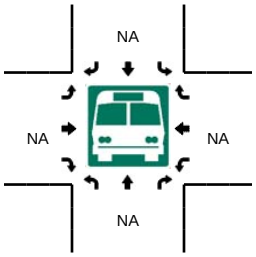












5-Min Count Period Beginning At	6 - Main St (Northbound)				6 - Main St (Southbound)				A St (Eastbound)				A St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	5	0	0	0	5	5	0	0	0	0	0	14	156	8	0	196	
4:05 PM	5	8	0	0	0	10	11	0	0	0	0	0	16	132	4	0	186	
4:10 PM	6	6	0	0	0	3	8	0	0	0	0	0	23	162	1	0	209	
4:15 PM	5	7	0	0	0	6	8	0	0	0	0	0	12	129	3	0	170	
4:20 PM	3	5	0	0	0	4	6	0	0	0	0	0	12	153	3	0	186	
4:25 PM	2	4	0	0	0	4	4	0	0	0	0	0	9	152	1	0	176	
4:30 PM	2	9	0	0	0	3	7	0	0	0	0	0	5	152	3	0	181	
4:35 PM	5	3	0	0	0	2	9	0	0	0	0	0	8	156	7	0	190	
4:40 PM	1	6	0	0	0	2	4	0	0	0	0	0	6	158	5	0	182	
4:45 PM	1	3	0	0	0	6	4	0	0	0	0	0	12	149	1	0	176	
4:50 PM	0	10	0	0	0	1	5	0	0	0	0	0	17	172	5	0	210	
4:55 PM	5	4	0	0	0	5	9	0	0	0	0	0	18	151	4	0	196	2258
5:00 PM	2	6	0	0	0	8	8	0	0	0	0	0	9	133	7	0	173	2235
5:05 PM	4	19	0	0	0	3	14	0	0	0	0	0	12	158	6	0	216	2265
5:10 PM	3	8	0	0	0	5	7	0	0	0	0	0	12	166	5	0	206	2262
5:15 PM	4	6	0	0	0	4	10	0	0	0	0	0	13	170	2	0	209	2301
5:20 PM	5	5	0	0	0	6	16	0	0	0	0	0	11	174	4	0	221	2336
5:25 PM	3	5	0	0	0	2	9	0	0	0	0	0	18	181	1	0	219	2379
5:30 PM	2	5	0	0	0	10	9	0	0	0	0	0	14	159	9	0	208	2406
5:35 PM	2	4	0	0	0	1	4	0	0	0	0	0	3	192	1	0	207	2423
5:40 PM	7	9	0	0	0	6	10	0	0	0	0	0	14	188	4	0	238	2479
5:45 PM	2	9	0	0	0	5	10	0	0	0	0	0	10	170	6	0	212	2515
5:50 PM	5	4	0	0	0	6	6	0	0	0	0	0	19	137	3	0	180	2485
5:55 PM	6	6	0	0	0	9	5	0	0	0	0	0	20	162	0	0	208	2497

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	88	0	0	0	48	96	0	0	0	0	0	108	2200	44	0	2628
Heavy Trucks	0	0	0		0	0	4		0	0	0		0	36	0		40
Pedestrians		20				56				28				12			116
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

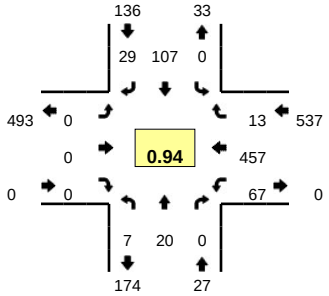
Type of peak hour being reported: Intersection Peak

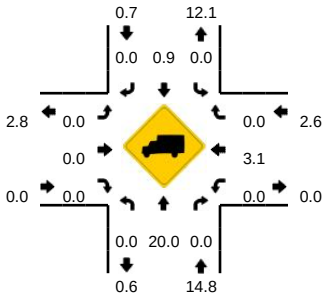
Method for determining peak hour: Total Entering Volume

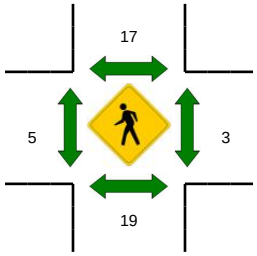
LOCATION: 7 - Main St -- B St
CITY/STATE: Hayward, CA

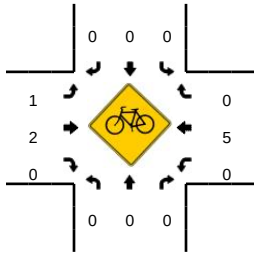
QC JOB #: 14753403
DATE: Tue, Jul 24 2018

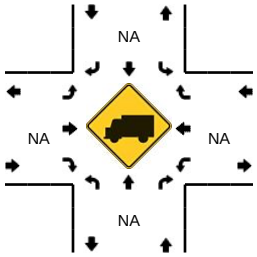
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

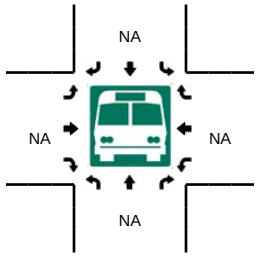












5-Min Count Period Beginning At	7 - Main St (Northbound)				7 - Main St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	3	1	0	0	0	0	0	3	22	0	0	30	
7:05 AM	0	2	0	0	0	5	0	0	0	0	0	0	3	46	1	0	57	
7:10 AM	0	1	0	0	0	2	0	0	0	0	0	0	3	51	0	0	57	
7:15 AM	0	3	0	0	0	7	4	0	0	0	0	0	0	39	0	0	53	
7:20 AM	0	1	0	0	0	4	1	0	0	0	0	0	5	55	1	0	67	
7:25 AM	1	0	0	0	0	0	4	0	0	0	0	0	5	50	2	0	62	
7:30 AM	0	2	0	0	0	2	0	0	0	0	0	0	1	46	0	0	51	
7:35 AM	0	0	0	0	0	4	2	0	0	0	0	0	6	42	2	0	56	
7:40 AM	0	2	0	0	0	3	3	0	0	0	0	0	7	44	1	0	60	
7:45 AM	0	2	0	0	0	4	1	0	0	0	0	0	5	42	1	0	55	
7:50 AM	1	2	0	0	0	3	1	0	0	0	0	0	4	43	2	0	56	
7:55 AM	0	3	0	0	0	7	2	0	0	0	0	0	3	33	0	0	48	652
8:00 AM	0	1	0	0	0	10	0	0	0	0	0	0	5	49	2	0	67	689
8:05 AM	0	3	0	0	0	11	3	0	0	0	0	0	1	36	1	0	55	687
8:10 AM	1	0	0	0	0	9	1	0	0	0	0	0	4	33	0	0	48	678
8:15 AM	1	1	0	0	0	9	5	0	0	0	0	0	8	39	1	0	64	689
8:20 AM	1	2	0	0	0	9	5	0	0	0	0	0	6	37	0	0	60	682
8:25 AM	1	1	0	0	0	3	1	0	0	0	0	0	8	43	0	0	57	677
8:30 AM	0	3	0	0	0	4	4	0	0	0	0	0	6	39	0	0	56	682
8:35 AM	0	3	0	0	0	10	2	0	0	0	0	0	3	33	2	0	53	679
8:40 AM	0	0	0	0	0	17	1	0	0	0	0	0	5	28	2	0	53	672
8:45 AM	0	3	0	0	0	5	1	0	0	0	0	0	6	42	2	0	59	676
8:50 AM	1	1	0	0	0	6	1	0	0	0	0	0	5	44	1	0	59	679
8:55 AM	2	2	0	0	0	14	5	0	0	0	0	0	10	34	2	0	69	700

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	24	0	0	0	100	28	0	0	0	0	0	84	480	20	0	748
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	12	0		16
Pedestrians		16				16				0				0			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:25 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

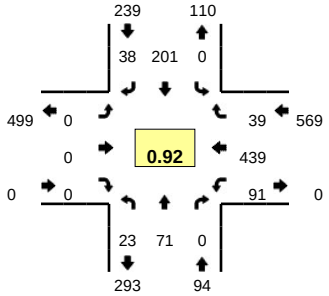
Type of peak hour being reported: Intersection Peak

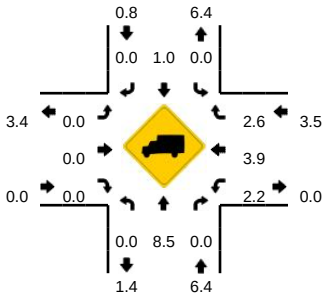
Method for determining peak hour: Total Entering Volume

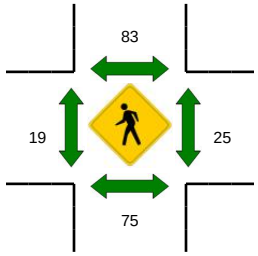
LOCATION: 7 - Main St -- B St
CITY/STATE: Hayward, CA

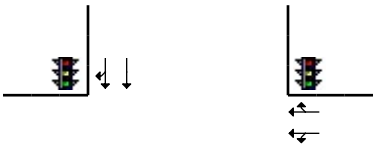
QC JOB #: 14753404
DATE: Tue, Jul 24 2018

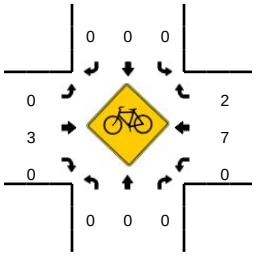
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

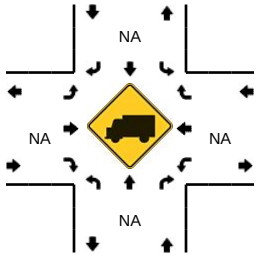


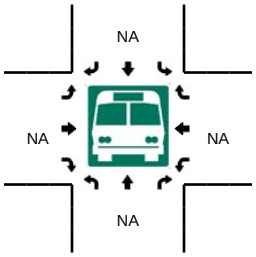












5-Min Count Period Beginning At	7 - Main St (Northbound)				7 - Main St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	12	0	0	0	19	3	0	0	0	0	0	11	32	2	0	79	
4:05 PM	1	9	0	0	0	19	2	0	0	0	0	0	10	29	1	0	71	
4:10 PM	0	4	0	0	0	27	1	0	0	0	0	0	6	40	2	0	80	
4:15 PM	1	8	0	0	0	19	2	0	0	0	0	0	10	29	4	0	73	
4:20 PM	2	3	0	0	0	14	6	0	0	0	0	0	6	34	6	0	71	
4:25 PM	1	4	0	0	0	14	1	0	0	0	0	0	10	25	2	0	57	
4:30 PM	2	8	0	0	0	8	1	0	0	0	0	0	8	35	3	0	65	
4:35 PM	5	5	0	0	0	6	3	0	0	0	0	0	15	33	5	0	72	
4:40 PM	0	4	0	0	0	11	3	0	0	0	0	0	6	34	1	0	59	
4:45 PM	0	4	0	0	0	17	3	0	0	0	0	0	8	29	0	0	61	
4:50 PM	0	4	0	0	0	13	1	0	0	0	0	0	6	48	3	0	75	
4:55 PM	1	4	0	0	0	19	3	0	0	0	0	0	3	33	3	0	66	829
5:00 PM	0	10	0	0	0	13	3	0	0	0	0	0	4	42	4	0	76	826
5:05 PM	2	11	0	0	0	16	2	0	0	0	0	0	11	27	3	0	72	827
5:10 PM	2	7	0	0	0	17	5	0	0	0	0	0	11	39	5	0	86	833
5:15 PM	3	7	0	0	0	16	0	0	0	0	0	0	6	34	1	0	67	827
5:20 PM	2	3	0	0	0	10	5	0	0	0	0	0	7	40	4	0	71	827
5:25 PM	2	4	0	0	0	19	2	0	0	0	0	0	6	38	3	0	74	844
5:30 PM	2	1	0	0	0	19	5	0	0	0	0	0	3	43	4	0	77	856
5:35 PM	0	11	0	0	0	8	4	0	0	0	0	0	4	42	2	0	71	855
5:40 PM	1	5	0	1	0	18	3	0	0	0	0	0	7	26	3	0	64	860
5:45 PM	4	3	0	0	0	16	5	0	0	0	0	0	10	36	5	0	79	878
5:50 PM	2	5	0	0	0	28	1	0	0	0	0	0	9	35	4	0	84	887
5:55 PM	2	4	0	0	0	21	3	0	0	0	0	0	13	37	1	0	81	902

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	48	0	0	0	260	36	0	0	0	0	0	128	432	40	0	976
Heavy Trucks	0	8	0		0	0	0		0	0	0		0	8	0		16
Pedestrians		80				76				32				0			188
Bicycles	0	0	0		0	0	0		0	1	0		0	1	1		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:25 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

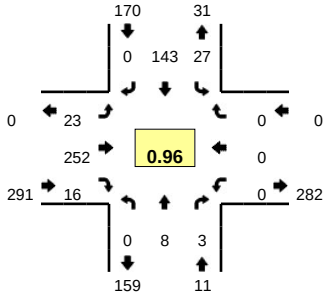
Type of peak hour being reported: Intersection Peak

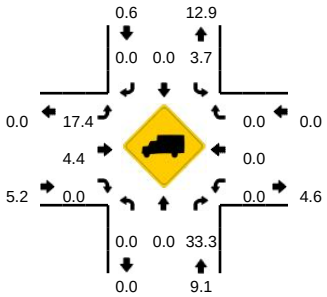
Method for determining peak hour: Total Entering Volume

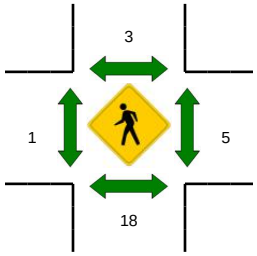
LOCATION: 8 - Main St -- C St
CITY/STATE: Hayward, CA

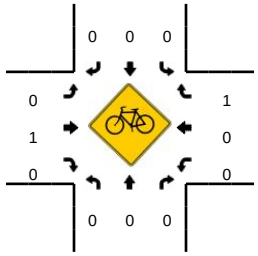
QC JOB #: 14753405
DATE: Tue, Jul 24 2018

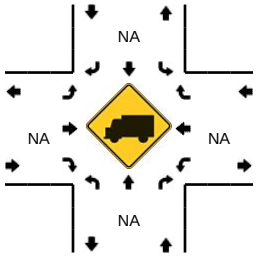
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:10 AM -- 8:25 AM

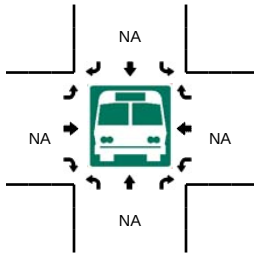












5-Min Count Period Beginning At	8 - Main St (Northbound)				8 - Main St (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	8	0	0	1	13	0	0	0	0	0	0	22	
7:05 AM	0	0	0	0	0	9	0	0	3	16	0	0	0	0	0	0	28	
7:10 AM	0	0	0	0	0	2	0	0	2	10	0	0	0	0	0	0	14	
7:15 AM	0	0	0	0	1	8	0	0	2	18	0	0	0	0	0	0	29	
7:20 AM	0	0	0	0	1	7	0	0	1	14	0	0	0	0	0	0	23	
7:25 AM	0	0	0	0	0	5	0	0	1	19	2	0	0	0	0	0	27	
7:30 AM	0	0	1	0	1	3	0	0	2	13	0	0	0	0	0	0	20	
7:35 AM	0	0	0	0	2	6	0	0	0	19	0	0	0	0	0	0	27	
7:40 AM	0	1	0	0	1	10	0	0	2	13	0	0	0	0	0	0	27	
7:45 AM	0	0	0	0	3	7	0	0	1	18	0	0	0	0	0	0	29	
7:50 AM	0	1	0	0	1	6	0	0	3	22	1	0	0	0	0	0	34	
7:55 AM	0	0	0	0	4	6	0	0	3	11	0	0	0	0	0	0	24	304
8:00 AM	0	0	0	0	2	11	0	0	1	18	1	0	0	0	0	0	33	315
8:05 AM	0	0	0	0	1	14	0	0	3	21	0	0	0	0	0	0	39	326
8:10 AM	0	0	0	0	2	14	0	0	1	25	0	0	0	0	0	0	42	354
8:15 AM	0	1	0	0	3	15	0	0	2	12	0	0	0	0	0	0	33	358
8:20 AM	0	1	0	0	0	12	0	0	2	31	2	0	0	0	0	0	48	383
8:25 AM	0	0	0	0	1	8	0	0	2	24	2	0	0	0	0	0	37	393
8:30 AM	0	0	0	0	2	11	0	0	3	21	1	0	0	0	0	0	38	411
8:35 AM	0	0	0	0	3	10	0	0	4	21	3	0	0	0	0	0	41	425
8:40 AM	0	0	1	0	5	17	0	0	1	16	0	0	0	0	0	0	40	438
8:45 AM	0	2	0	0	3	7	0	0	1	25	3	0	0	0	0	0	41	450
8:50 AM	0	2	1	0	3	9	0	0	2	21	1	0	0	0	0	0	39	455
8:55 AM	0	2	1	0	2	15	0	0	1	17	3	0	0	0	0	0	41	472

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	8	0	0	20	164	0	0	20	272	8	0	0	0	0	0	492
Heavy Trucks	0	0	0		0	0	0		4	8	0		0	0	0		12
Pedestrians		36				0				0				12			48
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:25 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

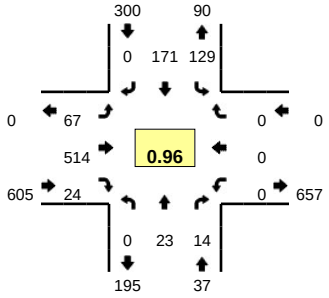
Type of peak hour being reported: Intersection Peak

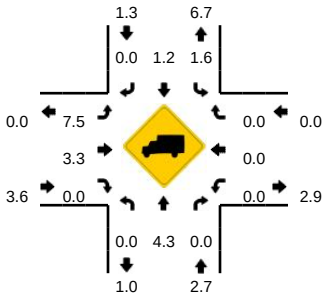
Method for determining peak hour: Total Entering Volume

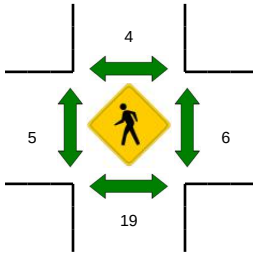
LOCATION: 8 - Main St -- C St
CITY/STATE: Hayward, CA

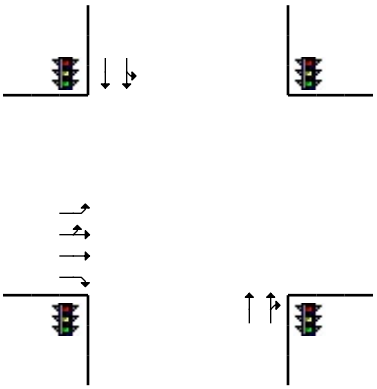
QC JOB #: 14753406
DATE: Tue, Jul 24 2018

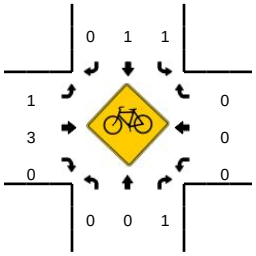
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

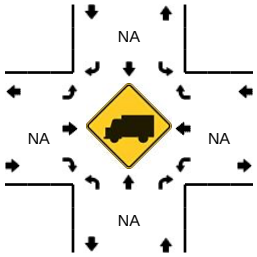


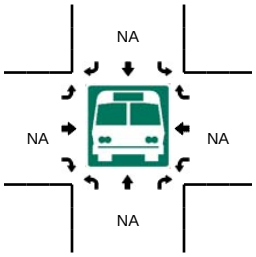












5-Min Count Period Beginning At	8 - Main St (Northbound)				8 - Main St (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	11	16	0	0	11	43	4	0	0	0	0	0	85	
4:05 PM	0	5	0	0	9	12	0	0	4	49	3	0	0	0	0	0	82	
4:10 PM	0	2	0	0	15	27	0	0	2	27	4	0	0	0	0	0	77	
4:15 PM	0	1	2	0	12	13	0	0	8	41	5	0	0	0	0	0	82	
4:20 PM	0	1	0	0	6	16	0	0	4	38	1	0	0	0	0	0	66	
4:25 PM	0	1	1	0	10	13	0	0	3	46	5	0	0	0	0	0	79	
4:30 PM	0	2	0	0	6	10	0	0	9	48	1	0	0	0	0	0	76	
4:35 PM	0	1	4	0	10	14	0	0	6	45	2	0	0	0	0	0	82	
4:40 PM	0	0	0	0	7	8	0	0	3	41	2	0	0	0	0	0	61	
4:45 PM	0	2	0	0	8	11	0	0	3	42	5	0	0	0	0	0	71	
4:50 PM	0	1	0	0	12	10	0	0	6	42	2	0	0	0	0	0	73	
4:55 PM	0	3	1	0	4	12	0	0	4	54	3	0	0	0	0	0	81	915
5:00 PM	0	4	4	0	8	12	0	0	3	22	3	0	0	0	0	0	56	886
5:05 PM	0	4	2	0	14	17	0	0	12	38	6	0	0	0	0	0	93	897
5:10 PM	0	1	0	0	11	15	0	0	8	46	1	0	0	0	0	0	82	902
5:15 PM	0	3	3	0	15	7	0	0	7	32	1	0	0	0	0	0	68	888
5:20 PM	0	1	0	0	8	11	0	0	3	52	2	0	0	0	0	0	77	899
5:25 PM	0	1	1	0	8	14	0	0	8	42	5	0	0	0	0	0	79	899
5:30 PM	0	0	1	0	11	13	0	0	3	51	3	0	0	0	0	0	82	905
5:35 PM	0	3	2	0	6	7	0	0	8	58	0	0	0	0	0	0	84	907
5:40 PM	0	2	1	0	13	15	0	0	2	40	2	0	0	0	0	0	75	921
5:45 PM	0	0	0	0	11	16	0	0	6	45	0	0	0	0	0	0	78	928
5:50 PM	0	3	0	0	13	22	0	0	2	42	0	0	0	0	0	0	82	937
5:55 PM	0	1	0	0	11	22	0	0	5	46	1	0	0	0	0	0	86	942

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	16	0	0	140	240	0	0	52	532	4	0	0	0	0	0	984
Heavy Trucks	0	0	0		0	0	0		8	20	0		0	0	0		28
Pedestrians		12				8				16				0			36
Bicycles	0	0	1		0	0	0		1	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

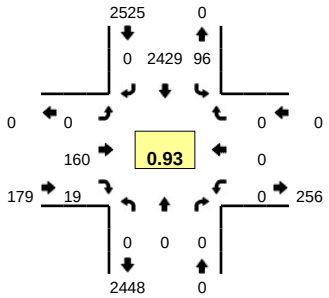
Type of peak hour being reported: Intersection Peak

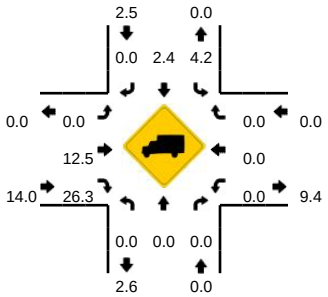
Method for determining peak hour: Total Entering Volume

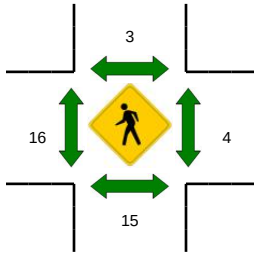
LOCATION: 11 - Mission Blvd -- C St
CITY/STATE: Hayward, CA

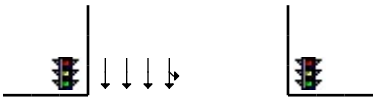
QC JOB #: 14753407
DATE: Tue, Jul 24 2018

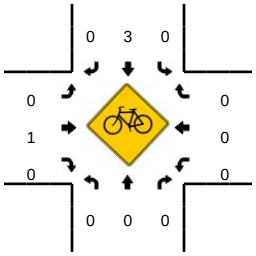
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

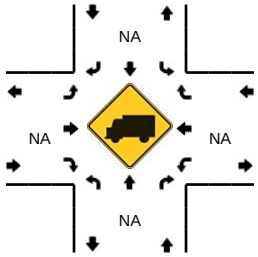


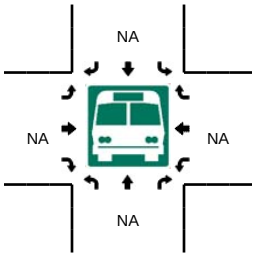












5-Min Count Period Beginning At	11 - Mission Blvd (Northbound)				11 - Mission Blvd (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	171	0	0	0	10	4	0	0	0	0	0	188	
7:05 AM	0	0	0	0	4	175	0	0	0	12	0	0	0	0	0	0	191	
7:10 AM	0	0	0	0	5	169	0	0	0	10	2	0	0	0	0	0	186	
7:15 AM	0	0	0	0	8	168	0	0	0	16	3	0	0	0	0	0	195	
7:20 AM	0	0	0	0	8	172	0	0	0	3	4	0	0	0	0	0	187	
7:25 AM	0	0	0	0	9	223	0	0	0	13	1	0	0	0	0	0	246	
7:30 AM	0	0	0	0	4	197	0	0	0	15	0	0	0	0	0	0	216	
7:35 AM	0	0	0	0	8	205	0	0	0	9	2	0	0	0	0	0	224	
7:40 AM	0	0	0	0	3	218	0	0	0	14	2	0	0	0	0	0	237	
7:45 AM	0	0	0	0	6	213	0	0	0	13	0	0	0	0	0	0	232	
7:50 AM	0	0	0	0	8	233	0	0	0	16	2	0	0	0	0	0	259	
7:55 AM	0	0	0	0	11	201	0	0	0	12	0	0	0	0	0	0	224	2585
8:00 AM	0	0	0	0	5	180	0	0	0	10	3	0	0	0	0	0	198	2595
8:05 AM	0	0	0	0	9	192	0	0	0	17	2	0	0	0	0	0	220	2624
8:10 AM	0	0	0	0	14	215	0	0	0	10	0	0	0	0	0	0	239	2677
8:15 AM	0	0	0	0	10	188	0	0	0	4	3	0	0	0	0	0	205	2687
8:20 AM	0	0	0	0	9	164	0	0	0	27	4	0	0	0	0	0	204	2704
8:25 AM	0	0	0	0	10	165	0	0	0	15	1	0	0	0	0	0	191	2649
8:30 AM	0	0	0	0	13	210	0	0	0	9	1	0	0	0	0	0	233	2666
8:35 AM	0	0	0	0	13	196	0	0	0	16	1	0	0	0	0	0	226	2668
8:40 AM	0	0	0	0	8	197	0	0	0	18	4	0	0	0	0	0	227	2658
8:45 AM	0	0	0	0	7	239	0	0	0	12	3	0	0	0	0	0	261	2687
8:50 AM	0	0	0	0	8	181	0	0	0	19	0	0	0	0	0	0	208	2636
8:55 AM	0	0	0	0	8	158	0	0	0	14	2	0	0	0	0	0	182	2594

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	68	2656	0	0	0	172	16	0	0	0	0	0	2912
Heavy Trucks	0	0	0		4	80	0		0	28	4		0	0	0		116
Pedestrians		12				0				16				4			32
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

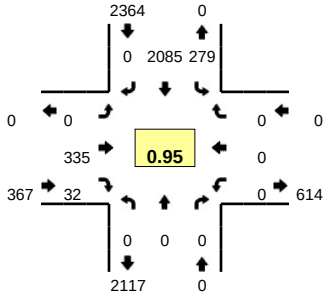
Type of peak hour being reported: Intersection Peak

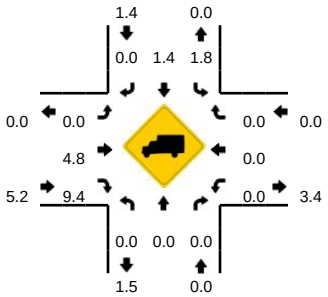
Method for determining peak hour: Total Entering Volume

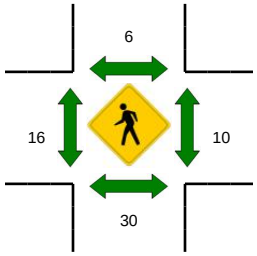
LOCATION: 11 - Mission Blvd -- C St
CITY/STATE: Hayward, CA

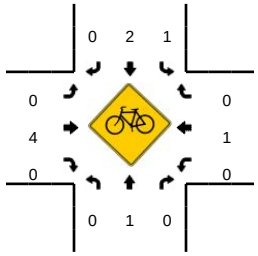
QC JOB #: 14753408
DATE: Tue, Jul 24 2018

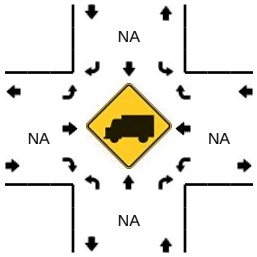
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

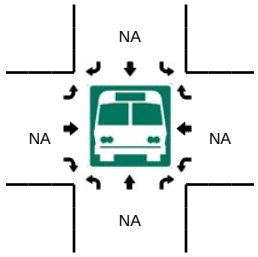












5-Min Count Period Beginning At	11 - Mission Blvd (Northbound)				11 - Mission Blvd (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	29	122	0	0	0	31	2	0	0	0	0	0	184	
4:05 PM	0	0	0	0	25	169	0	0	0	20	3	0	0	0	0	0	217	
4:10 PM	0	0	0	0	22	170	0	0	0	20	5	0	0	0	0	0	217	
4:15 PM	0	0	0	0	17	134	0	0	0	29	4	0	0	0	0	0	184	
4:20 PM	0	0	0	0	22	145	0	0	0	28	2	0	0	0	0	0	197	
4:25 PM	0	0	0	0	21	153	0	0	0	33	2	0	0	0	0	0	209	
4:30 PM	0	0	0	0	29	137	0	0	0	27	1	0	0	0	0	0	194	
4:35 PM	0	0	0	0	28	137	0	0	0	23	1	0	0	0	0	0	189	
4:40 PM	0	0	0	0	19	183	0	0	0	25	1	0	0	0	0	0	228	
4:45 PM	0	0	0	0	23	137	0	0	0	24	2	0	0	0	0	0	186	
4:50 PM	0	0	0	0	24	190	0	0	0	26	2	0	0	0	0	0	242	
4:55 PM	0	0	0	0	27	170	0	0	0	27	2	0	0	0	0	0	226	2473
5:00 PM	0	0	0	0	24	159	0	0	0	19	3	0	0	0	0	0	205	2494
5:05 PM	0	0	0	0	20	171	0	0	0	27	2	0	0	0	0	0	220	2497
5:10 PM	0	0	0	0	25	167	0	0	0	30	2	0	0	0	0	0	224	2504
5:15 PM	0	0	0	0	20	161	0	0	0	33	2	0	0	0	0	0	216	2536
5:20 PM	0	0	0	0	24	191	0	0	0	18	2	0	0	0	0	0	235	2574
5:25 PM	0	0	0	0	26	184	0	0	0	29	3	0	0	0	0	0	242	2607
5:30 PM	0	0	0	0	25	165	0	0	0	35	3	0	0	0	0	0	228	2641
5:35 PM	0	0	0	0	29	181	0	0	0	33	3	0	0	0	0	0	246	2698
5:40 PM	0	0	0	0	18	165	0	0	0	33	5	0	0	0	0	0	221	2691
5:45 PM	0	0	0	0	17	181	0	0	0	25	3	0	0	0	0	0	226	2731
5:50 PM	0	0	0	0	18	156	0	0	0	38	1	0	0	0	0	0	213	2702
5:55 PM	0	0	0	0	23	173	0	0	0	29	1	0	0	0	0	0	226	2702

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	320	2120	0	0	0	388	36	0	0	0	0	0	2864
Heavy Trucks	0	0	0		12	48	0		0	20	0		0	0	0		80
Pedestrians		32				0				8				4			44
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

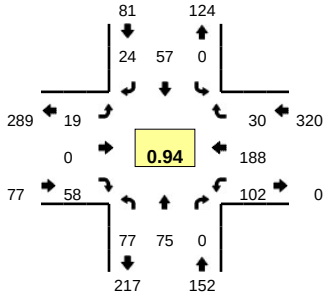
LOCATION: 15 - Watkins St -- B St

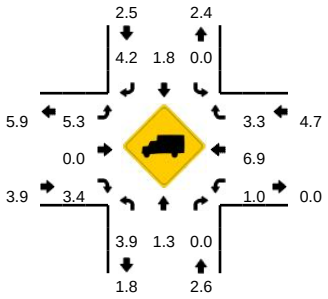
CITY/STATE: Hayward, CA

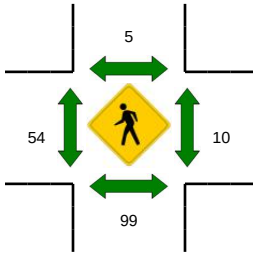
QC JOB #: 14753409

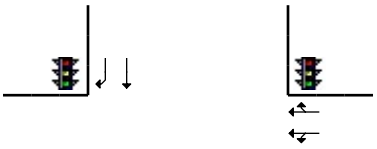
DATE: Tue, Jul 24 2018

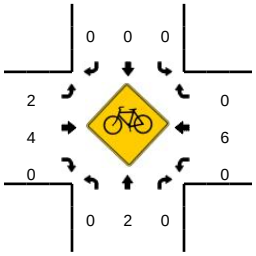
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

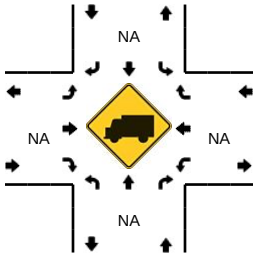


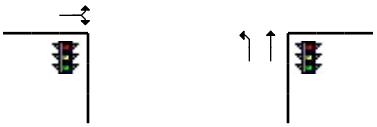


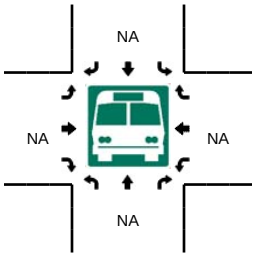












5-Min Count Period Beginning At	15 - Watkins St (Northbound)				15 - Watkins St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	7	3	0	0	0	2	0	0	0	0	3	0	4	8	2	0	29	
7:05 AM	4	2	0	0	0	3	3	0	1	0	3	0	4	6	1	0	27	
7:10 AM	6	4	0	0	0	3	0	0	1	0	0	0	8	19	3	0	44	
7:15 AM	7	4	0	0	0	5	0	0	2	0	3	0	8	12	1	0	42	
7:20 AM	5	3	0	0	0	4	1	0	0	0	3	0	9	19	1	0	45	
7:25 AM	3	3	0	0	0	7	2	0	5	0	3	0	8	22	0	0	53	
7:30 AM	9	5	0	0	0	6	3	0	1	0	3	0	9	16	3	0	55	
7:35 AM	12	8	0	0	0	5	3	0	4	0	4	0	13	9	1	0	59	
7:40 AM	9	4	0	0	0	6	2	0	0	0	4	0	7	10	2	0	44	
7:45 AM	6	10	0	0	0	6	1	0	1	0	4	0	5	18	4	0	55	
7:50 AM	6	5	0	0	0	1	2	0	2	0	7	0	13	20	1	0	57	
7:55 AM	8	8	0	0	0	3	1	0	1	0	5	0	8	14	1	0	49	559
8:00 AM	7	7	0	0	0	6	0	0	2	0	6	0	9	16	6	0	59	589
8:05 AM	3	6	0	0	0	5	1	0	0	0	8	0	4	11	1	0	39	601
8:10 AM	5	11	0	0	0	3	2	0	1	0	4	0	8	17	2	0	53	610
8:15 AM	6	2	0	0	0	5	4	0	1	0	5	0	11	14	4	0	52	620
8:20 AM	3	6	0	0	0	4	3	0	1	0	5	0	7	21	5	0	55	630
8:25 AM	7	2	0	0	0	4	2	0	3	0	6	0	3	14	1	0	42	619
8:30 AM	6	6	0	0	0	5	2	0	5	0	4	0	8	15	4	0	55	619
8:35 AM	6	3	0	0	0	11	3	0	1	0	5	0	12	13	2	0	56	616
8:40 AM	2	13	0	0	0	7	1	0	1	0	10	0	7	8	1	0	50	622
8:45 AM	4	2	0	0	0	8	0	0	0	0	7	0	10	5	3	0	39	606
8:50 AM	3	3	0	0	0	8	2	0	3	0	5	0	8	17	3	0	52	601
8:55 AM	3	7	0	0	0	4	0	0	2	0	7	0	11	14	6	0	54	606

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	96	64	0	0	0	72	32	0	40	0	40	0	120	188	16	0	668
Heavy Trucks	4	4	0		0	0	0		4	0	0		0	8	4		24
Pedestrians		92				12				56				0			160
Bicycles	0	0	0		0	0	0		0	0	0		0	3	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

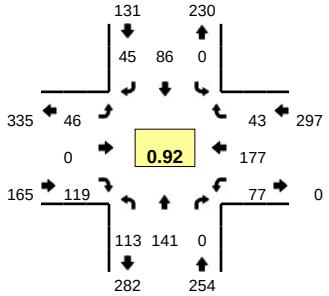
LOCATION: 15 - Watkins St -- B St

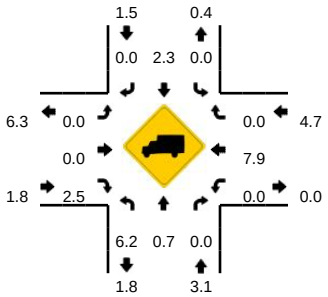
CITY/STATE: Hayward, CA

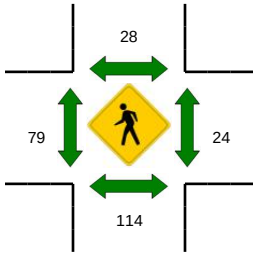
QC JOB #: 14753410

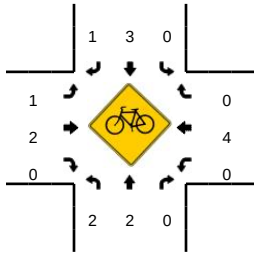
DATE: Tue, Jul 24 2018

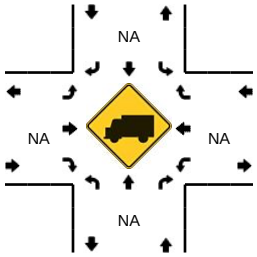
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

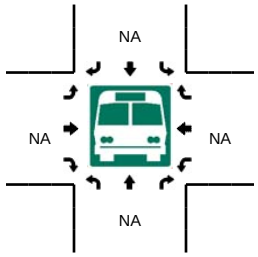












5-Min Count Period Beginning At	15 - Watkins St (Northbound)				15 - Watkins St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	12	10	0	0	0	6	4	0	0	0	12	0	5	11	9	0	69	
4:05 PM	10	11	0	0	0	2	6	0	3	0	7	0	6	21	3	0	69	
4:10 PM	6	9	0	0	0	5	7	0	1	0	5	0	6	13	1	0	53	
4:15 PM	7	6	0	0	0	5	2	0	2	0	7	0	2	6	7	0	44	
4:20 PM	5	10	0	0	0	7	1	0	3	0	7	0	8	19	8	0	68	
4:25 PM	4	18	0	0	0	3	3	0	5	0	6	0	3	4	2	0	48	
4:30 PM	11	10	0	0	0	8	8	0	4	0	9	0	5	13	9	0	77	
4:35 PM	4	12	0	0	0	8	2	0	11	0	4	0	4	16	1	0	62	
4:40 PM	10	9	0	0	0	13	6	0	9	0	13	0	6	16	3	0	85	
4:45 PM	7	11	0	0	0	10	5	0	2	0	6	0	4	13	2	0	60	
4:50 PM	6	12	0	0	0	8	3	0	4	0	12	0	6	17	2	0	70	
4:55 PM	11	15	0	0	0	4	5	0	4	0	10	0	6	14	5	0	74	779
5:00 PM	13	13	0	0	0	2	3	0	8	0	6	0	4	16	5	0	70	780
5:05 PM	12	20	0	0	0	6	4	0	3	0	6	0	7	19	5	0	82	793
5:10 PM	11	19	0	0	0	8	4	0	4	0	10	0	5	10	0	0	71	811
5:15 PM	8	9	0	0	0	8	3	0	3	0	7	0	5	10	6	0	59	826
5:20 PM	6	5	0	0	0	9	1	0	1	0	5	0	6	14	0	0	47	805
5:25 PM	8	13	0	0	0	6	5	0	2	0	26	0	9	13	2	0	84	841
5:30 PM	8	8	0	0	0	9	5	0	3	0	9	0	7	20	8	0	77	841
5:35 PM	13	7	0	0	0	3	1	0	3	0	9	0	12	15	5	0	68	847
5:40 PM	8	12	0	0	0	7	3	0	2	0	10	0	7	12	5	0	66	828
5:45 PM	11	17	0	0	0	3	1	0	7	0	4	0	8	19	4	0	74	842
5:50 PM	11	11	0	0	0	4	1	0	6	0	6	0	5	17	4	0	65	837
5:55 PM	8	10	0	0	0	9	5	0	5	0	13	0	13	11	1	0	75	838

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	116	112	0	0	0	72	44	0	32	0	176	0	112	192	60	0	916
Heavy Trucks	16	0	0		0	0	0		0	0	0		0	16	0		32
Pedestrians		80				24				60				16			180
Bicycles	1	0	0		0	3	0		0	1	0		0	3	0		8
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

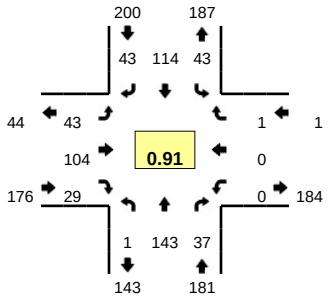
LOCATION: 16 - Watkins St -- C St

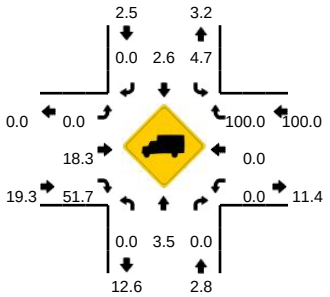
CITY/STATE: Hayward, CA

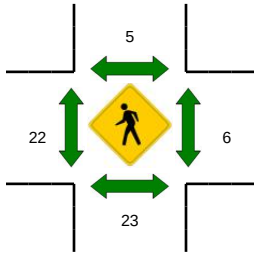
QC JOB #: 14753411

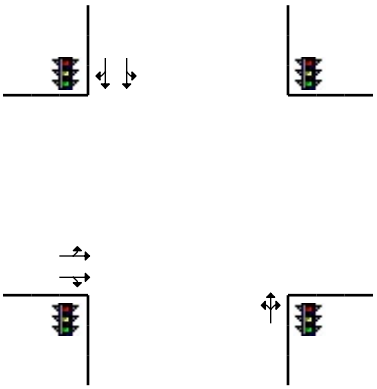
DATE: Tue, Jul 24 2018

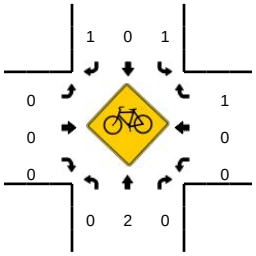
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

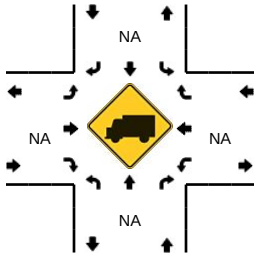


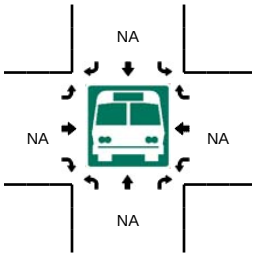












5-Min Count Period Beginning At	16 - Watkins St (Northbound)				16 - Watkins St (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	8	3	0	3	5	2	0	3	9	4	0	0	0	0	0	37	
7:05 AM	0	4	3	0	2	8	0	0	1	7	1	0	0	0	0	0	26	
7:10 AM	0	12	3	0	0	7	4	0	2	9	2	0	0	0	0	0	39	
7:15 AM	0	11	4	0	3	10	2	0	3	10	3	0	0	0	1	0	47	
7:20 AM	0	9	0	0	0	12	6	0	1	6	1	0	0	0	0	0	35	
7:25 AM	0	8	5	0	1	10	4	0	1	10	1	0	0	0	0	0	40	
7:30 AM	0	17	1	0	2	8	5	0	1	11	1	0	0	0	0	0	46	
7:35 AM	0	15	4	0	2	17	4	0	5	6	2	0	0	0	0	0	55	
7:40 AM	0	14	3	0	3	8	2	0	2	9	2	0	0	0	0	0	43	
7:45 AM	1	15	2	0	4	10	2	0	7	12	3	0	0	0	0	0	56	
7:50 AM	0	10	2	0	6	7	4	0	4	4	2	0	0	0	0	0	39	
7:55 AM	0	15	3	0	3	8	3	0	3	8	2	0	0	0	0	0	45	508
8:00 AM	0	12	4	0	1	10	8	0	8	9	6	0	0	0	0	0	58	529
8:05 AM	0	2	5	0	6	8	2	0	2	10	0	0	0	0	0	0	35	538
8:10 AM	0	14	2	0	2	9	3	0	5	4	3	0	0	0	0	0	42	541
8:15 AM	0	12	6	0	4	11	6	0	1	8	6	0	0	0	1	0	55	549
8:20 AM	0	4	2	0	5	7	3	0	3	15	2	0	0	0	0	0	41	555
8:25 AM	0	13	3	0	5	11	1	0	2	8	0	0	0	0	0	0	43	558
8:30 AM	0	14	6	0	2	9	3	0	1	9	2	0	0	0	0	0	46	558
8:35 AM	0	11	5	0	4	15	3	0	2	3	2	0	0	1	0	0	46	549
8:40 AM	0	13	6	0	8	13	0	0	3	5	3	0	0	0	0	0	51	557
8:45 AM	0	11	3	0	7	15	2	0	0	9	2	0	0	0	0	0	49	550
8:50 AM	0	3	5	0	4	13	3	0	1	9	1	0	0	0	0	0	39	550
8:55 AM	0	14	6	0	4	16	2	0	3	3	0	0	0	0	0	0	48	553

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	176	36	0	36	140	32	0	56	108	28	0	0	0	0	0	616
Heavy Trucks	0	4	0		0	4	0		0	20	12		0	0	0		40
Pedestrians		24				8				8				20			60
Bicycles	0	0	0		1	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

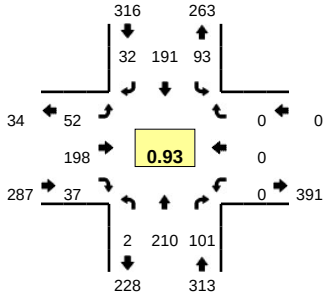
LOCATION: 16 - Watkins St -- C St

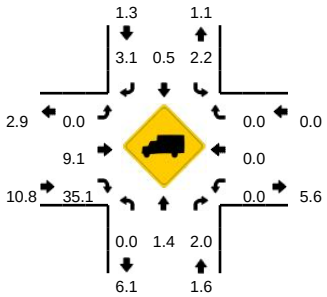
CITY/STATE: Hayward, CA

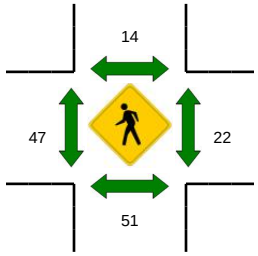
QC JOB #: 14753412

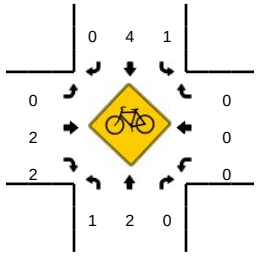
DATE: Tue, Jul 24 2018

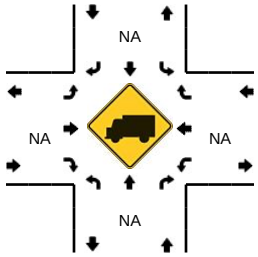
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

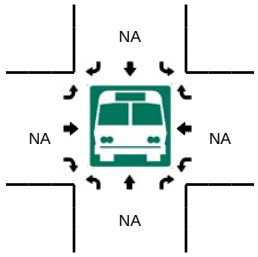












5-Min Count Period Beginning At	16 - Watkins St (Northbound)				16 - Watkins St (Southbound)				C St (Eastbound)				C St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	20	10	0	9	14	2	0	2	12	5	0	0	0	0	0	74	
4:05 PM	0	17	5	0	7	4	3	0	2	15	0	0	0	0	0	0	53	
4:10 PM	0	15	10	0	8	10	2	0	0	9	2	0	0	0	0	0	56	
4:15 PM	0	11	9	0	6	10	1	0	3	13	1	0	0	0	0	0	54	
4:20 PM	0	11	9	0	7	12	0	0	4	21	3	0	0	0	0	0	67	
4:25 PM	2	25	14	0	5	12	1	0	5	14	4	0	0	0	0	0	82	
4:30 PM	0	15	7	0	10	12	1	0	4	9	4	0	0	0	0	0	62	
4:35 PM	0	11	11	0	4	13	3	0	2	11	2	0	0	0	0	0	57	
4:40 PM	2	17	6	0	13	17	3	0	4	16	4	0	0	0	0	0	82	
4:45 PM	0	17	8	0	7	11	3	0	3	11	6	0	0	0	0	0	66	
4:50 PM	0	22	6	0	9	8	3	0	2	13	5	0	0	0	0	0	68	
4:55 PM	0	20	3	0	12	14	2	0	7	9	2	0	0	0	0	0	69	790
5:00 PM	0	16	5	0	4	7	3	0	6	15	1	0	0	0	0	0	57	773
5:05 PM	0	31	5	0	11	18	2	0	4	15	2	0	0	0	0	0	88	808
5:10 PM	0	19	12	0	9	25	3	0	7	14	3	0	0	0	0	0	92	844
5:15 PM	0	9	6	0	2	16	2	0	1	17	4	0	0	0	0	0	57	847
5:20 PM	0	15	8	0	4	16	1	0	5	12	5	0	0	0	0	0	66	846
5:25 PM	0	14	8	0	16	19	6	0	2	16	0	0	0	0	0	0	81	845
5:30 PM	0	15	10	0	8	21	1	1	4	15	1	0	0	0	0	0	76	859
5:35 PM	1	21	10	0	7	17	1	0	2	21	0	0	0	0	0	0	80	882
5:40 PM	0	18	4	0	9	13	2	0	5	16	6	0	0	0	0	0	73	873
5:45 PM	0	17	9	0	4	12	3	0	8	28	2	0	0	0	0	0	83	890
5:50 PM	1	17	14	0	3	10	0	0	4	16	8	0	0	0	0	0	73	895
5:55 PM	0	18	10	0	15	17	8	0	4	13	5	0	0	0	0	0	90	916

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	208	132	0	88	156	44	0	64	228	60	0	0	0	0	0	984
Heavy Trucks	0	0	0		4	0	0		0	24	12		0	0	0		40
Pedestrians		44				0				52				12			108
Bicycles	1	0	0		0	2	0		0	1	0		0	0	0		4
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

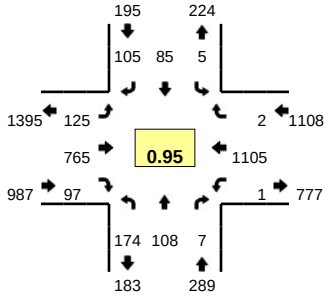
LOCATION: 17 - Watkins St -- Jackson St

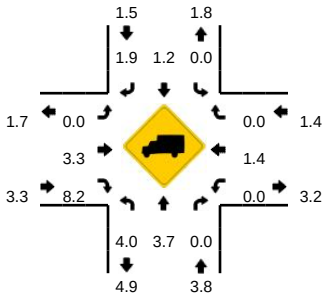
CITY/STATE: Hayward, CA

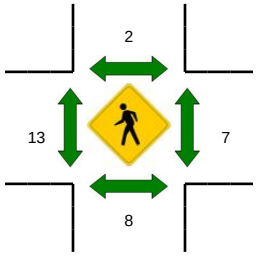
QC JOB #: 14753413

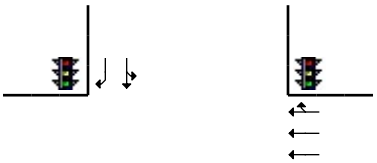
DATE: Tue, Jul 24 2018

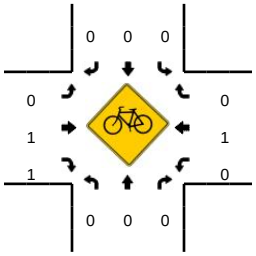
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:40 AM -- 8:55 AM

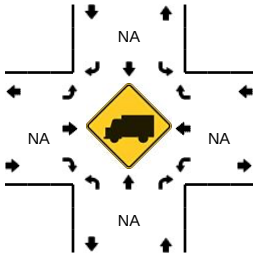


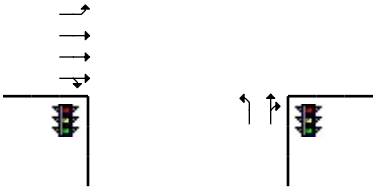


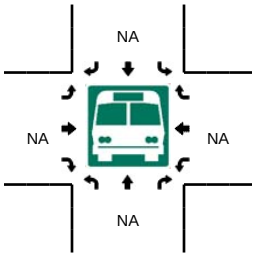












5-Min Count Period Beginning At	17 - Watkins St (Northbound)				17 - Watkins St (Southbound)				Jackson St (Eastbound)				Jackson St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	13	8	2	0	1	4	5	0	12	47	6	0	0	97	0	0	195	
7:05 AM	10	6	2	0	0	8	4	0	1	28	3	2	0	71	1	0	136	
7:10 AM	20	17	1	0	0	4	4	0	12	47	5	0	0	72	0	0	182	
7:15 AM	14	11	1	0	0	4	7	0	4	48	3	1	0	98	0	0	191	
7:20 AM	10	16	1	0	0	4	12	0	7	36	3	3	0	66	0	0	158	
7:25 AM	14	15	1	0	2	3	6	0	6	69	2	1	0	72	1	0	192	
7:30 AM	9	15	0	0	1	4	8	0	13	74	9	0	0	108	0	0	241	
7:35 AM	11	14	0	0	1	12	10	0	6	45	3	2	0	80	0	0	184	
7:40 AM	13	17	3	0	0	3	6	0	6	59	2	1	0	81	0	0	191	
7:45 AM	13	8	4	0	2	4	11	0	6	59	5	2	0	124	0	0	238	
7:50 AM	13	12	1	0	0	3	7	0	6	52	4	0	0	97	0	0	195	
7:55 AM	19	15	1	0	0	6	7	0	10	38	8	0	0	64	0	0	168	2271
8:00 AM	9	11	1	0	1	9	6	0	5	54	11	2	0	96	0	0	205	2281
8:05 AM	17	12	1	0	1	7	3	0	6	66	8	1	0	80	0	0	202	2347
8:10 AM	18	9	0	0	1	8	5	0	11	59	10	0	0	116	0	0	237	2402
8:15 AM	12	9	1	0	0	7	10	0	14	58	9	4	1	81	0	0	206	2417
8:20 AM	22	14	3	0	0	6	9	0	12	71	3	0	0	57	1	0	198	2457
8:25 AM	6	3	1	0	0	12	8	0	7	63	12	0	0	97	0	0	209	2474
8:30 AM	18	10	0	0	0	5	8	0	9	64	7	1	0	89	1	0	212	2445
8:35 AM	17	13	0	0	1	4	8	0	17	58	5	0	0	90	0	0	213	2474
8:40 AM	13	9	0	0	0	6	14	0	8	74	12	2	0	100	0	0	238	2521
8:45 AM	11	6	0	0	0	8	8	0	4	66	4	1	0	105	0	0	213	2496
8:50 AM	16	9	0	0	0	5	9	0	10	68	6	0	0	102	0	0	225	2526
8:55 AM	15	3	0	0	1	8	17	0	11	64	10	0	0	92	0	0	221	2579

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	160	96	0	0	0	76	124	0	88	832	88	12	0	1228	0	0	2704
Heavy Trucks	0	0	0		0	0	0		0	24	12		0	20	0		56
Pedestrians		12				0				12				4			28
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

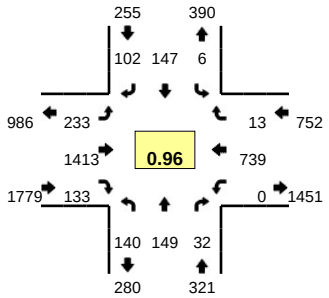
LOCATION: 17 - Watkins St -- Jackson St

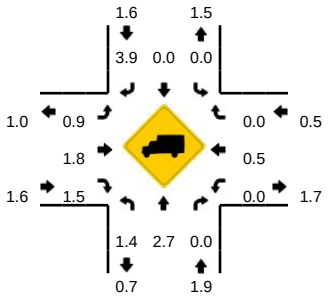
CITY/STATE: Hayward, CA

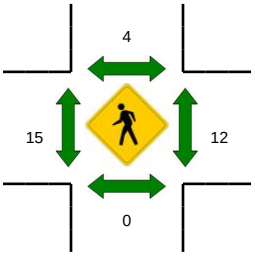
QC JOB #: 14753414

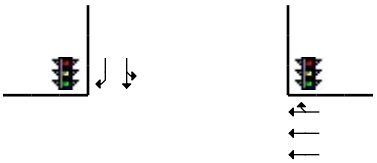
DATE: Tue, Jul 24 2018

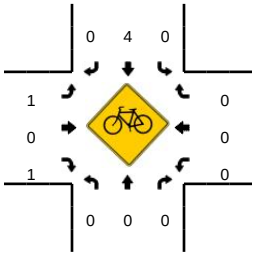
Peak-Hour: 4:25 PM -- 5:25 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

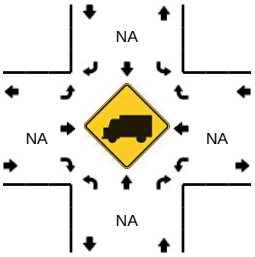


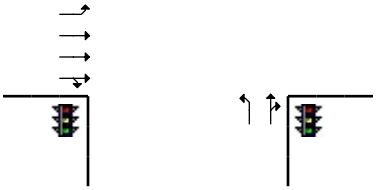


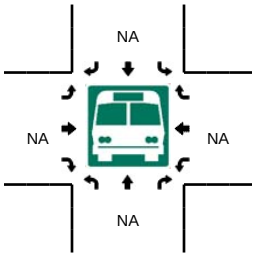












5-Min Count Period Beginning At	17 - Watkins St (Northbound)				17 - Watkins St (Southbound)				Jackson St (Eastbound)				Jackson St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	13	3	0	1	9	9	0	13	96	5	1	0	57	0	0	222	
4:05 PM	11	19	2	0	0	10	6	0	22	104	13	1	0	61	0	0	249	
4:10 PM	12	7	2	0	0	6	10	0	23	136	9	0	0	58	1	0	264	
4:15 PM	12	9	2	0	0	7	4	0	9	90	9	0	0	77	2	0	221	
4:20 PM	18	11	2	0	0	7	7	0	14	123	9	0	0	34	1	0	226	
4:25 PM	9	13	4	0	0	9	4	0	31	125	9	0	0	66	0	0	270	
4:30 PM	12	12	4	0	0	13	7	0	17	130	10	2	0	60	2	0	269	
4:35 PM	13	8	5	0	0	16	7	0	20	120	15	0	0	55	1	0	260	
4:40 PM	16	15	1	0	0	13	3	0	23	135	12	0	0	57	1	0	276	
4:45 PM	12	14	4	0	1	11	5	0	28	102	11	0	0	56	1	0	245	
4:50 PM	7	13	3	0	1	8	9	0	20	133	9	1	0	61	2	0	267	
4:55 PM	14	14	0	0	1	16	9	0	14	118	11	1	0	74	0	0	272	3041
5:00 PM	17	14	1	0	0	8	7	0	5	122	13	0	0	56	1	0	244	3063
5:05 PM	14	11	6	0	0	20	12	0	20	91	12	0	0	66	2	0	254	3068
5:10 PM	7	12	2	0	1	11	16	0	19	121	7	1	0	56	1	0	254	3058
5:15 PM	11	12	1	0	1	10	13	0	17	105	13	0	0	60	0	0	243	3080
5:20 PM	8	11	1	0	1	12	10	0	14	111	11	0	0	72	2	0	253	3107
5:25 PM	15	15	5	0	1	15	10	0	17	106	9	0	0	53	0	0	246	3083
5:30 PM	13	17	1	0	2	18	9	0	8	74	6	0	1	83	1	0	233	3047
5:35 PM	10	10	1	0	0	10	8	0	29	162	12	2	0	49	0	0	293	3080
5:40 PM	15	18	1	0	0	18	5	0	11	117	14	0	0	85	0	0	284	3088
5:45 PM	13	13	3	0	0	15	8	0	15	93	10	0	0	84	1	0	255	3098
5:50 PM	8	8	1	0	0	10	5	0	25	129	9	1	0	56	0	0	252	3083
5:55 PM	11	9	4	0	0	14	14	0	29	97	13	1	0	65	1	0	258	3069

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	164	140	40	0	0	168	68	0	240	1540	148	8	0	688	16	0	3220
Heavy Trucks	0	8	0		0	0	4		4	32	4		0	8	0		60
Pedestrians		0				8				12				4			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: 18 - Montgomery Ave & B St
Date: 7/24/2018
Site Code: 14753115

	Montgomery Ave Southbound					B St Westbound					Montgomery Ave Northbound					Hayward Station Bus Access Northeastbound					B St Eastbound				
Start Time	Right	Thru to Bus Access	Thru	Left	U-Turn	Right	Thru	Left to Bus Access	Left	U-Turn	Right	Thru	Left	Left to Bus Access	U-Turn	Right to Montgomery Ave	Right to B St	Left to Montgomery Ave	Left to B St	U-Turn	Right to Bus Access	Right	Thru	Left	U-Turn
07:00 AM	4	0	2	2	0	2	11	1	5	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3	0
07:05 AM	14	0	1	1	0	2	8	1	2	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	0
07:10 AM	8	0	1	0	0	0	17	3	7	0	0	0	0	0	0	0	0	0	0	0	3	3	4	3	0
07:15 AM	9	0	4	0	0	3	10	1	4	0	0	0	0	0	0	0	0	0	0	0	0	3	4	2	0
07:20 AM	2	0	0	1	0	3	15	3	6	0	0	0	0	0	0	0	0	0	0	0	2	2	3	2	0
07:25 AM	7	0	3	1	0	1	21	0	4	0	0	0	0	0	0	0	0	0	0	0	1	3	7	2	0
07:30 AM	7	0	1	3	0	1	19	1	2	0	0	0	0	0	0	0	0	0	0	0	1	3	7	5	0
07:35 AM	4	0	5	0	0	4	12	1	7	0	0	0	0	0	0	0	0	0	0	0	1	1	5	3	0
07:40 AM	4	0	2	1	0	1	12	2	8	0	0	0	0	0	0	0	0	0	0	0	3	3	1	3	0
07:45 AM	9	0	4	1	0	9	16	1	4	0	0	0	0	0	0	0	0	0	0	0	0	3	5	3	0
07:50 AM	12	0	3	3	0	1	15	2	8	0	0	0	0	0	0	0	0	0	0	0	0	6	8	1	0
07:55 AM	8	0	5	2	0	5	13	1	6	0	0	0	0	0	0	0	0	0	0	0	2	0	7	2	0
08:00 AM	9	0	9	5	0	4	9	1	9	0	0	0	0	0	0	0	0	0	0	0	2	3	6	3	0
08:05 AM	7	0	2	0	0	1	13	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	6	1	0
08:10 AM	6	0	3	0	0	4	15	2	2	0	0	0	0	0	0	0	0	0	0	0	3	3	6	3	0
08:15 AM	5	0	5	5	0	2	14	2	6	0	0	0	0	0	0	0	0	0	0	0	2	2	1	5	1
08:20 AM	8	0	3	1	0	4	15	1	4	0	0	0	0	0	0	0	0	0	0	0	2	3	5	2	0
08:25 AM	9	0	4	6	0	4	12	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	6	4	1
08:30 AM	4	0	2	2	0	2	14	4	4	0	0	0	0	0	0	0	0	0	0	0	0	1	7	2	1
08:35 AM	4	0	1	4	0	4	15	1	1	0	0	0	0	0	0	0	0	0	0	0	3	2	3	1	0
08:40 AM	5	0	1	3	0	1	7	1	3	0	0	0	0	0	0	0	0	0	0	0	1	2	6	1	1
08:45 AM	8	0	4	4	0	2	3	0	6	0	0	0	0	0	0	0	0	0	0	0	1	3	6	4	0
08:50 AM	6	0	1	3	0	1	15	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0
08:55 AM	5	0	1	3	0	0	10	2	4	0	0	0	0	0	0	0	0	0	0	0	1	1	4	2	1
Total	**164**	**0**	**67**	**51**	**0**	**61**	**311**	**32**	**111**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**52**	**120**	**61**	**5**

Peak Hour: 7:30 AM - 8:30 AM
Peak 15: 7:50 AM - 8:05 AM
PHF: 0.864706

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Location: 18 - Montgomery Ave & B St
Date: 7/24/2018
Site Code: 14753116

	Montgomery Ave Southbound					B St Westbound					Montgomery Ave Northbound					Hayward Station Bus Access Northeastbound					B St Eastbound				
Start Time	Right	Thru to Bus Access	Thru	Left	U-Turn	Right	Thru	Left to Bus Access	Left	U-Turn	Right	Thru	Left	Left to Bus Access	U-Turn	Right to Montgomery Ave	Right to B St	Left to Montgomery Ave	Left to B St	U-Turn	Right to Bus Access	Right	Thru	Left	U-Turn
04:00 PM	5	0	1	3	0	5	15	1	3	0	0	0	0	0	0	0	0	0	0	0	1	5	8	6	0
04:05 PM	6	0	2	0	0	15	19	2	5	1	0	0	0	0	0	0	0	0	0	0	2	1	8	5	1
04:10 PM	4	0	2	2	0	11	13	0	1	0	0	0	0	0	0	0	0	0	0	0	1	4	4	5	0
04:15 PM	1	0	3	4	0	3	10	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5	7	3	0
04:20 PM	2	0	1	2	0	10	14	4	3	0	0	0	0	0	0	0	0	0	0	0	0	5	7	3	0
04:25 PM	3	0	1	3	0	0	8	1	4	0	0	0	0	0	0	0	0	0	0	0	2	2	10	6	0
04:30 PM	5	0	6	1	0	6	16	1	7	0	0	0	0	0	0	0	0	0	0	0	1	3	11	6	0
04:35 PM	4	0	7	0	0	2	15	3	3	0	0	0	0	0	0	0	0	0	0	0	1	0	16	8	0
04:40 PM	3	0	3	4	0	5	18	0	7	0	0	0	0	0	0	0	0	0	0	0	1	4	15	3	0
04:45 PM	1	0	4	3	0	8	15	3	3	0	0	0	0	0	0	0	0	0	0	0	3	6	7	3	0
04:50 PM	1	0	5	3	0	6	17	0	3	0	0	0	0	0	0	0	0	0	0	0	2	2	11	7	0
04:55 PM	4	0	4	0	0	9	17	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	19	8	0
05:00 PM	5	0	2	0	0	3	17	0	8	0	0	0	0	0	0	0	0	0	0	0	1	3	16	3	0
05:05 PM	5	0	2	0	0	5	17	4	6	0	0	0	0	0	0	0	0	0	0	0	2	4	4	4	0
05:10 PM	6	0	3	2	0	10	17	0	1	1	0	0	0	0	0	0	0	0	0	0	1	4	9	10	0
05:15 PM	4	0	4	2	0	3	8	2	4	0	0	0	0	0	0	0	0	0	0	0	2	3	10	4	0
05:20 PM	6	0	5	4	0	6	11	2	4	0	0	0	0	0	0	0	0	0	0	0	1	5	9	5	0
05:25 PM	6	0	3	2	0	4	14	1	3	0	0	0	0	0	0	0	0	0	0	0	2	3	19	4	0
05:30 PM	5	0	6	5	0	4	25	2	4	0	0	0	0	0	0	0	0	0	0	0	1	9	10	6	0
05:35 PM	2	0	3	2	0	8	16	1	6	0	0	0	0	0	0	0	0	0	0	0	0	7	9	4	0
05:40 PM	5	0	6	0	0	7	9	4	5	1	0	0	0	0	0	0	0	0	0	0	2	8	10	6	0
05:45 PM	6	0	5	1	0	7	15	1	7	0	0	0	0	0	0	0	0	0	0	0	3	3	8	5	0
05:50 PM	2	0	3	2	0	7	8	1	6	0	0	0	0	0	0	0	0	0	0	0	2	10	14	3	1
05:55 PM	3	0	4	1	0	5	17	1	9	0	0	0	0	0	0	0	0	0	0	0	0	5	15	5	0
Total	**94**	**0**	**85**	**46**	**0**	**149**	**351**	**35**	**105**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**104**	**256**	**122**	**2**

Peak Hour: 4:55 PM - 5:55 PM
Peak 15: 5:30 PM - 5:45 PM
PHF: 0.915404

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

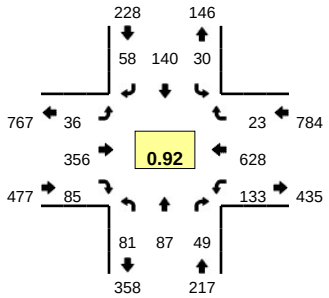
LOCATION: 19 - Western Blvd/Grand St -- A St

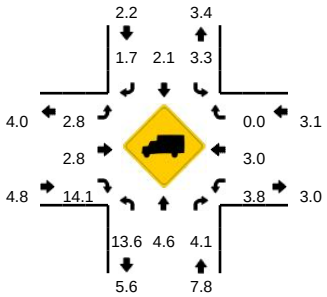
CITY/STATE: Hayward, CA

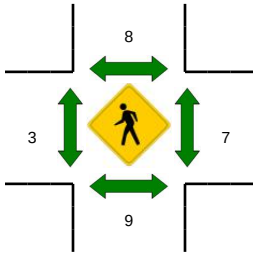
QC JOB #: 14753417

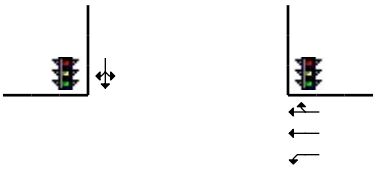
DATE: Tue, Jul 24 2018

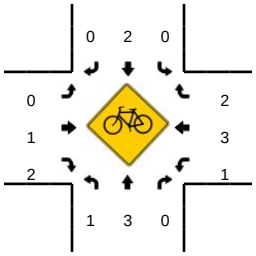
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

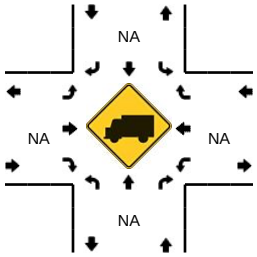


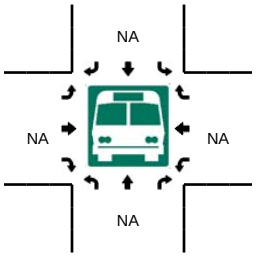












5-Min Count Period Beginning At	19 - Western Blvd/Grand St (Northbound)				19 - Western Blvd/Grand St (Southbound)				A St (Eastbound)				A St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	5	3	0	2	12	3	0	2	15	10	0	11	30	0	0	98	
7:05 AM	10	2	2	0	2	10	4	0	1	30	6	0	6	43	0	0	116	
7:10 AM	8	10	1	0	1	17	2	0	1	12	9	0	12	34	0	0	107	
7:15 AM	6	7	1	0	3	17	4	0	0	19	7	0	10	50	0	0	124	
7:20 AM	7	8	3	0	0	13	3	0	3	25	6	0	11	29	1	0	109	
7:25 AM	4	2	2	0	3	12	3	0	0	23	7	0	9	30	1	0	96	
7:30 AM	2	4	4	0	3	13	3	0	1	18	7	0	8	47	2	0	112	
7:35 AM	6	10	2	0	2	8	2	0	1	25	14	0	18	66	0	0	154	
7:40 AM	6	5	3	0	1	17	2	0	3	19	12	0	18	50	0	0	136	
7:45 AM	9	8	5	0	0	19	5	0	1	37	4	0	11	52	3	0	154	
7:50 AM	7	5	7	0	2	17	5	0	5	29	3	0	13	47	0	0	140	
7:55 AM	7	9	6	0	1	12	5	0	3	33	6	0	11	51	2	0	146	1492
8:00 AM	8	10	3	0	2	10	3	0	2	27	3	0	9	58	3	0	138	1532
8:05 AM	6	7	6	0	4	15	4	0	2	31	7	0	9	44	1	0	136	1552
8:10 AM	13	4	2	0	4	12	6	0	1	25	9	0	13	52	0	0	141	1586
8:15 AM	7	4	6	0	0	8	4	0	7	31	8	0	11	49	1	0	136	1598
8:20 AM	7	6	3	0	0	14	5	0	1	27	11	0	8	54	6	0	142	1631
8:25 AM	3	6	1	0	2	7	9	0	3	26	11	0	10	47	2	0	127	1662
8:30 AM	2	9	5	0	2	13	2	0	2	33	5	0	12	48	1	0	134	1684
8:35 AM	7	8	8	0	2	10	5	0	4	31	8	0	14	54	2	0	153	1683
8:40 AM	8	9	3	0	6	16	5	0	3	32	2	0	10	40	0	0	134	1681
8:45 AM	7	4	5	0	2	11	5	0	5	22	7	0	9	62	3	0	142	1669
8:50 AM	4	6	3	0	2	13	5	0	2	38	9	0	16	66	3	0	167	1696
8:55 AM	9	14	4	0	4	11	5	0	4	33	5	0	12	54	1	0	156	1706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	96	48	0	32	140	60	0	44	372	84	0	148	728	28	0	1860
Heavy Trucks	8	0	4		0	0	4		4	12	12		0	8	0		52
Pedestrians		20				0				0				0			20
Bicycles	0	2	0		0	0	0		0	0	0		0	1	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

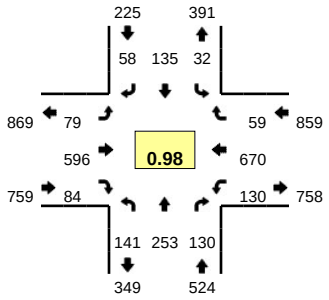
LOCATION: 19 - Western Blvd/Grand St -- A St

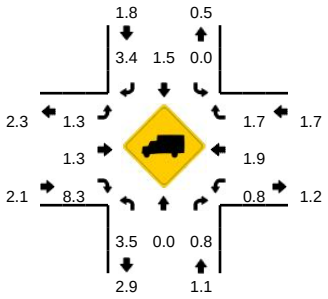
CITY/STATE: Hayward, CA

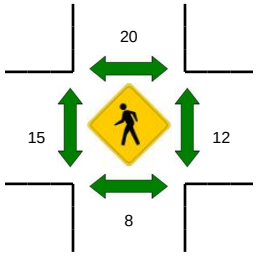
QC JOB #: 14753418

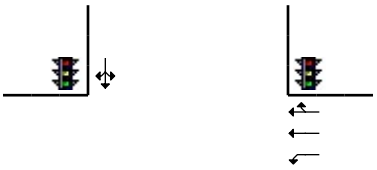
DATE: Tue, Jul 24 2018

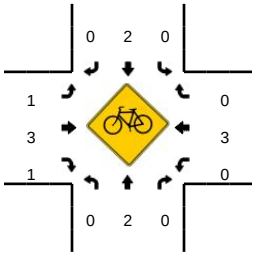
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

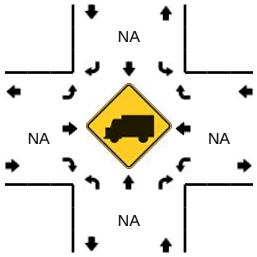


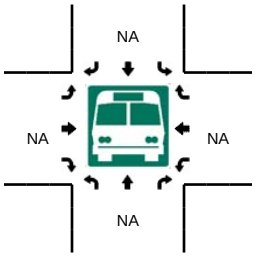












5-Min Count Period Beginning At	19 - Western Blvd/Grand St (Northbound)				19 - Western Blvd/Grand St (Southbound)				A St (Eastbound)				A St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	9	22	5	0	2	13	5	0	8	59	3	0	9	43	2	0	180	
4:05 PM	12	13	12	0	2	10	3	0	2	38	8	0	8	50	4	0	162	
4:10 PM	4	17	13	0	3	8	2	0	6	45	12	0	9	55	5	0	179	
4:15 PM	9	24	8	0	5	10	8	0	5	53	1	0	11	50	5	0	189	
4:20 PM	6	23	9	0	1	15	2	0	4	35	5	0	11	50	4	0	165	
4:25 PM	4	17	7	0	7	13	4	0	10	51	6	0	10	52	6	0	187	
4:30 PM	14	21	11	0	1	13	3	0	5	52	6	0	10	53	6	0	195	
4:35 PM	7	20	7	0	1	15	10	0	6	50	5	0	9	49	2	0	181	
4:40 PM	6	17	11	0	3	6	8	0	12	42	14	0	17	58	2	0	196	
4:45 PM	11	30	10	0	5	15	2	0	6	66	5	0	3	33	4	0	190	
4:50 PM	10	16	15	0	2	13	3	0	7	48	6	0	10	60	3	0	193	
4:55 PM	16	20	7	0	4	12	5	0	4	48	6	0	10	75	8	0	215	2232
5:00 PM	7	20	7	0	2	16	5	0	6	47	5	0	7	44	7	0	173	2225
5:05 PM	19	25	18	0	2	9	6	0	8	36	8	0	11	59	2	0	203	2266
5:10 PM	11	17	14	0	1	7	4	0	6	52	9	0	13	80	9	0	223	2310
5:15 PM	7	20	7	0	6	4	5	0	9	45	6	0	15	42	8	0	174	2295
5:20 PM	17	20	11	0	2	16	4	0	4	51	6	0	11	61	5	0	208	2338
5:25 PM	16	27	12	0	3	9	3	0	6	59	8	0	14	56	3	0	216	2367
5:30 PM	10	26	7	0	4	11	2	0	4	37	11	0	11	48	5	0	176	2348
5:35 PM	10	24	6	0	0	8	0	0	5	49	4	0	11	64	6	0	187	2354
5:40 PM	9	19	10	0	4	12	6	0	6	44	9	0	13	50	2	0	184	2342
5:45 PM	19	17	12	0	6	11	4	0	7	43	10	0	11	53	4	0	197	2349
5:50 PM	4	13	8	0	3	19	2	0	3	49	11	0	7	54	7	0	180	2336
5:55 PM	13	22	15	0	5	7	4	0	10	60	10	0	4	48	2	0	200	2321

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	140	228	128	0	36	108	52	0	76	592	84	0	156	732	88	0	2420
Heavy Trucks	4	0	0		0	0	0		0	0	20		0	16	4		44
Pedestrians		4				12				16				24			56
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

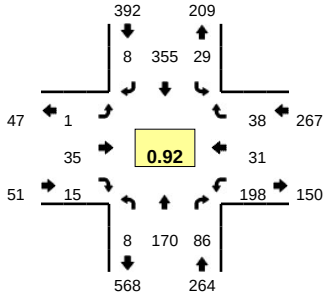
LOCATION: 20 - Grand St -- B St

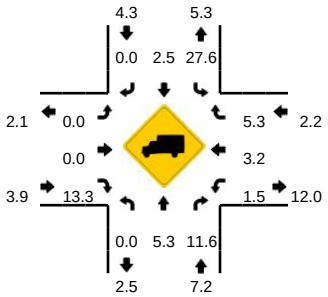
CITY/STATE: Hayward, CA

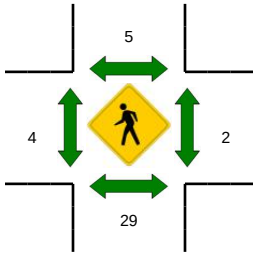
QC JOB #: 14753419

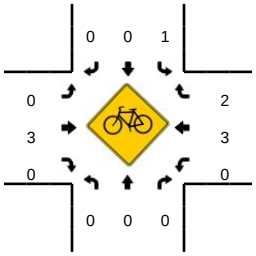
DATE: Tue, Jul 24 2018

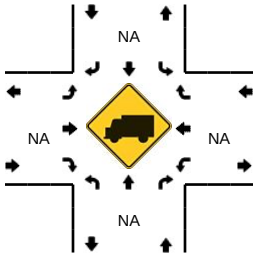
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

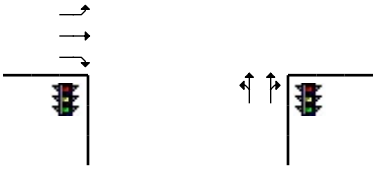


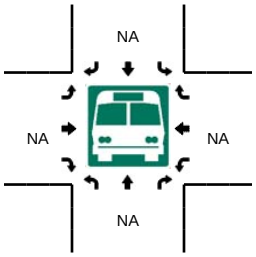












5-Min Count Period Beginning At	20 - Grand St (Northbound)				20 - Grand St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	12	5	0	3	33	0	0	0	1	4	0	14	2	6	0	80	
7:05 AM	0	12	5	0	2	20	2	0	0	1	1	0	15	3	1	0	62	
7:10 AM	0	15	9	0	2	33	0	0	0	4	1	0	22	3	3	0	92	
7:15 AM	0	14	6	0	1	33	0	0	0	3	1	0	11	2	2	0	73	
7:20 AM	0	16	6	0	3	23	1	0	0	2	3	0	18	4	3	0	79	
7:25 AM	1	9	8	0	1	30	0	0	0	4	1	0	23	1	1	0	79	
7:30 AM	2	7	7	0	1	22	1	0	0	2	2	0	18	4	1	0	67	
7:35 AM	1	18	7	0	2	41	2	0	0	3	2	0	12	0	2	0	90	
7:40 AM	0	7	7	0	4	39	2	0	0	4	1	0	9	1	7	0	81	
7:45 AM	1	18	4	0	3	30	0	0	0	3	0	0	27	1	3	0	90	
7:50 AM	1	16	9	0	5	28	2	0	1	3	1	0	22	1	4	0	93	
7:55 AM	1	16	8	0	2	23	0	0	0	0	0	0	16	3	4	0	73	959
8:00 AM	1	18	12	0	1	22	0	0	0	5	2	0	12	5	2	0	80	959
8:05 AM	0	16	3	0	4	31	0	0	0	2	1	0	8	6	6	0	77	974
8:10 AM	0	12	6	0	4	27	2	0	0	3	1	0	17	2	5	0	79	961
8:15 AM	1	16	8	0	3	18	1	0	1	4	2	0	11	5	1	0	71	959
8:20 AM	0	15	5	0	3	31	2	0	0	1	0	0	21	5	2	0	85	965
8:25 AM	0	6	9	0	0	22	2	0	0	2	0	0	12	3	3	0	59	945
8:30 AM	2	14	7	0	4	29	1	0	0	4	5	0	10	4	2	0	82	960
8:35 AM	1	16	4	0	2	29	1	0	1	4	2	0	13	3	6	0	82	952
8:40 AM	0	16	4	0	1	24	0	0	0	5	0	0	13	4	1	0	68	939
8:45 AM	0	16	10	0	1	27	1	0	0	3	4	0	9	1	0	0	72	921
8:50 AM	2	18	5	0	1	37	2	0	0	5	1	0	14	3	3	0	91	919
8:55 AM	2	19	4	0	4	20	2	0	1	3	1	0	15	1	2	0	74	920

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	164	80	0	48	388	16	0	4	40	8	0	232	12	56	0	1056
Heavy Trucks	0	8	4		8	16	0		0	0	0		4	0	0		40
Pedestrians		20				8				4				0			32
Bicycles	0	0	0		0	0	0		0	2	0		0	1	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

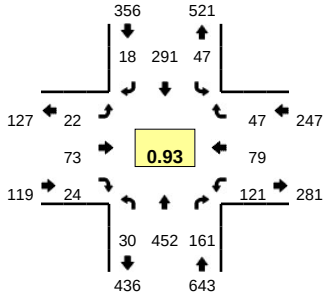
LOCATION: 20 - Grand St -- B St

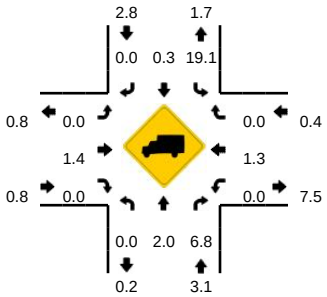
CITY/STATE: Hayward, CA

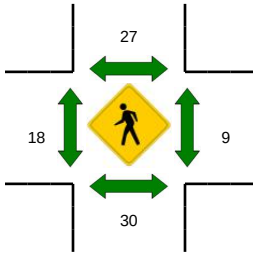
QC JOB #: 14753420

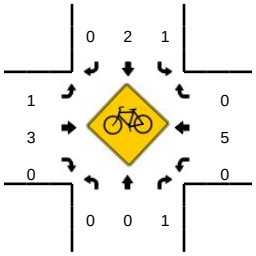
DATE: Tue, Jul 24 2018

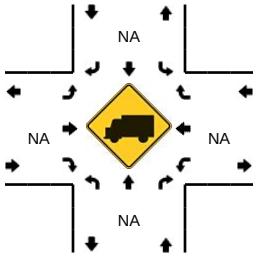
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:20 PM -- 5:35 PM

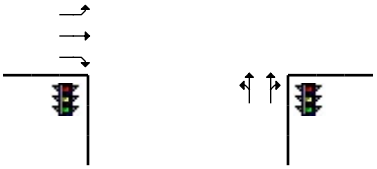


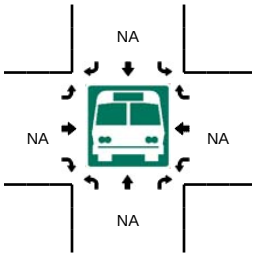












5-Min Count Period Beginning At	20 - Grand St (Northbound)				20 - Grand St (Southbound)				B St (Eastbound)				B St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	21	12	0	0	25	1	0	2	6	1	0	15	2	4	0	90	
4:05 PM	3	31	11	0	1	20	3	0	2	4	4	0	17	8	5	0	109	
4:10 PM	0	39	9	0	3	24	0	0	0	3	1	0	9	4	1	0	93	
4:15 PM	0	34	5	0	1	23	0	0	0	9	3	0	9	4	2	0	90	
4:20 PM	3	33	12	0	1	24	0	0	0	3	4	0	8	3	4	0	95	
4:25 PM	4	30	14	0	2	30	2	0	3	3	3	0	6	2	2	0	101	
4:30 PM	1	35	13	0	1	23	2	0	3	6	5	0	11	5	4	0	109	
4:35 PM	2	32	15	0	5	25	1	0	2	6	2	0	8	10	3	0	111	
4:40 PM	1	31	13	0	2	34	0	0	0	9	5	0	8	9	3	0	115	
4:45 PM	1	45	9	0	4	18	2	0	3	7	2	0	8	5	5	0	109	
4:50 PM	2	31	16	0	2	24	0	0	2	8	1	0	6	4	6	0	102	
4:55 PM	4	41	16	0	3	26	2	0	0	3	1	0	6	6	8	0	116	1240
5:00 PM	6	25	14	0	4	20	1	0	1	5	3	0	11	5	6	0	101	1251
5:05 PM	3	55	11	0	1	18	7	0	6	6	4	0	11	7	5	0	134	1276
5:10 PM	3	44	15	0	6	26	0	0	3	2	3	0	13	7	2	0	124	1307
5:15 PM	2	24	3	0	6	18	0	0	2	6	1	0	8	4	3	0	77	1294
5:20 PM	2	38	12	0	0	30	2	0	2	6	3	0	5	9	4	0	113	1312
5:25 PM	0	57	15	0	6	28	1	0	1	8	0	0	9	6	5	0	136	1347
5:30 PM	1	28	17	0	3	27	1	0	2	5	2	0	16	11	5	0	118	1356
5:35 PM	1	39	14	0	2	22	2	0	2	6	0	0	11	7	4	0	110	1355
5:40 PM	1	37	16	0	3	29	2	0	0	4	2	0	9	3	3	0	109	1349
5:45 PM	6	36	10	0	3	26	1	0	0	7	2	0	11	5	3	0	110	1350
5:50 PM	3	24	18	0	7	31	1	0	1	12	3	0	6	7	3	0	116	1364
5:55 PM	2	45	16	0	6	16	0	0	2	6	1	0	11	8	4	0	117	1365

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	492	176	0	36	340	16	0	20	76	20	0	120	104	56	0	1468
Heavy Trucks	0	0	16		0	0	0		0	0	0		0	0	0		16
Pedestrians		44				20				16				4			84
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/1/2018 4:26 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

AM Peak Hour

	Intersection	Northbound			Southbound			Eastbound			Westbound			Year
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Collected
1	Foothill Blvd & City Center Drive (South)	2	1,518	28	316	1,224	182	15	24	1	12	24	294	2015
2	Foothill Blvd \ A Street	100	1,484	526			1,238					1,289	14	2015
3	Foothill Blvd \ B Street	105	2,078	151								706	35	2015
4	Foothill Blvd \ C Street													
5	Foothill Blvd \ D Street		1,940	100				167	367			977	71	2014
6	Main Street \ A Street	17	25			50	92				52	2,365	17	2015
7	Main Street \ B Street													
8	Main Street \ C Street													
9	Mission Blvd \ A Street					474	133	203	0	166	1,513	677	94	2015
10	Mission Blvd \ B Street					2,132	87				260	417		2015
11	Mission Blvd \ C Street													
12	Mission Blvd \ D Street				70	2,532	290		470	11	535	621		2014
13	Mission Blvd \ Foothill Blvd \ Jackson			1,493		1,702	1,332		702	65				2014
14	Mission Blvd \ Fletcher Lane	218	1,381	66	29	1,794	15	74	51	108	194	129	13	2014
15	Watkins Street \ B Street													
16	Watkins Street \ C Street													
17	Watkins Street \ Jackson Street													
18	Montgomery Street \ B Street													
19	Grand Street \ A Street \ Western Blvd													
20	Grand Street \ B Street													
21	2nd Street \ City Center Drive	338	123	66	1	66	18	21	9	362	68	24	3	2015
22	2nd Street \ A Street	118	363	159	72	308	27	10	441	5	367	1,226	79	2014
23	2nd Street \ B Street	121	606	267	24	485	146	13	100	8	179	588	32	2014
24	2nd Street \ C Street		705	29	10	687		231	148	142	48		71	2014
25	2nd Street \ D Street	335	670	63	56	574	244	70	225	88	97	383	18	2014
26	Foothill Blvd & Hazel-City Center Drive (north)	46	1,750	6	223	1,707	79	105	36	26	22	18	146	2015

PM Peak Hour

	Intersection	Northbound			Southbound			Eastbound			Westbound				Year
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Collected
1	Foothill Blvd & City Center Drive (South)	22	2,254	72	360	849	116	105	108	6	43	37	290		2015
2	Foothill Blvd \ A Street	207	2,120	911			935					911	39		2015
3	Foothill Blvd \ B Street	164	3,155	209								426	68		2015
4	Foothill Blvd \ C Street														
5	Foothill Blvd \ D Street		2,934	159				534	472			598	67		2014
6	Main Street \ A Street	45	107			70	52				86	1,940	19		2015
7	Main Street \ B Street														
8	Main Street \ C Street														
9	Mission Blvd \ A Street					543	169	462	0	291	1,326	544	157		2015
10	Mission Blvd \ B Street					1,999	83				249	270			2015
11	Mission Blvd \ C Street														
12	Mission Blvd \ D Street				43	2,029	176		956	41	487	299			2014
13	Mission Blvd \ Foothill Blvd \ Jackson			1,896		1,580	977		1,309	54					2014
14	Mission Blvd \ Fletcher Lane	270	1,771	105	77	1,440	52	64	102	170	111	59	7		2014
15	Watkins Street \ B Street														
16	Watkins Street \ C Street														
17	Watkins Street \ Jackson Street														
18	Montgomery Street \ B Street														
19	Grand Street \ A Street \ Western Blvd														
20	Grand Street \ B Street														
21	2nd Street \ City Center Drive	306	113	67	1	179	58	42	41	456	63	23	5		2015
22	2nd Street \ A Street	85	327	362	164	444	67	24	922	30	288	850	92		2014
23	2nd Street \ B Street	72	658	481	43	600	112	31	163	16	199	332	49		2014
24	2nd Street \ C Street		707	49	20	806		473	281	174	35		26		2014
25	2nd Street \ D Street	106	528	54	84	611	310	181	341	56	51	202	40		2014
26	Foothill Blvd & Hazel-City Center Drive (north)	50	2,379	10	209	1,321	72	140	67	29	34	26	121		2015

Appendix 2: Existing (2018) Intersection Level of Service Worksheets

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	25	1	12	25	305	2	1573	29	328	1269	189
Future Volume (veh/h)	16	25	1	12	25	305	2	1573	29	328	1269	189
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	31	1	12	0	335	2	1673	31	353	1365	203
Peak Hour Factor	0.80	0.80	0.80	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	27	450	14	19	0	392	4	3519	65	374	3804	1181
Arrive On Green	0.02	0.13	0.13	0.01	0.00	0.12	0.00	0.54	0.54	0.42	1.00	1.00
Sat Flow, veh/h	1781	3514	113	1781	0	3170	1781	6553	121	1781	5106	1585
Grp Volume(v), veh/h	20	16	16	12	0	335	2	1232	472	353	1365	203
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	1781	0	1585	1781	1609	1849	1781	1702	1585
Q Serve(g_s), s	1.7	1.2	1.2	1.0	0.0	15.4	0.2	23.7	23.7	28.4	0.0	0.0
Cycle Q Clear(g_c), s	1.7	1.2	1.2	1.0	0.0	15.4	0.2	23.7	23.7	28.4	0.0	0.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	27	228	237	19	0	392	4	2591	993	374	3804	1181
V/C Ratio(X)	0.74	0.07	0.07	0.64	0.00	0.86	0.53	0.48	0.48	0.94	0.36	0.17
Avail Cap(c_a), veh/h	73	340	354	67	0	596	55	2591	993	550	3804	1181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.00	0.93	1.00	1.00	1.00	0.82	0.82	0.82
Uniform Delay (d), s/veh	73.1	57.1	57.1	73.4	0.0	64.0	74.3	21.4	21.4	42.3	0.0	0.0
Incr Delay (d2), s/veh	32.6	0.1	0.1	29.2	0.0	7.1	82.1	0.6	1.6	17.1	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.5	0.6	0.6	0.0	6.6	0.2	9.1	10.8	12.4	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	105.7	57.3	57.3	102.7	0.0	71.1	156.4	22.1	23.1	59.4	0.2	0.3
LnGrp LOS	F	E	E	F	A	E	F	C	C	E	A	A
Approach Vol, veh/h		52			347			1706			1921	
Approach Delay, s/veh		75.9			72.2			22.5			11.1	
Approach LOS		E			E			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	116.0	6.3	22.4	35.3	85.0	5.6	23.1
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	93.3	6.1	28.0	46.0	51.9	5.6	28.5
Max Q Clear Time (g_c+I1), s	2.2	2.0	3.7	17.4	30.4	25.7	3.0	3.2
Green Ext Time (p_c), s	0.0	17.4	0.0	1.0	1.0	14.3	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1336	15	104	1538	545	0	0	1283
Future Volume (vph)	0	0	0	0	1336	15	104	1538	545	0	0	1283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5077		1770	6156				3610
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5077		1770	6156				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	1421	16	112	1654	586	0	0	1426
RTOR Reduction (vph)	0	0	0	0	1	0	33	47	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1436	0	79	2193	0	0	0	1426
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					45.9		26.3	91.1				64.8
Effective Green, g (s)					45.9		26.3	91.1				64.8
Actuated g/C Ratio					0.31		0.18	0.61				0.43
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1563		312	3763				1569
v/s Ratio Prot					c0.28		0.04	c0.10				
v/s Ratio Perm								0.25				c0.40
v/c Ratio					0.92		0.25	0.58				0.91
Uniform Delay, d1					49.8		52.9	17.5				39.3
Progression Factor					1.00		1.00	1.00				0.62
Incremental Delay, d2					9.0		1.9	0.7				9.0
Delay (s)					58.7		54.8	18.1				33.5
Level of Service					E		D	B				C
Approach Delay (s)		0.0			58.7			19.9			33.5	
Approach LOS		A			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	732	36	109	2154	157	0	0	0
Future Volume (veh/h)	0	0	0	0	732	36	109	2154	157	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h				0	927	37	114	2244	164			
Peak Hour Factor				0.79	0.79	0.97	0.96	0.96	0.96			
Percent Heavy Veh, %				0	2	2	2	2	2			
Cap, veh/h				0	1083	43	1168	4586	335			
Arrive On Green				0.00	0.31	0.31	0.63	0.63	0.63			
Sat Flow, veh/h				0	3577	139	1781	7301	534			
Grp Volume(v), veh/h				0	473	491	114	1863	545			
Grp Sat Flow(s),veh/h/ln				0	1777	1845	1781	1515	1774			
Q Serve(g_s), s				0.0	37.0	37.0	3.8	24.4	24.4			
Cycle Q Clear(g_c), s				0.0	37.0	37.0	3.8	24.4	24.4			
Prop In Lane				0.00		0.08	1.00		0.30			
Lane Grp Cap(c), veh/h				0	553	574	1168	3806	1114			
V/C Ratio(X)				0.00	0.86	0.86	0.10	0.49	0.49			
Avail Cap(c_a), veh/h				0	792	823	1168	3806	1114			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.92	0.92	0.92			
Uniform Delay (d), s/veh				0.0	47.9	47.9	10.9	14.8	14.8			
Incr Delay (d2), s/veh				0.0	6.5	6.2	0.2	0.4	1.4			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	17.4	18.0	1.6	8.5	10.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	54.3	54.1	11.1	15.2	16.2			
LnGrp LOS				A	D	D	B	B	B			
Approach Vol, veh/h					964			2522				
Approach Delay, s/veh					54.2			15.2				
Approach LOS					D			B				

Timer - Assigned Phs		4		6								
Phs Duration (G+Y+Rc), s		50.0		98.0								
Change Period (Y+Rc), s		4.0		5.0								
Max Green Setting (Gmax), s		66.0		73.0								
Max Q Clear Time (g_c+I1), s		39.0		26.4								
Green Ext Time (p_c), s		7.1		31.7								

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	161	3	0	0	0	0	2122	161	0	0	0
Future Volume (veh/h)	147	161	3	0	0	0	0	2122	161	0	0	0
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870			
Adj Flow Rate, veh/h	153	168	3				0	2210	168			
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	2				0	2	2			
Cap, veh/h	279	399	7				0	5972	1250			
Arrive On Green	0.11	0.11	0.11				0.00	0.79	0.79			
Sat Flow, veh/h	1781	3572	64				0	7930	1585			
Grp Volume(v), veh/h	153	83	88				0	2210	168			
Grp Sat Flow(s),veh/h/ln	1781	1777	1859				0	1515	1585			
Q Serve(g_s), s	7.5	3.9	4.0				0.0	7.8	2.3			
Cycle Q Clear(g_c), s	7.5	3.9	4.0				0.0	7.8	2.3			
Prop In Lane	1.00		0.03				0.00		1.00			
Lane Grp Cap(c), veh/h	279	198	207				0	5972	1250			
V/C Ratio(X)	0.55	0.42	0.42				0.00	0.37	0.13			
Avail Cap(c_a), veh/h	436	355	372				0	5972	1250			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	38.9	37.3	37.3				0.0	2.8	2.3			
Incr Delay (d2), s/veh	0.6	0.5	0.5				0.0	0.2	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.3	1.7	1.8				0.0	1.6	0.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	37.8	37.8				0.0	3.0	2.5			
LnGrp LOS	D	D	D				A	A	A			
Approach Vol, veh/h		324						2378				
Approach Delay, s/veh		38.6						3.0				
Approach LOS		D						A				

Timer - Assigned Phs		2		4
Phs Duration (G+Y+Rc), s		76.0		14.0
Change Period (Y+Rc), s		5.0		4.0
Max Green Setting (Gmax), s		63.0		18.0
Max Q Clear Time (g_c+I1), s		9.8		9.5
Green Ext Time (p_c), s		42.7		0.5

Intersection Summary			
HCM 6th Ctrl Delay			7.3
HCM 6th LOS			A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	385	0	0	1025	74	0	2035	105	0	0	0
Future Volume (veh/h)	175	385	0	0	1025	74	0	2035	105	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			
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	1870	1870	0	0	1870	1870	0	1870	1900			
Adj Flow Rate, veh/h	250	550	0	0	1079	0	0	2098	108			
Peak Hour Factor	0.70	0.70	0.70	0.95	0.95	0.95	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	435	447	0	0	1278		0	0	0			
Arrive On Green	0.13	0.13	0.00	0.00	0.25	0.00	0.00	0.00	0.00			
Sat Flow, veh/h	3456	3647	0	0	5443	0		0				
Grp Volume(v), veh/h	250	550	0	0	1079	0		0.0				
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	0						
Q Serve(g_s), s	10.6	19.5	0.0	0.0	31.1	0.0						
Cycle Q Clear(g_c), s	10.6	19.5	0.0	0.0	31.1	0.0						
Prop In Lane	1.00		0.00	0.00		0.00						
Lane Grp Cap(c), veh/h	435	447	0	0	1278							
V/C Ratio(X)	0.58	1.23	0.00	0.00	0.84							
Avail Cap(c_a), veh/h	435	447	0	0	1466							
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.54	0.54	0.00	0.00	0.09	0.00						
Uniform Delay (d), s/veh	63.8	67.8	0.0	0.0	55.2	0.0						
Incr Delay (d2), s/veh	1.0	114.1	0.0	0.0	0.4	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	4.7	16.0	0.0	0.0	13.5	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.8	181.9	0.0	0.0	55.6	0.0						
LnGrp LOS	E	F	A	A	E							
Approach Vol, veh/h		800			1079	A						
Approach Delay, s/veh		145.3			55.6							
Approach LOS		F			E							

Timer - Assigned Phs		4		8
Phs Duration (G+Y+Rc), s		45.3		26.0
Change Period (Y+Rc), s		6.5		6.5
Max Green Setting (Gmax), s		44.5		19.5
Max Q Clear Time (g_c+I1), s		33.1		21.5
Green Ext Time (p_c), s		5.7		0.0

Intersection Summary	
HCM 6th Ctrl Delay	93.8
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	54	2451	18	18	26	0	0	52	95
Future Volume (veh/h)	0	0	0	54	2451	18	18	26	0	0	52	95
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				55	2501	18	32	46	0	0	63	114
Peak Hour Factor				0.98	0.98	0.98	0.56	0.56	0.56	0.83	0.83	0.83
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				78	3795	28	403	725	0	0	695	620
Arrive On Green				0.56	0.56	0.56	0.39	0.39	0.00	0.00	0.39	0.39
Sat Flow, veh/h				139	6753	50	919	1938	0	0	1870	1585
Grp Volume(v), veh/h				740	1162	673	40	38	0	0	63	114
Grp Sat Flow(s),veh/h/ln				1863	1609	1861	1156	1617	0	0	1777	1585
Q Serve(g_s), s				43.0	36.9	36.9	2.4	2.2	0.0	0.0	3.3	7.0
Cycle Q Clear(g_c), s				43.0	36.9	36.9	9.4	2.2	0.0	0.0	3.3	7.0
Prop In Lane				0.07		0.03	0.81		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1047	1808	1046	496	632	0	0	695	620
V/C Ratio(X)				0.71	0.64	0.64	0.08	0.06	0.00	0.00	0.09	0.18
Avail Cap(c_a), veh/h				1332	2299	1330	496	632	0	0	695	620
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.33	0.33	0.33	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				23.7	22.4	22.4	31.6	28.3	0.0	0.0	28.6	29.8
Incr Delay (d2), s/veh				0.4	0.1	0.2	0.3	0.2	0.0	0.0	0.3	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				18.8	13.9	16.1	1.0	0.9	0.0	0.0	1.5	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.1	22.5	22.6	32.0	28.5	0.0	0.0	28.9	30.4
LnGrp LOS				C	C	C	C	C	A	A	C	C
Approach Vol, veh/h					2574			78			177	
Approach Delay, s/veh					23.0			30.2			29.9	
Approach LOS					C			C			C	

Timer - Assigned Phs	2					6		8				
Phs Duration (G+Y+Rc), s	61.8					61.8		87.2				
Change Period (Y+Rc), s	3.5					3.5		3.5				
Max Green Setting (Gmax), s	35.5					35.5		106.5				
Max Q Clear Time (g_c+I1), s	11.4					9.0		45.0				
Green Ext Time (p_c), s	0.4					1.0		38.8				

Intersection Summary		
HCM 6th Ctrl Delay		23.6
HCM 6th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	74	503	14	8	22	0	0	118	32
Future Volume (veh/h)	0	0	0	74	503	14	8	22	0	0	118	32
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				79	535	15	9	23	0	0	126	34
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				330	2350	69	147	281	0	0	297	78
Arrive On Green				0.74	0.74	0.74	0.11	0.11	0.00	0.00	0.11	0.11
Sat Flow, veh/h				444	3165	93	432	2727	0	0	2881	729
Grp Volume(v), veh/h				329	0	300	18	14	0	0	79	81
Grp Sat Flow(s),veh/h/ln				1848	0	1854	1457	1617	0	0	1777	1739
Q Serve(g_s), s				3.0	0.0	2.6	0.0	0.4	0.0	0.0	2.2	2.3
Cycle Q Clear(g_c), s				3.0	0.0	2.6	2.3	0.4	0.0	0.0	2.2	2.3
Prop In Lane				0.24		0.05	0.49		0.00	0.00		0.42
Lane Grp Cap(c), veh/h				1372	0	1376	257	172	0	0	189	185
V/C Ratio(X)				0.24	0.00	0.22	0.07	0.08	0.00	0.00	0.42	0.44
Avail Cap(c_a), veh/h				1372	0	1376	491	427	0	0	469	459
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.61	0.00	0.61	1.00	1.00	0.00	0.00	0.99	0.99
Uniform Delay (d), s/veh				2.1	0.0	2.1	21.4	21.3	0.0	0.0	22.1	22.2
Incr Delay (d2), s/veh				0.3	0.0	0.2	0.1	0.2	0.0	0.0	1.4	1.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.5	0.0	0.4	0.2	0.2	0.0	0.0	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				2.4	0.0	2.3	21.5	21.5	0.0	0.0	23.6	23.8
LnGrp LOS				A	A	A	C	C	A	A	C	C
Approach Vol, veh/h					629			32			160	
Approach Delay, s/veh					2.4			21.5			23.7	
Approach LOS					A			C			C	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	9.6		43.4		9.6
Change Period (Y+Rc), s	4.0		4.0		4.0
Max Green Setting (Gmax), s	14.0		31.0		14.0
Max Q Clear Time (g_c+I1), s	4.3		5.0		4.3
Green Ext Time (p_c), s	0.0		4.1		0.5

Intersection Summary	
HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	277	18	0	0	0	0	9	3	30	157	0
Future Volume (veh/h)	25	277	18	0	0	0	0	9	3	30	157	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
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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	26	289	19				0	9	3	31	164	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	2	2				0	2	2	2	2	0
Cap, veh/h	1361	2857	1211				0	273	86	115	309	0
Arrive On Green	0.76	0.76	0.76				0.00	0.10	0.10	0.10	0.10	0.00
Sat Flow, veh/h	1781	3741	1585				0	2751	839	364	3087	0
Grp Volume(v), veh/h	26	289	19				0	6	6	109	86	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585				0	1777	1719	1749	1617	0
Q Serve(g_s), s	0.2	1.2	0.2				0.0	0.2	0.2	1.9	3.0	0.0
Cycle Q Clear(g_c), s	0.2	1.2	0.2				0.0	0.2	0.2	3.5	3.0	0.0
Prop In Lane	1.00		1.00				0.00		0.49	0.29		0.00
Lane Grp Cap(c), veh/h	1361	2857	1211				0	183	177	257	166	0
V/C Ratio(X)	0.02	0.10	0.02				0.00	0.03	0.03	0.42	0.52	0.00
Avail Cap(c_a), veh/h	1361	2857	1211				0	918	888	964	835	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74				0.00	1.00	1.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	1.7	1.8	1.7				0.0	24.2	24.2	25.7	25.5	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0				0.0	0.0	0.0	0.4	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0				0.0	0.1	0.1	1.4	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.7	1.9	1.7				0.0	24.3	24.3	26.1	26.4	0.0
LnGrp LOS	A	A	A				A	C	C	C	C	A
Approach Vol, veh/h		334						12			195	
Approach Delay, s/veh		1.8						24.3			26.2	
Approach LOS		A						C			C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		10.2		49.8		10.2
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		31.0		21.0		31.0
Max Q Clear Time (g_c+I1), s		2.2		3.2		5.5
Green Ext Time (p_c), s		0.0		2.5		0.7

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	0	172	1568	702	97	0	0	0	0	491	138
Future Volume (veh/h)	210	0	172	1568	702	97	0	0	0	0	491	138
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				0	1870	1870
Adj Flow Rate, veh/h	286	0	125	1651	739	102				0	528	148
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95				0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	2
Cap, veh/h	349	0	148	1937	1194	165				0	0	0
Arrive On Green	0.10	0.00	0.09	0.13	0.13	0.13				0.00	0.00	0.00
Sat Flow, veh/h	3563	0	1585	5023	3137	433					0	
Grp Volume(v), veh/h	286	0	125	1651	418	423					0.0	
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1674	1777	1792						
Q Serve(g_s), s	11.7	0.0	11.6	47.9	33.3	33.3						
Cycle Q Clear(g_c), s	11.7	0.0	11.6	47.9	33.3	33.3						
Prop In Lane	1.00		1.00	1.00		0.24						
Lane Grp Cap(c), veh/h	349	0	148	1937	676	682						
V/C Ratio(X)	0.82	0.00	0.85	0.85	0.62	0.62						
Avail Cap(c_a), veh/h	729	0	314	2343	817	824						
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33						
Upstream Filter(I)	1.00	0.00	1.00	0.78	0.78	0.78						
Uniform Delay (d), s/veh	65.9	0.0	66.5	60.9	54.9	54.9						
Incr Delay (d2), s/veh	4.7	0.0	12.4	2.2	0.8	0.8						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.6	0.0	5.2	22.1	16.1	16.3						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.6	0.0	78.9	63.0	55.7	55.7						
LnGrp LOS	E	A	E	E	E	E						
Approach Vol, veh/h		411			2492							
Approach Delay, s/veh		73.1			60.6							
Approach LOS		E			E							

Timer - Assigned Phs		3	4			7	8					
Phs Duration (G+Y+Rc), s		18.1	60.2			61.0	17.4					
Change Period (Y+Rc), s		3.5	3.5			3.5	3.5					
Max Green Setting (Gmax), s		30.5	68.5			69.5	29.5					
Max Q Clear Time (g_c+I1), s		13.7	35.3			49.9	13.6					
Green Ext Time (p_c), s		0.9	6.2			7.5	0.3					

Intersection Summary	
HCM 6th Ctrl Delay	62.3
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	269	432	0	0	0	0	0	2210	90
Future Volume (veh/h)	0	0	0	269	432	0	0	0	0	0	2210	90
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				286	460	0				0	2483	101
Peak Hour Factor				0.94	0.94	0.94				0.89	0.89	0.89
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				365	555	0				0	4279	1054
Arrive On Green				0.28	0.28	0.00				0.00	0.67	0.67
Sat Flow, veh/h				1146	2060	0				0	6696	1585
Grp Volume(v), veh/h				375	371	0				0	2483	101
Grp Sat Flow(s),veh/h/ln				1504	1617	0				0	1609	1585
Q Serve(g_s), s				35.4	31.7	0.0				0.0	31.2	3.4
Cycle Q Clear(g_c), s				35.4	31.7	0.0				0.0	31.2	3.4
Prop In Lane				0.76		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				465	454	0				0	4279	1054
V/C Ratio(X)				0.81	0.82	0.00				0.00	0.58	0.10
Avail Cap(c_a), veh/h				582	579	0				0	4279	1054
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.98	0.98	0.00				0.00	0.59	0.59
Uniform Delay (d), s/veh				51.0	49.6	0.0				0.0	13.5	8.9
Incr Delay (d2), s/veh				6.5	6.9	0.0				0.0	0.3	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				14.2	13.7	0.0				0.0	11.1	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				57.5	56.6	0.0				0.0	13.9	9.0
LnGrp LOS				E	E	A				A	B	A
Approach Vol, veh/h					746						2584	
Approach Delay, s/veh					57.0						13.7	
Approach LOS					E						B	

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	102.4	45.6
Change Period (Y+Rc), s	4.0	4.0
Max Green Setting (Gmax), s	87.0	53.0
Max Q Clear Time (g_c+I1), s	33.2	37.4
Green Ext Time (p_c), s	39.4	4.2

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	176	21	0	0	0	0	0	0	106	2672	0
Future Volume (veh/h)	0	176	21	0	0	0	0	0	0	106	2672	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	189	23							114	2873	0
Peak Hour Factor	0.93	0.93	0.93							0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	252	30							218	5156	0
Arrive On Green	0.00	0.08	0.08							0.29	0.29	0.00
Sat Flow, veh/h	0	3288	384							221	6208	0
Grp Volume(v), veh/h	0	104	108							876	2111	0
Grp Sat Flow(s),veh/h/ln	0	1777	1801							1800	1464	0
Q Serve(g_s), s	0.0	8.5	8.7							54.4	60.4	0.0
Cycle Q Clear(g_c), s	0.0	8.5	8.7							61.2	60.4	0.0
Prop In Lane	0.00		0.21							0.13		0.00
Lane Grp Cap(c), veh/h	0	140	142							1582	3793	0
V/C Ratio(X)	0.00	0.74	0.76							0.55	0.56	0.00
Avail Cap(c_a), veh/h	0	324	329							1582	3793	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	1.00	1.00							0.80	0.80	0.00
Uniform Delay (d), s/veh	0.0	66.7	66.8							29.0	28.8	0.0
Incr Delay (d2), s/veh	0.0	7.5	8.0							1.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	4.3							30.2	24.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	74.2	74.8							30.1	29.3	0.0
LnGrp LOS	A	E	E							C	C	A
Approach Vol, veh/h		212									2987	
Approach Delay, s/veh		74.5									29.5	
Approach LOS		E									C	

Timer - Assigned Phs			4		6							
Phs Duration (G+Y+Rc), s			15.7		132.3							
Change Period (Y+Rc), s			4.0		4.5							
Max Green Setting (Gmax), s			27.0		112.5							
Max Q Clear Time (g_c+I1), s			10.7		63.2							
Green Ext Time (p_c), s			1.0		40.7							

Intersection Summary												
HCM 6th Ctrl Delay			32.5									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	493	12	561	651	0	0	0	0	73	2656	304
Future Volume (veh/h)	0	493	12	561	651	0	0	0	0	73	2656	304
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	616	15	610	708	0				78	2826	323
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	748	18	686	1342	0				100	3896	452
Arrive On Green	0.00	0.15	0.15	0.20	0.38	0.00				0.55	0.55	0.55
Sat Flow, veh/h	0	5296	125	3456	3647	0				183	7118	826
Grp Volume(v), veh/h	0	408	223	610	708	0				793	1761	673
Grp Sat Flow(s),veh/h/ln	0	1702	1848	1728	1777	0				1861	1515	1722
Q Serve(g_s), s	0.0	14.0	14.0	20.6	18.6	0.0				40.3	34.4	34.9
Cycle Q Clear(g_c), s	0.0	14.0	14.0	20.6	18.6	0.0				40.3	34.4	34.9
Prop In Lane	0.00		0.07	1.00		0.00				0.10		0.48
Lane Grp Cap(c), veh/h	0	496	270	686	1342	0				1019	2487	942
V/C Ratio(X)	0.00	0.82	0.83	0.89	0.53	0.00				0.78	0.71	0.71
Avail Cap(c_a), veh/h	0	567	308	806	1540	0				1019	2487	942
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.44	0.44	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	49.7	49.8	46.8	29.0	0.0				21.4	20.1	20.2
Incr Delay (d2), s/veh	0.0	8.5	15.0	5.2	0.1	0.0				5.9	1.7	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.5	7.6	9.3	7.9	0.0				18.5	12.1	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	58.3	64.8	52.0	29.2	0.0				27.3	21.8	24.8
LnGrp LOS	A	E	E	D	C	A				C	C	C
Approach Vol, veh/h		631			1318						3227	
Approach Delay, s/veh		60.6			39.7						23.8	
Approach LOS		E			D						C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		70.7		49.3			27.8	21.5				
Change Period (Y+Rc), s		5.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		59.0		52.0			28.0	20.0				
Max Q Clear Time (g_c+I1), s		42.3		20.6			22.6	16.0				
Green Ext Time (p_c), s		15.7		5.5			1.2	1.5				

Intersection Summary												
HCM 6th Ctrl Delay			32.3									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis
13: Mission Boulevard & Jackson Street/Foothill Boulevard

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	736	68	0	0	0	0	0	1566	0	1785	1397
Future Volume (vph)	0	736	68	0	0	0	0	0	1566	0	1785	1397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0						4.5		5.0	4.0
Lane Util. Factor		0.91	1.00						0.76		0.86	0.88
Frt		1.00	0.85						0.85		1.00	0.85
Flt Protected		1.00	1.00						1.00		1.00	1.00
Satd. Flow (prot)		5085	1583						3610		6408	2787
Flt Permitted		1.00	1.00						1.00		1.00	1.00
Satd. Flow (perm)		5085	1583						3610		6408	2787
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	0	856	79	0	0	0	0	0	1780	0	1919	1502
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	13	0	0	0
Lane Group Flow (vph)	0	856	65	0	0	0	0	0	1767	0	1919	1502
Turn Type		NA	Perm						Prot		NA	Free
Protected Phases		4							5		2	
Permitted Phases			4									Free
Actuated Green, G (s)		28.5	28.5						82.0		81.5	120.0
Effective Green, g (s)		28.5	28.5						82.0		81.5	120.0
Actuated g/C Ratio		0.24	0.24						0.68		0.68	1.00
Clearance Time (s)		5.0	5.0						4.5		5.0	
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Lane Grp Cap (vph)		1207	375						2466		4352	2787
v/s Ratio Prot		c0.17							c0.49		0.30	
v/s Ratio Perm			0.04									0.54
v/c Ratio		0.71	0.17						0.72		0.44	0.54
Uniform Delay, d1		42.0	36.4						11.8		8.8	0.0
Progression Factor		1.00	1.00						1.00		0.60	1.00
Incremental Delay, d2		1.9	0.2						1.0		0.2	0.4
Delay (s)		43.9	36.6						12.8		5.5	0.4
Level of Service		D	D						B		A	A
Approach Delay (s)		43.3			0.0			12.8			3.3	
Approach LOS		D			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	53	113	203	135	14	229	1448	69	30	1882	16
Future Volume (veh/h)	78	53	113	203	135	14	229	1448	69	30	1882	16
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	65	138	245	163	17	266	1684	80	33	2068	18
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	97	326	114	342	36	304	3261	155	44	2647	23
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.17	0.65	0.65	0.02	0.51	0.51
Sat Flow, veh/h	485	470	1585	1179	1665	174	1781	4995	237	1781	5221	45
Grp Volume(v), veh/h	160	0	138	245	0	180	266	1147	617	33	1348	738
Grp Sat Flow(s),veh/h/ln	956	0	1585	1179	0	1839	1781	1702	1828	1781	1702	1862
Q Serve(g_s), s	8.1	0.0	6.8	2.6	0.0	7.8	13.1	15.9	15.9	1.7	29.1	29.1
Cycle Q Clear(g_c), s	15.9	0.0	6.8	18.5	0.0	7.8	13.1	15.9	15.9	1.7	29.1	29.1
Prop In Lane	0.59		1.00	1.00		0.09	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	260	0	326	114	0	378	304	2222	1193	44	1726	944
V/C Ratio(X)	0.61	0.00	0.42	2.14	0.00	0.48	0.87	0.52	0.52	0.74	0.78	0.78
Avail Cap(c_a), veh/h	260	0	326	114	0	378	495	2222	1193	257	1726	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	31.1	44.6	0.0	31.5	36.4	8.2	8.2	43.6	18.1	18.1
Incr Delay (d2), s/veh	3.2	0.0	0.3	541.1	0.0	0.3	5.6	0.9	1.6	8.7	3.6	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	2.6	19.7	0.0	3.4	6.1	5.3	5.9	0.8	11.4	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	0.0	31.4	585.7	0.0	31.8	42.0	9.0	9.8	52.3	21.7	24.5
LnGrp LOS	D	A	C	F	A	C	D	A	A	D	C	C
Approach Vol, veh/h		298			425			2030			2119	
Approach Delay, s/veh		35.8			351.1			13.6			23.2	
Approach LOS		D			F			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	62.8		22.0	18.4	49.6		22.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	13.0	48.0		18.5	25.0	36.0		18.5
Max Q Clear Time (g_c+I1), s	3.7	17.9		17.9	15.1	31.1		20.5
Green Ext Time (p_c), s	0.0	21.0		0.1	0.3	4.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	0	64	112	207	33	85	83	0	0	63	26
Future Volume (veh/h)	21	0	64	112	207	33	85	83	0	0	63	26
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	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	22	0	68	119	220	35	90	88	0	0	67	28
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, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	28	0	85	185	363	60	811	1003	0	0	1003	850
Arrive On Green	0.07	0.00	0.07	0.17	0.17	0.17	0.54	0.54	0.00	0.00	0.54	0.54
Sat Flow, veh/h	398	0	1231	1102	2165	355	1301	1870	0	0	1870	1585
Grp Volume(v), veh/h	90	0	0	196	0	178	90	88	0	0	67	28
Grp Sat Flow(s),veh/h/ln	1629	0	0	1815	0	1806	1301	1870	0	0	1870	1585
Q Serve(g_s), s	2.9	0.0	0.0	5.3	0.0	4.8	1.9	1.2	0.0	0.0	0.9	0.4
Cycle Q Clear(g_c), s	2.9	0.0	0.0	5.3	0.0	4.8	2.8	1.2	0.0	0.0	0.9	0.4
Prop In Lane	0.24		0.76	0.61		0.20	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	113	0	0	305	0	303	811	1003	0	0	1003	850
V/C Ratio(X)	0.80	0.00	0.00	0.64	0.00	0.59	0.11	0.09	0.00	0.00	0.07	0.03
Avail Cap(c_a), veh/h	215	0	0	617	0	613	811	1003	0	0	1003	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.62	0.00	0.62	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	0.0	0.0	20.6	0.0	20.4	6.6	6.0	0.0	0.0	5.9	5.8
Incr Delay (d2), s/veh	12.0	0.0	0.0	1.4	0.0	1.1	0.3	0.2	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	2.2	0.0	1.9	0.5	0.4	0.0	0.0	0.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	0.0	22.0	0.0	21.5	6.9	6.1	0.0	0.0	6.0	5.9
LnGrp LOS	D	A	A	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		90			374			178			95	
Approach Delay, s/veh		36.3			21.7			6.5			6.0	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.4		12.9		32.4		7.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		18.0		16.0		7.0				
Max Q Clear Time (g_c+I1), s		2.9		7.3		4.8		4.9				
Green Ext Time (p_c), s		0.3		1.6		0.5		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	114	32	0	0	0	1	157	41	47	125	47
Future Volume (veh/h)	47	114	32	0	0	0	1	157	41	47	125	47
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900				1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	125	35				1	173	45	52	137	52
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	2	0				2	2	2	2	2	2
Cap, veh/h	584	1458	422				69	232	60	317	210	80
Arrive On Green	0.69	0.69	0.69				0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	850	2123	615				2	1430	370	1163	1292	490
Grp Volume(v), veh/h	112	0	100				219	0	0	52	0	189
Grp Sat Flow(s),veh/h/ln	1828	0	1760				1802	0	0	1163	0	1782
Q Serve(g_s), s	1.1	0.0	1.0				0.0	0.0	0.0	0.0	0.0	5.3
Cycle Q Clear(g_c), s	1.1	0.0	1.0				6.1	0.0	0.0	2.2	0.0	5.3
Prop In Lane	0.47		0.35				0.00		0.21	1.00		0.28
Lane Grp Cap(c), veh/h	1255	0	1209				361	0	0	317	0	289
V/C Ratio(X)	0.09	0.00	0.08				0.61	0.00	0.00	0.16	0.00	0.65
Avail Cap(c_a), veh/h	1255	0	1209				612	0	0	480	0	538
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.8	0.0	2.8				21.2	0.0	0.0	19.5	0.0	20.8
Incr Delay (d2), s/veh	0.1	0.0	0.1				0.6	0.0	0.0	0.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2				2.4	0.0	0.0	0.5	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.9	0.0	2.9				21.8	0.0	0.0	19.6	0.0	21.7
LnGrp LOS	A	A	A				C	A	A	B	A	C
Approach Vol, veh/h		212						219			241	
Approach Delay, s/veh		2.9						21.8			21.3	
Approach LOS		A						C			C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		12.6		40.4		12.6
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		29.0		16.0
Max Q Clear Time (g_c+I1), s		8.1		3.1		7.3
Green Ext Time (p_c), s		0.5		0.8		0.5

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	138	842	107	1	1216	2	191	119	8	6	94	116
Future Volume (veh/h)	138	842	107	1	1216	2	191	119	8	6	94	116
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	886	113	1	1280	2	201	125	8	6	99	122
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	1895	241	24	1493	2	724	707	45	10	166	150
Arrive On Green	0.09	0.41	0.41	0.29	0.29	0.29	0.41	0.41	0.41	0.09	0.09	0.09
Sat Flow, veh/h	1781	4587	583	1	5110	8	1781	1739	111	107	1758	1585
Grp Volume(v), veh/h	145	657	342	469	388	426	201	0	133	105	0	122
Grp Sat Flow(s),veh/h/ln	1781	1702	1765	1869	1549	1701	1781	0	1850	1865	0	1585
Q Serve(g_s), s	12.1	21.2	21.3	0.0	35.7	35.8	11.4	0.0	6.9	8.2	0.0	11.4
Cycle Q Clear(g_c), s	12.1	21.2	21.3	35.7	35.7	35.8	11.4	0.0	6.9	8.2	0.0	11.4
Prop In Lane	1.00		0.33	0.00		0.00	1.00		0.06	0.06		1.00
Lane Grp Cap(c), veh/h	168	1406	729	570	453	497	724	0	752	176	0	150
V/C Ratio(X)	0.86	0.47	0.47	0.82	0.86	0.86	0.28	0.00	0.18	0.60	0.00	0.81
Avail Cap(c_a), veh/h	236	1668	865	643	513	563	724	0	752	408	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.4	32.2	32.3	50.5	50.5	50.5	30.0	0.0	28.7	65.6	0.0	67.1
Incr Delay (d2), s/veh	20.0	0.2	0.5	7.7	12.4	11.5	1.0	0.0	0.5	3.2	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	8.9	9.3	18.0	15.4	16.8	5.2	0.0	3.3	4.1	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.5	32.5	32.7	58.1	62.9	62.0	31.0	0.0	29.2	68.8	0.0	77.2
LnGrp LOS	F	C	C	E	E	E	C	A	C	E	A	E
Approach Vol, veh/h		1144			1283			334			227	
Approach Delay, s/veh		39.5			60.8			30.3			73.3	
Approach LOS		D			E			C			E	

Timer - Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		65.3		67.4		18.3	18.3	49.1
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0
Max Green Setting (Gmax), s		31.0		74.0		33.0	20.0	50.0
Max Q Clear Time (g_c+I1), s		13.4		23.3		13.4	14.1	37.8
Green Ext Time (p_c), s		1.2		8.6		0.9	0.2	6.4

Intersection Summary		
HCM 6th Ctrl Delay		50.2
HCM 6th LOS		D

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	69	51	84	182	44	0	0	0	30	51	97
Future Vol, veh/h	41	69	51	84	182	44	0	0	0	30	51	97
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	80	59	98	212	51	0	0	0	35	59	113
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9.5	10	9.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	48%	0%	17%
Vol Thru, %	43%	52%	67%	29%
Vol Right, %	32%	0%	33%	54%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	175	135	178
LT Vol	41	84	0	30
Through Vol	69	91	91	51
RT Vol	51	0	44	97
Lane Flow Rate	187	203	157	207
Geometry Grp	5	7	7	2
Degree of Util (X)	0.251	0.309	0.218	0.281
Departure Headway (Hd)	4.824	5.461	4.989	4.881
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	739	655	716	733
Service Time	2.887	3.22	2.748	2.936
HCM Lane V/C Ratio	0.253	0.31	0.219	0.282
HCM Control Delay	9.5	10.7	9.1	9.9
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	1	1.3	0.8	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	392	94	146	691	25	89	96	54	33	154	64
Future Volume (veh/h)	40	392	94	146	691	25	89	96	54	33	154	64
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	426	102	159	751	27	97	104	59	36	167	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	1631	387	195	2238	80	202	357	475	70	214	84
Arrive On Green	0.04	0.57	0.57	0.11	0.64	0.64	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1781	2849	676	1781	3499	126	1143	1870	1585	150	1123	439
Grp Volume(v), veh/h	43	264	264	159	381	397	97	104	59	273	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1749	1781	1777	1848	1143	1870	1585	1712	0	0
Q Serve(g_s), s	2.3	7.3	7.4	8.6	9.7	9.7	0.8	4.7	2.7	9.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	7.3	7.4	8.6	9.7	9.7	15.8	4.7	2.7	15.0	0.0	0.0
Prop In Lane	1.00		0.39	1.00		0.07	1.00		1.00	0.13		0.26
Lane Grp Cap(c), veh/h	75	1017	1001	195	1136	1182	202	357	475	368	0	0
V/C Ratio(X)	0.57	0.26	0.26	0.82	0.34	0.34	0.48	0.29	0.12	0.74	0.00	0.00
Avail Cap(c_a), veh/h	164	1017	1001	400	1136	1182	357	611	691	596	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.1	10.5	10.5	42.7	8.1	8.1	38.9	34.0	24.9	38.0	0.0	0.0
Incr Delay (d2), s/veh	6.7	0.6	0.6	8.1	0.8	0.8	1.7	0.4	0.1	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.9	2.9	4.2	3.6	3.8	2.3	2.2	1.0	6.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	11.1	11.2	50.8	8.9	8.9	40.6	34.4	25.1	41.0	0.0	0.0
LnGrp LOS	D	B	B	D	A	A	D	C	C	D	A	A
Approach Vol, veh/h		571			937			260			273	
Approach Delay, s/veh		14.3			16.0			34.6			41.0	
Approach LOS		B			B			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	60.6		22.7	8.1	67.2		22.7
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	22.0	31.5		32.0	9.0	44.5		32.0
Max Q Clear Time (g_c+I1), s	10.6	9.4		17.0	4.3	11.7		17.8
Green Ext Time (p_c), s	0.3	3.3		1.4	0.0	5.6		0.9

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	39	17	218	34	42	9	187	95	32	391	9
Future Volume (veh/h)	1	39	17	218	34	42	9	187	95	32	391	9
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	42	18	237	37	46	10	203	103	35	425	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	533	560	474	533	227	282	45	668	319	85	955	22
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	1870	1585	1781	758	943	42	2233	1066	167	3194	74
Grp Volume(v), veh/h	1	42	18	237	0	83	170	0	146	242	0	228
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1701	1830	0	1510	1746	0	1689
Q Serve(g_s), s	0.0	1.9	0.9	12.6	0.0	4.2	0.0	0.0	8.8	1.3	0.0	12.8
Cycle Q Clear(g_c), s	0.0	1.9	0.9	12.6	0.0	4.2	8.2	0.0	8.8	12.3	0.0	12.8
Prop In Lane	1.00		1.00	1.00		0.55	0.06		0.71	0.14		0.04
Lane Grp Cap(c), veh/h	533	560	474	533	0	509	580	0	452	558	0	505
V/C Ratio(X)	0.00	0.08	0.04	0.44	0.00	0.16	0.29	0.00	0.32	0.43	0.00	0.45
Avail Cap(c_a), veh/h	533	560	474	533	0	509	580	0	452	558	0	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.8	29.4	29.1	33.1	0.0	30.2	31.6	0.0	31.8	33.0	0.0	33.2
Incr Delay (d2), s/veh	0.0	0.3	0.1	2.7	0.0	0.7	1.3	0.0	1.9	2.4	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.4	5.8	0.0	1.8	3.9	0.0	3.4	5.9	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	29.7	29.2	35.8	0.0	30.9	32.9	0.0	33.7	35.5	0.0	36.1
LnGrp LOS	C	C	C	D	A	C	C	A	C	D	A	D
Approach Vol, veh/h		61			320			316			470	
Approach Delay, s/veh		29.5			34.5			33.3			35.8	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.0	39.0	39.0	39.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	35.0	35.0	35.0	35.0
Max Q Clear Time (g_c+I1), s	10.8	3.9	14.8	14.6
Green Ext Time (p_c), s	1.2	0.1	1.8	0.6

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
21: 2nd Street & City Center Drive (S)/City Center Drive

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	375	70	25	3	350	127	68	1	68	19
Future Volume (veh/h)	22	9	375	70	25	3	350	127	68	1	68	19
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	11	463	89	32	4	389	141	76	1	99	28
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.90	0.90	0.90	0.69	0.69	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	478	585	495	352	509	64	872	280	151	587	909	248
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.24	0.24	0.24	0.33	0.33	0.33
Sat Flow, veh/h	1372	1870	1585	920	1630	204	3563	1143	616	1781	2759	753
Grp Volume(v), veh/h	27	11	463	89	0	36	389	0	217	1	62	65
Grp Sat Flow(s),veh/h/ln	1372	1870	1585	920	0	1834	1781	0	1759	1781	1777	1735
Q Serve(g_s), s	1.5	0.4	30.1	7.9	0.0	1.5	9.8	0.0	11.3	0.0	2.6	2.8
Cycle Q Clear(g_c), s	3.0	0.4	30.1	8.3	0.0	1.5	9.8	0.0	11.3	0.0	2.6	2.8
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.35	1.00		0.43
Lane Grp Cap(c), veh/h	478	585	495	352	0	573	872	0	431	587	586	572
V/C Ratio(X)	0.06	0.02	0.93	0.25	0.00	0.06	0.45	0.00	0.50	0.00	0.11	0.11
Avail Cap(c_a), veh/h	501	616	522	367	0	604	872	0	431	587	586	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	25.2	35.4	28.1	0.0	25.6	34.0	0.0	34.5	23.9	24.7	24.8
Incr Delay (d2), s/veh	0.1	0.0	24.8	0.8	0.0	0.1	1.6	0.0	4.2	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.2	14.8	1.8	0.0	0.7	4.4	0.0	5.3	0.0	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	25.3	60.2	28.9	0.0	25.7	35.6	0.0	38.7	23.9	25.1	25.2
LnGrp LOS	C	C	E	C	A	C	D	A	D	C	C	C
Approach Vol, veh/h		501			125			606			128	
Approach Delay, s/veh		57.6			28.0			36.7			25.1	
Approach LOS		E			C			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		37.2		39.0		37.2				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		26.0		35.0		35.0		35.0				
Max Q Clear Time (g_c+I1), s		13.3		32.1		4.8		10.3				
Green Ext Time (p_c), s		4.3		1.1		1.3		1.1				

Intersection Summary	
HCM 6th Ctrl Delay	42.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	463	5	385	1286	83	124	381	167	76	323	28
Future Volume (veh/h)	10	463	5	385	1286	83	124	381	167	76	323	28
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	498	5	410	1368	88	143	438	192	86	367	32
Peak Hour Factor	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	1182	12	326	1343	86	168	876	381	109	1093	95
Arrive On Green	0.03	0.33	0.33	0.09	0.40	0.40	0.03	0.12	0.12	0.06	0.33	0.33
Sat Flow, veh/h	1781	3605	36	3456	3391	218	1781	2411	1047	1781	3309	287
Grp Volume(v), veh/h	11	245	258	410	715	741	143	322	308	86	196	203
Grp Sat Flow(s),veh/h/ln	1781	1777	1864	1728	1777	1831	1781	1777	1682	1781	1777	1819
Q Serve(g_s), s	0.6	11.4	11.4	10.0	42.0	42.0	8.5	18.0	18.2	5.0	8.8	8.9
Cycle Q Clear(g_c), s	0.6	11.4	11.4	10.0	42.0	42.0	8.5	18.0	18.2	5.0	8.8	8.9
Prop In Lane	1.00		0.02	1.00		0.12	1.00		0.62	1.00		0.16
Lane Grp Cap(c), veh/h	46	583	611	326	704	726	168	646	611	109	587	601
V/C Ratio(X)	0.24	0.42	0.42	1.26	1.02	1.02	0.85	0.50	0.50	0.79	0.33	0.34
Avail Cap(c_a), veh/h	269	801	840	326	704	726	168	646	611	168	587	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	0.81	0.81	0.81
Uniform Delay (d), s/veh	50.6	27.8	27.8	48.0	32.0	32.0	50.6	37.6	37.7	49.1	26.7	26.7
Incr Delay (d2), s/veh	1.0	0.7	0.7	138.5	37.9	38.8	26.9	2.3	2.5	4.8	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.9	5.2	10.5	24.8	25.7	5.2	9.0	8.6	2.4	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	28.5	28.4	186.5	69.9	70.8	77.5	39.9	40.2	53.8	27.9	28.0
LnGrp LOS	D	C	C	F	F	F	E	D	D	D	C	C
Approach Vol, veh/h		514			1866			773			485	
Approach Delay, s/veh		28.9			95.9			47.0			32.5	
Approach LOS		C			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	42.5	14.0	39.0	14.0	39.0	6.8	46.2
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	10.0	22.0	10.0	* 48	10.0	22.0	16.0	* 42
Max Q Clear Time (g_c+I1), s	7.0	20.2	12.0	13.4	10.5	10.9	2.6	44.0
Green Ext Time (p_c), s	0.0	0.9	0.0	4.8	0.0	2.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.6
HCM 6th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	105	8	188	617	34	127	636	280	25	509	153
Future Volume (veh/h)	14	105	8	188	617	34	127	636	280	25	509	153
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	128	10	202	663	37	144	723	318	29	599	180
Peak Hour Factor	0.82	0.82	0.82	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	202	16	402	793	44	175	1961	831	58	1716	727
Arrive On Green	0.07	0.07	0.07	0.23	0.23	0.23	0.10	0.52	0.52	0.01	0.15	0.15
Sat Flow, veh/h	387	3042	248	1781	3510	196	1781	3741	1585	1781	3741	1585
Grp Volume(v), veh/h	81	0	74	202	353	347	144	723	318	29	599	180
Grp Sat Flow(s),veh/h/ln	1851	0	1826	1781	1870	1835	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.5	0.0	4.2	10.5	19.1	19.1	8.4	12.1	12.7	1.7	15.2	10.6
Cycle Q Clear(g_c), s	4.5	0.0	4.2	10.5	19.1	19.1	8.4	12.1	12.7	1.7	15.2	10.6
Prop In Lane	0.21		0.14	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	0	121	402	422	414	175	1961	831	58	1716	727
V/C Ratio(X)	0.66	0.00	0.61	0.50	0.84	0.84	0.82	0.37	0.38	0.50	0.35	0.25
Avail Cap(c_a), veh/h	325	0	320	471	494	485	252	1961	831	111	1716	727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	0.41	0.41	0.41
Uniform Delay (d), s/veh	48.3	0.0	48.1	35.8	39.2	39.2	46.9	14.9	15.0	51.6	30.8	28.8
Incr Delay (d2), s/veh	6.0	0.0	4.8	1.0	10.5	10.8	12.6	0.5	1.2	2.7	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	2.1	4.6	9.9	9.8	4.3	5.1	4.7	0.8	7.7	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.3	0.0	53.0	36.8	49.6	49.9	59.5	15.4	16.2	54.3	31.0	29.2
LnGrp LOS	D	A	D	D	D	D	E	B	B	D	C	C
Approach Vol, veh/h		155			902			1185			808	
Approach Delay, s/veh		53.7			46.9			21.0			31.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	59.6		11.0	14.4	52.6		27.9
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.6	36.8		18.6	15.0	28.4		28.0
Max Q Clear Time (g_c+I1), s	3.7	14.7		6.5	10.4	17.2		21.1
Green Ext Time (p_c), s	0.0	6.5		0.6	0.1	3.6		2.8

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	155	149	50	0	74	0	739	30	10	721	0
Future Volume (veh/h)	242	155	149	50	0	74	0	739	30	10	721	0
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	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	176	169	66	0	97	0	830	34	12	838	0
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.89	0.89	0.89	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	2
Cap, veh/h	759	193	185	0	0	0	0	2462	101	460	2515	0
Arrive On Green	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.71	0.71	0.71	0.71	0.00
Sat Flow, veh/h	3456	877	842		0		0	3573	143	640	3647	0
Grp Volume(v), veh/h	275	0	345		0.0		0	424	440	12	838	0
Grp Sat Flow(s),veh/h/ln	1728	0	1719				0	1777	1845	640	1777	0
Q Serve(g_s), s	7.4	0.0	21.6				0.0	10.1	10.1	0.8	9.9	0.0
Cycle Q Clear(g_c), s	7.4	0.0	21.6				0.0	10.1	10.1	10.9	9.9	0.0
Prop In Lane	1.00		0.49				0.00		0.08	1.00		0.00
Lane Grp Cap(c), veh/h	759	0	377				0	1258	1306	460	2515	0
V/C Ratio(X)	0.36	0.00	0.91				0.00	0.34	0.34	0.03	0.33	0.00
Avail Cap(c_a), veh/h	817	0	406				0	1258	1306	460	2515	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98				0.00	0.76	0.76	0.85	0.85	0.00
Uniform Delay (d), s/veh	36.4	0.0	41.9				0.0	6.2	6.2	8.3	6.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	22.7				0.0	0.6	0.5	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	11.4				0.0	3.6	3.7	0.1	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	0.0	64.6				0.0	6.7	6.7	8.3	6.5	0.0
LnGrp LOS	D	A	E				A	A	A	A	A	A
Approach Vol, veh/h		620						864			850	
Approach Delay, s/veh		52.1						6.7			6.5	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		81.8		28.2		81.8
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		46.0		26.0		46.0
Max Q Clear Time (g_c+I1), s		12.1		23.6		12.9
Green Ext Time (p_c), s		9.4		0.6		10.0

Intersection Summary	
HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	236	92	102	402	19	351	703	66	59	602	256
Future Volume (veh/h)	73	236	92	102	402	19	351	703	66	59	602	256
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	85	274	107	120	473	22	399	799	75	69	700	298
Peak Hour Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.88	0.88	0.88	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	321	125	131	467	22	394	1424	134	94	644	274
Arrive On Green	0.06	0.25	0.25	0.07	0.26	0.26	0.22	0.43	0.43	0.05	0.27	0.27
Sat Flow, veh/h	1781	1280	500	1781	1773	82	1781	3284	308	1781	2428	1033
Grp Volume(v), veh/h	85	0	381	120	0	495	399	432	442	69	512	486
Grp Sat Flow(s),veh/h/ln	1781	0	1780	1781	0	1856	1781	1777	1815	1781	1777	1684
Q Serve(g_s), s	4.5	0.0	19.4	6.4	0.0	25.0	21.0	17.3	17.3	3.6	25.2	25.2
Cycle Q Clear(g_c), s	4.5	0.0	19.4	6.4	0.0	25.0	21.0	17.3	17.3	3.6	25.2	25.2
Prop In Lane	1.00		0.28	1.00		0.04	1.00		0.17	1.00		0.61
Lane Grp Cap(c), veh/h	108	0	446	131	0	488	394	770	787	94	472	447
V/C Ratio(X)	0.78	0.00	0.85	0.91	0.00	1.01	1.01	0.56	0.56	0.73	1.09	1.09
Avail Cap(c_a), veh/h	113	0	450	131	0	488	394	770	787	169	472	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	44.0	0.0	34.0	43.7	0.0	35.0	37.0	20.1	20.1	44.3	34.9	34.9
Incr Delay (d2), s/veh	3.2	0.0	1.6	53.2	0.0	44.2	48.7	2.9	2.9	9.6	65.2	66.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	8.4	4.7	0.0	17.0	14.3	7.5	7.7	1.8	19.1	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.2	0.0	35.5	96.9	0.0	79.2	85.7	23.1	23.0	53.9	100.1	101.1
LnGrp LOS	D	A	D	F	A	F	F	C	C	D	F	F
Approach Vol, veh/h		466			615			1273			1067	
Approach Delay, s/veh		37.7			82.7			42.7			97.5	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	46.2	11.0	28.8	25.0	30.2	9.8	30.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	9.0	37.0	7.0	24.0	21.0	25.0	6.0	25.0
Max Q Clear Time (g_c+I1), s	5.6	19.3	8.4	21.4	23.0	27.2	6.5	27.0
Green Ext Time (p_c), s	0.0	5.4	0.0	0.6	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	66.3
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	37	27	23	19	151	48	1814	6	231	1769	82
Future Volume (veh/h)	109	37	27	23	19	151	48	1814	6	231	1769	82
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	46	34	29	24	194	52	1951	6	246	1882	87
Peak Hour Factor	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	204	151	37	254	216	67	2601	808	270	3183	988
Arrive On Green	0.09	0.20	0.20	0.02	0.14	0.14	0.04	0.51	0.51	0.15	0.62	0.62
Sat Flow, veh/h	1781	999	738	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	136	0	80	29	24	194	52	1951	6	246	1882	87
Grp Sat Flow(s),veh/h/ln	1781	0	1737	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.2	0.0	5.7	2.4	1.7	18.0	4.3	45.2	0.3	20.3	32.8	3.3
Cycle Q Clear(g_c), s	11.2	0.0	5.7	2.4	1.7	18.0	4.3	45.2	0.3	20.3	32.8	3.3
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	0	355	37	254	216	67	2601	808	270	3183	988
V/C Ratio(X)	0.86	0.00	0.23	0.79	0.09	0.90	0.78	0.75	0.01	0.91	0.59	0.09
Avail Cap(c_a), veh/h	191	0	400	80	314	266	118	2601	808	323	3183	988
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.9	0.0	49.4	72.6	56.3	63.4	71.1	29.0	18.0	62.2	16.7	11.2
Incr Delay (d2), s/veh	26.6	0.0	0.3	29.5	0.2	27.0	15.3	1.8	0.0	26.1	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	2.6	1.4	0.8	8.9	2.3	18.7	0.1	11.2	12.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.5	0.0	49.8	102.1	56.5	90.3	86.4	30.8	18.0	88.4	17.6	11.4
LnGrp LOS	F	A	D	F	E	F	F	C	B	F	B	B
Approach Vol, veh/h		216			247			2009			2215	
Approach Delay, s/veh		77.3			88.4			32.2			25.2	
Approach LOS		E			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	97.9	17.3	24.3	26.6	80.9	7.1	34.4
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	9.9	81.1	16.0	25.0	27.0	64.0	6.7	34.3
Max Q Clear Time (g_c+I1), s	6.3	34.8	13.2	20.0	22.3	47.2	4.4	7.7
Green Ext Time (p_c), s	0.0	24.3	0.1	0.3	0.3	12.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	112	6	45	38	301	23	2336	75	373	880	120
Future Volume (veh/h)	109	112	6	45	38	301	23	2336	75	373	880	120
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	124	127	7	49	0	354	25	2539	82	397	936	128
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	582	32	63	0	409	32	2939	95	403	3393	1053
Arrive On Green	0.08	0.17	0.17	0.04	0.00	0.13	0.02	0.46	0.46	0.23	0.66	0.66
Sat Flow, veh/h	1781	3426	188	1781	0	3170	1781	6451	208	1781	5106	1585
Grp Volume(v), veh/h	124	65	69	49	0	354	25	1898	723	397	936	128
Grp Sat Flow(s),veh/h/ln	1781	1777	1837	1781	0	1585	1781	1609	1833	1781	1702	1585
Q Serve(g_s), s	10.4	4.8	4.9	4.1	0.0	16.5	2.1	53.3	53.5	33.5	11.4	4.5
Cycle Q Clear(g_c), s	10.4	4.8	4.9	4.1	0.0	16.5	2.1	53.3	53.5	33.5	11.4	4.5
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	136	302	312	63	0	409	32	2199	835	403	3393	1053
V/C Ratio(X)	0.91	0.22	0.22	0.78	0.00	0.87	0.79	0.86	0.87	0.98	0.28	0.12
Avail Cap(c_a), veh/h	136	345	356	114	0	577	75	2199	835	403	3393	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.00	0.98	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	69.3	54.0	54.1	72.2	0.0	64.5	73.9	36.9	36.9	58.1	10.4	9.2
Incr Delay (d2), s/veh	52.0	0.4	0.4	17.8	0.0	9.4	34.4	4.8	11.6	38.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	2.2	2.3	2.2	0.0	7.2	1.3	21.8	26.5	19.4	4.3	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.3	54.4	54.4	90.0	0.0	73.9	108.3	41.7	48.6	96.3	10.6	9.5
LnGrp LOS	F	D	D	F	A	E	F	D	D	F	B	A
Approach Vol, veh/h		258			403			2646			1461	
Approach Delay, s/veh		86.6			75.8			44.2			33.8	
Approach LOS		F			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	105.3	15.5	23.5	38.2	73.8	9.4	29.6
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	6.4	88.6	11.5	27.5	34.2	60.8	9.7	29.3
Max Q Clear Time (g_c+I1), s	4.1	13.4	12.4	18.5	35.5	55.5	6.1	6.9
Green Ext Time (p_c), s	0.0	9.2	0.0	1.0	0.0	5.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	46.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	944	40	215	2197	944	0	0	969
Future Volume (vph)	0	0	0	0	944	40	215	2197	944	0	0	969
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frt					0.99		1.00	0.95				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5054		1770	6119				3610
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5054		1770	6119				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	1061	45	231	2362	1015	0	0	1077
RTOR Reduction (vph)	0	0	0	0	3	0	28	55	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1103	0	203	3322	0	0	0	1077
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					39.3		42.5	100.7				58.2
Effective Green, g (s)					39.3		42.5	100.7				58.2
Actuated g/C Ratio					0.26		0.28	0.66				0.38
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1306		494	4053				1382
v/s Ratio Prot					c0.22		0.11	c0.23				
v/s Ratio Perm								0.31				0.30
v/c Ratio					0.84		0.41	0.88dr				0.78
Uniform Delay, d1					53.5		44.6	18.9				41.3
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					5.2		2.5	2.0				4.4
Delay (s)					58.6		47.1	20.9				45.7
Level of Service					E		D	C				D
Approach Delay (s)		0.0			58.6			22.6			45.7	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	442	70	170	3270	217	0	0	0
Future Volume (veh/h)	0	0	0	0	442	70	170	3270	217	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h				0	470	74	179	3442	228			
Peak Hour Factor				0.94	0.94	0.94	0.95	0.95	0.95			
Percent Heavy Veh, %				0	2	2	2	2	2			
Cap, veh/h				0	557	87	1399	5580	366			
Arrive On Green				0.00	0.18	0.18	0.76	0.76	0.76			
Sat Flow, veh/h				0	3172	482	1781	7361	483			
Grp Volume(v), veh/h				0	270	274	179	2828	842			
Grp Sat Flow(s),veh/h/ln				0	1777	1784	1781	1515	1783			
Q Serve(g_s), s				0.0	21.7	22.0	4.0	31.3	32.0			
Cycle Q Clear(g_c), s				0.0	21.7	22.0	4.0	31.3	32.0			
Prop In Lane				0.00		0.27	1.00		0.27			
Lane Grp Cap(c), veh/h				0	322	323	1399	4594	1352			
V/C Ratio(X)				0.00	0.84	0.85	0.13	0.62	0.62			
Avail Cap(c_a), veh/h				0	456	458	1399	4594	1352			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.78	0.78	0.78			
Uniform Delay (d), s/veh				0.0	58.5	58.6	4.8	8.1	8.2			
Incr Delay (d2), s/veh				0.0	9.4	10.0	0.1	0.5	1.7			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	10.6	10.8	1.5	9.5	11.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	67.9	68.6	5.0	8.6	9.9			
LnGrp LOS				A	E	E	A	A	A			
Approach Vol, veh/h					544			3849				
Approach Delay, s/veh					68.3			8.7				
Approach LOS					E			A				

Timer - Assigned Phs		4		6								
Phs Duration (G+Y+Rc), s		30.8		117.2								
Change Period (Y+Rc), s		4.0		5.0								
Max Green Setting (Gmax), s		38.0		101.0								
Max Q Clear Time (g_c+I1), s		24.0		34.0								
Green Ext Time (p_c), s		2.8		62.5								

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	359	12	0	0	0	0	2997	369	0	0	0
Future Volume (veh/h)	275	359	12	0	0	0	0	2997	369	0	0	0
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870			
Adj Flow Rate, veh/h	286	374	12				0	3122	384			
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	2				0	2	2			
Cap, veh/h	387	637	20				0	5594	1170			
Arrive On Green	0.18	0.18	0.18				0.00	0.74	0.74			
Sat Flow, veh/h	1781	3514	113				0	7930	1585			
Grp Volume(v), veh/h	286	189	197				0	3122	384			
Grp Sat Flow(s),veh/h/ln	1781	1777	1850				0	1515	1585			
Q Serve(g_s), s	17.5	10.9	10.9				0.0	20.5	9.4			
Cycle Q Clear(g_c), s	17.5	10.9	10.9				0.0	20.5	9.4			
Prop In Lane	1.00		0.06				0.00		1.00			
Lane Grp Cap(c), veh/h	387	322	335				0	5594	1170			
V/C Ratio(X)	0.74	0.59	0.59				0.00	0.56	0.33			
Avail Cap(c_a), veh/h	430	365	380				0	5594	1170			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.98				0.00	1.00	1.00			
Uniform Delay (d), s/veh	44.7	42.0	42.0				0.0	6.5	5.1			
Incr Delay (d2), s/veh	4.8	0.9	0.9				0.0	0.4	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.2	4.8	5.1				0.0	5.7	2.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	42.9	42.9				0.0	6.9	5.8			
LnGrp LOS	D	D	D				A	A	A			
Approach Vol, veh/h		672						3506				
Approach Delay, s/veh		45.7						6.8				
Approach LOS		D						A				

Timer - Assigned Phs		2		4
Phs Duration (G+Y+Rc), s		87.7		24.3
Change Period (Y+Rc), s		5.0		4.0
Max Green Setting (Gmax), s		80.0		23.0
Max Q Clear Time (g_c+I1), s		22.5		19.5
Green Ext Time (p_c), s		56.0		0.8

Intersection Summary		
HCM 6th Ctrl Delay		13.1
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	560	495	0	0	627	70	0	3077	167	0	0	0
Future Volume (veh/h)	560	495	0	0	627	70	0	3077	167	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			
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	1870	1870	0	0	1870	1870	0	1870	1900			
Adj Flow Rate, veh/h	615	544	0	0	660	0	0	3239	176			
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	547	563	0	0	841		0	0	0			
Arrive On Green	0.16	0.16	0.00	0.00	0.16	0.00	0.00	0.00	0.00			
Sat Flow, veh/h	3456	3647	0	0	5443	0		0				
Grp Volume(v), veh/h	615	544	0	0	660	0		0.0				
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	0						
Q Serve(g_s), s	25.5	24.5	0.0	0.0	20.0	0.0						
Cycle Q Clear(g_c), s	25.5	24.5	0.0	0.0	20.0	0.0						
Prop In Lane	1.00		0.00	0.00		0.00						
Lane Grp Cap(c), veh/h	547	563	0	0	841							
V/C Ratio(X)	1.12	0.97	0.00	0.00	0.78							
Avail Cap(c_a), veh/h	547	563	0	0	1348							
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.48	0.48	0.00	0.00	0.57	0.00						
Uniform Delay (d), s/veh	67.8	67.3	0.0	0.0	64.5	0.0						
Incr Delay (d2), s/veh	67.5	18.7	0.0	0.0	1.0	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	16.4	12.6	0.0	0.0	8.8	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.2	86.0	0.0	0.0	65.4	0.0						
LnGrp LOS	F	F	A	A	E							
Approach Vol, veh/h		1159			660	A						
Approach Delay, s/veh		112.1			65.4							
Approach LOS		F			E							

Timer - Assigned Phs		4		8
Phs Duration (G+Y+Rc), s		33.0		32.0
Change Period (Y+Rc), s		6.5		6.5
Max Green Setting (Gmax), s		42.5		25.5
Max Q Clear Time (g_c+I1), s		22.0		27.5
Green Ext Time (p_c), s		4.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	95.2
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	89	2011	20	47	111	0	0	73	54
Future Volume (veh/h)	0	0	0	89	2011	20	47	111	0	0	73	54
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				96	2162	22	64	150	0	0	91	68
Peak Hour Factor				0.93	0.93	0.93	0.74	0.74	0.74	0.80	0.80	0.80
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				136	3280	34	397	1008	0	0	920	631
Arrive On Green				0.50	0.50	0.50	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				273	6590	69	788	2294	0	0	2109	1383
Grp Volume(v), veh/h				654	1031	595	109	105	0	0	79	80
Grp Sat Flow(s),veh/h/ln				1857	1609	1858	1380	1617	0	0	1777	1621
Q Serve(g_s), s				41.5	36.0	36.0	5.2	5.7	0.0	0.0	3.9	4.3
Cycle Q Clear(g_c), s				41.5	36.0	36.0	9.5	5.7	0.0	0.0	3.9	4.3
Prop In Lane				0.15		0.04	0.59		0.00	0.00		0.85
Lane Grp Cap(c), veh/h				924	1601	925	667	738	0	0	811	740
V/C Ratio(X)				0.71	0.64	0.64	0.16	0.14	0.00	0.00	0.10	0.11
Avail Cap(c_a), veh/h				1301	2254	1302	667	738	0	0	811	740
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.54	0.54	0.54	0.99	0.99	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				29.6	28.2	28.2	25.3	24.0	0.0	0.0	23.5	23.6
Incr Delay (d2), s/veh				0.6	0.2	0.4	0.5	0.4	0.0	0.0	0.2	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				18.6	14.0	16.2	2.5	2.3	0.0	0.0	1.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				30.2	28.5	28.6	25.9	24.4	0.0	0.0	23.8	23.9
LnGrp LOS				C	C	C	C	C	A	A	C	C
Approach Vol, veh/h					2280			214			159	
Approach Delay, s/veh					29.0			25.2			23.8	
Approach LOS					C			C			C	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	72.9		72.9		79.1	
Change Period (Y+Rc), s	3.5		3.5		3.5	
Max Green Setting (Gmax), s	38.5		38.5		106.5	
Max Q Clear Time (g_c+I1), s	11.5		6.3		43.5	
Green Ext Time (p_c), s	1.2		0.9		32.1	

Intersection Summary	
HCM 6th Ctrl Delay	28.4
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	91	439	39	23	71	0	0	201	38
Future Volume (veh/h)	0	0	0	91	439	39	23	71	0	0	201	38
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				99	477	42	25	77	0	0	218	41
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				413	2093	192	128	300	0	0	362	67
Arrive On Green				0.74	0.74	0.74	0.12	0.12	0.00	0.00	0.12	0.12
Sat Flow, veh/h				561	2843	261	280	2565	0	0	3088	554
Grp Volume(v), veh/h				325	0	293	53	49	0	0	128	131
Grp Sat Flow(s),veh/h/ln				1842	0	1823	1143	1617	0	0	1777	1771
Q Serve(g_s), s				3.2	0.0	2.8	0.1	1.5	0.0	0.0	3.8	3.9
Cycle Q Clear(g_c), s				3.2	0.0	2.8	4.0	1.5	0.0	0.0	3.8	3.9
Prop In Lane				0.30		0.14	0.47		0.00	0.00		0.31
Lane Grp Cap(c), veh/h				1357	0	1343	233	195	0	0	215	214
V/C Ratio(X)				0.24	0.00	0.22	0.23	0.25	0.00	0.00	0.60	0.61
Avail Cap(c_a), veh/h				1357	0	1343	416	404	0	0	444	443
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.74	0.00	0.74	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				2.4	0.0	2.3	22.3	22.3	0.0	0.0	23.3	23.4
Incr Delay (d2), s/veh				0.3	0.0	0.3	0.5	0.7	0.0	0.0	2.6	2.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.6	0.0	0.5	0.6	0.6	0.0	0.0	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				2.7	0.0	2.6	22.8	23.0	0.0	0.0	26.0	26.2
LnGrp LOS				A	A	A	C	C	A	A	C	C
Approach Vol, veh/h					618			102			259	
Approach Delay, s/veh					2.6			22.9			26.1	
Approach LOS					A			C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	10.8	45.2	10.8
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	34.0	14.0
Max Q Clear Time (g_c+I1), s	6.0	5.2	5.9
Green Ext Time (p_c), s	0.2	4.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	514	24	0	0	0	0	23	14	129	171	0
Future Volume (veh/h)	67	514	24	0	0	0	0	23	14	129	171	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
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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	70	535	25				0	24	15	134	178	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	2	2				0	2	2	2	2	0
Cap, veh/h	1259	2643	1120				0	372	211	278	332	0
Arrive On Green	0.71	0.71	0.71				0.00	0.17	0.17	0.17	0.17	0.00
Sat Flow, veh/h	1781	3741	1585				0	2276	1242	1057	2033	0
Grp Volume(v), veh/h	70	535	25				0	19	20	174	138	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585				0	1777	1647	1388	1617	0
Q Serve(g_s), s	0.8	3.2	0.3				0.0	0.6	0.7	7.2	5.0	0.0
Cycle Q Clear(g_c), s	0.8	3.2	0.3				0.0	0.6	0.7	7.9	5.0	0.0
Prop In Lane	1.00		1.00				0.00		0.75	0.77		0.00
Lane Grp Cap(c), veh/h	1259	2643	1120				0	303	280	334	275	0
V/C Ratio(X)	0.06	0.20	0.02				0.00	0.06	0.07	0.52	0.50	0.00
Avail Cap(c_a), veh/h	1259	2643	1120				0	984	912	894	896	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	0.57				0.00	1.00	1.00	0.91	0.91	0.00
Uniform Delay (d), s/veh	2.9	3.3	2.8				0.0	22.6	22.6	25.9	24.5	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0				0.0	0.0	0.0	0.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.1				0.0	0.2	0.2	2.5	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.0	3.4	2.9				0.0	22.7	22.7	26.3	24.9	0.0
LnGrp LOS	A	A	A				A	C	C	C	C	A
Approach Vol, veh/h		630						39			312	
Approach Delay, s/veh		3.3						22.7			25.7	
Approach LOS		A						C			C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		15.1		49.9		15.1
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		36.0		21.0		36.0
Max Q Clear Time (g_c+I1), s		2.7		5.2		9.9
Green Ext Time (p_c), s		0.1		4.7		1.2

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	479	0	302	1374	564	163	0	0	0	0	563	175
Future Volume (veh/h)	479	0	302	1374	564	163	0	0	0	0	563	175
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				0	1870	1870
Adj Flow Rate, veh/h	637	0	224	1416	581	168				0	640	199
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97				0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	2
Cap, veh/h	717	0	248	1627	759	219				0	0	0
Arrive On Green	0.20	0.00	0.16	0.11	0.09	0.09				0.00	0.00	0.00
Sat Flow, veh/h	3563	0	1585	5023	2721	785					0	
Grp Volume(v), veh/h	637	0	224	1416	379	370					0.0	
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1674	1777	1729						
Q Serve(g_s), s	26.4	0.0	21.1	42.2	31.7	31.8						
Cycle Q Clear(g_c), s	26.4	0.0	21.1	42.2	31.7	31.8						
Prop In Lane	1.00		1.00	1.00		0.45						
Lane Grp Cap(c), veh/h	717	0	248	1627	495	482						
V/C Ratio(X)	0.89	0.00	0.90	0.87	0.76	0.77						
Avail Cap(c_a), veh/h	1020	0	412	1867	614	597						
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33						
Upstream Filter(I)	1.00	0.00	1.00	0.78	0.78	0.78						
Uniform Delay (d), s/veh	59.0	0.0	63.0	64.7	64.1	64.2						
Incr Delay (d2), s/veh	7.2	0.0	14.6	3.4	3.6	3.8						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	12.7	0.0	9.5	19.6	15.7	15.4						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.2	0.0	77.6	68.1	67.7	68.0						
LnGrp LOS	E	A	E	E	E	E						
Approach Vol, veh/h		861			2165							
Approach Delay, s/veh		69.2			68.0							
Approach LOS		E			E							

Timer - Assigned Phs		3	4			7	8					
Phs Duration (G+Y+Rc), s		34.1	45.9			52.7	27.2					
Change Period (Y+Rc), s		3.5	3.5			3.5	3.5					
Max Green Setting (Gmax), s		43.5	52.5			56.5	39.5					
Max Q Clear Time (g_c+I1), s		28.4	33.8			44.2	23.1					
Green Ext Time (p_c), s		2.2	4.7			5.1	0.6					

Intersection Summary	
HCM 6th Ctrl Delay	68.3
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	258	280	0	0	0	0	0	2072	86
Future Volume (veh/h)	0	0	0	258	280	0	0	0	0	0	2072	86
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				300	326	0				0	2136	89
Peak Hour Factor				0.86	0.86	0.86				0.97	0.97	0.97
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				386	422	0				0	4489	1106
Arrive On Green				0.25	0.25	0.00				0.00	0.70	0.70
Sat Flow, veh/h				1360	1777	0				0	6696	1585
Grp Volume(v), veh/h				317	309	0				0	2136	89
Grp Sat Flow(s),veh/h/ln				1436	1617	0				0	1609	1585
Q Serve(g_s), s				32.3	27.0	0.0				0.0	22.8	2.7
Cycle Q Clear(g_c), s				32.3	27.0	0.0				0.0	22.8	2.7
Prop In Lane				0.95		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				405	404	0				0	4489	1106
V/C Ratio(X)				0.78	0.77	0.00				0.00	0.48	0.08
Avail Cap(c_a), veh/h				547	564	0				0	4489	1106
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.98	0.98	0.00				0.00	0.56	0.56
Uniform Delay (d), s/veh				54.9	52.9	0.0				0.0	10.4	7.4
Incr Delay (d2), s/veh				5.1	4.0	0.0				0.0	0.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.3	11.5	0.0				0.0	8.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				60.0	57.0	0.0				0.0	10.6	7.4
LnGrp LOS				E	E	A				A	B	A
Approach Vol, veh/h					626						2225	
Approach Delay, s/veh					58.5						10.5	
Approach LOS					E						B	

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	110.1	41.9
Change Period (Y+Rc), s	4.0	4.0
Max Green Setting (Gmax), s	91.0	53.0
Max Q Clear Time (g_c+I1), s	24.8	34.3
Green Ext Time (p_c), s	35.6	3.7

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	335	32	0	0	0	0	0	0	279	2085	0
Future Volume (veh/h)	0	335	32	0	0	0	0	0	0	279	2085	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	353	34							294	2195	0
Peak Hour Factor	0.95	0.95	0.95							0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	435	42							604	4328	0
Arrive On Green	0.00	0.13	0.13							0.27	0.27	0.00
Sat Flow, veh/h	0	3370	314							703	5573	0
Grp Volume(v), veh/h	0	190	197							688	1801	0
Grp Sat Flow(s),veh/h/ln	0	1777	1814							1646	1464	0
Q Serve(g_s), s	0.0	15.8	16.0							54.0	52.8	0.0
Cycle Q Clear(g_c), s	0.0	15.8	16.0							54.0	52.8	0.0
Prop In Lane	0.00		0.17							0.43		0.00
Lane Grp Cap(c), veh/h	0	236	241							1369	3563	0
V/C Ratio(X)	0.00	0.81	0.82							0.50	0.51	0.00
Avail Cap(c_a), veh/h	0	433	442							1369	3563	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	0.97	0.97							0.89	0.89	0.00
Uniform Delay (d), s/veh	0.0	64.0	64.1							30.3	29.8	0.0
Incr Delay (d2), s/veh	0.0	6.3	6.5							1.2	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	7.9							24.4	21.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	70.3	70.6							31.4	30.3	0.0
LnGrp LOS	A	E	E							C	C	A
Approach Vol, veh/h		387									2489	
Approach Delay, s/veh		70.5									30.6	
Approach LOS		E									C	

Timer - Assigned Phs		4		6								
Phs Duration (G+Y+Rc), s		24.2		127.8								
Change Period (Y+Rc), s		4.0		4.5								
Max Green Setting (Gmax), s		37.0		106.5								
Max Q Clear Time (g_c+I1), s		18.0		56.0								
Green Ext Time (p_c), s		2.1		33.8								

Intersection Summary												
HCM 6th Ctrl Delay			36.0									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1003	43	511	314	0	0	0	0	45	2128	185
Future Volume (veh/h)	0	1003	43	511	314	0	0	0	0	45	2128	185
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	1056	45	555	341	0				46	2194	191
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	1233	53	636	1648	0				66	3381	301
Arrive On Green	0.00	0.25	0.25	0.18	0.46	0.00				0.46	0.46	0.46
Sat Flow, veh/h	0	5190	214	3456	3647	0				144	7361	656
Grp Volume(v), veh/h	0	715	386	555	341	0				596	1324	510
Grp Sat Flow(s),veh/h/ln	0	1702	1832	1728	1777	0				1863	1515	1752
Q Serve(g_s), s	0.0	23.5	23.5	18.3	6.7	0.0				29.8	26.0	26.0
Cycle Q Clear(g_c), s	0.0	23.5	23.5	18.3	6.7	0.0				29.8	26.0	26.0
Prop In Lane	0.00		0.12	1.00		0.00				0.08		0.37
Lane Grp Cap(c), veh/h	0	836	450	636	1648	0				856	2088	805
V/C Ratio(X)	0.00	0.86	0.86	0.87	0.21	0.00				0.70	0.63	0.63
Avail Cap(c_a), veh/h	0	902	485	797	1883	0				856	2088	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.56	0.56	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	42.2	42.2	46.4	18.6	0.0				25.1	24.1	24.1
Incr Delay (d2), s/veh	0.0	7.7	13.4	5.2	0.0	0.0				4.7	1.5	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.7	12.2	8.3	2.8	0.0				14.0	9.4	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	49.9	55.6	51.6	18.6	0.0				29.8	25.6	27.9
LnGrp LOS	A	D	E	D	B	A				C	C	C
Approach Vol, veh/h		1101			896						2431	
Approach Delay, s/veh		51.9			39.1						27.1	
Approach LOS		D			D						C	

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		58.7		58.3			25.5	32.7				
Change Period (Y+Rc), s		5.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		46.0		62.0			27.0	31.0				
Max Q Clear Time (g_c+I1), s		31.8		8.7			20.3	25.5				
Green Ext Time (p_c), s		12.0		2.5			1.3	3.2				

Intersection Summary												
HCM 6th Ctrl Delay			35.7									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis
13: Mission Boulevard & Jackson Street/Foothill Boulevard

08/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1373	57	0	0	0	0	0	1989	0	1657	1025
Future Volume (vph)	0	1373	57	0	0	0	0	0	1989	0	1657	1025
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0						4.5		5.0	4.0
Lane Util. Factor		0.91	1.00						0.76		0.86	0.88
Frt		1.00	0.85						0.85		1.00	0.85
Flt Protected		1.00	1.00						1.00		1.00	1.00
Satd. Flow (prot)		5085	1583						3610		6408	2787
Flt Permitted		1.00	1.00						1.00		1.00	1.00
Satd. Flow (perm)		5085	1583						3610		6408	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	0	1445	60	0	0	0	0	0	2116	0	1708	1057
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	0	1445	47	0	0	0	0	0	2109	0	1708	1057
Turn Type		NA	Perm						Prot		NA	Free
Protected Phases		4							5		2	
Permitted Phases			4									Free
Actuated Green, G (s)		36.0	36.0						71.5		71.0	117.0
Effective Green, g (s)		36.0	36.0						71.5		71.0	117.0
Actuated g/C Ratio		0.31	0.31						0.61		0.61	1.00
Clearance Time (s)		5.0	5.0						4.5		5.0	
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Lane Grp Cap (vph)		1564	487						2206		3888	2787
v/s Ratio Prot		c0.28							c0.58		0.27	
v/s Ratio Perm			0.03									0.38
v/c Ratio		0.92	0.10						0.96		0.44	0.38
Uniform Delay, d1		39.2	28.9						21.3		12.3	0.0
Progression Factor		1.00	1.00						1.00		0.40	1.00
Incremental Delay, d2		9.5	0.1						10.6		0.2	0.2
Delay (s)		48.7	29.0						31.9		5.2	0.2
Level of Service		D	C						C		A	A
Approach Delay (s)		47.9			0.0			31.9			3.3	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	107	178	116	62	7	283	1858	110	81	1510	55
Future Volume (veh/h)	67	107	178	116	62	7	283	1858	110	81	1510	55
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	116	193	123	66	7	298	1956	116	86	1606	59
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	210	318	158	334	35	328	3175	188	109	2635	97
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.18	0.64	0.64	0.06	0.52	0.52
Sat Flow, veh/h	521	1044	1585	1070	1662	176	1781	4931	291	1781	5055	186
Grp Volume(v), veh/h	189	0	193	123	0	73	298	1348	724	86	1081	584
Grp Sat Flow(s),veh/h/ln	1565	0	1585	1070	0	1839	1781	1702	1818	1781	1702	1837
Q Serve(g_s), s	8.9	0.0	12.4	9.9	0.0	3.7	18.4	26.2	26.4	5.3	25.0	25.0
Cycle Q Clear(g_c), s	12.6	0.0	12.4	22.5	0.0	3.7	18.4	26.2	26.4	5.3	25.0	25.0
Prop In Lane	0.39		1.00	1.00		0.10	1.00		0.16	1.00		0.10
Lane Grp Cap(c), veh/h	359	0	318	158	0	369	328	2192	1171	109	1774	957
V/C Ratio(X)	0.53	0.00	0.61	0.78	0.00	0.20	0.91	0.62	0.62	0.79	0.61	0.61
Avail Cap(c_a), veh/h	359	0	318	158	0	369	429	2192	1171	239	1774	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	0.0	40.7	52.2	0.0	37.2	44.8	11.8	11.8	51.8	18.8	18.8
Incr Delay (d2), s/veh	0.7	0.0	2.4	19.4	0.0	0.1	16.9	1.3	2.5	4.6	1.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	5.0	4.3	0.0	1.7	9.6	9.5	10.6	2.5	9.9	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.6	0.0	43.1	71.7	0.0	37.3	61.6	13.1	14.2	56.5	20.4	21.7
LnGrp LOS	D	A	D	E	A	D	E	B	B	E	C	C
Approach Vol, veh/h		382			196			2370			1751	
Approach Delay, s/veh		42.4			58.9			19.5			22.6	
Approach LOS		D			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	76.1		26.0	23.6	62.4		26.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	15.0	64.0		22.5	27.0	52.0		22.5
Max Q Clear Time (g_c+I1), s	7.3	28.4		14.6	20.4	27.0		24.5
Green Ext Time (p_c), s	0.0	27.8		0.7	0.3	17.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	0	119	77	177	43	113	141	0	0	86	45
Future Volume (veh/h)	46	0	119	77	177	43	113	141	0	0	86	45
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	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	50	0	129	84	192	47	123	153	0	0	93	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	63	0	162	132	317	80	721	938	0	0	938	795
Arrive On Green	0.14	0.00	0.14	0.15	0.15	0.15	0.50	0.50	0.00	0.00	0.50	0.50
Sat Flow, veh/h	457	0	1179	900	2152	546	1246	1870	0	0	1870	1585
Grp Volume(v), veh/h	179	0	0	170	0	153	123	153	0	0	93	49
Grp Sat Flow(s),veh/h/ln	1635	0	0	1825	0	1772	1246	1870	0	0	1870	1585
Q Serve(g_s), s	5.9	0.0	0.0	4.9	0.0	4.5	3.2	2.5	0.0	0.0	1.5	0.9
Cycle Q Clear(g_c), s	5.9	0.0	0.0	4.9	0.0	4.5	4.7	2.5	0.0	0.0	1.5	0.9
Prop In Lane	0.28		0.72	0.49		0.31	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	225	0	0	269	0	261	721	938	0	0	938	795
V/C Ratio(X)	0.80	0.00	0.00	0.63	0.00	0.59	0.17	0.16	0.00	0.00	0.10	0.06
Avail Cap(c_a), veh/h	321	0	0	587	0	570	721	938	0	0	938	795
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.64	0.00	0.64	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	0.0	22.5	0.0	22.3	8.6	7.6	0.0	0.0	7.3	7.2
Incr Delay (d2), s/veh	8.8	0.0	0.0	1.6	0.0	1.3	0.5	0.4	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	2.1	0.0	1.8	0.8	0.9	0.0	0.0	0.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	0.0	24.1	0.0	23.6	9.1	8.0	0.0	0.0	7.5	7.3
LnGrp LOS	C	A	A	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		179			323			276			142	
Approach Delay, s/veh		32.2			23.9			8.5			7.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.1		12.2		32.1		11.7				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		15.0		18.0		15.0		11.0				
Max Q Clear Time (g_c+I1), s		3.5		6.9		6.7		7.9				
Green Ext Time (p_c), s		0.4		1.4		0.8		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			18.3									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	198	37	0	0	0	2	210	101	93	191	32
Future Volume (veh/h)	52	198	37	0	0	0	2	210	101	93	191	32
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900				1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	213	40				2	226	109	100	205	34
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0				2	2	2	2	2	2
Cap, veh/h	394	1559	305				65	279	134	305	366	61
Arrive On Green	0.62	0.62	0.62				0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	631	2501	489				3	1192	571	1045	1564	259
Grp Volume(v), veh/h	163	0	146				337	0	0	100	0	239
Grp Sat Flow(s),veh/h/ln	1839	0	1782				1766	0	0	1045	0	1824
Q Serve(g_s), s	2.1	0.0	1.9				0.2	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	2.1	0.0	1.9				10.1	0.0	0.0	7.5	0.0	6.5
Prop In Lane	0.34		0.27				0.01		0.32	1.00		0.14
Lane Grp Cap(c), veh/h	1146	0	1111				477	0	0	305	0	426
V/C Ratio(X)	0.14	0.00	0.13				0.71	0.00	0.00	0.33	0.00	0.56
Avail Cap(c_a), veh/h	1146	0	1111				758	0	0	471	0	716
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.4	0.0	4.3				20.3	0.0	0.0	19.3	0.0	18.9
Incr Delay (d2), s/veh	0.3	0.0	0.2				0.7	0.0	0.0	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5				3.9	0.0	0.0	1.1	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.6	0.0	4.6				21.0	0.0	0.0	19.6	0.0	19.4
LnGrp LOS	A	A	A				C	A	A	B	A	B
Approach Vol, veh/h		309						337			339	
Approach Delay, s/veh		4.6						21.0			19.4	
Approach LOS		A						C			B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		17.1		38.9		17.1
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		22.0		26.0		22.0
Max Q Clear Time (g_c+I1), s		12.1		4.1		9.5
Green Ext Time (p_c), s		1.0		1.1		0.9

Intersection Summary	
HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	1413	133	0	739	13	140	149	32	6	147	102
Future Volume (veh/h)	233	1413	133	0	739	13	140	149	32	6	147	102
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	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	243	1472	139	0	770	14	146	155	33	6	153	106
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	268	1810	171	0	1058	19	766	643	137	7	187	165
Arrive On Green	0.15	0.38	0.38	0.00	0.20	0.20	0.43	0.43	0.43	0.10	0.10	0.10
Sat Flow, veh/h	1781	4746	448	0	5332	94	1781	1495	318	70	1796	1585
Grp Volume(v), veh/h	243	1056	555	0	507	277	146	0	188	159	0	106
Grp Sat Flow(s),veh/h/ln	1781	1702	1790	0	1702	1853	1781	0	1813	1867	0	1585
Q Serve(g_s), s	20.7	42.8	42.8	0.0	21.4	21.5	7.8	0.0	10.2	12.8	0.0	9.9
Cycle Q Clear(g_c), s	20.7	42.8	42.8	0.0	21.4	21.5	7.8	0.0	10.2	12.8	0.0	9.9
Prop In Lane	1.00		0.25	0.00		0.05	1.00		0.18	0.04		1.00
Lane Grp Cap(c), veh/h	268	1299	683	0	697	380	766	0	780	194	0	165
V/C Ratio(X)	0.91	0.81	0.81	0.00	0.73	0.73	0.19	0.00	0.24	0.82	0.00	0.64
Avail Cap(c_a), veh/h	405	1592	837	0	729	397	766	0	780	424	0	360
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	64.3	42.7	42.7	0.0	57.2	57.2	27.2	0.0	27.9	67.6	0.0	66.3
Incr Delay (d2), s/veh	17.1	2.8	5.1	0.0	3.5	6.4	0.6	0.0	0.7	8.3	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	18.5	19.9	0.0	9.6	10.8	3.5	0.0	4.7	6.6	0.0	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.4	45.5	47.8	0.0	60.7	63.6	27.8	0.0	28.6	75.9	0.0	70.4
LnGrp LOS	F	D	D	A	E	E	C	A	C	E	A	E
Approach Vol, veh/h		1854			784			334			265	
Approach Delay, s/veh		50.9			61.7			28.3			73.7	
Approach LOS		D			E			C			E	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		70.3		63.7		20.0	27.2	36.5				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green Setting (Gmax), s		34.0		72.0		35.0	35.0	33.0				
Max Q Clear Time (g_c+I1), s		12.2		44.8		14.8	22.7	23.5				
Green Ext Time (p_c), s		1.5		13.9		1.2	0.6	3.5				

Intersection Summary												
HCM 6th Ctrl Delay			53.0									
HCM 6th LOS			D									

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	137	79	77	174	73	0	0	0	20	46	56
Future Vol, veh/h	63	137	79	77	174	73	0	0	0	20	46	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	149	86	84	189	79	0	0	0	22	50	61
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	10.6	9.6	9.4
HCM LOS	B	A	A

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	47%	0%	16%
Vol Thru, %	49%	53%	54%	38%
Vol Right, %	28%	0%	46%	46%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	279	164	160	122
LT Vol	63	77	0	20
Through Vol	137	87	87	46
RT Vol	79	0	73	56
Lane Flow Rate	303	178	174	133
Geometry Grp	5	7	7	2
Degree of Util (X)	0.39	0.266	0.232	0.189
Departure Headway (Hd)	4.633	5.362	4.804	5.118
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	773	668	744	698
Service Time	2.679	3.109	2.551	3.175
HCM Lane V/C Ratio	0.392	0.266	0.234	0.191
HCM Control Delay	10.6	10.1	9	9.4
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.9	1.1	0.9	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	596	84	130	670	59	141	253	130	32	135	58
Future Volume (veh/h)	79	596	84	130	670	59	141	253	130	32	135	58
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	81	608	86	133	684	60	144	258	133	33	138	59
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	1663	235	164	1869	164	270	443	522	72	228	88
Arrive On Green	0.06	0.53	0.53	0.18	1.00	1.00	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1781	3126	441	1781	3305	290	1186	1870	1585	111	961	370
Grp Volume(v), veh/h	81	345	349	133	367	377	144	258	133	230	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1791	1781	1777	1818	1186	1870	1585	1443	0	0
Q Serve(g_s), s	4.0	10.1	10.2	6.4	0.0	0.0	3.5	11.0	5.5	3.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	10.1	10.2	6.4	0.0	0.0	17.3	11.0	5.5	13.9	0.0	0.0
Prop In Lane	1.00		0.25	1.00		0.16	1.00		1.00	0.14		0.26
Lane Grp Cap(c), veh/h	105	945	953	164	1005	1028	270	443	522	387	0	0
V/C Ratio(X)	0.77	0.37	0.37	0.81	0.37	0.37	0.53	0.58	0.25	0.59	0.00	0.00
Avail Cap(c_a), veh/h	218	945	953	317	1005	1028	384	623	675	541	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.66	0.66	1.00	0.00	0.00
Uniform Delay (d), s/veh	41.8	12.2	12.2	35.9	0.0	0.0	33.9	30.4	22.1	30.7	0.0	0.0
Incr Delay (d2), s/veh	11.4	1.1	1.1	9.0	1.0	1.0	1.1	0.8	0.2	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	4.1	4.1	2.9	0.3	0.3	3.0	4.9	2.0	4.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	13.3	13.3	45.0	1.0	1.0	35.0	31.2	22.3	32.2	0.0	0.0
LnGrp LOS	D	B	B	D	A	A	D	C	C	C	A	A
Approach Vol, veh/h		775			877			535			230	
Approach Delay, s/veh		17.5			7.7			30.0			32.2	
Approach LOS		B			A			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.3	52.4		25.3	9.3	55.4		25.3
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	16.0	31.5		30.0	11.0	36.5		30.0
Max Q Clear Time (g_c+I1), s	8.4	12.2		15.9	6.0	2.0		19.3
Green Ext Time (p_c), s	0.2	4.3		1.1	0.1	5.3		1.9

Intersection Summary		
HCM 6th Ctrl Delay		18.1
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	73	24	121	79	47	30	452	161	47	291	18
Future Volume (veh/h)	22	73	24	121	79	47	30	452	161	47	291	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	78	26	130	85	51	32	486	173	51	313	19
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	533	560	474	533	328	197	63	720	251	87	636	44
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1781	1870	1585	1781	1095	657	99	2407	838	156	2125	147
Grp Volume(v), veh/h	24	78	26	130	0	136	371	0	320	167	0	216
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1752	1793	0	1551	753	0	1675
Q Serve(g_s), s	1.1	3.6	1.4	6.5	0.0	6.9	8.8	0.0	21.3	7.7	0.0	12.1
Cycle Q Clear(g_c), s	1.1	3.6	1.4	6.5	0.0	6.9	21.0	0.0	21.3	29.0	0.0	12.1
Prop In Lane	1.00		1.00	1.00		0.38	0.09		0.54	0.31		0.09
Lane Grp Cap(c), veh/h	533	560	474	533	0	524	570	0	464	265	0	501
V/C Ratio(X)	0.05	0.14	0.05	0.24	0.00	0.26	0.65	0.00	0.69	0.63	0.00	0.43
Avail Cap(c_a), veh/h	533	560	474	533	0	524	570	0	464	265	0	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.1	30.0	29.2	31.0	0.0	31.2	35.9	0.0	36.2	39.1	0.0	33.0
Incr Delay (d2), s/veh	0.2	0.5	0.2	1.1	0.0	1.2	5.7	0.0	8.2	10.8	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.7	0.6	2.9	0.0	3.1	10.1	0.0	9.1	5.4	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.3	30.5	29.4	32.1	0.0	32.4	41.6	0.0	44.4	49.9	0.0	35.7
LnGrp LOS	C	C	C	C	A	C	D	A	D	D	A	D
Approach Vol, veh/h		128			266			691			383	
Approach Delay, s/veh		30.1			32.2			42.9			41.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.0	39.0	39.0	39.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	35.0	35.0	35.0	35.0
Max Q Clear Time (g_c+I1), s	23.3	5.6	31.0	8.9
Green Ext Time (p_c), s	2.4	0.3	0.6	0.7

Intersection Summary	
HCM 6th Ctrl Delay	39.6
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	42	473	65	24	5	317	117	69	1	186	60
Future Volume (veh/h)	44	42	473	65	24	5	317	117	69	1	186	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	49	550	83	31	6	354	127	77	1	219	71
Peak Hour Factor	0.86	0.86	0.86	0.78	0.78	0.78	0.90	0.90	0.90	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	600	722	611	392	587	114	1145	350	212	257	384	121
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.32	0.32	0.32	0.14	0.14	0.14
Sat Flow, veh/h	1371	1870	1585	820	1523	295	3563	1090	661	1781	2658	839
Grp Volume(v), veh/h	51	49	550	83	0	37	354	0	204	1	144	146
Grp Sat Flow(s),veh/h/ln	1371	1870	1585	820	0	1817	1781	0	1751	1781	1777	1719
Q Serve(g_s), s	2.0	1.3	26.4	5.8	0.0	1.0	6.1	0.0	7.2	0.0	6.1	6.4
Cycle Q Clear(g_c), s	3.0	1.3	26.4	7.1	0.0	1.0	6.1	0.0	7.2	0.0	6.1	6.4
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.38	1.00		0.49
Lane Grp Cap(c), veh/h	600	722	611	392	0	701	1145	0	563	257	257	248
V/C Ratio(X)	0.08	0.07	0.90	0.21	0.00	0.05	0.31	0.00	0.36	0.00	0.56	0.59
Avail Cap(c_a), veh/h	665	809	686	430	0	786	1145	0	563	771	769	744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	15.7	23.4	17.9	0.0	15.6	20.7	0.0	21.1	29.6	32.2	32.3
Incr Delay (d2), s/veh	0.1	0.1	15.5	0.6	0.0	0.1	0.7	0.0	1.8	0.0	4.1	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	11.8	1.1	0.0	0.4	2.5	0.0	3.1	0.0	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	15.8	38.8	18.5	0.0	15.6	21.4	0.0	22.9	29.6	36.3	37.0
LnGrp LOS	B	B	D	B	A	B	C	A	C	C	D	D
Approach Vol, veh/h		650			120			558			291	
Approach Delay, s/veh		35.3			17.6			21.9			36.6	
Approach LOS		D			B			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.0		35.2		15.7		35.2				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		26.0		35.0		35.0		35.0				
Max Q Clear Time (g_c+I1), s		9.2		28.4		8.4		9.1				
Green Ext Time (p_c), s		4.6		2.8		3.3		1.2				

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	967	31	302	892	96	89	343	380	172	466	70
Future Volume (veh/h)	25	967	31	302	892	96	89	343	380	172	466	70
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1099	35	325	959	103	96	369	409	181	491	74
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	873	28	309	924	99	122	714	637	207	1393	209
Arrive On Green	0.05	0.25	0.25	0.09	0.29	0.29	0.02	0.13	0.13	0.12	0.45	0.45
Sat Flow, veh/h	1781	3515	112	3456	3237	348	1781	1777	1585	1781	3099	465
Grp Volume(v), veh/h	28	555	579	325	526	536	96	369	409	181	281	284
Grp Sat Flow(s),veh/h/ln	1781	1777	1850	1728	1777	1808	1781	1777	1585	1781	1777	1787
Q Serve(g_s), s	1.7	27.8	27.8	10.0	32.0	32.0	6.0	21.7	27.4	11.2	11.6	11.7
Cycle Q Clear(g_c), s	1.7	27.8	27.8	10.0	32.0	32.0	6.0	21.7	27.4	11.2	11.6	11.7
Prop In Lane	1.00		0.06	1.00		0.19	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	92	441	459	309	507	516	122	714	637	207	799	803
V/C Ratio(X)	0.30	1.26	1.26	1.05	1.04	1.04	0.79	0.52	0.64	0.88	0.35	0.35
Avail Cap(c_a), veh/h	223	441	459	309	507	516	223	714	637	207	799	803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	0.72	0.79	0.79	0.79
Uniform Delay (d), s/veh	51.1	42.1	42.1	51.0	40.0	40.0	53.9	38.5	40.9	48.7	20.1	20.2
Incr Delay (d2), s/veh	0.7	134.0	133.5	65.9	49.9	49.7	3.1	1.9	3.6	25.6	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	28.4	29.6	7.1	20.8	21.1	2.9	10.7	12.3	6.4	5.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.8	176.1	175.6	116.9	89.9	89.7	57.0	40.4	44.5	74.3	21.1	21.1
LnGrp LOS	D	F	F	F	F	F	E	D	D	E	C	C
Approach Vol, veh/h		1162			1387			874			746	
Approach Delay, s/veh		172.9			96.2			44.1			34.0	
Approach LOS		F			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	49.0	14.0	32.0	11.6	54.4	9.8	36.2
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	13.0	45.0	10.0	* 28	14.0	44.0	14.0	* 24
Max Q Clear Time (g_c+I1), s	13.2	29.4	12.0	29.8	8.0	13.7	3.7	34.0
Green Ext Time (p_c), s	0.0	6.2	0.0	0.0	0.0	5.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	95.5
HCM 6th LOS	F

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	171	17	209	348	51	76	690	505	45	629	117
Future Volume (veh/h)	33	171	17	209	348	51	76	690	505	45	629	117
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	201	20	213	375	54	88	988	463	50	699	130
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.86	0.86	0.86	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	52	281	29	277	498	71	112	2095	888	75	2018	855
Arrive On Green	0.10	0.10	0.10	0.16	0.16	0.16	0.06	0.56	0.56	0.01	0.18	0.18
Sat Flow, veh/h	527	2840	294	1781	3201	457	1781	3741	1585	1781	3741	1585
Grp Volume(v), veh/h	137	0	123	213	218	211	88	988	463	50	699	130
Grp Sat Flow(s),veh/h/ln	1844	0	1817	1781	1870	1788	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.1	0.0	7.4	12.8	12.5	12.7	5.5	17.7	20.3	3.1	18.3	7.8
Cycle Q Clear(g_c), s	8.1	0.0	7.4	12.8	12.5	12.7	5.5	17.7	20.3	3.1	18.3	7.8
Prop In Lane	0.29		0.16	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	0	180	277	291	278	112	2095	888	75	2018	855
V/C Ratio(X)	0.75	0.00	0.69	0.77	0.75	0.76	0.79	0.47	0.52	0.66	0.35	0.15
Avail Cap(c_a), veh/h	346	0	341	429	451	431	194	2095	888	111	2018	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85	0.75	0.75	0.75
Uniform Delay (d), s/veh	49.1	0.0	48.8	45.3	45.2	45.3	51.7	14.7	15.3	54.4	28.7	24.4
Incr Delay (d2), s/veh	6.0	0.0	4.6	4.5	3.8	4.2	9.9	0.6	1.9	7.3	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	3.6	6.0	6.1	5.9	2.7	7.4	7.5	1.6	9.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.1	0.0	53.3	49.8	49.0	49.5	61.6	15.4	17.2	61.7	29.1	24.7
LnGrp LOS	E	A	D	D	D	D	E	B	B	E	C	C
Approach Vol, veh/h		260			642			1539			879	
Approach Delay, s/veh		54.2			49.4			18.6			30.3	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	66.7		15.1	11.0	64.4		21.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	41.0		21.0	12.2	35.8		27.0
Max Q Clear Time (g_c+I1), s	5.1	22.3		10.1	7.5	20.3		14.8
Green Ext Time (p_c), s	0.0	8.8		1.0	0.1	4.7		2.6

Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	496	295	183	37	0	27	0	742	51	21	845	0
Future Volume (veh/h)	496	295	183	37	0	27	0	742	51	21	845	0
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	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	539	321	199	54	0	39	0	894	61	23	929	0
Peak Hour Factor	0.92	0.92	0.92	0.69	0.69	0.69	0.83	0.83	0.83	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	2
Cap, veh/h	1129	353	219	0	0	0	0	2038	139	333	2145	0
Arrive On Green	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.00
Sat Flow, veh/h	3456	1080	670		0		0	3469	230	588	3647	0
Grp Volume(v), veh/h	539	0	520		0.0		0	471	484	23	929	0
Grp Sat Flow(s),veh/h/ln	1728	0	1750				0	1777	1829	588	1777	0
Q Serve(g_s), s	14.3	0.0	32.7				0.0	16.4	16.4	2.5	16.1	0.0
Cycle Q Clear(g_c), s	14.3	0.0	32.7				0.0	16.4	16.4	18.9	16.1	0.0
Prop In Lane	1.00		0.38				0.00		0.13	1.00		0.00
Lane Grp Cap(c), veh/h	1129	0	572				0	1073	1104	333	2145	0
V/C Ratio(X)	0.48	0.00	0.91				0.00	0.44	0.44	0.07	0.43	0.00
Avail Cap(c_a), veh/h	1382	0	700				0	1073	1104	333	2145	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.00	0.88				0.00	0.78	0.78	0.84	0.84	0.00
Uniform Delay (d), s/veh	30.9	0.0	37.1				0.0	12.3	12.3	17.4	12.2	0.0
Incr Delay (d2), s/veh	0.1	0.0	11.4				0.0	1.0	1.0	0.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	15.6				0.0	6.6	6.7	0.4	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	48.5				0.0	13.3	13.3	17.7	12.8	0.0
LnGrp LOS	C	A	D				A	B	B	B	B	A
Approach Vol, veh/h		1059						955			952	
Approach Delay, s/veh		39.6						13.3			12.9	
Approach LOS		D						B			B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		73.4		41.6		73.4
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		43.0		46.0		43.0
Max Q Clear Time (g_c+I1), s		18.4		34.7		20.9
Green Ext Time (p_c), s		9.5		2.8		9.6

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	358	59	53	212	42	111	554	57	88	641	325
Future Volume (veh/h)	190	358	59	53	212	42	111	554	57	88	641	325
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	218	411	68	56	226	45	134	667	69	96	697	353
Peak Hour Factor	0.87	0.87	0.87	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	447	74	79	288	57	162	1436	148	121	956	484
Arrive On Green	0.14	0.29	0.29	0.04	0.19	0.19	0.09	0.44	0.44	0.07	0.42	0.42
Sat Flow, veh/h	1781	1565	259	1781	1515	302	1781	3251	336	1781	2283	1156
Grp Volume(v), veh/h	218	0	479	56	0	271	134	364	372	96	542	508
Grp Sat Flow(s),veh/h/ln	1781	0	1824	1781	0	1816	1781	1777	1810	1781	1777	1662
Q Serve(g_s), s	13.4	0.0	28.5	3.5	0.0	15.9	8.3	16.1	16.2	5.9	28.6	28.6
Cycle Q Clear(g_c), s	13.4	0.0	28.5	3.5	0.0	15.9	8.3	16.1	16.2	5.9	28.6	28.6
Prop In Lane	1.00		0.14	1.00		0.17	1.00		0.19	1.00		0.70
Lane Grp Cap(c), veh/h	248	0	520	79	0	346	162	785	800	121	744	696
V/C Ratio(X)	0.88	0.00	0.92	0.71	0.00	0.78	0.83	0.46	0.46	0.79	0.73	0.73
Avail Cap(c_a), veh/h	286	0	586	95	0	389	191	785	800	191	744	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.00	0.69	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	47.3	0.0	38.8	52.8	0.0	43.1	50.1	21.9	22.0	51.4	27.2	27.2
Incr Delay (d2), s/veh	17.4	0.0	14.1	17.5	0.0	9.0	22.2	2.0	1.9	9.7	5.3	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.0	14.6	1.9	0.0	8.0	4.7	7.1	7.2	3.0	12.9	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.7	0.0	52.9	70.3	0.0	52.2	72.2	23.9	23.9	61.1	32.5	32.9
LnGrp LOS	E	A	D	E	A	D	E	C	C	E	C	C
Approach Vol, veh/h		697			327			870			1146	
Approach Delay, s/veh		56.6			55.3			31.4			35.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	54.5	8.9	37.0	14.2	51.9	19.6	26.3
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	12.0	40.0	6.0	36.0	12.0	40.0	18.0	24.0
Max Q Clear Time (g_c+I1), s	7.9	18.2	5.5	30.5	10.3	30.6	15.4	17.9
Green Ext Time (p_c), s	0.1	4.7	0.0	1.5	0.1	4.7	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	69	30	35	27	125	52	2466	10	217	1369	75
Future Volume (veh/h)	145	69	30	35	27	125	52	2466	10	217	1369	75
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	78	34	38	30	137	60	2834	11	236	1488	82
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	199	87	49	189	160	77	2934	911	217	3335	1035
Arrive On Green	0.09	0.16	0.16	0.03	0.10	0.10	0.04	0.57	0.57	0.12	0.65	0.65
Sat Flow, veh/h	1781	1235	538	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	163	0	112	38	30	137	60	2834	11	236	1488	82
Grp Sat Flow(s),veh/h/ln	1781	0	1773	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	13.0	0.0	8.4	3.1	2.2	12.6	4.9	78.5	0.4	18.0	21.1	2.8
Cycle Q Clear(g_c), s	13.0	0.0	8.4	3.1	2.2	12.6	4.9	78.5	0.4	18.0	21.1	2.8
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	0	286	49	189	160	77	2934	911	217	3335	1035
V/C Ratio(X)	1.04	0.00	0.39	0.78	0.16	0.85	0.78	0.97	0.01	1.09	0.45	0.08
Avail Cap(c_a), veh/h	156	0	351	105	316	268	126	2934	911	217	3335	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.32	0.32	0.32	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.5	0.0	55.5	71.5	60.8	65.4	70.1	30.1	13.5	65.0	12.6	9.4
Incr Delay (d2), s/veh	83.4	0.0	0.9	22.4	0.4	12.9	5.5	4.3	0.0	87.0	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	0.0	3.8	1.7	1.1	5.7	2.4	32.2	0.2	13.4	8.1	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	150.9	0.0	56.4	94.0	61.2	78.4	75.6	34.4	13.5	152.0	13.0	9.5
LnGrp LOS	F	A	E	F	E	E	E	C	B	F	B	A
Approach Vol, veh/h		275			205			2905			1806	
Approach Delay, s/veh		112.4			78.7			35.2			31.0	
Approach LOS		F			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	101.7	17.0	19.0	22.0	90.0	8.1	27.9
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	10.5	82.5	13.0	25.0	18.0	75.0	8.7	29.3
Max Q Clear Time (g_c+I1), s	6.9	23.1	15.0	14.6	20.0	80.5	5.1	10.4
Green Ext Time (p_c), s	0.0	18.0	0.0	0.4	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	39.6
HCM 6th LOS	D

Appendix 3: Cumulative (2040) Intersection Level of Service Worksheets

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	25	5	14	25	305	3	2065	29	328	1280	189
Future Volume (veh/h)	21	25	5	14	25	305	3	2065	29	328	1280	189
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	31	6	15	0	335	3	2197	31	353	1376	203
Peak Hour Factor	0.80	0.80	0.80	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	387	73	22	0	392	6	3520	50	373	3783	1174
Arrive On Green	0.02	0.13	0.13	0.01	0.00	0.12	0.00	0.53	0.53	0.42	1.00	1.00
Sat Flow, veh/h	1781	2986	561	1781	0	3170	1781	6586	93	1781	5106	1585
Grp Volume(v), veh/h	26	18	19	15	0	335	3	1610	618	353	1376	203
Grp Sat Flow(s),veh/h/ln	1781	1777	1769	1781	0	1585	1781	1609	1854	1781	1702	1585
Q Serve(g_s), s	2.2	1.3	1.4	1.2	0.0	15.4	0.3	34.7	34.7	28.4	0.0	0.0
Cycle Q Clear(g_c), s	2.2	1.3	1.4	1.2	0.0	15.4	0.3	34.7	34.7	28.4	0.0	0.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	33	230	229	22	0	392	6	2579	991	373	3783	1174
V/C Ratio(X)	0.79	0.08	0.08	0.68	0.00	0.86	0.54	0.62	0.62	0.95	0.36	0.17
Avail Cap(c_a), veh/h	60	332	330	60	0	591	55	2579	991	478	3783	1174
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.00	0.95	1.00	1.00	1.00	0.66	0.66	0.66
Uniform Delay (d), s/veh	72.8	57.0	57.1	73.3	0.0	64.0	74.2	24.2	24.2	42.5	0.0	0.0
Incr Delay (d2), s/veh	33.2	0.1	0.2	29.3	0.0	7.4	62.3	1.2	3.0	18.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.6	0.6	0.8	0.0	6.7	0.2	13.5	16.0	12.6	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.1	57.2	57.2	102.6	0.0	71.4	136.4	25.4	27.2	61.1	0.2	0.2
LnGrp LOS	F	E	E	F	A	E	F	C	C	E	A	A
Approach Vol, veh/h		63			350			2231			1932	
Approach Delay, s/veh		77.4			72.8			26.0			11.3	
Approach LOS		E			E			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.5	115.4	6.7	22.4	35.2	84.6	5.9	23.3
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	94.6	5.0	27.8	40.0	59.2	5.0	27.8
Max Q Clear Time (g_c+I1), s	2.3	2.0	4.2	17.4	30.4	36.7	3.2	3.4
Green Ext Time (p_c), s	0.0	17.6	0.0	1.0	0.8	16.8	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1336	18	104	2257	545	0	0	1301
Future Volume (vph)	0	0	0	0	1336	18	104	2257	545	0	0	1301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frt					1.00		1.00	0.97				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5075		1770	6221				3610
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5075		1770	6221				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	1421	19	112	2427	586	0	0	1446
RTOR Reduction (vph)	0	0	0	0	1	0	33	32	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1439	0	79	2981	0	0	0	1446
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					45.7		26.9	91.3				64.4
Effective Green, g (s)					45.7		26.9	91.3				64.4
Actuated g/C Ratio					0.31		0.18	0.61				0.43
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1556		319	3811				1560
v/s Ratio Prot					c0.28		0.04	c0.14				
v/s Ratio Perm								0.34				c0.40
v/c Ratio					0.93		0.25	0.78				0.93
Uniform Delay, d1					50.0		52.4	21.5				40.1
Progression Factor					1.00		1.00	1.00				0.81
Incremental Delay, d2					9.7		1.9	1.7				10.7
Delay (s)					59.7		54.2	23.1				43.2
Level of Service					E		D	C				D
Approach Delay (s)		0.0			59.7			24.2			43.2	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	909	52	123	2846	374	0	0	0
Future Volume (veh/h)	0	0	0	0	909	52	123	2846	374	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h				0	1151	54	128	2965	390			
Peak Hour Factor				0.79	0.79	0.97	0.96	0.96	0.96			
Percent Heavy Veh, %				0	2	2	2	2	2			
Cap, veh/h				0	1299	61	1052	3874	504			
Arrive On Green				0.00	0.38	0.38	0.56	0.56	0.56			
Sat Flow, veh/h				0	3549	162	1781	6875	894			
Grp Volume(v), veh/h				0	592	613	128	2610	745			
Grp Sat Flow(s),veh/h/ln				0	1777	1841	1781	1515	1709			
Q Serve(g_s), s				0.0	46.1	46.2	5.0	48.9	50.0			
Cycle Q Clear(g_c), s				0.0	46.1	46.2	5.0	48.9	50.0			
Prop In Lane				0.00		0.09	1.00		0.52			
Lane Grp Cap(c), veh/h				0	668	692	1052	3415	963			
V/C Ratio(X)				0.00	0.89	0.89	0.12	0.76	0.77			
Avail Cap(c_a), veh/h				0	768	796	1052	3415	963			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.77	0.77	0.77			
Uniform Delay (d), s/veh				0.0	43.2	43.2	15.2	24.8	25.0			
Incr Delay (d2), s/veh				0.0	11.0	10.8	0.2	1.3	4.7			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	22.2	23.0	2.1	17.6	21.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	54.3	54.0	15.4	26.1	29.7			
LnGrp LOS				A	D	D	B	C	C			
Approach Vol, veh/h					1205			3483				
Approach Delay, s/veh					54.1			26.5				
Approach LOS					D			C				

Timer - Assigned Phs		4		6
Phs Duration (G+Y+Rc), s		59.6		88.4
Change Period (Y+Rc), s		4.0		5.0
Max Green Setting (Gmax), s		64.0		75.0
Max Q Clear Time (g_c+I1), s		48.2		52.0
Green Ext Time (p_c), s		7.4		22.0

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	301	161	3	0	0	0	0	2872	161	0	0	0
Future Volume (veh/h)	301	161	3	0	0	0	0	2872	161	0	0	0
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870			
Adj Flow Rate, veh/h	314	168	3				0	2992	168			
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	2				0	2	2			
Cap, veh/h	441	724	13				0	5282	1105			
Arrive On Green	0.20	0.20	0.20				0.00	0.70	0.70			
Sat Flow, veh/h	1781	3572	64				0	7930	1585			
Grp Volume(v), veh/h	314	83	88				0	2992	168			
Grp Sat Flow(s),veh/h/ln	1781	1777	1859				0	1515	1585			
Q Serve(g_s), s	15.4	3.5	3.5				0.0	17.8	3.2			
Cycle Q Clear(g_c), s	15.4	3.5	3.5				0.0	17.8	3.2			
Prop In Lane	1.00		0.03				0.00		1.00			
Lane Grp Cap(c), veh/h	441	360	377				0	5282	1105			
V/C Ratio(X)	0.71	0.23	0.23				0.00	0.57	0.15			
Avail Cap(c_a), veh/h	694	612	640				0	5282	1105			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.99	0.99	0.99				0.00	1.00	1.00			
Uniform Delay (d), s/veh	34.7	30.0	30.0				0.0	6.8	4.6			
Incr Delay (d2), s/veh	0.8	0.1	0.1				0.0	0.4	0.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.6	1.5	1.6				0.0	4.8	1.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	30.1	30.1				0.0	7.3	4.9			
LnGrp LOS	D	C	C				A	A	A			
Approach Vol, veh/h		485						3160				
Approach Delay, s/veh		33.6						7.1				
Approach LOS		C						A				

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	67.8	22.2
Change Period (Y+Rc), s	5.0	4.0
Max Green Setting (Gmax), s	50.0	31.0
Max Q Clear Time (g_c+I1), s	19.8	17.4
Green Ext Time (p_c), s	29.5	0.9

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	398	0	0	1038	262	0	2534	111	0	0	0
Future Volume (veh/h)	219	398	0	0	1038	262	0	2534	111	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			
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	1870	1870	0	0	1870	1870	0	1870	1900			
Adj Flow Rate, veh/h	313	569	0	0	1093	0	0	2612	114			
Peak Hour Factor	0.70	0.70	0.70	0.95	0.95	0.95	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	661	680	0	0	1289		0	0	0			
Arrive On Green	0.19	0.19	0.00	0.00	0.25	0.00	0.00	0.00	0.00			
Sat Flow, veh/h	3456	3647	0	0	5443	0		0				
Grp Volume(v), veh/h	313	569	0	0	1093	0		0.0				
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	0						
Q Serve(g_s), s	12.5	23.9	0.0	0.0	31.6	0.0						
Cycle Q Clear(g_c), s	12.5	23.9	0.0	0.0	31.6	0.0						
Prop In Lane	1.00		0.00	0.00		0.00						
Lane Grp Cap(c), veh/h	661	680	0	0	1289							
V/C Ratio(X)	0.47	0.84	0.00	0.00	0.85							
Avail Cap(c_a), veh/h	818	841	0	0	1466							
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.50	0.50	0.00	0.00	0.09	0.00						
Uniform Delay (d), s/veh	55.7	60.3	0.0	0.0	55.1	0.0						
Incr Delay (d2), s/veh	0.3	3.2	0.0	0.0	0.4	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	5.5	11.1	0.0	0.0	13.6	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.0	63.5	0.0	0.0	55.5	0.0						
LnGrp LOS	E	E	A	A	E							
Approach Vol, veh/h		882			1093	A						
Approach Delay, s/veh		60.9			55.5							
Approach LOS		E			E							

Timer - Assigned Phs	4	8
Phs Duration (G+Y+Rc), s	45.6	36.2
Change Period (Y+Rc), s	6.5	6.5
Max Green Setting (Gmax), s	44.5	36.7
Max Q Clear Time (g_c+I1), s	33.6	25.9
Green Ext Time (p_c), s	5.6	3.8

Intersection Summary	
HCM 6th Ctrl Delay	57.9
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	74	2451	18	27	58	0	0	124	95
Future Volume (veh/h)	0	0	0	74	2451	18	27	58	0	0	124	95
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				76	2501	18	48	104	0	0	149	114
Peak Hour Factor				0.98	0.98	0.98	0.56	0.56	0.56	0.83	0.83	0.83
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				107	3767	28	320	807	0	0	773	553
Arrive On Green				0.56	0.56	0.56	0.39	0.39	0.00	0.00	0.39	0.39
Sat Flow, veh/h				190	6700	49	718	2150	0	0	2071	1415
Grp Volume(v), veh/h				745	1172	678	75	77	0	0	133	130
Grp Sat Flow(s),veh/h/ln				1861	1609	1861	1166	1617	0	0	1777	1616
Q Serve(g_s), s				43.6	37.4	37.4	4.3	4.5	0.0	0.0	7.3	8.0
Cycle Q Clear(g_c), s				43.6	37.4	37.4	12.3	4.5	0.0	0.0	7.3	8.0
Prop In Lane				0.10		0.03	0.64		0.00	0.00		0.88
Lane Grp Cap(c), veh/h				1046	1809	1047	495	632	0	0	694	631
V/C Ratio(X)				0.71	0.65	0.65	0.15	0.12	0.00	0.00	0.19	0.21
Avail Cap(c_a), veh/h				1305	2256	1306	495	632	0	0	694	631
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.31	0.31	0.31	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				23.8	22.5	22.5	32.3	29.0	0.0	0.0	29.9	30.1
Incr Delay (d2), s/veh				0.4	0.1	0.2	0.7	0.4	0.0	0.0	0.6	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				19.1	14.1	16.3	2.0	1.9	0.0	0.0	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.2	22.6	22.7	33.0	29.4	0.0	0.0	30.5	30.8
LnGrp LOS				C	C	C	C	C	A	A	C	C
Approach Vol, veh/h					2595			152			263	
Approach Delay, s/veh					23.1			31.2			30.7	
Approach LOS					C			C			C	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	61.7	61.7	87.3
Change Period (Y+Rc), s	3.5	3.5	3.5
Max Green Setting (Gmax), s	37.5	37.5	104.5
Max Q Clear Time (g_c+I1), s	14.3	10.0	45.6
Green Ext Time (p_c), s	0.8	1.6	38.2

Intersection Summary	
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	152	596	32	8	46	0	0	211	32
Future Volume (veh/h)	0	0	0	152	596	32	8	46	0	0	211	32
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				162	634	34	9	49	0	0	224	34
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				496	2051	114	112	386	0	0	389	58
Arrive On Green				0.72	0.72	0.72	0.13	0.13	0.00	0.00	0.13	0.13
Sat Flow, veh/h				685	2834	158	199	3166	0	0	3193	464
Grp Volume(v), veh/h				434	0	396	32	26	0	0	127	131
Grp Sat Flow(s),veh/h/ln				1836	0	1842	1663	1617	0	0	1777	1787
Q Serve(g_s), s				4.5	0.0	4.0	0.0	0.8	0.0	0.0	3.6	3.7
Cycle Q Clear(g_c), s				4.5	0.0	4.0	3.7	0.8	0.0	0.0	3.6	3.7
Prop In Lane				0.37		0.09	0.28		0.00	0.00		0.26
Lane Grp Cap(c), veh/h				1329	0	1333	296	203	0	0	223	224
V/C Ratio(X)				0.33	0.00	0.30	0.11	0.13	0.00	0.00	0.57	0.58
Avail Cap(c_a), veh/h				1329	0	1333	603	519	0	0	570	573
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.53	0.00	0.53	1.00	1.00	0.00	0.00	0.97	0.97
Uniform Delay (d), s/veh				2.7	0.0	2.6	20.6	20.6	0.0	0.0	21.8	21.9
Incr Delay (d2), s/veh				0.3	0.0	0.3	0.2	0.3	0.0	0.0	2.2	2.3
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				0.8	0.0	0.7	0.3	0.3	0.0	0.0	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				3.0	0.0	2.9	20.8	20.9	0.0	0.0	24.1	24.2
LnGrp LOS				A	A	A	C	C	A	A	C	C
Approach Vol, veh/h					830			58			258	
Approach Delay, s/veh					2.9			20.8			24.1	
Approach LOS					A			C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	10.6	42.4	10.6
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	28.0	17.0
Max Q Clear Time (g_c+I1), s	5.7	6.5	5.7
Green Ext Time (p_c), s	0.1	5.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	394	23	0	0	0	0	14	4	61	295	0
Future Volume (veh/h)	41	394	23	0	0	0	0	14	4	61	295	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
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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	43	410	24				0	15	4	64	307	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	2	2				0	2	2	2	2	0
Cap, veh/h	1253	2630	1115				0	458	117	150	475	0
Arrive On Green	0.70	0.70	0.70				0.00	0.16	0.16	0.16	0.16	0.00
Sat Flow, veh/h	1781	3741	1585				0	2896	716	432	2993	0
Grp Volume(v), veh/h	43	410	24				0	9	10	202	169	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585				0	1777	1741	1723	1617	0
Q Serve(g_s), s	0.4	2.2	0.3				0.0	0.3	0.3	4.7	5.9	0.0
Cycle Q Clear(g_c), s	0.4	2.2	0.3				0.0	0.3	0.3	6.6	5.9	0.0
Prop In Lane	1.00		1.00				0.00		0.41	0.32		0.00
Lane Grp Cap(c), veh/h	1253	2630	1115				0	290	285	361	264	0
V/C Ratio(X)	0.03	0.16	0.02				0.00	0.03	0.03	0.56	0.64	0.00
Avail Cap(c_a), veh/h	1253	2630	1115				0	711	697	760	647	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.49				0.00	1.00	1.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	2.7	3.0	2.7				0.0	21.1	21.1	23.7	23.4	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0				0.0	0.0	0.0	0.5	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.1				0.0	0.1	0.1	2.6	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.7	3.0	2.7				0.0	21.1	21.1	24.1	24.3	0.0
LnGrp LOS	A	A	A				A	C	C	C	C	A
Approach Vol, veh/h		477						19			371	
Approach Delay, s/veh		3.0						21.1			24.2	
Approach LOS		A						C			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	13.8	46.2	13.8
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	24.0	28.0	24.0
Max Q Clear Time (g_c+I1), s	2.3	4.2	8.6
Green Ext Time (p_c), s	0.0	4.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	0	217	1568	702	97	0	0	0	0	588	547
Future Volume (veh/h)	220	0	217	1568	702	97	0	0	0	0	588	547
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				0	1870	1870
Adj Flow Rate, veh/h	312	0	157	1651	739	102				0	904	407
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95				0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	2
Cap, veh/h	375	0	179	1874	1195	165				0	0	0
Arrive On Green	0.11	0.00	0.11	0.12	0.13	0.13				0.00	0.00	0.00
Sat Flow, veh/h	3563	0	1585	5023	3137	433					0	
Grp Volume(v), veh/h	312	0	157	1651	418	423					0.0	
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1674	1777	1792						
Q Serve(g_s), s	12.8	0.0	14.5	48.2	33.3	33.3						
Cycle Q Clear(g_c), s	12.8	0.0	14.5	48.2	33.3	33.3						
Prop In Lane	1.00		1.00	1.00		0.24						
Lane Grp Cap(c), veh/h	375	0	179	1874	677	683						
V/C Ratio(X)	0.83	0.00	0.88	0.88	0.62	0.62						
Avail Cap(c_a), veh/h	658	0	293	2046	724	730						
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33						
Upstream Filter(I)	1.00	0.00	1.00	0.77	0.77	0.77						
Uniform Delay (d), s/veh	65.4	0.0	65.0	62.1	54.9	54.9						
Incr Delay (d2), s/veh	4.8	0.0	15.2	3.6	1.1	1.1						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	6.1	0.0	6.6	22.4	16.2	16.4						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.2	0.0	80.2	65.6	56.0	56.0						
LnGrp LOS	E	A	F	E	E	E						
Approach Vol, veh/h		469			2492							
Approach Delay, s/veh		73.6			62.4							
Approach LOS		E			E							

Timer - Assigned Phs		3	4			7	8
Phs Duration (G+Y+Rc), s		19.2	60.3			59.1	20.4
Change Period (Y+Rc), s		3.5	3.5			3.5	3.5
Max Green Setting (Gmax), s		27.5	60.7			60.7	27.5
Max Q Clear Time (g_c+I1), s		14.8	35.3			50.2	16.5
Green Ext Time (p_c), s		0.9	5.9			5.4	0.3

Intersection Summary	
HCM 6th Ctrl Delay	64.1
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	269	531	0	0	0	0	0	2240	186
Future Volume (veh/h)	0	0	0	269	531	0	0	0	0	0	2240	186
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				286	565	0				0	2517	209
Peak Hour Factor				0.94	0.94	0.94				0.89	0.89	0.89
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				360	659	0				0	4094	1008
Arrive On Green				0.31	0.31	0.00				0.00	0.64	0.64
Sat Flow, veh/h				1031	2212	0				0	6696	1585
Grp Volume(v), veh/h				428	423	0				0	2517	209
Grp Sat Flow(s),veh/h/ln				1541	1617	0				0	1609	1585
Q Serve(g_s), s				39.2	36.2	0.0				0.0	34.6	8.2
Cycle Q Clear(g_c), s				39.2	36.2	0.0				0.0	34.6	8.2
Prop In Lane				0.67		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				518	501	0				0	4094	1008
V/C Ratio(X)				0.83	0.85	0.00				0.00	0.61	0.21
Avail Cap(c_a), veh/h				613	601	0				0	4094	1008
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.94	0.94	0.00				0.00	0.49	0.49
Uniform Delay (d), s/veh				48.8	47.8	0.0				0.0	16.1	11.3
Incr Delay (d2), s/veh				7.4	8.8	0.0				0.0	0.3	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				16.2	15.8	0.0				0.0	12.6	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				56.2	56.6	0.0				0.0	16.4	11.5
LnGrp LOS				E	E	A				A	B	B
Approach Vol, veh/h					851						2726	
Approach Delay, s/veh					56.4						16.0	
Approach LOS					E						B	

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	98.2	49.8
Change Period (Y+Rc), s	4.0	4.0
Max Green Setting (Gmax), s	85.0	55.0
Max Q Clear Time (g_c+I1), s	36.6	41.2
Green Ext Time (p_c), s	37.7	4.6

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	314	225	0	0	0	0	0	0	106	2713	0
Future Volume (veh/h)	0	314	225	0	0	0	0	0	0	106	2713	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	338	242							114	2917	0
Peak Hour Factor	0.93	0.93	0.93							0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	402	282							189	4425	0
Arrive On Green	0.00	0.20	0.20							0.24	0.24	0.00
Sat Flow, veh/h	0	2088	1400							218	6212	0
Grp Volume(v), veh/h	0	300	280							890	2141	0
Grp Sat Flow(s),veh/h/ln	0	1777	1618							1801	1464	0
Q Serve(g_s), s	0.0	24.0	24.7							60.4	65.0	0.0
Cycle Q Clear(g_c), s	0.0	24.0	24.7							66.0	65.0	0.0
Prop In Lane	0.00		0.87							0.13		0.00
Lane Grp Cap(c), veh/h	0	358	326							1361	3253	0
V/C Ratio(X)	0.00	0.84	0.86							0.65	0.66	0.00
Avail Cap(c_a), veh/h	0	492	448							1361	3253	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	0.97	0.97							0.76	0.76	0.00
Uniform Delay (d), s/veh	0.0	56.7	57.0							39.3	39.0	0.0
Incr Delay (d2), s/veh	0.0	8.7	11.2							1.9	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.7	11.1							32.8	25.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	65.5	68.2							41.2	39.8	0.0
LnGrp LOS	A	E	E							D	D	A
Approach Vol, veh/h		580									3031	
Approach Delay, s/veh		66.8									40.2	
Approach LOS		E									D	

Timer - Assigned Phs	4	6
Phs Duration (G+Y+Rc), s	33.9	114.1
Change Period (Y+Rc), s	4.0	4.5
Max Green Setting (Gmax), s	41.0	98.5
Max Q Clear Time (g_c+I1), s	26.7	68.0
Green Ext Time (p_c), s	3.2	27.2

Intersection Summary	
HCM 6th Ctrl Delay	44.5
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	515	12	727	651	0	0	0	0	98	2924	304
Future Volume (veh/h)	0	515	12	727	651	0	0	0	0	98	2924	304
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	644	15	790	708	0				104	3111	323
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	770	18	841	1517	0				111	3570	374
Arrive On Green	0.00	0.15	0.15	0.24	0.43	0.00				0.50	0.50	0.50
Sat Flow, veh/h	0	5302	119	3456	3647	0				223	7165	751
Grp Volume(v), veh/h	0	427	232	790	708	0				867	1925	746
Grp Sat Flow(s),veh/h/ln	0	1702	1849	1728	1777	0				1859	1515	1735
Q Serve(g_s), s	0.0	14.6	14.7	26.9	17.1	0.0				52.6	44.3	45.4
Cycle Q Clear(g_c), s	0.0	14.6	14.7	26.9	17.1	0.0				52.6	44.3	45.4
Prop In Lane	0.00		0.06	1.00		0.00				0.12		0.43
Lane Grp Cap(c), veh/h	0	510	277	841	1517	0				926	2264	865
V/C Ratio(X)	0.00	0.84	0.84	0.94	0.47	0.00				0.94	0.85	0.86
Avail Cap(c_a), veh/h	0	567	308	855	1590	0				926	2264	865
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.21	0.21	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	49.6	49.6	44.5	24.6	0.0				28.3	26.2	26.5
Incr Delay (d2), s/veh	0.0	9.7	16.8	5.1	0.0	0.0				17.6	4.2	11.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.9	8.1	12.0	7.2	0.0				27.0	16.3	20.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	59.3	66.4	49.6	24.7	0.0				45.8	30.5	37.6
LnGrp LOS	A	E	E	D	C	A				D	C	D
Approach Vol, veh/h		659			1498						3538	
Approach Delay, s/veh		61.8			37.8						35.7	
Approach LOS		E			D						D	

Timer - Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		64.8		55.2			33.2	22.0
Change Period (Y+Rc), s		5.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		57.3		53.7			29.7	20.0
Max Q Clear Time (g_c+I1), s		54.6		19.1			28.9	16.7
Green Ext Time (p_c), s		2.7		5.6			0.3	1.3

Intersection Summary	
HCM 6th Ctrl Delay	39.3
HCM 6th LOS	D

HCM Signalized Intersection Capacity Analysis
13: Mission Boulevard & Jackson Street/Foothill Boulevard

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	802	208	0	0	0	0	0	1992	1	2169	1508
Future Volume (vph)	0	802	208	0	0	0	0	0	1992	1	2169	1508
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0						4.5		5.0	4.0
Lane Util. Factor		0.91	1.00						0.76		0.86	0.88
Frt		1.00	0.85						0.85		1.00	0.85
Flt Protected		1.00	1.00						1.00		1.00	1.00
Satd. Flow (prot)		5085	1583						3610		6408	2787
Flt Permitted		1.00	1.00						1.00		1.00	1.00
Satd. Flow (perm)		5085	1583						3610		6408	2787
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	0	933	242	0	0	0	0	0	2264	1	2332	1622
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	9	0	6	0
Lane Group Flow (vph)	0	933	229	0	0	0	0	0	2255	0	2327	1622
Turn Type		NA	Perm						Prot	Perm	NA	Free
Protected Phases		4							5		2	
Permitted Phases			4							2		Free
Actuated Green, G (s)		31.0	31.0						79.5		79.0	120.0
Effective Green, g (s)		31.0	31.0						79.5		79.0	120.0
Actuated g/C Ratio		0.26	0.26						0.66		0.66	1.00
Clearance Time (s)		5.0	5.0						4.5		5.0	
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Lane Grp Cap (vph)		1313	408						2391		4218	2787
v/s Ratio Prot		c0.18							c0.62			
v/s Ratio Perm			0.14								0.36	0.58
v/c Ratio		0.71	0.56						0.94		0.55	0.58
Uniform Delay, d1		40.4	38.6						18.2		11.0	0.0
Progression Factor		1.00	1.00						1.00		0.55	1.00
Incremental Delay, d2		1.8	1.8						8.5		0.2	0.3
Delay (s)		42.3	40.4						26.7		6.2	0.3
Level of Service		D	D						C		A	A
Approach Delay (s)		41.9			0.0			26.7			3.8	
Approach LOS		D			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	53	127	306	208	22	289	1861	69	30	2396	20
Future Volume (veh/h)	91	53	127	306	208	22	289	1861	69	30	2396	20
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	65	155	369	251	27	336	2164	80	33	2633	22
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	112	484	167	507	55	257	2794	103	44	2263	19
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.14	0.55	0.55	0.02	0.43	0.43
Sat Flow, veh/h	487	365	1585	1161	1660	179	1781	5055	186	1781	5223	44
Grp Volume(v), veh/h	176	0	155	369	0	278	336	1455	789	33	1714	941
Grp Sat Flow(s),veh/h/ln	852	0	1585	1161	0	1838	1781	1702	1837	1781	1702	1863
Q Serve(g_s), s	9.6	0.0	6.8	6.8	0.0	11.1	13.0	30.0	30.3	1.7	39.0	39.0
Cycle Q Clear(g_c), s	20.7	0.0	6.8	27.5	0.0	11.1	13.0	30.0	30.3	1.7	39.0	39.0
Prop In Lane	0.63		1.00	1.00		0.10	1.00		0.10	1.00		0.02
Lane Grp Cap(c), veh/h	326	0	484	167	0	562	257	1882	1015	44	1475	807
V/C Ratio(X)	0.54	0.00	0.32	2.21	0.00	0.49	1.31	0.77	0.78	0.74	1.16	1.17
Avail Cap(c_a), veh/h	326	0	484	167	0	562	257	1882	1015	79	1475	807
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	24.1	43.2	0.0	25.6	38.5	15.7	15.8	43.6	25.5	25.5
Incr Delay (d2), s/veh	1.0	0.0	0.1	561.4	0.0	0.3	162.9	3.2	5.8	8.7	80.9	87.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	2.5	29.8	0.0	4.8	17.2	11.4	13.1	0.8	31.2	35.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	24.2	604.7	0.0	25.8	201.4	18.9	21.6	52.3	106.4	113.3
LnGrp LOS	C	A	C	F	A	C	F	B	C	D	F	F
Approach Vol, veh/h		331			647			2580			2688	
Approach Delay, s/veh		28.8			355.9			43.5			108.1	
Approach LOS		C			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	53.8		31.0	16.0	43.0		31.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	4.0	48.0		27.5	13.0	39.0		27.5
Max Q Clear Time (g_c+I1), s	3.7	32.3		22.7	15.0	41.0		29.5
Green Ext Time (p_c), s	0.0	14.3		0.5	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	102.9
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	0	125	144	355	33	85	83	0	0	63	26
Future Volume (veh/h)	26	0	125	144	355	33	85	83	0	0	63	26
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	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	28	0	133	153	378	35	90	88	0	0	67	28
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, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	35	0	165	215	564	54	657	790	0	0	790	669
Arrive On Green	0.12	0.00	0.12	0.23	0.23	0.23	0.42	0.42	0.00	0.00	0.42	0.42
Sat Flow, veh/h	281	0	1335	942	2472	237	1301	1870	0	0	1870	1585
Grp Volume(v), veh/h	161	0	0	296	0	270	90	88	0	0	67	28
Grp Sat Flow(s),veh/h/ln	1616	0	0	1823	0	1828	1301	1870	0	0	1870	1585
Q Serve(g_s), s	5.1	0.0	0.0	7.9	0.0	7.1	2.4	1.5	0.0	0.0	1.1	0.6
Cycle Q Clear(g_c), s	5.1	0.0	0.0	7.9	0.0	7.1	3.5	1.5	0.0	0.0	1.1	0.6
Prop In Lane	0.17		0.83	0.52		0.13	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	199	0	0	416	0	417	657	790	0	0	790	669
V/C Ratio(X)	0.81	0.00	0.00	0.71	0.00	0.65	0.14	0.11	0.00	0.00	0.08	0.04
Avail Cap(c_a), veh/h	244	0	0	619	0	621	657	790	0	0	790	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.66	0.00	0.66	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	0.0	18.8	0.0	18.5	10.2	9.3	0.0	0.0	9.2	9.0
Incr Delay (d2), s/veh	15.1	0.0	0.0	1.5	0.0	1.1	0.4	0.3	0.0	0.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	3.2	0.0	2.8	0.7	0.6	0.0	0.0	0.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	0.0	20.4	0.0	19.6	10.7	9.6	0.0	0.0	9.4	9.1
LnGrp LOS	D	A	A	C	A	B	B	A	A	A	A	A
Approach Vol, veh/h		161			566			178			95	
Approach Delay, s/veh		37.7			20.0			10.1			9.3	
Approach LOS		D			C			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	26.4	16.1	26.4	10.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	18.0	15.0	8.0
Max Q Clear Time (g_c+I1), s	3.1	9.9	5.5	7.1
Green Ext Time (p_c), s	0.2	2.2	0.4	0.1

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	333	104	0	0	1	1	157	132	69	206	47
Future Volume (veh/h)	47	333	104	0	0	1	1	157	132	69	206	47
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900				1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	366	114				1	173	145	76	226	52
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	2	0				2	2	2	2	2	2
Cap, veh/h	209	1513	496				68	216	180	322	338	78
Arrive On Green	0.62	0.62	0.62				0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	337	2443	800				1	941	786	1062	1471	338
Grp Volume(v), veh/h	286	0	246				319	0	0	76	0	278
Grp Sat Flow(s),veh/h/ln	1854	0	1726				1728	0	0	1062	0	1809
Q Serve(g_s), s	3.7	0.0	3.3				0.0	0.0	0.0	0.0	0.0	7.4
Cycle Q Clear(g_c), s	3.7	0.0	3.3				9.2	0.0	0.0	4.7	0.0	7.4
Prop In Lane	0.18		0.46				0.00		0.45	1.00		0.19
Lane Grp Cap(c), veh/h	1148	0	1070				465	0	0	322	0	415
V/C Ratio(X)	0.25	0.00	0.23				0.69	0.00	0.00	0.24	0.00	0.67
Avail Cap(c_a), veh/h	1148	0	1070				752	0	0	499	0	717
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.5	0.0	4.5				19.3	0.0	0.0	17.6	0.0	18.6
Incr Delay (d2), s/veh	0.5	0.0	0.5				0.7	0.0	0.0	0.1	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	1.1	0.0	0.9				3.4	0.0	0.0	0.7	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.1	0.0	5.0				20.0	0.0	0.0	17.7	0.0	19.3
LnGrp LOS	A	A	A				B	A	A	B	A	B
Approach Vol, veh/h		532						319			354	
Approach Delay, s/veh		5.0						20.0			18.9	
Approach LOS		A						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	16.2	36.8	16.2
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	21.0	24.0	21.0
Max Q Clear Time (g_c+I1), s	11.2	5.7	9.4
Green Ext Time (p_c), s	0.9	2.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	138	1030	107	23	1234	52	191	203	41	6	94	116
Future Volume (veh/h)	138	1030	107	23	1234	52	191	203	41	6	94	116
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	1084	113	24	1299	55	201	214	43	6	99	122
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	2070	216	41	1500	63	675	573	115	10	166	150
Arrive On Green	0.09	0.44	0.44	0.32	0.32	0.32	0.38	0.38	0.38	0.09	0.09	0.09
Sat Flow, veh/h	1781	4697	489	51	4684	197	1781	1512	304	107	1758	1585
Grp Volume(v), veh/h	145	785	412	480	432	465	201	0	257	105	0	122
Grp Sat Flow(s),veh/h/ln	1781	1702	1782	1717	1549	1667	1781	0	1816	1865	0	1585
Q Serve(g_s), s	12.1	25.3	25.4	21.3	39.7	39.8	11.9	0.0	15.5	8.2	0.0	11.4
Cycle Q Clear(g_c), s	12.1	25.3	25.4	39.2	39.7	39.8	11.9	0.0	15.5	8.2	0.0	11.4
Prop In Lane	1.00		0.27	0.05		0.12	1.00		0.17	0.06		1.00
Lane Grp Cap(c), veh/h	167	1500	785	575	496	534	675	0	688	176	0	150
V/C Ratio(X)	0.87	0.52	0.52	0.84	0.87	0.87	0.30	0.00	0.37	0.60	0.00	0.81
Avail Cap(c_a), veh/h	201	1668	873	625	544	585	675	0	688	408	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.5	30.7	30.7	47.6	48.4	48.4	32.8	0.0	33.9	65.6	0.0	67.1
Incr Delay (d2), s/veh	27.2	0.3	0.5	9.1	13.6	12.8	1.1	0.0	1.6	3.2	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	10.6	11.1	18.4	17.2	18.4	5.5	0.0	7.2	4.1	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.7	31.0	31.3	56.6	62.0	61.2	34.0	0.0	35.5	68.8	0.0	77.2
LnGrp LOS	F	C	C	E	E	E	C	A	D	E	A	E
Approach Vol, veh/h		1342			1378			458			227	
Approach Delay, s/veh		38.0			59.8			34.8			73.3	
Approach LOS		D			E			C			E	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	61.2	71.5	18.3	18.2	53.3
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	5.0
Max Green Setting (Gmax), s	31.0	74.0	33.0	17.0	53.0
Max Q Clear Time (g_c+I1), s	17.5	27.4	13.4	14.1	41.8
Green Ext Time (p_c), s	1.8	11.0	0.9	0.1	6.6

Intersection Summary	
HCM 6th Ctrl Delay	48.8
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	25.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	69	66	173	182	93	0	0	0	99	220	163
Future Vol, veh/h	55	69	66	173	182	93	0	0	0	99	220	163
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	80	77	201	212	108	0	0	0	115	256	190
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	13.8	17	38.5
HCM LOS	B	C	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	29%	66%	0%	21%
Vol Thru, %	36%	34%	49%	46%
Vol Right, %	35%	0%	51%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	264	184	482
LT Vol	55	173	0	99
Through Vol	69	91	91	220
RT Vol	66	0	93	163
Lane Flow Rate	221	307	214	560
Geometry Grp	5	7	7	2
Degree of Util (X)	0.397	0.599	0.376	0.892
Departure Headway (Hd)	6.475	7.026	6.33	5.729
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	552	510	565	628
Service Time	4.568	4.811	4.114	3.793
HCM Lane V/C Ratio	0.4	0.602	0.379	0.892
HCM Control Delay	13.8	19.9	12.9	38.5
HCM Lane LOS	B	C	B	E
HCM 95th-tile Q	1.9	3.9	1.7	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	399	94	146	965	27	94	96	74	86	210	129
Future Volume (veh/h)	40	399	94	146	965	27	94	96	74	86	210	129
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	434	102	159	1049	29	102	104	80	93	228	140
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	1291	301	193	1828	51	242	585	667	130	268	155
Arrive On Green	0.04	0.45	0.45	0.11	0.52	0.52	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1781	2860	667	1781	3532	98	1014	1870	1585	275	858	494
Grp Volume(v), veh/h	43	268	268	159	528	550	102	104	80	461	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1750	1781	1777	1853	1014	1870	1585	1628	0	0
Q Serve(g_s), s	2.3	9.6	9.7	8.6	20.0	20.0	0.0	4.0	3.0	22.0	0.0	0.0
Cycle Q Clear(g_c), s	2.3	9.6	9.7	8.6	20.0	20.0	18.9	4.0	3.0	26.5	0.0	0.0
Prop In Lane	1.00		0.38	1.00		0.05	1.00		1.00	0.20		0.30
Lane Grp Cap(c), veh/h	75	802	790	193	920	959	242	585	667	553	0	0
V/C Ratio(X)	0.57	0.33	0.34	0.82	0.57	0.57	0.42	0.18	0.12	0.83	0.00	0.00
Avail Cap(c_a), veh/h	124	802	790	305	920	959	318	725	786	673	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.1	17.4	17.4	42.8	16.2	16.2	29.6	24.5	17.3	32.1	0.0	0.0
Incr Delay (d2), s/veh	6.7	1.1	1.2	9.6	2.6	2.5	1.1	0.1	0.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.1	4.1	4.2	8.3	8.7	2.1	1.8	1.1	11.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	18.5	18.6	52.4	18.8	18.7	30.8	24.6	17.4	39.6	0.0	0.0
LnGrp LOS	D	B	B	D	B	B	C	C	B	D	A	A
Approach Vol, veh/h		579			1237			286			461	
Approach Delay, s/veh		21.1			23.1			24.8			39.6	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.6	48.7		34.6	8.1	55.2		34.6
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	6.8	30.7		38.0	6.8	40.7		38.0
Max Q Clear Time (g_c+I1), s	10.6	11.7		28.5	4.3	22.0		20.9
Green Ext Time (p_c), s	0.2	3.2		2.1	0.0	7.1		1.2

Intersection Summary	
HCM 6th Ctrl Delay	25.8
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	55	22	219	95	45	26	207	104	36	423	27
Future Volume (veh/h)	1	55	22	219	95	45	26	207	104	36	423	27
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	60	24	238	103	49	28	225	113	39	460	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	384	325	579	389	185	95	727	361	100	1115	69
Arrive On Green	0.21	0.21	0.21	0.32	0.32	0.32	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1870	1585	1781	1198	570	163	1979	983	177	3033	188
Grp Volume(v), veh/h	1	60	24	238	0	152	191	0	175	271	0	257
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1768	1601	0	1525	1730	0	1668
Q Serve(g_s), s	0.1	3.1	1.4	12.2	0.0	7.4	0.3	0.0	9.6	1.2	0.0	13.5
Cycle Q Clear(g_c), s	0.1	3.1	1.4	12.2	0.0	7.4	13.8	0.0	9.6	12.7	0.0	13.5
Prop In Lane	1.00		1.00	1.00		0.32	0.15		0.64	0.14		0.11
Lane Grp Cap(c), veh/h	365	384	325	579	0	574	624	0	560	671	0	613
V/C Ratio(X)	0.00	0.16	0.07	0.41	0.00	0.26	0.31	0.00	0.31	0.40	0.00	0.42
Avail Cap(c_a), veh/h	365	384	325	579	0	574	624	0	560	671	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.0	38.2	37.5	30.8	0.0	29.2	26.1	0.0	26.4	27.4	0.0	27.7
Incr Delay (d2), s/veh	0.0	0.9	0.4	2.2	0.0	1.1	1.3	0.0	1.5	1.8	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.6	5.6	0.0	3.3	4.0	0.0	3.7	5.9	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.0	39.1	38.0	32.9	0.0	30.3	27.4	0.0	27.9	29.2	0.0	29.8
LnGrp LOS	D	D	D	C	A	C	C	A	C	C	A	C
Approach Vol, veh/h		85			390			366			528	
Approach Delay, s/veh		38.7			31.9			27.6			29.5	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	47.0	28.0	47.0	42.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	24.0	43.0	38.0
Max Q Clear Time (g_c+I1), s	15.8	5.1	15.5	14.2
Green Ext Time (p_c), s	1.5	0.2	2.2	0.9

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	17	375	181	52	15	350	127	326	3	68	19
Future Volume (veh/h)	22	17	375	181	52	15	350	127	326	3	68	19
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	21	463	229	66	19	297	269	362	4	99	28
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.90	0.90	0.90	0.69	0.69	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	456	611	517	362	456	131	776	815	691	212	328	89
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.44	0.44	0.44	0.12	0.12	0.12
Sat Flow, veh/h	1313	1870	1585	911	1396	402	1781	1870	1585	1781	2759	753
Grp Volume(v), veh/h	27	21	463	229	0	85	297	269	362	4	62	65
Grp Sat Flow(s),veh/h/ln	1313	1870	1585	911	0	1798	1781	1870	1585	1781	1777	1735
Q Serve(g_s), s	1.5	0.8	28.1	23.1	0.0	3.4	11.4	9.6	16.9	0.2	3.2	3.4
Cycle Q Clear(g_c), s	4.9	0.8	28.1	23.8	0.0	3.4	11.4	9.6	16.9	0.2	3.2	3.4
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	456	611	517	362	0	587	776	815	691	212	211	206
V/C Ratio(X)	0.06	0.03	0.89	0.63	0.00	0.14	0.38	0.33	0.52	0.02	0.30	0.31
Avail Cap(c_a), veh/h	547	741	628	425	0	712	776	815	691	212	211	206
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	23.2	32.3	31.3	0.0	24.0	19.3	18.8	20.8	39.3	40.6	40.7
Incr Delay (d2), s/veh	0.1	0.0	15.9	4.2	0.0	0.2	1.4	1.1	2.8	0.2	3.5	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	12.7	5.4	0.0	1.5	4.9	4.3	6.6	0.1	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	23.2	48.2	35.5	0.0	24.3	20.7	19.9	23.7	39.4	44.2	44.6
LnGrp LOS	C	C	D	D	A	C	C	B	C	D	D	D
Approach Vol, veh/h		511			314			928			131	
Approach Delay, s/veh		46.0			32.5			21.6			44.3	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	48.0	37.0	16.0	37.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	44.0	40.0	12.0	40.0
Max Q Clear Time (g_c+I1), s	18.9	30.1	5.4	25.8
Green Ext Time (p_c), s	10.5	2.9	0.5	2.6

Intersection Summary	
HCM 6th Ctrl Delay	31.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	463	20	500	1286	83	157	408	179	76	427	28
Future Volume (veh/h)	10	463	20	500	1286	83	157	408	179	76	427	28
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	498	22	532	1368	88	180	469	206	86	485	32
Peak Hour Factor	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	974	43	606	1458	94	202	794	346	109	940	62
Arrive On Green	0.03	0.28	0.28	0.18	0.43	0.43	0.04	0.11	0.11	0.06	0.28	0.28
Sat Flow, veh/h	1781	3467	153	3456	3391	218	1781	2408	1050	1781	3384	223
Grp Volume(v), veh/h	11	255	265	532	715	741	180	345	330	86	254	263
Grp Sat Flow(s),veh/h/ln	1781	1777	1843	1728	1777	1831	1781	1777	1681	1781	1777	1830
Q Serve(g_s), s	0.6	12.8	12.8	15.9	40.7	41.0	10.7	19.6	19.8	5.0	12.8	12.8
Cycle Q Clear(g_c), s	0.6	12.8	12.8	15.9	40.7	41.0	10.7	19.6	19.8	5.0	12.8	12.8
Prop In Lane	1.00		0.08	1.00		0.12	1.00		0.62	1.00		0.12
Lane Grp Cap(c), veh/h	46	499	518	606	764	788	202	586	554	109	494	508
V/C Ratio(X)	0.24	0.51	0.51	0.88	0.94	0.94	0.89	0.59	0.59	0.79	0.51	0.52
Avail Cap(c_a), veh/h	168	533	553	782	771	795	202	586	554	134	494	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.74	0.74	0.74	0.78	0.78	0.78
Uniform Delay (d), s/veh	50.6	32.0	32.0	42.6	28.8	28.9	50.4	40.4	40.5	49.1	32.3	32.3
Incr Delay (d2), s/veh	1.0	1.2	1.1	7.7	18.7	19.1	27.9	3.2	3.5	14.1	3.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.6	5.8	7.4	20.6	21.5	6.7	9.9	9.5	2.7	5.9	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	33.1	33.1	50.3	47.6	48.1	78.3	43.6	43.9	63.1	35.2	35.2
LnGrp LOS	D	C	C	D	D	D	E	D	D	E	D	D
Approach Vol, veh/h		531			1988			855			603	
Approach Delay, s/veh		33.5			48.5			51.0			39.2	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	39.0	22.6	34.0	16.0	33.4	6.8	49.8
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	8.0	26.0	24.0	* 32	12.0	22.0	10.0	* 46
Max Q Clear Time (g_c+I1), s	17.0	21.8	17.9	14.8	12.7	14.8	2.6	43.0
Green Ext Time (p_c), s	0.0	2.0	0.7	4.0	0.0	2.3	0.0	2.5

Intersection Summary	
HCM 6th Ctrl Delay	45.6
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	138	93	188	636	34	128	636	280	25	575	325
Future Volume (veh/h)	112	138	93	188	636	34	128	636	280	25	575	325
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	168	113	202	684	37	145	723	318	29	720	353
Peak Hour Factor	0.82	0.82	0.82	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	219	153	406	801	43	168	1623	688	58	1392	590
Arrive On Green	0.16	0.16	0.16	0.23	0.23	0.23	0.09	0.43	0.43	0.01	0.12	0.12
Sat Flow, veh/h	1111	1412	985	1781	3516	190	1781	3741	1585	1781	3741	1585
Grp Volume(v), veh/h	224	0	194	202	364	357	145	723	318	29	720	353
Grp Sat Flow(s),veh/h/ln	1815	0	1693	1781	1870	1836	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.6	0.0	11.6	10.5	19.8	19.8	8.5	14.4	15.1	1.7	19.1	22.4
Cycle Q Clear(g_c), s	12.6	0.0	11.6	10.5	19.8	19.8	8.5	14.4	15.1	1.7	19.1	22.4
Prop In Lane	0.61		0.58	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	0	262	406	426	418	168	1623	688	58	1392	590
V/C Ratio(X)	0.80	0.00	0.74	0.50	0.85	0.85	0.86	0.45	0.46	0.50	0.52	0.60
Avail Cap(c_a), veh/h	428	0	399	454	476	468	168	1623	688	109	1392	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.62	0.62	0.62
Uniform Delay (d), s/veh	43.2	0.0	42.7	35.7	39.2	39.3	47.3	21.1	21.3	51.6	37.6	39.0
Incr Delay (d2), s/veh	5.9	0.0	4.1	0.9	13.0	13.3	31.5	0.8	2.0	4.1	0.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	5.1	4.6	10.5	10.3	5.2	6.4	5.9	0.8	9.7	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	46.8	36.6	52.2	52.5	78.8	21.9	23.3	55.7	38.4	41.8
LnGrp LOS	D	A	D	D	D	D	E	C	C	E	D	D
Approach Vol, veh/h		418			923			1186			1102	
Approach Delay, s/veh		48.0			48.9			29.2			40.0	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	50.0		20.4	14.0	43.4		28.1
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.5	31.5		25.0	10.0	28.0		27.0
Max Q Clear Time (g_c+I1), s	3.7	17.1		14.6	10.5	24.4		21.8
Green Ext Time (p_c), s	0.0	5.4		1.8	0.0	2.1		2.4

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	155	149	142	0	80	0	739	43	93	785	0
Future Volume (veh/h)	242	155	149	142	0	80	0	739	43	93	785	0
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	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	176	169	187	0	105	0	830	48	108	913	0
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.89	0.89	0.89	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	2
Cap, veh/h	772	196	188	0	0	0	0	2404	139	450	2502	0
Arrive On Green	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.70	0.70	0.70	0.70	0.00
Sat Flow, veh/h	3456	877	842		0		0	3508	197	632	3647	0
Grp Volume(v), veh/h	275	0	345		0.0		0	432	446	108	913	0
Grp Sat Flow(s),veh/h/ln	1728	0	1719				0	1777	1835	632	1777	0
Q Serve(g_s), s	7.4	0.0	21.5				0.0	10.5	10.5	8.9	11.3	0.0
Cycle Q Clear(g_c), s	7.4	0.0	21.5				0.0	10.5	10.5	19.3	11.3	0.0
Prop In Lane	1.00		0.49				0.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	772	0	384				0	1251	1292	450	2502	0
V/C Ratio(X)	0.36	0.00	0.90				0.00	0.35	0.35	0.24	0.36	0.00
Avail Cap(c_a), veh/h	911	0	453				0	1251	1292	450	2502	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.99				0.00	0.77	0.77	0.63	0.63	0.00
Uniform Delay (d), s/veh	36.1	0.0	41.5				0.0	6.4	6.4	10.1	6.5	0.0
Incr Delay (d2), s/veh	0.1	0.0	16.9				0.0	0.6	0.6	0.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	10.8				0.0	3.7	3.8	1.3	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	0.0	58.4				0.0	6.9	6.9	10.9	6.7	0.0
LnGrp LOS	D	A	E				A	A	A	B	A	A
Approach Vol, veh/h		620						878			1021	
Approach Delay, s/veh		48.5						6.9			7.2	
Approach LOS		D						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	81.4	28.6	81.4
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	52.0	29.0	52.0
Max Q Clear Time (g_c+I1), s	12.5	23.5	21.3
Green Ext Time (p_c), s	10.0	1.1	12.3

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	236	109	126	405	20	352	710	66	59	752	260
Future Volume (veh/h)	75	236	109	126	405	20	352	710	66	59	752	260
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	274	127	148	476	24	400	807	75	69	874	302
Peak Hour Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.88	0.88	0.88	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	304	141	113	446	22	319	1455	135	94	821	283
Arrive On Green	0.06	0.25	0.25	0.06	0.25	0.25	0.18	0.44	0.44	0.05	0.32	0.32
Sat Flow, veh/h	1781	1209	560	1781	1765	89	1781	3287	305	1781	2593	894
Grp Volume(v), veh/h	87	0	401	148	0	500	400	436	446	69	598	578
Grp Sat Flow(s),veh/h/ln	1781	0	1769	1781	0	1854	1781	1777	1815	1781	1777	1710
Q Serve(g_s), s	4.6	0.0	20.8	6.0	0.0	24.0	17.0	17.2	17.2	3.6	30.1	30.1
Cycle Q Clear(g_c), s	4.6	0.0	20.8	6.0	0.0	24.0	17.0	17.2	17.2	3.6	30.1	30.1
Prop In Lane	1.00		0.32	1.00		0.05	1.00		0.17	1.00		0.52
Lane Grp Cap(c), veh/h	111	0	445	113	0	468	319	787	804	94	563	541
V/C Ratio(X)	0.78	0.00	0.90	1.32	0.00	1.07	1.25	0.55	0.55	0.73	1.06	1.07
Avail Cap(c_a), veh/h	113	0	447	113	0	468	319	787	804	169	563	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.00	0.53	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	43.9	0.0	34.4	44.5	0.0	35.5	39.0	19.6	19.6	44.3	32.5	32.5
Incr Delay (d2), s/veh	17.2	0.0	12.7	191.5	0.0	60.7	137.8	2.8	2.8	8.8	52.8	54.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	10.3	8.6	0.0	18.4	19.5	7.4	7.6	1.8	20.7	20.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.1	0.0	47.0	236.0	0.0	96.2	176.8	22.4	22.3	53.1	85.2	87.2
LnGrp LOS	E	A	D	F	A	F	F	C	C	D	F	F
Approach Vol, veh/h		488			648			1282			1245	
Approach Delay, s/veh		49.5			128.1			70.5			84.3	
Approach LOS		D			F			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	47.1	10.0	28.9	21.0	35.1	9.9	29.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	5.0	38.0	6.0	24.0	17.0	30.0	6.0	24.0
Max Q Clear Time (g_c+I1), s	5.6	19.2	8.0	22.8	19.0	32.1	6.6	26.0
Green Ext Time (p_c), s	0.0	5.6	0.0	0.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	82.6
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	172	27	23	64	387	79	2247	27	244	1769	82
Future Volume (veh/h)	135	172	27	23	64	387	79	2247	27	244	1769	82
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	169	215	34	29	82	496	85	2416	29	260	1882	87
Peak Hour Factor	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	405	64	37	339	287	105	2361	733	259	2803	870
Arrive On Green	0.10	0.26	0.26	0.02	0.18	0.18	0.08	0.62	0.62	0.15	0.55	0.55
Sat Flow, veh/h	1781	1576	249	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	169	0	249	29	82	496	85	2416	29	260	1882	87
Grp Sat Flow(s),veh/h/ln	1781	0	1825	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	14.1	0.0	17.5	2.4	5.6	27.0	7.0	68.9	1.1	21.7	39.2	3.9
Cycle Q Clear(g_c), s	14.1	0.0	17.5	2.4	5.6	27.0	7.0	68.9	1.1	21.7	39.2	3.9
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	0	469	37	339	287	105	2361	733	259	2803	870
V/C Ratio(X)	0.98	0.00	0.53	0.79	0.24	1.73	0.81	1.02	0.04	1.00	0.67	0.10
Avail Cap(c_a), veh/h	172	0	469	80	339	287	175	2361	733	259	2803	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.2	0.0	47.6	72.6	52.2	61.0	67.8	28.7	15.6	63.7	24.0	16.0
Incr Delay (d2), s/veh	63.0	0.0	1.1	29.5	0.4	341.4	10.5	22.4	0.1	56.4	1.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	8.2	1.4	2.7	38.1	3.5	29.6	0.4	13.9	16.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	130.2	0.0	48.7	102.1	52.6	402.4	78.4	51.1	15.7	120.1	25.3	16.3
LnGrp LOS	F	A	D	F	D	F	E	F	B	F	C	B
Approach Vol, veh/h		418			607			2530			2229	
Approach Delay, s/veh		81.7			340.8			51.6			36.0	
Approach LOS		F			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	86.8	18.4	31.0	25.7	73.9	7.1	42.3
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	14.6	76.0	14.4	27.0	21.7	68.9	6.7	34.7
Max Q Clear Time (g_c+I1), s	19.6	41.2	16.1	29.0	23.7	70.9	4.4	19.5
Green Ext Time (p_c), s	0.1	20.8	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	78.1
HCM 6th LOS	E

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	130	73	45	61	301	34	2336	75	373	880	297
Future Volume (veh/h)	173	130	73	45	61	301	34	2336	75	373	880	297
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	197	148	83	49	0	371	37	2539	82	397	936	316
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	468	249	63	0	426	48	2764	89	382	3147	977
Arrive On Green	0.11	0.21	0.21	0.04	0.00	0.13	0.03	0.43	0.43	0.21	0.62	0.62
Sat Flow, veh/h	1781	2242	1191	1781	0	3170	1781	6451	208	1781	5106	1585
Grp Volume(v), veh/h	197	116	115	49	0	371	37	1898	723	397	936	316
Grp Sat Flow(s),veh/h/ln	1781	1777	1656	1781	0	1585	1781	1609	1833	1781	1702	1585
Q Serve(g_s), s	16.6	8.3	8.9	4.1	0.0	17.3	3.1	56.0	56.2	32.4	13.0	14.4
Cycle Q Clear(g_c), s	16.6	8.3	8.9	4.1	0.0	17.3	3.1	56.0	56.2	32.4	13.0	14.4
Prop In Lane	1.00		0.72	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	196	371	346	63	0	426	48	2068	786	382	3147	977
V/C Ratio(X)	1.01	0.31	0.33	0.78	0.00	0.87	0.78	0.92	0.92	1.04	0.30	0.32
Avail Cap(c_a), veh/h	196	405	377	114	0	577	103	2068	786	382	3147	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.97	0.00	0.97	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	67.2	50.5	50.8	72.2	0.0	64.1	73.0	40.6	40.7	59.3	13.6	13.9
Incr Delay (d2), s/veh	65.9	0.5	0.6	17.6	0.0	10.3	23.0	8.0	17.7	53.1	0.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	3.8	3.8	2.2	0.0	7.6	1.7	23.5	29.0	20.3	5.1	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	133.1	51.0	51.4	89.8	0.0	74.4	96.0	48.6	58.4	112.4	13.8	14.6
LnGrp LOS	F	D	D	F	A	E	F	D	E	F	B	B
Approach Vol, veh/h		428			420			2658			1649	
Approach Delay, s/veh		88.9			76.2			52.0			37.7	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	98.1	20.6	24.3	36.4	69.7	9.4	35.5
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	8.7	81.2	16.6	27.5	32.4	57.5	9.7	34.4
Max Q Clear Time (g_c+I1), s	5.1	16.4	18.6	19.3	34.4	58.2	6.1	10.9
Green Ext Time (p_c), s	0.0	10.4	0.0	1.0	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	52.4
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	945	40	368	2282	1079	0	0	1007
Future Volume (vph)	0	0	0	0	945	40	368	2282	1079	0	0	1007
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frt					0.99		1.00	0.95				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5054		1770	6099				3610
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5054		1770	6099				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	1062	45	396	2454	1160	0	0	1119
RTOR Reduction (vph)	0	0	0	0	3	0	28	61	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1104	0	368	3553	0	0	0	1119
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					37.9		44.5	102.1				57.6
Effective Green, g (s)					37.9		44.5	102.1				57.6
Actuated g/C Ratio					0.25		0.29	0.67				0.38
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1260		518	4096				1368
v/s Ratio Prot					c0.22		0.21	c0.25				
v/s Ratio Perm								0.33				0.31
v/c Ratio					0.88		0.71	0.99dr				0.82
Uniform Delay, d1					54.8		48.0	19.6				42.5
Progression Factor					1.00		1.00	1.00				1.00
Incremental Delay, d2					7.1		8.1	2.7				5.5
Delay (s)					61.9		56.1	22.4				48.0
Level of Service					E		E	C				D
Approach Delay (s)		0.0			61.9			25.7			48.0	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	497	70	233	3685	324	0	0	0
Future Volume (veh/h)	0	0	0	0	497	70	233	3685	324	0	0	0
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach					No			No				
Adj Sat Flow, veh/h/ln				0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h				0	529	74	245	3879	341			
Peak Hour Factor				0.94	0.94	0.94	0.95	0.95	0.95			
Percent Heavy Veh, %				0	2	2	2	2	2			
Cap, veh/h				0	617	86	1371	5346	457			
Arrive On Green				0.00	0.20	0.20	0.74	0.74	0.74			
Sat Flow, veh/h				0	3226	437	1781	7203	616			
Grp Volume(v), veh/h				0	299	304	245	3246	974			
Grp Sat Flow(s),veh/h/ln				0	1777	1792	1781	1515	1759			
Q Serve(g_s), s				0.0	24.1	24.3	6.1	44.0	47.3			
Cycle Q Clear(g_c), s				0.0	24.1	24.3	6.1	44.0	47.3			
Prop In Lane				0.00		0.24	1.00		0.35			
Lane Grp Cap(c), veh/h				0	350	353	1371	4498	1306			
V/C Ratio(X)				0.00	0.86	0.86	0.18	0.72	0.75			
Avail Cap(c_a), veh/h				0	456	460	1371	4498	1306			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	0.42	0.42	0.42			
Uniform Delay (d), s/veh				0.0	57.4	57.5	5.7	10.6	11.0			
Incr Delay (d2), s/veh				0.0	11.8	12.3	0.1	0.4	1.7			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln				0.0	12.0	12.2	2.2	13.6	17.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	69.2	69.7	5.8	11.0	12.7			
LnGrp LOS				A	E	E	A	B	B			
Approach Vol, veh/h					603			4465				
Approach Delay, s/veh					69.5			11.1				
Approach LOS					E			B				

Timer - Assigned Phs												
				4		6						
Phs Duration (G+Y+Rc), s				33.2		114.8						
Change Period (Y+Rc), s				4.0		5.0						
Max Green Setting (Gmax), s				38.0		101.0						
Max Q Clear Time (g_c+I1), s				26.3		49.3						
Green Ext Time (p_c), s				2.9		50.9						

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	604	359	12	0	0	0	0	3212	369	0	0	0
Future Volume (veh/h)	604	359	12	0	0	0	0	3212	369	0	0	0
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Work Zone On Approach		No						No				
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870			
Adj Flow Rate, veh/h	629	374	12				0	3346	384			
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	2				0	2	2			
Cap, veh/h	731	1315	42				0	4132	865			
Arrive On Green	0.37	0.37	0.37				0.00	0.55	0.55			
Sat Flow, veh/h	1781	3514	113				0	7930	1585			
Grp Volume(v), veh/h	629	189	197				0	3346	384			
Grp Sat Flow(s),veh/h/ln	1781	1777	1850				0	1515	1585			
Q Serve(g_s), s	38.3	8.3	8.4				0.0	40.3	16.3			
Cycle Q Clear(g_c), s	38.3	8.3	8.4				0.0	40.3	16.3			
Prop In Lane	1.00		0.06				0.00		1.00			
Lane Grp Cap(c), veh/h	731	665	692				0	4132	865			
V/C Ratio(X)	0.86	0.28	0.29				0.00	0.81	0.44			
Avail Cap(c_a), veh/h	812	746	776				0	4132	865			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91				0.00	1.00	1.00			
Uniform Delay (d), s/veh	33.9	24.5	24.6				0.0	20.7	15.3			
Incr Delay (d2), s/veh	7.3	0.1	0.1				0.0	1.8	1.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.6	3.5	3.7				0.0	13.9	6.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.2	24.6	24.6				0.0	22.5	16.9			
LnGrp LOS	D	C	C				A	C	B			
Approach Vol, veh/h		1015						3730				
Approach Delay, s/veh		34.9						22.0				
Approach LOS		C						C				

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	66.1	45.9
Change Period (Y+Rc), s	5.0	4.0
Max Green Setting (Gmax), s	56.0	47.0
Max Q Clear Time (g_c+I1), s	42.3	40.3
Green Ext Time (p_c), s	13.7	1.6

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	706	936	0	0	1441	83	0	3084	221	0	0	0
Future Volume (veh/h)	706	936	0	0	1441	83	0	3084	221	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			
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	1870	1870	0	0	1870	1870	0	1870	1900			
Adj Flow Rate, veh/h	776	1029	0	0	1517	0	0	3246	233			
Peak Hour Factor	0.91	0.91	0.91	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	912	938	0	0	1380		0	0	0			
Arrive On Green	0.26	0.26	0.00	0.00	0.27	0.00	0.00	0.00	0.00			
Sat Flow, veh/h	3456	3647	0	0	5443	0		0				
Grp Volume(v), veh/h	776	1029	0	0	1517	0		0.0				
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1702	0						
Q Serve(g_s), s	34.3	42.5	0.0	0.0	43.5	0.0						
Cycle Q Clear(g_c), s	34.3	42.5	0.0	0.0	43.5	0.0						
Prop In Lane	1.00		0.00	0.00		0.00						
Lane Grp Cap(c), veh/h	912	938	0	0	1380							
V/C Ratio(X)	0.85	1.10	0.00	0.00	1.10							
Avail Cap(c_a), veh/h	912	938	0	0	1380							
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	0.09	0.09	0.00	0.00	0.19	0.00						
Uniform Delay (d), s/veh	56.2	59.3	0.0	0.0	58.7	0.0						
Incr Delay (d2), s/veh	0.8	45.5	0.0	0.0	47.4	0.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	15.1	25.1	0.0	0.0	24.8	0.0						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.0	104.7	0.0	0.0	106.2	0.0						
LnGrp LOS	E	F	A	A	F							
Approach Vol, veh/h		1805			1517	A						
Approach Delay, s/veh		84.2			106.2							
Approach LOS		F			F							

Timer - Assigned Phs	4	8
Phs Duration (G+Y+Rc), s	50.0	49.0
Change Period (Y+Rc), s	6.5	6.5
Max Green Setting (Gmax), s	43.5	42.5
Max Q Clear Time (g_c+I1), s	45.5	44.5
Green Ext Time (p_c), s	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	94.2
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	332	2011	20	486	115	0	0	231	54
Future Volume (veh/h)	0	0	0	332	2011	20	486	115	0	0	231	54
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				357	2162	22	657	155	0	0	289	68
Peak Hour Factor				0.93	0.93	0.93	0.74	0.74	0.74	0.80	0.80	0.80
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				396	2597	27	520	835	0	0	1479	343
Arrive On Green				0.44	0.44	0.44	0.52	0.52	0.00	0.00	0.52	0.52
Sat Flow, veh/h				904	5936	61	915	1702	0	0	2958	663
Grp Volume(v), veh/h				721	1153	667	657	155	0	0	177	180
Grp Sat Flow(s),veh/h/ln				1825	1609	1859	915	1617	0	0	1777	1751
Q Serve(g_s), s				55.8	47.8	47.8	70.1	7.8	0.0	0.0	8.2	8.4
Cycle Q Clear(g_c), s				55.8	47.8	47.8	78.5	7.8	0.0	0.0	8.2	8.4
Prop In Lane				0.50		0.03	1.00		0.00	0.00		0.38
Lane Grp Cap(c), veh/h				798	1407	813	520	835	0	0	918	904
V/C Ratio(X)				0.90	0.82	0.82	1.26	0.19	0.00	0.00	0.19	0.20
Avail Cap(c_a), veh/h				811	1429	826	520	835	0	0	918	904
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.45	0.45	0.45	0.86	0.86	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				39.7	37.5	37.5	44.1	19.7	0.0	0.0	19.7	19.8
Incr Delay (d2), s/veh				6.7	1.8	3.1	131.6	0.4	0.0	0.0	0.5	0.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				26.4	19.1	22.4	39.5	3.1	0.0	0.0	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.5	39.3	40.6	175.8	20.1	0.0	0.0	20.2	20.3
LnGrp LOS				D	D	D	F	C	A	A	C	C
Approach Vol, veh/h					2541			812			357	
Approach Delay, s/veh					41.6			146.0			20.3	
Approach LOS					D			F			C	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	82.0	82.0	70.0
Change Period (Y+Rc), s	3.5	3.5	3.5
Max Green Setting (Gmax), s	77.5	77.5	67.5
Max Q Clear Time (g_c+I1), s	80.5	10.4	57.8
Green Ext Time (p_c), s	0.0	2.4	8.7

Intersection Summary	
HCM 6th Ctrl Delay	62.4
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	98	439	150	23	435	0	0	604	40
Future Volume (veh/h)	0	0	0	98	439	150	23	435	0	0	604	40
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1870	1900	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				107	477	163	25	473	0	0	657	43
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				0	2	0	2	2	0	0	2	2
Cap, veh/h				287	1327	479	85	834	0	0	917	60
Arrive On Green				0.59	0.59	0.59	0.27	0.27	0.00	0.00	0.27	0.27
Sat Flow, veh/h				490	2262	817	55	3167	0	0	3479	221
Grp Volume(v), veh/h				403	0	344	259	239	0	0	344	356
Grp Sat Flow(s),veh/h/ln				1846	0	1723	1521	1617	0	0	1777	1831
Q Serve(g_s), s				6.5	0.0	5.8	0.4	7.1	0.0	0.0	9.8	9.8
Cycle Q Clear(g_c), s				6.5	0.0	5.8	10.2	7.1	0.0	0.0	9.8	9.8
Prop In Lane				0.27		0.47	0.10		0.00	0.00		0.12
Lane Grp Cap(c), veh/h				1082	0	1011	482	438	0	0	481	496
V/C Ratio(X)				0.37	0.00	0.34	0.54	0.55	0.00	0.00	0.72	0.72
Avail Cap(c_a), veh/h				1082	0	1011	711	664	0	0	730	752
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.73	0.00	0.73	0.97	0.97	0.00	0.00	0.99	0.99
Uniform Delay (d), s/veh				6.1	0.0	6.0	17.3	17.5	0.0	0.0	18.5	18.5
Incr Delay (d2), s/veh				0.7	0.0	0.7	0.9	1.0	0.0	0.0	2.0	1.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.0	0.0	1.7	2.7	2.5	0.0	0.0	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				6.8	0.0	6.7	18.2	18.5	0.0	0.0	20.5	20.4
LnGrp LOS				A	A	A	B	B	A	A	C	C
Approach Vol, veh/h					747			498			700	
Approach Delay, s/veh					6.8			18.4			20.4	
Approach LOS					A			B			C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	19.2	36.8	19.2
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	23.0	25.0	23.0
Max Q Clear Time (g_c+I1), s	12.2	8.5	11.8
Green Ext Time (p_c), s	2.3	4.5	3.3

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	673	63	0	0	0	0	298	105	193	515	0
Future Volume (veh/h)	151	673	63	0	0	0	0	298	105	193	515	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
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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	157	701	66				0	310	109	201	536	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	2	2				0	2	2	2	2	0
Cap, veh/h	859	1803	764				0	1024	353	311	812	0
Arrive On Green	0.48	0.48	0.48				0.00	0.39	0.39	0.39	0.39	0.00
Sat Flow, veh/h	1781	3741	1585				0	2686	894	563	2142	0
Grp Volume(v), veh/h	157	701	66				0	211	208	338	399	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585				0	1777	1709	1004	1617	0
Q Serve(g_s), s	3.3	7.8	1.5				0.0	5.3	5.5	15.8	12.9	0.0
Cycle Q Clear(g_c), s	3.3	7.8	1.5				0.0	5.3	5.5	21.3	12.9	0.0
Prop In Lane	1.00		1.00				0.00		0.52	0.60		0.00
Lane Grp Cap(c), veh/h	859	1803	764				0	702	675	485	638	0
V/C Ratio(X)	0.18	0.39	0.09				0.00	0.30	0.31	0.70	0.63	0.00
Avail Cap(c_a), veh/h	859	1803	764				0	875	842	602	796	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.50				0.00	1.00	1.00	0.74	0.74	0.00
Uniform Delay (d), s/veh	9.6	10.7	9.1				0.0	13.5	13.6	20.0	15.8	0.0
Incr Delay (d2), s/veh	0.2	0.3	0.1				0.0	0.1	0.1	1.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.9	0.5				0.0	1.9	1.9	4.5	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.8	11.0	9.2				0.0	13.6	13.6	21.2	16.1	0.0
LnGrp LOS	A	B	A				A	B	B	C	B	A
Approach Vol, veh/h		924						419			737	
Approach Delay, s/veh		10.7						13.6			18.4	
Approach LOS		B						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	29.7	35.3	29.7
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	32.0	25.0	32.0
Max Q Clear Time (g_c+I1), s	7.5	9.8	23.3
Green Ext Time (p_c), s	1.7	6.6	2.4

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	813	0	302	1774	564	429	0	0	0	0	579	340
Future Volume (veh/h)	813	0	302	1774	564	429	0	0	0	0	579	340
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				0	1870	1870
Adj Flow Rate, veh/h	1008	0	224	1829	581	442				0	715	348
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97				0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	2
Cap, veh/h	1091	0	357	2000	610	464				0	0	0
Arrive On Green	0.31	0.00	0.23	0.13	0.10	0.10				0.00	0.00	0.00
Sat Flow, veh/h	3563	0	1585	5023	1922	1462					0	
Grp Volume(v), veh/h	1008	0	224	1829	537	486					0.0	
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1674	1777	1607						
Q Serve(g_s), s	41.6	0.0	19.4	54.6	45.7	45.7						
Cycle Q Clear(g_c), s	41.6	0.0	19.4	54.6	45.7	45.7						
Prop In Lane	1.00		1.00	1.00		0.91						
Lane Grp Cap(c), veh/h	1091	0	357	2000	564	510						
V/C Ratio(X)	0.92	0.00	0.63	0.91	0.95	0.95						
Avail Cap(c_a), veh/h	1231	0	401	2065	567	513						
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33						
Upstream Filter(I)	1.00	0.00	1.00	0.31	0.31	0.31						
Uniform Delay (d), s/veh	51.0	0.0	53.1	63.5	66.9	66.9						
Incr Delay (d2), s/veh	10.9	0.0	2.6	2.3	11.8	12.7						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	20.2	0.0	8.0	25.2	23.8	21.7						
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.9	0.0	55.7	65.8	78.7	79.6						
LnGrp LOS	E	A	E	E	E	E						
Approach Vol, veh/h		1232			2852							
Approach Delay, s/veh		60.8			70.5							
Approach LOS		E			E							

Timer - Assigned Phs		3	4		7	8
Phs Duration (G+Y+Rc), s		50.0	51.7		64.0	37.7
Change Period (Y+Rc), s		3.5	3.5		3.5	3.5
Max Green Setting (Gmax), s		52.5	48.5		62.5	38.5
Max Q Clear Time (g_c+I1), s		43.6	47.7		56.6	21.4
Green Ext Time (p_c), s		2.9	0.5		3.9	0.7

Intersection Summary	
HCM 6th Ctrl Delay	67.6
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	263	280	0	0	0	0	0	2092	86
Future Volume (veh/h)	0	0	0	263	280	0	0	0	0	0	2092	86
Initial Q (Qb), veh				0	0	0				0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00				1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach					No						No	
Adj Sat Flow, veh/h/ln				1870	1870	0				0	1870	1870
Adj Flow Rate, veh/h				306	326	0				0	2157	89
Peak Hour Factor				0.86	0.86	0.86				0.97	0.97	0.97
Percent Heavy Veh, %				2	2	0				0	2	2
Cap, veh/h				393	423	0				0	4471	1102
Arrive On Green				0.25	0.25	0.00				0.00	0.69	0.69
Sat Flow, veh/h				1372	1761	0				0	6696	1585
Grp Volume(v), veh/h				319	313	0				0	2157	89
Grp Sat Flow(s),veh/h/ln				1432	1617	0				0	1609	1585
Q Serve(g_s), s				32.6	27.2	0.0				0.0	23.4	2.8
Cycle Q Clear(g_c), s				32.6	27.2	0.0				0.0	23.4	2.8
Prop In Lane				0.96		0.00				0.00		1.00
Lane Grp Cap(c), veh/h				408	408	0				0	4471	1102
V/C Ratio(X)				0.78	0.77	0.00				0.00	0.48	0.08
Avail Cap(c_a), veh/h				555	574	0				0	4471	1102
HCM Platoon Ratio				1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)				0.92	0.92	0.00				0.00	0.39	0.39
Uniform Delay (d), s/veh				54.7	52.7	0.0				0.0	10.6	7.5
Incr Delay (d2), s/veh				4.7	3.7	0.0				0.0	0.1	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.3	11.5	0.0				0.0	8.1	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				59.3	56.3	0.0				0.0	10.8	7.5
LnGrp LOS				E	E	A				A	B	A
Approach Vol, veh/h					632						2246	
Approach Delay, s/veh					57.8						10.7	
Approach LOS					E						B	

Timer - Assigned Phs	2	4
Phs Duration (G+Y+Rc), s	109.6	42.4
Change Period (Y+Rc), s	4.0	4.0
Max Green Setting (Gmax), s	90.0	54.0
Max Q Clear Time (g_c+I1), s	25.4	34.6
Green Ext Time (p_c), s	35.7	3.8

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	565	32	0	0	0	0	0	0	328	2085	0
Future Volume (veh/h)	0	565	32	0	0	0	0	0	0	328	2085	0
Initial Q (Qb), veh	0	0	0							0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00							1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00							1.00	1.00	1.00
Work Zone On Approach		No									No	
Adj Sat Flow, veh/h/ln	0	1870	1870							1870	1870	0
Adj Flow Rate, veh/h	0	595	34							345	2195	0
Peak Hour Factor	0.95	0.95	0.95							0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2							2	2	0
Cap, veh/h	0	704	40							626	3842	0
Arrive On Green	0.00	0.21	0.21							0.24	0.24	0.00
Sat Flow, veh/h	0	3511	195							800	5445	0
Grp Volume(v), veh/h	0	309	320							697	1843	0
Grp Sat Flow(s),veh/h/ln	0	1777	1835							1615	1464	0
Q Serve(g_s), s	0.0	25.4	25.5							57.8	56.0	0.0
Cycle Q Clear(g_c), s	0.0	25.4	25.5							57.8	56.0	0.0
Prop In Lane	0.00		0.11							0.50		0.00
Lane Grp Cap(c), veh/h	0	366	378							1227	3241	0
V/C Ratio(X)	0.00	0.84	0.85							0.57	0.57	0.00
Avail Cap(c_a), veh/h	0	561	580							1227	3241	0
HCM Platoon Ratio	1.00	1.00	1.00							0.33	0.33	1.00
Upstream Filter(I)	0.00	0.95	0.95							0.88	0.88	0.00
Uniform Delay (d), s/veh	0.0	58.0	58.0							36.9	36.3	0.0
Incr Delay (d2), s/veh	0.0	6.8	6.7							1.7	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0							0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.2	12.6							25.8	22.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	64.8	64.8							38.6	36.9	0.0
LnGrp LOS	A	E	E							D	D	A
Approach Vol, veh/h		629									2540	
Approach Delay, s/veh		64.8									37.4	
Approach LOS		E									D	

Timer - Assigned Phs	4	6
Phs Duration (G+Y+Rc), s	35.3	116.7
Change Period (Y+Rc), s	4.0	4.5
Max Green Setting (Gmax), s	48.0	95.5
Max Q Clear Time (g_c+I1), s	27.5	59.8
Green Ext Time (p_c), s	3.8	27.0

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1517	43	884	706	0	0	0	0	125	2128	185
Future Volume (veh/h)	0	1517	43	884	706	0	0	0	0	125	2128	185
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	1597	45	961	767	0				129	2194	191
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	1483	42	945	2126	0				126	2316	206
Arrive On Green	0.00	0.29	0.29	0.27	0.60	0.00				0.32	0.32	0.32
Sat Flow, veh/h	0	5273	144	3456	3647	0				389	7130	633
Grp Volume(v), veh/h	0	1065	577	961	767	0				613	1371	530
Grp Sat Flow(s),veh/h/ln	0	1702	1844	1728	1777	0				1851	1515	1756
Q Serve(g_s), s	0.0	34.0	34.0	32.0	12.9	0.0				38.0	34.1	34.1
Cycle Q Clear(g_c), s	0.0	34.0	34.0	32.0	12.9	0.0				38.0	34.1	34.1
Prop In Lane	0.00		0.08	1.00		0.00				0.21		0.36
Lane Grp Cap(c), veh/h	0	989	536	945	2126	0				601	1476	570
V/C Ratio(X)	0.00	1.08	1.08	1.02	0.36	0.00				1.02	0.93	0.93
Avail Cap(c_a), veh/h	0	989	536	945	2126	0				601	1476	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	41.5	41.5	42.5	12.0	0.0				39.5	38.2	38.2
Incr Delay (d2), s/veh	0.0	51.5	61.1	13.4	0.0	0.0				42.0	11.6	23.7
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	21.1	24.3	15.2	5.0	0.0				24.0	14.1	18.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	93.0	102.6	55.9	12.0	0.0				81.5	49.8	61.8
LnGrp LOS	A	F	F	F	B	A				F	D	E
Approach Vol, veh/h		1642			1728						2514	
Approach Delay, s/veh		96.4			36.4						60.1	
Approach LOS		F			D						E	

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	43.0	74.0	36.0	38.0
Change Period (Y+Rc), s	5.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	38.0	70.0	32.0	34.0
Max Q Clear Time (g_c+I1), s	40.0	14.9	34.0	36.0
Green Ext Time (p_c), s	0.0	6.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	63.3
HCM 6th LOS	E

HCM Signalized Intersection Capacity Analysis
13: Mission Boulevard & Jackson Street/Foothill Boulevard

08/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1373	190	0	0	0	0	0	2442	9	2204	1033
Future Volume (vph)	0	1373	190	0	0	0	0	0	2442	9	2204	1033
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0						4.5		5.0	4.0
Lane Util. Factor		0.91	1.00						0.76		0.86	0.88
Frt		1.00	0.85						0.85		1.00	0.85
Flt Protected		1.00	1.00						1.00		1.00	1.00
Satd. Flow (prot)		5085	1583						3610		6407	2787
Flt Permitted		1.00	1.00						1.00		1.00	1.00
Satd. Flow (perm)		5085	1583						3610		6407	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	0	1445	200	0	0	0	0	0	2598	9	2272	1065
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	7	0	7	0
Lane Group Flow (vph)	0	1445	187	0	0	0	0	0	2591	0	2274	1065
Turn Type		NA	Perm						Prot	Perm	NA	Free
Protected Phases		4							5		2	
Permitted Phases			4							2		Free
Actuated Green, G (s)		34.0	34.0						73.5		73.0	117.0
Effective Green, g (s)		34.0	34.0						73.5		73.0	117.0
Actuated g/C Ratio		0.29	0.29						0.63		0.62	1.00
Clearance Time (s)		5.0	5.0						4.5		5.0	
Vehicle Extension (s)		3.0	3.0						3.0		3.0	
Lane Grp Cap (vph)		1477	460						2267		3997	2787
v/s Ratio Prot		c0.28							c0.72			
v/s Ratio Perm			0.12								0.35	0.38
v/c Ratio		0.98	0.41						1.14		0.57	0.38
Uniform Delay, d1		41.1	33.4						21.8		12.8	0.0
Progression Factor		1.00	1.00						1.00		0.40	1.00
Incremental Delay, d2		18.2	0.6						70.1		0.1	0.1
Delay (s)		59.4	34.0						91.9		5.3	0.1
Level of Service		E	C						F		A	A
Approach Delay (s)		56.3			0.0			91.9			3.7	
Approach LOS		E			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	127.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	183	179	171	78	9	374	2625	299	194	2059	64
Future Volume (veh/h)	67	183	179	171	78	9	374	2625	299	194	2059	64
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	199	195	182	83	10	394	2763	315	206	2190	68
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	327	403	171	417	50	382	2585	284	175	2226	69
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.21	0.55	0.55	0.10	0.44	0.44
Sat Flow, veh/h	379	1284	1585	990	1638	197	1781	4669	513	1781	5089	158
Grp Volume(v), veh/h	272	0	195	182	0	93	394	1987	1091	206	1463	795
Grp Sat Flow(s),veh/h/ln	1664	0	1585	990	0	1835	1781	1702	1778	1781	1702	1842
Q Serve(g_s), s	12.0	0.0	11.7	12.1	0.0	4.5	24.0	62.0	62.0	11.0	47.5	47.9
Cycle Q Clear(g_c), s	16.4	0.0	11.7	28.5	0.0	4.5	24.0	62.0	62.0	11.0	47.5	47.9
Prop In Lane	0.27		1.00	1.00		0.11	1.00		0.29	1.00		0.09
Lane Grp Cap(c), veh/h	464	0	403	171	0	467	382	1884	984	175	1489	806
V/C Ratio(X)	0.59	0.00	0.48	1.06	0.00	0.20	1.03	1.05	1.11	1.18	0.98	0.99
Avail Cap(c_a), veh/h	464	0	403	171	0	467	382	1884	984	175	1489	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	35.5	52.2	0.0	32.8	44.0	25.0	25.0	50.5	31.1	31.2
Incr Delay (d2), s/veh	1.3	0.0	0.3	86.7	0.0	0.1	54.6	36.7	63.4	123.9	19.5	28.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	4.5	8.9	0.0	2.0	16.3	32.8	41.6	10.9	22.8	26.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	35.8	138.9	0.0	32.9	98.6	61.7	88.4	174.4	50.5	59.8
LnGrp LOS	D	A	D	F	A	C	F	F	F	F	D	E
Approach Vol, veh/h		467			275			3472			2464	
Approach Delay, s/veh		37.4			103.1			74.3			63.9	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	66.0		32.0	27.0	53.0		32.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	11.0	62.0		28.5	24.0	49.0		28.5
Max Q Clear Time (g_c+I1), s	13.0	64.0		18.4	26.0	49.9		30.5
Green Ext Time (p_c), s	0.0	0.0		1.1	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	69.1
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	0	147	77	194	43	215	141	0	0	86	53
Future Volume (veh/h)	76	0	147	77	194	43	215	141	0	0	86	53
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	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h	83	0	160	84	211	47	234	153	0	0	93	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	90	0	174	131	344	79	677	882	0	0	882	747
Arrive On Green	0.16	0.00	0.16	0.15	0.15	0.15	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h	563	0	1084	851	2237	517	1236	1870	0	0	1870	1585
Grp Volume(v), veh/h	243	0	0	180	0	162	234	153	0	0	93	58
Grp Sat Flow(s),veh/h/ln	1647	0	0	1828	0	1777	1236	1870	0	0	1870	1585
Q Serve(g_s), s	8.1	0.0	0.0	5.2	0.0	4.7	7.3	2.6	0.0	0.0	1.5	1.1
Cycle Q Clear(g_c), s	8.1	0.0	0.0	5.2	0.0	4.7	8.8	2.6	0.0	0.0	1.5	1.1
Prop In Lane	0.34		0.66	0.47		0.29	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	265	0	0	281	0	273	677	882	0	0	882	747
V/C Ratio(X)	0.92	0.00	0.00	0.64	0.00	0.59	0.35	0.17	0.00	0.00	0.11	0.08
Avail Cap(c_a), veh/h	265	0	0	588	0	571	677	882	0	0	882	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.64	0.00	0.64	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	0.0	0.0	22.3	0.0	22.1	10.7	8.5	0.0	0.0	8.2	8.1
Incr Delay (d2), s/veh	34.4	0.0	0.0	1.6	0.0	1.3	1.4	0.4	0.0	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	0.0	2.2	0.0	1.9	1.9	1.0	0.0	0.0	0.6	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.5	0.0	0.0	23.8	0.0	23.4	12.1	8.9	0.0	0.0	8.5	8.3
LnGrp LOS	E	A	A	C	A	C	B	A	A	A	A	A
Approach Vol, veh/h		243			342			387			151	
Approach Delay, s/veh		57.5			23.6			10.8			8.4	
Approach LOS		E			C			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	30.4	12.6	30.4	13.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	18.0	17.0	9.0
Max Q Clear Time (g_c+I1), s	3.5	7.2	10.8	10.1
Green Ext Time (p_c), s	0.5	1.4	0.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	24.5
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	421	37	0	0	0	2	222	101	93	191	33
Future Volume (veh/h)	116	421	37	0	0	0	2	222	101	93	191	33
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1870	1900				1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	453	40				2	239	109	100	205	35
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0				2	2	2	2	2	2
Cap, veh/h	435	1663	153				65	295	133	307	377	64
Arrive On Green	0.61	0.61	0.61				0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	707	2705	249				2	1216	551	1033	1557	266
Grp Volume(v), veh/h	324	0	294				350	0	0	100	0	240
Grp Sat Flow(s),veh/h/ln	1835	0	1826				1770	0	0	1033	0	1823
Q Serve(g_s), s	4.6	0.0	4.1				0.1	0.0	0.0	0.0	0.0	6.4
Cycle Q Clear(g_c), s	4.6	0.0	4.1				10.5	0.0	0.0	7.7	0.0	6.4
Prop In Lane	0.39		0.14				0.01		0.31	1.00		0.15
Lane Grp Cap(c), veh/h	1128	0	1123				493	0	0	307	0	441
V/C Ratio(X)	0.29	0.00	0.26				0.71	0.00	0.00	0.33	0.00	0.54
Avail Cap(c_a), veh/h	1128	0	1123				822	0	0	499	0	781
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	0.0	4.9				20.0	0.0	0.0	19.0	0.0	18.5
Incr Delay (d2), s/veh	0.6	0.0	0.6				0.7	0.0	0.0	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.3				4.0	0.0	0.0	1.1	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	0.0	5.5				20.7	0.0	0.0	19.2	0.0	18.9
LnGrp LOS	A	A	A				C	A	A	B	A	B
Approach Vol, veh/h		618						350			340	
Approach Delay, s/veh		5.6						20.7			19.0	
Approach LOS		A						C			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	17.6	38.4	17.6
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	24.0	24.0	24.0
Max Q Clear Time (g_c+I1), s	12.5	6.6	9.7
Green Ext Time (p_c), s	1.1	2.3	1.0

Intersection Summary	
HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	505	1413	133	19	739	51	140	289	32	63	193	135
Future Volume (veh/h)	505	1413	133	19	739	51	140	289	32	63	193	135
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	526	1472	139	20	770	53	146	301	33	66	201	141
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	2402	227	37	857	59	438	407	45	75	227	259
Arrive On Green	0.29	0.51	0.51	0.19	0.19	0.19	0.25	0.25	0.25	0.16	0.16	0.16
Sat Flow, veh/h	1781	4746	448	60	4409	302	1781	1656	182	457	1391	1585
Grp Volume(v), veh/h	526	1056	555	283	270	289	146	0	334	267	0	141
Grp Sat Flow(s),veh/h/ln	1781	1702	1790	1574	1549	1648	1781	0	1838	1848	0	1585
Q Serve(g_s), s	44.0	34.2	34.2	15.2	26.2	26.4	10.4	0.0	25.8	21.8	0.0	12.6
Cycle Q Clear(g_c), s	44.0	34.2	34.2	26.8	26.2	26.4	10.4	0.0	25.8	21.8	0.0	12.6
Prop In Lane	1.00		0.25	0.07		0.18	1.00		0.10	0.25		1.00
Lane Grp Cap(c), veh/h	509	1723	906	331	301	320	438	0	452	302	0	259
V/C Ratio(X)	1.03	0.61	0.61	0.86	0.90	0.90	0.33	0.00	0.74	0.88	0.00	0.54
Avail Cap(c_a), veh/h	509	1746	918	341	312	332	438	0	452	396	0	340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.0	27.2	27.2	59.8	60.5	60.6	47.7	0.0	53.5	63.0	0.0	59.2
Incr Delay (d2), s/veh	48.8	0.6	1.2	18.5	26.3	26.1	2.0	0.0	10.4	16.9	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.6	14.1	15.0	12.6	12.5	13.4	4.9	0.0	13.3	11.7	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.8	27.8	28.4	78.3	86.9	86.7	49.7	0.0	63.8	79.9	0.0	60.9
LnGrp LOS	F	C	C	E	F	F	D	A	E	E	A	E
Approach Vol, veh/h		2137			843			480			408	
Approach Delay, s/veh		46.7			83.9			59.6			73.3	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	41.9	83.0	29.2	48.0	35.0
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	5.0
Max Green Setting (Gmax), s	29.0	79.0	33.0	44.0	31.0
Max Q Clear Time (g_c+I1), s	27.8	36.2	23.8	46.0	28.8
Green Ext Time (p_c), s	0.3	17.0	1.4	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	59.2
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	52
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	212	228	262	134	175	129	0	0	0	21	98	69
Future Vol, veh/h	212	228	262	134	175	129	0	0	0	21	98	69
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	230	248	285	146	190	140	0	0	0	23	107	75
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	86.9	12.7	13.3
HCM LOS	F	B	B

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	30%	60%	0%	11%
Vol Thru, %	32%	40%	40%	52%
Vol Right, %	37%	0%	60%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	702	222	217	188
LT Vol	212	134	0	21
Through Vol	228	88	88	98
RT Vol	262	0	129	69
Lane Flow Rate	763	241	235	204
Geometry Grp	5	7	7	2
Degree of Util (X)	1.102	0.416	0.359	0.361
Departure Headway (Hd)	5.2	6.442	5.709	6.628
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	702	563	633	546
Service Time	3.2	4.142	3.409	4.628
HCM Lane V/C Ratio	1.087	0.428	0.371	0.374
HCM Control Delay	86.9	13.7	11.6	13.3
HCM Lane LOS	F	B	B	B
HCM 95th-tile Q	21.9	2	1.6	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	335	703	88	130	760	75	164	271	130	32	135	79
Future Volume (veh/h)	335	703	88	130	760	75	164	271	130	32	135	79
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	342	717	90	133	776	77	167	277	133	33	138	81
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	382	1624	204	167	1275	126	278	479	555	72	227	120
Arrive On Green	0.21	0.51	0.51	0.06	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	3177	399	1781	3265	324	1162	1870	1585	103	887	469
Grp Volume(v), veh/h	342	401	406	133	422	431	167	277	133	252	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1799	1781	1777	1812	1162	1870	1585	1459	0	0
Q Serve(g_s), s	16.8	12.8	12.8	6.6	18.8	18.8	5.4	11.6	5.4	3.2	0.0	0.0
Cycle Q Clear(g_c), s	16.8	12.8	12.8	6.6	18.8	18.8	20.2	11.6	5.4	14.9	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.18	1.00		1.00	0.13		0.32
Lane Grp Cap(c), veh/h	382	908	919	167	694	707	278	479	555	419	0	0
V/C Ratio(X)	0.89	0.44	0.44	0.80	0.61	0.61	0.60	0.58	0.24	0.60	0.00	0.00
Avail Cap(c_a), veh/h	475	908	919	265	694	707	303	520	589	453	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.4	13.9	13.9	41.3	27.2	27.2	34.0	29.2	20.8	29.7	0.0	0.0
Incr Delay (d2), s/veh	16.6	1.6	1.5	8.4	3.9	3.9	1.9	0.9	0.2	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	5.2	5.3	3.3	9.1	9.2	3.6	5.2	2.0	5.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	15.4	15.4	49.7	31.1	31.1	36.0	30.2	20.9	31.6	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	D	C	C	C	A	A
Approach Vol, veh/h		1149			986			577			252	
Approach Delay, s/veh		26.0			33.6			29.7			31.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	50.5		27.1	23.3	39.6		27.1
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	13.4	39.1		25.0	24.0	28.5		25.0
Max Q Clear Time (g_c+I1), s	8.6	14.8		16.9	18.8	20.8		22.2
Green Ext Time (p_c), s	0.1	5.5		0.9	0.5	3.3		0.8

Intersection Summary	
HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	168	44	126	88	47	78	493	487	49	293	18
Future Volume (veh/h)	22	168	44	126	88	47	78	493	487	49	293	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	181	47	135	95	51	84	530	524	53	315	19
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	336	284	335	215	116	140	790	764	133	1045	71
Arrive On Green	0.18	0.18	0.18	0.19	0.19	0.19	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1145	615	197	1490	1442	173	1972	135
Grp Volume(v), veh/h	24	181	47	135	0	146	614	0	524	150	0	237
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1760	1688	0	1442	603	0	1678
Q Serve(g_s), s	1.3	10.3	2.9	7.8	0.0	8.6	22.4	0.0	31.4	7.2	0.0	9.0
Cycle Q Clear(g_c), s	1.3	10.3	2.9	7.8	0.0	8.6	31.5	0.0	31.4	38.6	0.0	9.0
Prop In Lane	1.00		1.00	1.00		0.35	0.14		1.00	0.35		0.08
Lane Grp Cap(c), veh/h	320	336	284	335	0	331	929	0	764	361	0	889
V/C Ratio(X)	0.08	0.54	0.17	0.40	0.00	0.44	0.66	0.00	0.69	0.42	0.00	0.27
Avail Cap(c_a), veh/h	320	336	284	335	0	331	929	0	764	361	0	889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.9	43.6	40.6	41.7	0.0	42.1	20.2	0.0	20.3	21.6	0.0	15.0
Incr Delay (d2), s/veh	0.5	6.1	1.2	3.6	0.0	4.2	3.7	0.0	5.0	3.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.3	1.3	3.8	0.0	4.1	12.9	0.0	11.2	3.7	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	49.7	41.8	45.3	0.0	46.3	23.9	0.0	25.3	25.1	0.0	15.8
LnGrp LOS	D	D	D	D	A	D	C	A	C	C	A	B
Approach Vol, veh/h		252			281			1138			387	
Approach Delay, s/veh		47.3			45.8			24.5			19.4	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.0	25.0	66.0	26.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	62.0	21.0	62.0	22.0
Max Q Clear Time (g_c+I1), s	33.5	12.3	40.6	10.6
Green Ext Time (p_c), s	6.3	0.5	1.9	0.6

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	52	473	74	47	6	317	117	161	25	186	60
Future Volume (veh/h)	44	52	473	74	47	6	317	117	161	25	186	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	60	550	95	60	8	220	314	179	29	219	71
Peak Hour Factor	0.86	0.86	0.86	0.78	0.78	0.78	0.90	0.90	0.90	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	573	738	626	381	638	85	632	802	446	216	322	102
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.36	0.36	0.36	0.12	0.12	0.12
Sat Flow, veh/h	1333	1870	1585	811	1616	215	1781	2258	1256	1781	2658	839
Grp Volume(v), veh/h	51	60	550	95	0	68	220	259	234	29	144	146
Grp Sat Flow(s),veh/h/ln	1333	1870	1585	811	0	1832	1781	1870	1644	1781	1777	1719
Q Serve(g_s), s	2.3	1.9	29.9	7.7	0.0	2.2	8.4	9.6	10.0	1.4	7.2	7.6
Cycle Q Clear(g_c), s	4.5	1.9	29.9	9.6	0.0	2.2	8.4	9.6	10.0	1.4	7.2	7.6
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.76	1.00		0.49
Lane Grp Cap(c), veh/h	573	738	626	381	0	723	632	664	584	216	215	208
V/C Ratio(X)	0.09	0.08	0.88	0.25	0.00	0.09	0.35	0.39	0.40	0.13	0.67	0.70
Avail Cap(c_a), veh/h	706	926	784	463	0	906	632	664	584	326	325	314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	17.6	26.1	20.6	0.0	17.7	22.1	22.4	22.5	36.5	39.1	39.2
Incr Delay (d2), s/veh	0.1	0.1	11.7	0.7	0.0	0.1	1.5	1.7	2.1	0.6	7.5	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.8	12.8	1.5	0.0	0.9	3.7	4.4	4.1	0.6	3.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	17.7	37.7	21.3	0.0	17.8	23.6	24.2	24.6	37.1	46.6	48.0
LnGrp LOS	B	B	D	C	A	B	C	C	C	D	D	D
Approach Vol, veh/h		661			163			713			319	
Approach Delay, s/veh		34.5			19.8			24.1			46.4	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	37.0	40.7	15.3	40.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	33.0	46.0	17.0	46.0
Max Q Clear Time (g_c+I1), s	12.0	31.9	9.6	11.6
Green Ext Time (p_c), s	7.2	4.8	1.7	1.9

Intersection Summary	
HCM 6th Ctrl Delay	31.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	967	210	360	892	96	106	343	576	172	505	70
Future Volume (veh/h)	25	967	210	360	892	96	106	343	576	172	505	70
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1099	239	387	959	103	114	369	619	181	532	74
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	1110	240	401	1445	155	141	444	396	191	871	121
Arrive On Green	0.05	0.38	0.38	0.12	0.45	0.45	0.03	0.08	0.08	0.11	0.28	0.28
Sat Flow, veh/h	1781	2905	629	3456	3237	348	1781	1777	1585	1781	3134	435
Grp Volume(v), veh/h	28	670	668	387	526	536	114	369	619	181	301	305
Grp Sat Flow(s),veh/h/ln	1781	1777	1757	1728	1777	1808	1781	1777	1585	1781	1777	1792
Q Serve(g_s), s	1.7	41.9	42.5	12.5	26.1	26.1	7.1	22.9	28.0	11.3	16.5	16.6
Cycle Q Clear(g_c), s	1.7	41.9	42.5	12.5	26.1	26.1	7.1	22.9	28.0	11.3	16.5	16.6
Prop In Lane	1.00		0.36	1.00		0.19	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	92	679	672	401	793	807	141	444	396	191	494	498
V/C Ratio(X)	0.30	0.99	0.99	0.96	0.66	0.66	0.81	0.83	1.56	0.95	0.61	0.61
Avail Cap(c_a), veh/h	159	679	672	401	793	807	175	444	396	191	494	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.60	0.60	0.77	0.77	0.77
Uniform Delay (d), s/veh	51.1	34.3	34.5	49.3	24.4	24.4	53.7	49.0	51.4	49.7	35.2	35.2
Incr Delay (d2), s/veh	0.7	31.1	33.4	35.5	2.4	2.3	10.2	10.5	260.3	42.6	4.3	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	23.4	23.8	7.3	11.3	11.4	3.7	12.2	40.6	7.3	7.7	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.8	65.4	67.9	84.8	26.8	26.7	63.9	59.5	311.7	92.3	39.4	39.5
LnGrp LOS	D	E	E	F	C	C	E	E	F	F	D	D
Approach Vol, veh/h		1366			1449			1102			787	
Approach Delay, s/veh		66.3			42.2			201.6			51.6	
Approach LOS		E			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	32.0	17.0	47.0	12.9	35.1	9.8	54.2
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	12.0	28.0	13.0	* 43	11.0	29.0	10.0	* 46
Max Q Clear Time (g_c+I1), s	13.3	30.0	14.5	44.5	9.1	18.6	3.7	28.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.6	0.0	9.1

Intersection Summary	
HCM 6th Ctrl Delay	88.1
HCM 6th LOS	F

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	171	28	277	371	159	76	706	505	45	915	136
Future Volume (veh/h)	131	171	28	277	371	159	76	706	505	45	915	136
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	201	33	283	403	167	88	998	469	50	1017	151
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.86	0.86	0.86	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	269	45	352	498	204	111	1786	757	75	1711	725
Arrive On Green	0.14	0.14	0.14	0.20	0.20	0.20	0.06	0.48	0.48	0.01	0.15	0.15
Sat Flow, veh/h	1368	1923	323	1781	2523	1032	1781	3741	1585	1781	3741	1585
Grp Volume(v), veh/h	203	0	185	283	297	273	88	998	469	50	1017	151
Grp Sat Flow(s),veh/h/ln	1802	0	1812	1781	1870	1685	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.2	0.0	11.0	17.0	17.0	17.4	5.5	21.3	24.6	3.1	28.4	9.4
Cycle Q Clear(g_c), s	12.2	0.0	11.0	17.0	17.0	17.4	5.5	21.3	24.6	3.1	28.4	9.4
Prop In Lane	0.76		0.18	1.00		0.61	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	0	254	352	369	332	111	1786	757	75	1711	725
V/C Ratio(X)	0.80	0.00	0.73	0.80	0.81	0.82	0.79	0.56	0.62	0.66	0.59	0.21
Avail Cap(c_a), veh/h	370	0	372	429	451	406	127	1786	757	105	1711	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	0.55	0.55	0.55
Uniform Delay (d), s/veh	46.7	0.0	46.1	42.9	42.9	43.0	51.8	20.9	21.7	54.4	37.9	29.8
Incr Delay (d2), s/veh	7.8	0.0	4.0	8.9	8.6	10.6	18.9	0.9	2.7	5.4	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.0	5.2	8.3	8.7	8.2	3.0	9.3	9.5	1.5	14.4	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	0.0	50.1	51.8	51.5	53.6	70.7	21.8	24.4	59.9	38.7	30.1
LnGrp LOS	D	A	D	D	D	D	E	C	C	E	D	C
Approach Vol, veh/h		388			853			1555			1218	
Approach Delay, s/veh		52.4			52.3			25.3			38.5	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	57.5		19.7	11.0	55.2		26.1
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.6	39.4		23.0	8.0	38.0		27.0
Max Q Clear Time (g_c+I1), s	5.1	26.6		14.2	7.5	30.4		19.4
Green Ext Time (p_c), s	0.0	7.1		1.5	0.0	4.3		2.8

Intersection Summary	
HCM 6th Ctrl Delay	37.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	496	295	185	143	0	27	0	752	200	21	1194	0
Future Volume (veh/h)	496	295	185	143	0	27	0	752	200	21	1194	0
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	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	539	321	201	207	0	39	0	906	241	23	1312	0
Peak Hour Factor	0.92	0.92	0.92	0.69	0.69	0.69	0.83	0.83	0.83	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	0	2	0	2	2	2	2	2
Cap, veh/h	1096	341	214	0	0	0	0	1703	452	271	2179	0
Arrive On Green	0.32	0.32	0.32	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.00
Sat Flow, veh/h	3456	1076	674		0		0	2870	738	490	3647	0
Grp Volume(v), veh/h	539	0	522		0.0		0	579	568	23	1312	0
Grp Sat Flow(s),veh/h/ln	1728	0	1749				0	1777	1738	490	1777	0
Q Serve(g_s), s	14.5	0.0	33.4				0.0	21.5	21.6	3.3	26.0	0.0
Cycle Q Clear(g_c), s	14.5	0.0	33.4				0.0	21.5	21.6	24.8	26.0	0.0
Prop In Lane	1.00		0.39				0.00		0.42	1.00		0.00
Lane Grp Cap(c), veh/h	1096	0	555				0	1090	1065	271	2179	0
V/C Ratio(X)	0.49	0.00	0.94				0.00	0.53	0.53	0.08	0.60	0.00
Avail Cap(c_a), veh/h	1142	0	578				0	1090	1065	271	2179	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95				0.00	0.50	0.50	0.47	0.47	0.00
Uniform Delay (d), s/veh	31.8	0.0	38.2				0.0	12.8	12.8	19.9	13.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	22.0				0.0	0.9	1.0	0.3	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	17.5				0.0	8.4	8.3	0.4	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	0.0	60.2				0.0	13.7	13.7	20.2	14.2	0.0
LnGrp LOS	C	A	E				A	B	B	C	B	A
Approach Vol, veh/h		1061						1147			1335	
Approach Delay, s/veh		45.8						13.7			14.3	
Approach LOS		D						B			B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	74.5	40.5	74.5
Change Period (Y+Rc), s	4.0	4.0	4.0
Max Green Setting (Gmax), s	48.0	38.0	48.0
Max Q Clear Time (g_c+I1), s	23.6	35.4	28.0
Green Ext Time (p_c), s	12.0	1.1	12.9

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	269	499	60	53	218	42	210	648	65	122	641	746
Future Volume (veh/h)	269	499	60	53	218	42	210	648	65	122	641	746
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	574	69	56	232	45	253	781	78	133	697	811
Peak Hour Factor	0.87	0.87	0.87	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	497	60	79	312	60	207	1309	131	161	667	595
Arrive On Green	0.14	0.30	0.30	0.04	0.20	0.20	0.12	0.40	0.40	0.09	0.38	0.38
Sat Flow, veh/h	1781	1638	197	1781	1522	295	1781	3263	326	1781	1777	1585
Grp Volume(v), veh/h	309	0	643	56	0	277	253	425	434	133	697	811
Grp Sat Flow(s),veh/h/ln	1781	0	1835	1781	0	1817	1781	1777	1812	1781	1777	1585
Q Serve(g_s), s	16.0	0.0	34.0	3.5	0.0	16.0	13.0	21.1	21.1	8.2	42.1	42.1
Cycle Q Clear(g_c), s	16.0	0.0	34.0	3.5	0.0	16.0	13.0	21.1	21.1	8.2	42.1	42.1
Prop In Lane	1.00		0.11	1.00		0.16	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	557	79	0	372	207	713	727	161	667	595
V/C Ratio(X)	1.21	0.00	1.15	0.71	0.00	0.74	1.22	0.60	0.60	0.83	1.04	1.36
Avail Cap(c_a), veh/h	254	0	557	95	0	389	207	713	727	191	667	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00	0.44	0.44	0.44
Uniform Delay (d), s/veh	48.0	0.0	39.0	52.8	0.0	41.8	49.5	26.4	26.4	50.1	35.0	35.0
Incr Delay (d2), s/veh	99.9	0.0	71.6	17.5	0.0	7.2	135.9	3.7	3.6	10.9	35.8	168.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	0.0	26.1	1.9	0.0	7.9	13.6	9.5	9.7	4.1	24.3	43.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	147.9	0.0	110.6	70.3	0.0	49.0	185.4	30.0	30.0	60.9	70.7	203.1
LnGrp LOS	F	A	F	E	A	D	F	C	C	E	F	F
Approach Vol, veh/h		952			333			1112			1641	
Approach Delay, s/veh		122.7			52.6			65.4			135.3	
Approach LOS		F			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	49.9	8.9	39.0	17.0	47.1	20.0	27.9
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	12.0	42.0	6.0	34.0	13.0	41.0	16.0	24.0
Max Q Clear Time (g_c+I1), s	10.3	23.1	5.5	36.0	15.0	44.1	18.0	18.0
Green Ext Time (p_c), s	0.1	5.4	0.0	0.0	0.0	0.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	106.3
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	110	143	65	92	125	61	2466	10	217	1374	138
Future Volume (veh/h)	164	110	143	65	92	125	61	2466	10	217	1374	138
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	124	161	71	101	137	70	2834	11	236	1493	150
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	134	175	89	257	218	89	2713	842	217	3080	956
Arrive On Green	0.09	0.18	0.18	0.05	0.14	0.14	0.05	0.53	0.53	0.12	0.60	0.60
Sat Flow, veh/h	1781	739	959	1781	1870	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	184	0	285	71	101	137	70	2834	11	236	1493	150
Grp Sat Flow(s),veh/h/ln	1781	0	1698	1781	1870	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	14.0	0.0	24.4	5.8	7.3	12.1	5.8	78.6	0.5	18.0	24.3	6.1
Cycle Q Clear(g_c), s	14.0	0.0	24.4	5.8	7.3	12.1	5.8	78.6	0.5	18.0	24.3	6.1
Prop In Lane	1.00		0.56	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	0	309	89	257	218	89	2713	842	217	3080	956
V/C Ratio(X)	1.09	0.00	0.92	0.79	0.39	0.63	0.79	1.04	0.01	1.09	0.48	0.16
Avail Cap(c_a), veh/h	169	0	342	111	316	268	149	2713	842	217	3080	956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.0	0.0	59.5	69.5	58.2	60.2	69.6	34.7	16.4	65.0	16.5	12.9
Incr Delay (d2), s/veh	96.0	0.0	28.2	26.5	1.0	3.2	1.5	21.4	0.0	87.0	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	13.0	3.3	3.5	5.1	2.7	37.0	0.2	13.4	9.6	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.0	0.0	87.7	96.0	59.1	63.4	71.0	56.1	16.4	152.0	17.0	13.2
LnGrp LOS	F	A	F	F	E	E	E	F	B	F	B	B
Approach Vol, veh/h		469			309			2915			1879	
Approach Delay, s/veh		117.3			69.5			56.3			33.7	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	94.3	18.0	24.4	22.0	83.6	11.4	30.9
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	12.4	79.6	14.0	25.0	18.0	74.0	9.2	29.8
Max Q Clear Time (g_c+I1), s	7.8	26.3	16.0	14.1	20.0	80.6	7.8	26.4
Green Ext Time (p_c), s	0.0	18.2	0.0	0.7	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	54.6
HCM 6th LOS	D

Appendix 4: Cumulative (2040) Plus Specific Plan Intersection Level of Service Worksheets

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

09/20/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	77	79	117	117	195	158	1581	159	510	863	296
Future Volume (veh/h)	44	77	79	117	117	195	158	1581	159	510	863	296
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	96	99	122	183	162	168	1682	169	548	928	318
Peak Hour Factor	0.80	0.80	0.80	0.96	0.96	0.96	0.94	0.94	0.94	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	70	180	160	107	227	193	192	1702	759	439	2195	979
Arrive On Green	0.04	0.10	0.10	0.06	0.12	0.12	0.11	0.48	0.48	0.49	1.00	1.00
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	96	99	122	183	162	168	1682	169	548	928	318
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.6	7.7	9.0	9.0	14.3	15.0	13.9	70.2	9.3	37.0	0.0	0.0
Cycle Q Clear(g_c), s	4.6	7.7	9.0	9.0	14.3	15.0	13.9	70.2	9.3	37.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	180	160	107	227	193	192	1702	759	439	2195	979
V/C Ratio(X)	0.78	0.53	0.62	1.14	0.80	0.84	0.87	0.99	0.22	1.25	0.42	0.32
Avail Cap(c_a), veh/h	88	326	291	107	363	307	281	1702	759	439	2195	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	71.4	64.1	64.6	70.5	64.2	64.5	65.9	38.7	22.8	38.0	0.0	0.0
Incr Delay (d2), s/veh	29.1	2.5	3.8	129.3	6.6	10.8	18.2	19.2	0.7	113.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.6	3.8	8.0	7.3	6.7	7.3	34.6	3.7	27.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.5	66.5	68.5	199.8	70.8	75.3	84.1	57.9	23.5	151.1	0.1	0.1
LnGrp LOS	F	E	E	F	E	E	F	E	C	F	A	A
Approach Vol, veh/h		250			467			2019			1794	
Approach Delay, s/veh		74.8			106.1			57.2			46.2	
Approach LOS		E			F			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	97.7	9.9	22.2	41.0	76.8	13.0	19.2
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	23.7	72.8	7.4	29.1	37.0	59.5	9.0	27.5
Max Q Clear Time (g_c+I1), s	15.9	2.0	6.6	17.0	39.0	72.2	11.0	11.0
Green Ext Time (p_c), s	0.3	10.5	0.0	1.2	0.0	0.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	58.8
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

09/20/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	594	44	320	430	78	0	1579	178	0	638	553
Future Volume (vph)	243	594	44	320	430	78	0	1579	178	0	638	553
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95	1.00		0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		3539	1583		3539	1583
Flt Permitted	0.37	1.00	1.00	0.22	1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)	694	1863	1583	418	1863	1583		3539	1583		3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	264	646	48	340	457	83	0	1698	191	0	709	614
RTOR Reduction (vph)	0	0	14	0	0	11	0	0	40	0	0	0
Lane Group Flow (vph)	264	646	34	340	457	72	0	1698	151	0	709	614
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA	Perm		NA	custom
Protected Phases		4			4			6			6	
Permitted Phases	4		4	4		4		2	6			2
Actuated Green, G (s)	48.5	48.5	48.5	48.5	48.5	48.5		39.5	39.5		39.5	38.0
Effective Green, g (s)	48.5	48.5	48.5	48.5	48.5	48.5		39.5	39.5		39.5	38.0
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51		0.42	0.42		0.42	0.40
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	354	951	808	213	951	808		1471	658		1471	633
v/s Ratio Prot		0.35			0.25			c0.48			0.20	
v/s Ratio Perm	0.38		0.02	c0.81		0.05			0.10			0.39
v/c Ratio	0.75	0.68	0.04	1.60	0.48	0.09		1.15	0.23		0.48	0.97
Uniform Delay, d1	18.4	17.4	11.6	23.2	15.1	11.9		27.8	17.9		20.3	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	8.3	1.9	0.0	289.3	0.4	0.0		77.6	0.8		1.1	29.1
Delay (s)	26.7	19.4	11.7	312.5	15.5	12.0		105.4	18.7		21.4	57.1
Level of Service	C	B	B	F	B	B		F	B		C	E
Approach Delay (s)		21.0			129.9			96.6			38.0	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	72.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	292	32	927	664	124	31	1394	328	494	499	9
Future Volume (veh/h)	239	292	32	927	664	124	31	1394	328	494	499	9
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	260	317	35	1173	841	128	32	1452	342	537	542	10
Peak Hour Factor	0.92	0.92	0.92	0.79	0.79	0.97	0.96	0.96	0.96	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	756	84	441	725	110	368	1190	272	103	1479	27
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	580	1655	183	1029	1586	241	856	2871	657	263	3570	66
Grp Volume(v), veh/h	260	0	352	1173	0	969	32	883	911	537	270	282
Grp Sat Flow(s),veh/h/ln	580	0	1837	1029	0	1827	856	1777	1752	263	1777	1859
Q Serve(g_s), s	0.0	0.0	9.0	23.0	0.0	32.0	1.9	29.0	29.0	0.0	7.3	7.3
Cycle Q Clear(g_c), s	32.0	0.0	9.0	32.0	0.0	32.0	9.2	29.0	29.0	29.0	7.3	7.3
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.38	1.00		0.04
Lane Grp Cap(c), veh/h	103	0	840	441	0	835	368	736	726	103	736	770
V/C Ratio(X)	2.53	0.00	0.42	2.66	0.00	1.16	0.09	1.20	1.26	5.22	0.37	0.37
Avail Cap(c_a), veh/h	103	0	840	441	0	835	368	736	726	103	736	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.00	0.76	1.00	0.00	1.00	0.09	0.09	0.09	0.48	0.48	0.48
Uniform Delay (d), s/veh	35.0	0.0	12.8	26.2	0.0	19.0	17.3	20.5	20.5	35.0	14.2	14.2
Incr Delay (d2), s/veh	708.8	0.0	0.3	753.7	0.0	85.3	0.0	90.9	116.1	1909.7	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.0	0.0	3.4	99.6	0.0	31.6	0.4	29.3	33.9	56.3	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	743.8	0.0	13.0	779.8	0.0	104.3	17.4	111.4	136.6	1944.7	14.8	14.8
LnGrp LOS	F	A	B	F	A	F	B	F	F	F	B	B
Approach Vol, veh/h		612			2142			1826			1089	
Approach Delay, s/veh		323.5			474.2			122.3			966.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	36.0	34.0	36.0
Change Period (Y+Rc), s	5.0	4.0	5.0	4.0
Max Green Setting (Gmax), s	29.0	32.0	29.0	32.0
Max Q Clear Time (g_c+I1), s	31.0	34.0	31.0	34.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	439.2
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	292	1	98	354	394	12	1167	4	0	1169	301
Future Volume (veh/h)	206	292	1	98	354	394	12	1167	4	0	1169	301
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	215	304	1	102	369	410	12	1216	4	0	1218	314
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	137	889	3	514	386	429	65	3093	1427	0	3198	1427
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.90	0.90	0.90	0.00	0.90	0.90
Sat Flow, veh/h	693	1863	6	1074	809	899	9	3437	1585	0	3647	1585
Grp Volume(v), veh/h	215	0	305	102	0	779	652	576	4	0	1218	314
Grp Sat Flow(s),veh/h/ln	693	0	1869	1074	0	1709	1829	1617	1585	0	1777	1585
Q Serve(g_s), s	2.5	0.0	6.6	4.3	0.0	28.5	0.0	3.6	0.0	0.0	3.4	1.6
Cycle Q Clear(g_c), s	31.0	0.0	6.6	10.9	0.0	28.5	3.5	3.6	0.0	0.0	3.4	1.6
Prop In Lane	1.00		0.00	1.00		0.53	0.02		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	137	0	891	514	0	815	1702	1455	1427	0	3198	1427
V/C Ratio(X)	1.56	0.00	0.34	0.20	0.00	0.96	0.38	0.40	0.00	0.00	0.38	0.22
Avail Cap(c_a), veh/h	137	0	891	514	0	815	1702	1455	1427	0	3198	1427
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	0.76	0.00	0.76	1.00	1.00	1.00	0.00	0.09	0.09
Uniform Delay (d), s/veh	32.3	0.0	10.6	14.0	0.0	16.3	0.5	0.5	0.3	0.0	0.5	0.4
Incr Delay (d2), s/veh	280.6	0.0	0.1	0.1	0.0	17.9	0.7	0.8	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	0.0	2.4	1.0	0.0	13.4	0.3	0.3	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	312.9	0.0	10.7	14.2	0.0	34.2	1.2	1.3	0.3	0.0	0.5	0.4
LnGrp LOS	F	A	B	B	A	C	A	A	A	A	A	A
Approach Vol, veh/h		520			881			1232			1532	
Approach Delay, s/veh		135.6			31.9			1.2			0.5	
Approach LOS		F			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.5		35.5		64.5		35.5				
Change Period (Y+Rc), s		5.0		* 4.5		* 5		4.5				
Max Green Setting (Gmax), s		25.0		* 31		* 26		30.5				
Max Q Clear Time (g_c+I1), s		5.6		33.0		5.4		30.5				
Green Ext Time (p_c), s		11.3		0.0		10.5		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	702	285	899	862	0	1268
Future Volume (veh/h)	702	285	899	862	0	1268
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	0	1870
Adj Flow Rate, veh/h	739	300	927	889	0	1378
Peak Hour Factor	0.95	0.95	0.97	0.97	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2
Cap, veh/h	763	679	1597	713	0	1597
Arrive On Green	0.43	0.43	0.45	0.45	0.00	0.45
Sat Flow, veh/h	1781	1585	3647	1585	0	3741
Grp Volume(v), veh/h	739	300	927	889	0	1378
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	0	1777
Q Serve(g_s), s	36.5	12.0	17.5	40.5	0.0	31.4
Cycle Q Clear(g_c), s	36.5	12.0	17.5	40.5	0.0	31.4
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	763	679	1597	713	0	1597
V/C Ratio(X)	0.97	0.44	0.58	1.25	0.00	0.86
Avail Cap(c_a), veh/h	764	680	1597	713	0	1597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	18.1	18.4	24.8	0.0	22.3
Incr Delay (d2), s/veh	4.7	0.0	1.5	123.0	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	4.2	7.2	38.4	0.0	13.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.8	18.2	20.0	147.8	0.0	28.7
LnGrp LOS	C	B	B	F	A	C
Approach Vol, veh/h	1039		1816			1378
Approach Delay, s/veh	26.5		82.5			28.7
Approach LOS	C		F			C

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		47.0				47.0	43.0
Change Period (Y+Rc), s		6.5				6.5	4.5
Max Green Setting (Gmax), s		40.4				40.4	38.6
Max Q Clear Time (g_c+I1), s		42.5				33.4	38.5
Green Ext Time (p_c), s		0.0				4.9	0.1

Intersection Summary	
HCM 6th Ctrl Delay	51.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	783	75	414	578	3	17	152	113	0	174	431
Future Volume (veh/h)	99	783	75	414	578	3	17	152	113	0	174	431
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	396	3132	300	422	590	3	30	271	202	0	210	519
Peak Hour Factor	0.25	0.25	0.25	0.98	0.98	0.98	0.56	0.56	0.56	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1010	856	96	1010	856	547	803	598	96	385	952
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.81	0.81	0.81	0.00	0.81	0.81
Sat Flow, veh/h	824	1870	1585	51	1870	1585	726	995	742	921	478	1180
Grp Volume(v), veh/h	396	3132	300	422	590	3	30	0	473	0	0	729
Grp Sat Flow(s),veh/h/ln	824	1870	1585	51	1870	1585	726	0	1737	921	0	1658
Q Serve(g_s), s	24.6	40.5	8.1	0.0	15.9	0.1	1.2	0.0	5.4	0.0	0.0	11.4
Cycle Q Clear(g_c), s	40.5	40.5	8.1	40.5	15.9	0.1	15.2	0.0	5.4	0.0	0.0	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		0.71
Lane Grp Cap(c), veh/h	366	1010	856	96	1010	856	547	0	1401	96	0	1337
V/C Ratio(X)	1.08	3.10	0.35	4.40	0.58	0.00	0.05	0.00	0.34	0.00	0.00	0.55
Avail Cap(c_a), veh/h	366	1010	856	96	1010	856	547	0	1401	96	0	1337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.56	0.56	0.56	0.90	0.00	0.90	0.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	17.2	9.8	37.5	11.6	8.0	5.6	0.0	1.9	0.0	0.0	2.5
Incr Delay (d2), s/veh	57.6	946.8	0.1	1541.6	0.5	0.0	0.2	0.0	0.6	0.0	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	280.3	2.5	42.8	5.9	0.0	0.2	0.0	1.0	0.0	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.0	964.0	9.9	1579.1	12.1	8.0	5.8	0.0	2.5	0.0	0.0	4.1
LnGrp LOS	F	F	A	F	B	A	A	A	A	A	A	A
Approach Vol, veh/h		3828			1015			503			729	
Approach Delay, s/veh		798.4			663.6			2.7			4.1	
Approach LOS		F			F			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	65.0	45.0	65.0	45.0
Change Period (Y+Rc), s	3.5	4.5	3.5	* 4.5
Max Green Setting (Gmax), s	27.5	39.5	27.5	* 41
Max Q Clear Time (g_c+I1), s	17.2	42.5	13.4	42.5
Green Ext Time (p_c), s	2.4	0.0	4.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	614.7
HCM 6th LOS	F

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	539	5	7	692	6	7	191	15	9	586	37
Future Volume (veh/h)	96	539	5	7	692	6	7	191	15	9	586	37
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	573	5	7	736	6	7	203	16	10	623	39
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	914	8	334	915	7	141	656	52	460	667	42
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	718	1851	16	836	1853	15	773	1711	135	1162	1742	109
Grp Volume(v), veh/h	102	0	578	7	0	742	7	0	219	10	0	662
Grp Sat Flow(s),veh/h/ln	718	0	1867	836	0	1868	773	0	1846	1162	0	1851
Q Serve(g_s), s	9.0	0.0	14.8	0.4	0.0	21.7	0.6	0.0	5.4	0.4	0.0	22.3
Cycle Q Clear(g_c), s	30.7	0.0	14.8	15.2	0.0	21.7	22.9	0.0	5.4	5.8	0.0	22.3
Prop In Lane	1.00		0.01	1.00		0.01	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	226	0	922	334	0	922	141	0	707	460	0	709
V/C Ratio(X)	0.45	0.00	0.63	0.02	0.00	0.80	0.05	0.00	0.31	0.02	0.00	0.93
Avail Cap(c_a), veh/h	226	0	922	334	0	922	143	0	710	461	0	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	0.09	0.00	0.09	0.99	0.00	0.99	0.09	0.00	0.09
Uniform Delay (d), s/veh	26.7	0.0	12.1	17.6	0.0	13.8	30.2	0.0	14.0	16.1	0.0	19.2
Incr Delay (d2), s/veh	6.2	0.0	3.1	0.0	0.0	0.5	0.1	0.0	0.2	0.0	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	6.1	0.1	0.0	7.8	0.1	0.0	2.1	0.1	0.0	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.0	0.0	15.2	17.6	0.0	14.3	30.4	0.0	14.3	16.1	0.0	21.9
LnGrp LOS	C	A	B	B	A	B	C	A	B	B	A	C
Approach Vol, veh/h		680			749			226			672	
Approach Delay, s/veh		17.9			14.4			14.8			21.8	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	28.9	36.1	28.9	36.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	32.0	25.0	32.0
Max Q Clear Time (g_c+I1), s	24.9	32.7	24.3	23.7
Green Ext Time (p_c), s	0.0	0.0	0.3	3.3

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	474	77	114	526	11	16	140	0	9	415	163
Future Volume (veh/h)	57	474	77	114	526	11	16	140	0	9	415	163
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	494	80	119	548	11	17	146	0	9	432	170
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	876	743	364	876	743	179	705	0	534	481	189
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.38	0.38	0.00	0.38	0.38	0.38
Sat Flow, veh/h	850	1870	1585	839	1870	1585	817	1870	0	1242	1277	503
Grp Volume(v), veh/h	59	494	80	119	548	11	17	146	0	9	0	602
Grp Sat Flow(s),veh/h/ln	850	1870	1585	839	1870	1585	817	1870	0	1242	0	1780
Q Serve(g_s), s	3.1	10.5	1.6	6.6	12.1	0.2	1.1	2.9	0.0	0.3	0.0	17.5
Cycle Q Clear(g_c), s	15.2	10.5	1.6	17.1	12.1	0.2	18.6	2.9	0.0	3.2	0.0	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.28
Lane Grp Cap(c), veh/h	342	876	743	364	876	743	179	705	0	534	0	671
V/C Ratio(X)	0.17	0.56	0.11	0.33	0.63	0.01	0.10	0.21	0.00	0.02	0.00	0.90
Avail Cap(c_a), veh/h	342	876	743	364	876	743	212	782	0	585	0	744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.49	0.49	0.49	1.00	1.00	0.00	0.24	0.00	0.24
Uniform Delay (d), s/veh	16.7	10.6	8.2	16.7	11.0	7.8	24.9	11.6	0.0	12.7	0.0	16.1
Incr Delay (d2), s/veh	0.8	2.0	0.2	0.3	0.7	0.0	0.1	0.1	0.0	0.0	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.0	0.5	1.2	4.2	0.1	0.2	1.1	0.0	0.1	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	12.5	8.4	17.0	11.7	7.8	25.0	11.6	0.0	12.7	0.0	19.5
LnGrp LOS	B	B	A	B	B	A	C	B	A	B	A	B
Approach Vol, veh/h		633			678			163			611	
Approach Delay, s/veh		12.5			12.5			13.0			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.7	30.3	24.7	30.3
Change Period (Y+Rc), s	4.0	* 4.5	4.0	4.5
Max Green Setting (Gmax), s	23.0	* 24	23.0	23.5
Max Q Clear Time (g_c+I1), s	20.6	17.2	19.5	19.1
Green Ext Time (p_c), s	0.1	2.7	1.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	208	44	774	188	64	78	637	712	37	1259	682
Future Volume (veh/h)	54	208	44	774	188	64	78	637	712	37	1259	682
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	226	48	815	198	67	85	692	774	40	1354	733
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	258	219	559	541	183	50	845	754	50	1095	543
Arrive On Green	0.05	0.14	0.14	0.31	0.40	0.40	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1781	1870	1585	1781	1337	452	198	1777	1585	362	2302	1140
Grp Volume(v), veh/h	59	226	48	815	0	265	85	692	774	40	1017	1070
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1789	198	1777	1585	362	1777	1665
Q Serve(g_s), s	4.7	17.2	3.9	45.5	0.0	15.0	0.0	48.5	69.0	0.0	69.0	69.0
Cycle Q Clear(g_c), s	4.7	17.2	3.9	45.5	0.0	15.0	69.0	48.5	69.0	69.0	69.0	69.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	84	258	219	559	0	724	50	845	754	50	845	792
V/C Ratio(X)	0.70	0.88	0.22	1.46	0.00	0.37	1.71	0.82	1.03	0.81	1.20	1.35
Avail Cap(c_a), veh/h	332	348	295	559	0	724	50	845	754	50	845	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.00	0.80	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.1	61.3	55.6	49.8	0.0	30.2	72.5	32.6	38.0	72.5	38.0	38.0
Incr Delay (d2), s/veh	10.1	16.9	0.5	214.0	0.0	0.2	328.0	0.9	17.5	78.9	102.4	166.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	9.4	1.6	53.4	0.0	6.6	6.4	20.9	29.9	2.6	53.5	64.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.2	78.2	56.1	263.8	0.0	30.4	400.5	33.5	55.5	151.4	140.5	204.2
LnGrp LOS	E	E	E	F	A	C	F	C	F	F	F	F
Approach Vol, veh/h		333			1080			1551			2127	
Approach Delay, s/veh		75.0			206.5			64.6			172.7	
Approach LOS		E			F			E			F	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		72.5	10.3	62.2		72.5	49.0	23.5				
Change Period (Y+Rc), s		3.5	3.5	3.5		3.5	3.5	3.5				
Max Green Setting (Gmax), s		62.0	27.0	45.5		62.0	45.5	27.0				
Max Q Clear Time (g_c+I1), s		71.0	6.7	17.0		71.0	47.5	19.2				
Green Ext Time (p_c), s		0.0	0.1	1.7		0.0	0.0	0.8				

Intersection Summary	
HCM 6th Ctrl Delay	140.6
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	78	118	71	639	26	42	1225	542	21	1697	358
Future Volume (veh/h)	178	78	118	71	639	26	42	1225	542	21	1697	358
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	193	85	128	76	680	28	46	1332	589	24	1907	402
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	327	493	532	866	36	51	1121	463	51	1344	274
Arrive On Green	0.49	0.49	0.49	0.49	0.49	0.49	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	741	674	1014	1168	1784	73	159	2453	1012	233	2941	598
Grp Volume(v), veh/h	193	0	213	76	0	708	46	938	983	24	1125	1184
Grp Sat Flow(s),veh/h/ln	741	0	1688	1168	0	1857	159	1777	1688	233	1777	1763
Q Serve(g_s), s	23.6	0.0	10.4	5.7	0.0	44.4	0.0	64.0	64.0	0.0	64.0	64.0
Cycle Q Clear(g_c), s	68.0	0.0	10.4	16.1	0.0	44.4	64.0	64.0	64.0	64.0	64.0	64.0
Prop In Lane	1.00		0.60	1.00		0.04	1.00		0.60	1.00		0.34
Lane Grp Cap(c), veh/h	176	0	820	532	0	902	51	812	772	51	812	806
V/C Ratio(X)	1.09	0.00	0.26	0.14	0.00	0.78	0.89	1.16	1.27	0.47	1.38	1.47
Avail Cap(c_a), veh/h	176	0	820	532	0	902	51	812	772	51	812	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.51	0.00	0.51	0.09	0.09	0.09	0.09	0.09	0.09
Uniform Delay (d), s/veh	61.6	0.0	21.2	25.9	0.0	29.9	70.0	38.0	38.0	70.0	38.0	38.0
Incr Delay (d2), s/veh	51.0	0.0	0.0	0.1	0.0	2.4	19.1	71.4	123.9	2.7	173.9	211.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	4.2	1.6	0.0	20.2	1.9	43.4	52.5	0.9	66.5	74.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	112.6	0.0	21.2	26.0	0.0	32.3	89.1	109.4	161.9	72.7	211.9	249.9
LnGrp LOS	F	A	C	C	A	C	F	F	F	E	F	F
Approach Vol, veh/h		406			784			1967			2333	
Approach Delay, s/veh		64.7			31.7			135.1			229.8	
Approach LOS		E			C			F			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		68.0		72.0		68.0		72.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		64.0		68.0		64.0		68.0				
Max Q Clear Time (g_c+I1), s		66.0		70.0		66.0		46.4				
Green Ext Time (p_c), s		0.0		0.0		0.0		5.5				

Intersection Summary												
HCM 6th Ctrl Delay			155.4									
HCM 6th LOS			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	388	53	59	665	0	39	0	1377	491	64	1811	0
Future Volume (veh/h)	388	53	59	665	0	39	0	1377	491	64	1811	0
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	417	57	63	715	0	42	0	1481	528	69	1947	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	595	338	374	522	0	660	48	1367	459	48	1860	0
Arrive On Green	0.42	0.42	0.42	0.42	0.00	0.42	0.00	0.52	0.52	0.52	0.52	0.00
Sat Flow, veh/h	1365	812	897	1272	0	1585	227	2612	878	213	3647	0
Grp Volume(v), veh/h	417	0	120	715	0	42	0	979	1030	69	1947	0
Grp Sat Flow(s),veh/h/ln	1365	0	1709	1272	0	1585	227	1777	1712	213	1777	0
Q Serve(g_s), s	39.5	0.0	6.6	55.9	0.0	2.4	0.0	78.5	78.5	0.0	78.5	0.0
Cycle Q Clear(g_c), s	41.9	0.0	6.6	62.5	0.0	2.4	0.0	78.5	78.5	78.5	78.5	0.0
Prop In Lane	1.00		0.52	1.00		1.00	1.00		0.51	1.00		0.00
Lane Grp Cap(c), veh/h	595	0	712	522	0	660	48	930	896	48	1860	0
V/C Ratio(X)	0.70	0.00	0.17	1.37	0.00	0.06	0.00	1.05	1.15	1.44	1.05	0.00
Avail Cap(c_a), veh/h	600	0	718	522	0	660	48	930	896	48	1860	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	0.76	0.00	0.76	0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	38.8	0.0	27.4	49.6	0.0	26.2	0.0	35.8	35.8	75.0	35.8	0.0
Incr Delay (d2), s/veh	3.3	0.0	0.1	175.8	0.0	0.0	0.0	44.3	80.3	207.4	22.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	2.8	45.7	0.0	0.9	0.0	44.5	51.9	4.6	39.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	0.0	27.6	225.4	0.0	26.2	0.0	80.1	116.0	282.4	58.7	0.0
LnGrp LOS	D	A	C	F	A	C	A	F	F	F	F	A
Approach Vol, veh/h		537			757			2009			2016	
Approach Delay, s/veh		38.9			214.4			98.5			66.3	
Approach LOS		D			F			F			E	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	83.0	67.0	83.0	67.0
Change Period (Y+Rc), s	4.5	* 4.5	4.5	4.5
Max Green Setting (Gmax), s	78.5	* 63	78.5	62.5
Max Q Clear Time (g_c+I1), s	80.5	43.9	80.5	64.5
Green Ext Time (p_c), s	0.0	2.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	96.8
HCM 6th LOS	F

Notes

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	276	382	260	1591	1560	974
Future Volume (veh/h)	276	382	260	1591	1560	974
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	345	478	283	1729	1660	1036
Peak Hour Factor	0.80	0.80	0.92	0.92	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	412	367	90	2310	1423	803
Arrive On Green	0.23	0.23	0.65	0.65	0.65	0.65
Sat Flow, veh/h	1781	1585	108	3647	2283	1235
Grp Volume(v), veh/h	345	478	283	1729	1313	1383
Grp Sat Flow(s),veh/h/ln	1781	1585	108	1777	1777	1648
Q Serve(g_s), s	14.8	18.5	0.0	26.5	52.0	52.0
Cycle Q Clear(g_c), s	14.8	18.5	52.0	26.5	52.0	52.0
Prop In Lane	1.00	1.00	1.00			0.75
Lane Grp Cap(c), veh/h	412	367	90	2310	1155	1071
V/C Ratio(X)	0.84	1.30	3.14	0.75	1.14	1.29
Avail Cap(c_a), veh/h	412	367	90	2310	1155	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.3	30.7	40.0	9.5	14.0	14.0
Incr Delay (d2), s/veh	14.1	155.4	993.5	2.3	72.7	137.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	22.6	26.6	8.9	39.4	56.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.4	186.1	1033.5	11.8	86.7	151.9
LnGrp LOS	D	F	F	B	F	F
Approach Vol, veh/h	823			2012	2696	
Approach Delay, s/veh	126.3			155.5	120.1	
Approach LOS	F			F	F	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		57.0		23.0		57.0
Change Period (Y+Rc), s		5.0		4.5		5.0
Max Green Setting (Gmax), s		52.0		18.5		52.0
Max Q Clear Time (g_c+I1), s		54.0		20.5		54.0
Green Ext Time (p_c), s		0.0		0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	133.9
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	133	475	745	211	11	251	1852	165	11	1859	178
Future Volume (veh/h)	14	133	475	745	211	11	251	1852	165	11	1859	178
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	162	579	898	254	13	292	2153	192	12	2043	196
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	530	484	247	539	28	257	2705	239	21	2055	195
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.14	0.57	0.57	0.01	0.43	0.43
Sat Flow, veh/h	81	1735	1585	718	1764	90	1781	4777	421	1781	4742	451
Grp Volume(v), veh/h	179	0	579	898	0	267	292	1528	817	12	1461	778
Grp Sat Flow(s),veh/h/ln	1815	0	1585	718	0	1854	1781	1702	1794	1781	1702	1789
Q Serve(g_s), s	0.0	0.0	27.5	20.9	0.0	10.5	13.0	31.8	32.7	0.6	38.4	39.0
Cycle Q Clear(g_c), s	6.6	0.0	27.5	27.5	0.0	10.5	13.0	31.8	32.7	0.6	38.4	39.0
Prop In Lane	0.09		1.00	1.00		0.05	1.00		0.23	1.00		0.25
Lane Grp Cap(c), veh/h	599	0	484	247	0	567	257	1928	1016	21	1475	775
V/C Ratio(X)	0.30	0.00	1.20	3.64	0.00	0.47	1.13	0.79	0.80	0.58	0.99	1.00
Avail Cap(c_a), veh/h	599	0	484	247	0	567	257	1928	1016	79	1475	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	0.0	31.3	37.9	0.0	25.4	38.5	15.4	15.5	44.3	25.3	25.5
Incr Delay (d2), s/veh	0.1	0.0	106.7	1198.3	0.0	0.2	97.4	3.4	6.8	9.4	21.3	33.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	24.4	87.5	0.0	4.5	12.5	12.0	13.9	0.3	18.8	22.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	0.0	138.0	1236.2	0.0	25.6	135.9	18.8	22.3	53.7	46.6	58.6
LnGrp LOS	C	A	F	F	A	C	F	B	C	D	D	F
Approach Vol, veh/h		758			1165			2637			2251	
Approach Delay, s/veh		111.1			958.8			32.9			50.8	
Approach LOS		F			F			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	55.0		31.0	16.0	43.0		31.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	4.0	48.0		27.5	13.0	39.0		27.5
Max Q Clear Time (g_c+I1), s	2.6	34.7		29.5	15.0	41.0		29.5
Green Ext Time (p_c), s	0.0	12.5		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	205.9
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
15: Watkins Street & B Street

09/21/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	164	37	801	224	14	113	34	184	26	10	24
Future Volume (veh/h)	1	164	37	801	224	14	113	34	184	26	10	24
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	174	39	852	238	15	120	36	196	28	11	26
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	649	145	735	764	48	529	92	502	392	130	580
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1	1479	330	1168	1741	110	1371	252	1372	658	356	1585
Grp Volume(v), veh/h	214	0	0	852	0	253	120	0	232	39	0	26
Grp Sat Flow(s),veh/h/ln	1810	0	0	1168	0	1851	1371	0	1623	1014	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	14.9	0.0	3.6	2.9	0.0	4.3	0.1	0.0	0.4
Cycle Q Clear(g_c), s	3.1	0.0	0.0	18.0	0.0	3.6	7.4	0.0	4.3	4.4	0.0	0.4
Prop In Lane	0.00		0.18	1.00		0.06	1.00		0.84	0.72		1.00
Lane Grp Cap(c), veh/h	883	0	0	735	0	812	529	0	594	522	0	580
V/C Ratio(X)	0.24	0.00	0.00	1.16	0.00	0.31	0.23	0.00	0.39	0.07	0.00	0.04
Avail Cap(c_a), veh/h	883	0	0	735	0	812	529	0	594	522	0	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.51	0.00	0.51	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.3	0.0	0.0	13.2	0.0	7.5	12.4	0.0	9.6	8.6	0.0	8.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	80.0	0.0	0.1	1.0	0.0	1.9	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	22.3	0.0	1.0	0.9	0.0	1.5	0.2	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	0.0	0.0	93.2	0.0	7.6	13.4	0.0	11.5	8.9	0.0	8.5
LnGrp LOS	A	A	A	F	A	A	B	A	B	A	A	A
Approach Vol, veh/h		214			1105			352			65	
Approach Delay, s/veh		7.5			73.6			12.2			8.7	
Approach LOS		A			E			B			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.0		22.0		19.0		22.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		15.0		18.0		15.0		5.0				
Max Q Clear Time (g_c+I1), s		6.4		20.0		9.4		5.1				
Green Ext Time (p_c), s		0.1		0.0		0.9		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			50.6									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	95	147	0	0	0	1	280	395	10	828	9
Future Volume (veh/h)	55	95	147	0	0	0	1	280	395	10	828	9
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	104	162	0	0	0	1	308	434	11	910	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	718	221	345	120	628	0	60	362	509	271	965	11
Arrive On Green	0.34	0.34	0.34	0.00	0.00	0.00	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1781	659	1027	1113	1870	0	0	693	974	718	1846	20
Grp Volume(v), veh/h	60	0	266	0	0	0	743	0	0	11	0	920
Grp Sat Flow(s),veh/h/ln	1781	0	1686	1113	1870	0	1667	0	0	718	0	1867
Q Serve(g_s), s	1.4	0.0	7.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	27.8
Cycle Q Clear(g_c), s	1.4	0.0	7.5	0.0	0.0	0.0	28.2	0.0	0.0	1.4	0.0	27.8
Prop In Lane	1.00		0.61	1.00		0.00	0.00		0.58	1.00		0.01
Lane Grp Cap(c), veh/h	718	0	566	120	628	0	931	0	0	271	0	976
V/C Ratio(X)	0.08	0.00	0.47	0.00	0.00	0.00	0.80	0.00	0.00	0.04	0.00	0.94
Avail Cap(c_a), veh/h	718	0	566	120	628	0	977	0	0	290	0	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	15.7	0.0	0.0	0.0	12.2	0.0	0.0	7.2	0.0	13.5
Incr Delay (d2), s/veh	0.2	0.0	2.8	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	15.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	3.0	0.0	0.0	0.0	7.8	0.0	0.0	0.1	0.0	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	18.5	0.0	0.0	0.0	16.3	0.0	0.0	7.2	0.0	28.9
LnGrp LOS	B	A	B	A	A	A	B	A	A	A	A	C
Approach Vol, veh/h		326			0			743			931	
Approach Delay, s/veh		17.7			0.0			16.3			28.6	
Approach LOS		B						B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	35.4	24.6	35.4	24.6
Change Period (Y+Rc), s	4.0	* 4.5	4.0	4.5
Max Green Setting (Gmax), s	33.0	* 19	33.0	18.5
Max Q Clear Time (g_c+I1), s	30.2	9.5	29.8	0.0
Green Ext Time (p_c), s	1.1	0.8	1.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

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

HCM 6th Signalized Intersection Summary
17: Watkins Street & Jackson Street

09/21/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1673	181	0	2132	49	405	147	98	2	46	713
Future Volume (veh/h)	405	1673	181	0	2132	49	405	147	98	2	46	713
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	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	426	1761	191	0	2244	52	426	155	103	2	48	751
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	201	2293	248	0	1802	42	366	215	143	16	392	346
Arrive On Green	0.11	0.49	0.49	0.00	0.35	0.35	0.21	0.21	0.21	0.22	0.22	0.22
Sat Flow, veh/h	1781	4678	505	0	5303	119	1781	1048	697	75	1792	1585
Grp Volume(v), veh/h	426	1279	673	0	1486	810	426	0	258	50	0	751
Grp Sat Flow(s),veh/h/ln	1781	1702	1779	0	1702	1849	1781	0	1745	1867	0	1585
Q Serve(g_s), s	17.0	46.4	46.8	0.0	53.0	53.0	31.0	0.0	20.8	3.2	0.0	33.0
Cycle Q Clear(g_c), s	17.0	46.4	46.8	0.0	53.0	53.0	31.0	0.0	20.8	3.2	0.0	33.0
Prop In Lane	1.00		0.28	0.00		0.06	1.00		0.40	0.04		1.00
Lane Grp Cap(c), veh/h	201	1668	872	0	1195	649	366	0	358	408	0	346
V/C Ratio(X)	2.12	0.77	0.77	0.00	1.24	1.25	1.16	0.00	0.72	0.12	0.00	2.17
Avail Cap(c_a), veh/h	201	1668	872	0	1195	649	366	0	358	408	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.0	31.5	31.6	0.0	49.0	49.0	60.0	0.0	56.0	47.4	0.0	59.0
Incr Delay (d2), s/veh	522.3	2.2	4.3	0.0	116.8	124.3	100.0	0.0	11.8	0.1	0.0	535.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	36.9	19.5	21.0	0.0	41.8	46.7	24.2	0.0	10.4	1.5	0.0	77.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	589.3	33.7	35.8	0.0	165.8	173.3	160.0	0.0	67.8	47.5	0.0	594.1
LnGrp LOS	F	C	D	A	F	F	F	A	E	D	A	F
Approach Vol, veh/h		2378			2296			684			801	
Approach Delay, s/veh		133.8			168.5			125.2			560.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		35.0		79.0		37.0	21.0	58.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green Setting (Gmax), s		31.0		74.0		33.0	17.0	53.0				
Max Q Clear Time (g_c+I1), s		33.0		48.8		35.0	19.0	55.0				
Green Ext Time (p_c), s		0.0		16.6		0.0	0.0	0.0				

Intersection Summary	
HCM 6th Ctrl Delay	201.2
HCM 6th LOS	F

Intersection	
Intersection Delay, s/veh	73.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	64	19	114	121	126	0	0	0	136	138	442
Future Vol, veh/h	0	64	19	114	121	126	0	0	0	136	138	442
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	74	22	133	141	147	0	0	0	158	160	514
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	11.5	13.9	110.2
HCM LOS	B	B	F

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	65%	0%	19%
Vol Thru, %	77%	35%	32%	19%
Vol Right, %	23%	0%	68%	62%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	83	175	187	716
LT Vol	0	114	0	136
Through Vol	64	61	61	138
RT Vol	19	0	126	442
Lane Flow Rate	97	203	217	833
Geometry Grp	5	7	7	2
Degree of Util (X)	0.174	0.391	0.37	1.169
Departure Headway (Hd)	7.045	7.43	6.611	5.055
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	512	487	549	724
Service Time	5.045	5.13	4.311	3.055
HCM Lane V/C Ratio	0.189	0.417	0.395	1.151
HCM Control Delay	11.5	14.8	13.1	110.2
HCM Lane LOS	B	B	B	F
HCM 95th-tile Q	0.6	1.8	1.7	26.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	248	38	69	839	58	51	84	79	30	616	48
Future Volume (veh/h)	26	248	38	69	839	58	51	84	79	30	616	48
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	270	41	75	912	63	55	91	86	33	670	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	880	746	94	927	786	110	736	707	46	645	49
Arrive On Green	0.03	0.47	0.47	0.05	0.50	0.50	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	731	1870	1585	54	1639	125
Grp Volume(v), veh/h	28	270	41	75	912	63	55	91	86	755	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	731	1870	1585	1818	0	0
Q Serve(g_s), s	2.3	13.4	2.1	6.2	72.0	3.1	0.0	4.7	4.8	40.4	0.0	0.0
Cycle Q Clear(g_c), s	2.3	13.4	2.1	6.2	72.0	3.1	48.9	4.7	4.8	59.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.04		0.07
Lane Grp Cap(c), veh/h	49	880	746	94	927	786	110	736	707	740	0	0
V/C Ratio(X)	0.57	0.31	0.05	0.80	0.98	0.08	0.50	0.12	0.12	1.02	0.00	0.00
Avail Cap(c_a), veh/h	77	880	746	153	927	786	110	736	707	740	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.00	0.00
Uniform Delay (d), s/veh	72.1	24.6	21.6	70.2	37.2	19.9	42.4	29.0	24.3	46.4	0.0	0.0
Incr Delay (d2), s/veh	10.0	0.9	0.1	14.0	25.8	0.2	3.5	0.1	0.1	38.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.3	0.8	3.2	38.9	1.2	2.0	2.2	1.8	35.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.1	25.5	21.7	84.2	63.0	20.1	45.9	29.1	24.4	84.6	0.0	0.0
LnGrp LOS	F	C	C	F	E	C	D	C	C	F	A	A
Approach Vol, veh/h		339			1050			232			755	
Approach Delay, s/veh		29.7			62.0			31.3			84.6	
Approach LOS		C			E			C			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.9	75.1		63.0	8.1	78.9		63.0
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	12.9	65.6		59.0	6.5	72.0		59.0
Max Q Clear Time (g_c+I1), s	8.2	15.4		61.0	4.3	74.0		50.9
Green Ext Time (p_c), s	0.1	1.9		0.0	0.0	0.0		0.7

Intersection Summary	
HCM 6th Ctrl Delay	61.6
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	35	139	543	19	0	0	156	48	0	287	435
Future Volume (veh/h)	58	35	139	543	19	0	0	156	48	0	287	435
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	38	151	590	21	0	0	170	52	0	312	473
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	384	325	579	607	0	0	993	295	0	653	583
Arrive On Green	0.21	0.21	0.21	0.32	0.32	0.00	0.00	0.37	0.37	0.00	0.37	0.37
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	0	2795	801	0	1870	1585
Grp Volume(v), veh/h	63	38	151	590	21	0	0	110	112	0	312	473
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	0	1777	1726	0	1777	1585
Q Serve(g_s), s	3.4	1.9	9.8	38.0	0.9	0.0	0.0	4.9	5.1	0.0	15.8	31.5
Cycle Q Clear(g_c), s	3.4	1.9	9.8	38.0	0.9	0.0	0.0	4.9	5.1	0.0	15.8	31.5
Prop In Lane	1.00		1.00	1.00		0.00	0.00		0.46	0.00		1.00
Lane Grp Cap(c), veh/h	365	384	325	579	607	0	0	653	634	0	653	583
V/C Ratio(X)	0.17	0.10	0.46	1.02	0.03	0.00	0.00	0.17	0.18	0.00	0.48	0.81
Avail Cap(c_a), veh/h	365	384	325	579	607	0	0	653	634	0	653	583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	37.7	40.9	39.5	27.0	0.0	0.0	24.9	25.0	0.0	28.4	33.4
Incr Delay (d2), s/veh	1.0	0.5	4.7	42.5	0.1	0.0	0.0	0.6	0.6	0.0	2.5	11.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.9	4.3	23.1	0.4	0.0	0.0	2.2	2.2	0.0	7.1	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	38.2	45.6	82.0	27.1	0.0	0.0	25.5	25.6	0.0	30.9	45.1
LnGrp LOS	D	D	D	F	C	A	A	C	C	A	C	D
Approach Vol, veh/h		252			611			222			785	
Approach Delay, s/veh		42.9			80.1			25.6			39.4	
Approach LOS		D			F			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.0		28.0		47.0		42.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		43.0		24.0		43.0		38.0				
Max Q Clear Time (g_c+I1), s		7.1		11.8		33.5		40.0				
Green Ext Time (p_c), s		0.9		0.4		2.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			51.5									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	104	453	380	73	5	190	180	467	4	99	165
Future Volume (veh/h)	190	104	453	380	73	5	190	180	467	4	99	165
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	128	559	481	92	6	211	200	519	6	143	239
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.90	0.90	0.90	0.69	0.69	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	501	693	587	311	643	42	726	762	646	198	197	176
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.41	0.41	0.41	0.11	0.11	0.11
Sat Flow, veh/h	1297	1870	1585	755	1737	113	1781	1870	1585	1781	1777	1585
Grp Volume(v), veh/h	235	128	559	481	0	98	211	200	519	6	143	239
Grp Sat Flow(s),veh/h/ln	1297	1870	1585	755	0	1850	1781	1870	1585	1781	1777	1585
Q Serve(g_s), s	15.9	5.0	37.0	35.0	0.0	3.8	8.6	7.7	31.2	0.3	8.4	12.0
Cycle Q Clear(g_c), s	19.7	5.0	37.0	40.0	0.0	3.8	8.6	7.7	31.2	0.3	8.4	12.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	501	693	587	311	0	685	726	762	646	198	197	176
V/C Ratio(X)	0.47	0.18	0.95	1.54	0.00	0.14	0.29	0.26	0.80	0.03	0.72	1.36
Avail Cap(c_a), veh/h	501	693	587	311	0	685	726	762	646	198	197	176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	23.0	33.1	40.2	0.0	22.6	21.5	21.2	28.2	42.8	46.4	48.0
Incr Delay (d2), s/veh	1.5	0.3	26.2	260.4	0.0	0.2	1.0	0.8	10.2	0.3	20.6	193.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	2.2	18.1	31.0	0.0	1.7	3.8	3.5	13.3	0.2	4.8	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	23.3	59.2	300.7	0.0	22.8	22.5	22.1	38.4	43.1	67.0	241.0
LnGrp LOS	C	C	E	F	A	C	C	C	D	D	E	F
Approach Vol, veh/h		922			579			930			388	
Approach Delay, s/veh		46.9			253.6			31.3			173.8	
Approach LOS		D			F			C			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	48.0	44.0	16.0	44.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	44.0	40.0	12.0	40.0
Max Q Clear Time (g_c+I1), s	33.2	39.0	14.0	42.0
Green Ext Time (p_c), s	6.5	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	101.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	704	6	683	391	350	117	479	383	263	327	320
Future Volume (veh/h)	62	704	6	683	391	350	117	479	383	263	327	320
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	757	6	727	416	372	134	551	440	299	372	364
Peak Hour Factor	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	559	473	451	915	776	154	424	359	202	474	402
Arrive On Green	0.06	0.30	0.30	0.25	0.49	0.49	0.09	0.23	0.23	0.11	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	67	757	6	727	416	372	134	551	440	299	372	364
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.5	44.8	0.4	38.0	21.9	23.5	11.1	34.0	34.0	17.0	27.8	33.4
Cycle Q Clear(g_c), s	5.5	44.8	0.4	38.0	21.9	23.5	11.1	34.0	34.0	17.0	27.8	33.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	559	473	451	915	776	154	424	359	202	474	402
V/C Ratio(X)	0.60	1.36	0.01	1.61	0.45	0.48	0.87	1.30	1.22	1.48	0.79	0.91
Avail Cap(c_a), veh/h	154	559	473	451	915	776	154	424	359	202	474	402
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.54	0.54	0.54
Uniform Delay (d), s/veh	68.5	52.6	37.0	56.0	25.1	25.5	67.7	58.0	58.0	66.5	52.2	54.3
Incr Delay (d2), s/veh	1.9	171.3	0.0	285.1	0.5	0.7	4.8	136.5	103.5	230.4	7.0	16.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	47.5	0.2	52.8	10.0	9.1	5.3	32.1	24.0	20.7	14.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.4	223.9	37.0	341.1	25.6	26.2	72.5	194.5	161.5	296.9	59.2	71.1
LnGrp LOS	E	F	D	F	C	C	E	F	F	F	E	E
Approach Vol, veh/h		830			1515			1125			1035	
Approach Delay, s/veh		210.1			177.2			167.1			132.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	38.0	42.0	49.0	17.0	42.0	13.4	77.6
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	17.0	34.0	38.0	* 45	13.0	38.0	13.0	* 70
Max Q Clear Time (g_c+I1), s	19.0	36.0	40.0	46.8	13.1	35.4	7.5	25.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.3	0.0	7.1

Intersection Summary	
HCM 6th Ctrl Delay	170.3
HCM 6th LOS	F

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	375	498	127	935	177	74	580	312	6	321	690
Future Volume (veh/h)	222	375	498	127	935	177	74	580	312	6	321	690
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	271	457	607	137	1005	190	84	659	355	7	378	812
Peak Hour Factor	0.82	0.82	0.82	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	395	335	534	561	476	108	562	476	19	469	397
Arrive On Green	0.21	0.21	0.21	0.30	0.30	0.30	0.06	0.30	0.30	0.01	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	271	457	607	137	1005	190	84	659	355	7	378	812
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.7	19.0	19.0	5.2	27.0	8.6	4.2	27.0	18.2	0.4	17.1	22.6
Cycle Q Clear(g_c), s	12.7	19.0	19.0	5.2	27.0	8.6	4.2	27.0	18.2	0.4	17.1	22.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	395	335	534	561	476	108	562	476	19	469	397
V/C Ratio(X)	0.72	1.16	1.81	0.26	1.79	0.40	0.78	1.17	0.75	0.37	0.81	2.04
Avail Cap(c_a), veh/h	376	395	335	534	561	476	129	562	476	129	469	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.21	0.21	0.21	0.09	0.09	0.09
Uniform Delay (d), s/veh	33.0	35.5	35.5	23.9	31.5	25.1	41.7	31.5	28.4	44.2	31.7	33.7
Incr Delay (d2), s/veh	6.6	95.6	377.9	0.3	363.1	0.5	5.4	82.1	2.3	1.1	1.4	470.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	18.9	42.3	2.2	68.3	3.2	2.0	24.5	7.0	0.2	7.7	60.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	131.1	413.4	24.1	394.6	25.6	47.1	113.6	30.7	45.3	33.1	503.8
LnGrp LOS	D	F	F	C	F	C	D	F	C	D	C	F
Approach Vol, veh/h		1335			1332			1098			1197	
Approach Delay, s/veh		240.9			303.9			81.7			352.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	31.0		23.0	9.4	26.6		31.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.5	21.5		19.0	6.5	21.5		27.0
Max Q Clear Time (g_c+I1), s	2.4	29.0		21.0	6.2	24.6		29.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	249.5
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	14	0	249	319	66	43	556	363	57	580	127
Future Volume (veh/h)	74	14	0	249	319	66	43	556	363	57	580	127
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	16	0	328	420	87	48	625	408	66	674	148
Peak Hour Factor	0.88	0.88	0.88	0.76	0.76	0.76	0.89	0.89	0.89	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	113	96	344	361	306	364	698	456	144	1236	1048
Arrive On Green	0.06	0.06	0.00	0.19	0.19	0.19	0.66	0.66	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	666	1057	690	546	1870	1585
Grp Volume(v), veh/h	84	16	0	328	420	87	48	0	1033	66	674	148
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	666	0	1746	546	1870	1585
Q Serve(g_s), s	6.5	1.1	0.0	25.5	27.0	6.6	5.8	0.0	68.7	16.0	26.7	4.9
Cycle Q Clear(g_c), s	6.5	1.1	0.0	25.5	27.0	6.6	32.5	0.0	68.7	84.7	26.7	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	107	113	96	344	361	306	364	0	1154	144	1237	1048
V/C Ratio(X)	0.78	0.14	0.00	0.95	1.16	0.28	0.13	0.00	0.89	0.46	0.55	0.14
Avail Cap(c_a), veh/h	293	307	260	344	361	306	364	0	1154	144	1237	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	1.00	1.00	1.00	0.09	0.00	0.09	0.43	0.43	0.43
Uniform Delay (d), s/veh	64.9	62.3	0.0	55.9	56.5	48.3	21.2	0.0	19.7	54.8	12.6	8.9
Incr Delay (d2), s/veh	4.4	0.2	0.0	36.4	100.1	0.2	0.1	0.0	1.2	4.4	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.5	0.0	14.9	22.8	2.6	0.9	0.0	26.4	2.4	11.1	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	62.5	0.0	92.3	156.6	48.4	21.2	0.0	20.8	59.3	13.3	9.0
LnGrp LOS	E	E	A	F	F	D	C	A	C	E	B	A
Approach Vol, veh/h		100			835			1081			888	
Approach Delay, s/veh		68.2			120.1			20.9			16.0	
Approach LOS		E			F			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		96.6		12.4		96.6		31.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		78.0		23.0		78.0		27.0				
Max Q Clear Time (g_c+I1), s		70.7		8.5		86.7		29.0				
Green Ext Time (p_c), s		5.5		0.1		0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	49.5
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	631	315	0	18	448	10	238	322	145	0	693	135
Future Volume (veh/h)	631	315	0	18	448	10	238	322	145	0	693	135
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	734	366	0	21	527	12	270	366	165	0	806	157
Peak Hour Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.88	0.88	0.88	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	829	0	42	401	9	178	823	697	1	586	497
Arrive On Green	0.25	0.44	0.00	0.02	0.22	0.22	0.10	0.44	0.44	0.00	0.31	0.31
Sat Flow, veh/h	1781	1870	0	1781	1821	41	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	734	366	0	21	0	539	270	366	165	0	806	157
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1863	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	37.0	20.3	0.0	1.7	0.0	33.0	15.0	20.4	9.8	0.0	47.0	11.3
Cycle Q Clear(g_c), s	37.0	20.3	0.0	1.7	0.0	33.0	15.0	20.4	9.8	0.0	47.0	11.3
Prop In Lane	1.00		0.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	829	0	42	0	410	178	823	697	1	586	497
V/C Ratio(X)	1.67	0.44	0.00	0.51	0.00	1.32	1.52	0.44	0.24	0.00	1.38	0.32
Avail Cap(c_a), veh/h	439	829	0	71	0	410	178	823	697	71	586	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.59	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.71	0.71
Uniform Delay (d), s/veh	56.5	28.9	0.0	72.4	0.0	58.5	67.5	29.2	26.3	0.0	51.5	39.3
Incr Delay (d2), s/veh	307.6	0.2	0.0	9.2	0.0	158.2	258.7	1.7	0.8	0.0	176.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	54.2	9.3	0.0	0.9	0.0	33.6	19.7	9.7	3.9	0.0	50.7	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	364.1	29.1	0.0	81.6	0.0	216.7	326.2	31.0	27.1	0.0	228.0	40.4
LnGrp LOS	F	C	A	F	A	F	F	C	C	A	F	D
Approach Vol, veh/h		1100			560			801			963	
Approach Delay, s/veh		252.7			211.7			129.7			197.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	71.0	7.5	71.5	19.0	52.0	41.0	38.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	6.0	56.0	6.0	64.0	15.0	47.0	37.0	33.0
Max Q Clear Time (g_c+I1), s	0.0	22.4	3.7	22.3	17.0	49.0	39.0	35.0
Green Ext Time (p_c), s	0.0	3.0	0.0	2.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	201.7
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	289	59	130	0	118	753	156	1732	0	628	1601	743
Future Volume (veh/h)	289	59	130	0	118	753	156	1732	0	628	1601	743
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	361	74	162	0	151	965	168	1862	0	668	1703	790
Peak Hour Factor	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	205	449	1	474	402	107	1161	518	344	1635	729
Arrive On Green	0.11	0.39	0.39	0.00	0.25	0.25	0.08	0.43	0.00	0.19	0.46	0.46
Sat Flow, veh/h	1781	522	1143	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	361	0	236	0	151	965	168	1862	0	668	1703	790
Grp Sat Flow(s),veh/h/ln	1781	0	1665	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	17.0	0.0	15.0	0.0	9.8	38.0	9.0	49.0	0.0	29.0	69.0	69.0
Cycle Q Clear(g_c), s	17.0	0.0	15.0	0.0	9.8	38.0	9.0	49.0	0.0	29.0	69.0	69.0
Prop In Lane	1.00		0.69	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	0	655	1	474	402	107	1161	518	344	1635	729
V/C Ratio(X)	1.79	0.00	0.36	0.00	0.32	2.40	1.57	1.60	0.00	1.94	1.04	1.08
Avail Cap(c_a), veh/h	202	0	655	53	474	402	107	1161	518	344	1635	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	0.0	32.2	0.0	45.5	56.0	69.0	42.4	0.0	60.5	40.5	40.5
Incr Delay (d2), s/veh	373.9	0.0	0.3	0.0	0.4	639.0	261.5	272.2	0.0	433.4	34.0	58.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.7	0.0	6.2	0.0	4.7	86.4	11.8	64.1	0.0	54.6	37.4	38.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	440.4	0.0	32.5	0.0	45.9	695.0	330.5	314.6	0.0	493.9	74.5	98.7
LnGrp LOS	F	A	C	A	D	F	F	F	A	F	F	F
Approach Vol, veh/h		597			1116			2030			3161	
Approach Delay, s/veh		279.1			607.2			315.9			169.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	74.0	21.0	42.0	33.0	54.0	0.0	63.0
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	69.0	17.0	38.0	29.0	49.0	4.5	50.5
Max Q Clear Time (g_c+I1), s	11.0	71.0	19.0	40.0	31.0	51.0	0.0	17.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	292.6
HCM 6th LOS	F

HCM Signalized Intersection Capacity Analysis
1: Roundabout & Mission Blvd.

08/23/2018

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	2314	1851	0	1942
Future Volume (vph)	0	0	2314	1851	0	1942
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5			4.5
Lane Util. Factor			0.95			0.88
Frt			0.93			0.85
Flt Protected			1.00			1.00
Satd. Flow (prot)			3303			2787
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3303			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2515	2012	0	2111
RTOR Reduction (vph)	0	0	288	0	0	0
Lane Group Flow (vph)	0	0	4239	0	0	2111
Turn Type			NA			Perm
Protected Phases			8			
Permitted Phases						6
Actuated Green, G (s)			21.5			19.5
Effective Green, g (s)			21.5			19.5
Actuated g/C Ratio			0.43			0.39
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1420			1086
v/s Ratio Prot			c1.28			
v/s Ratio Perm						c0.76
v/c Ratio			2.99			1.94
Uniform Delay, d1			14.2			15.2
Progression Factor			0.78			1.00
Incremental Delay, d2			893.6			428.1
Delay (s)			904.7			443.4
Level of Service			F			F
Approach Delay (s)		0.0	904.7		443.4	
Approach LOS		A	F		F	

Intersection Summary			
HCM 2000 Control Delay	758.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.49		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	198.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2353	1812	1866	0	0
Future Volume (vph)	0	2353	1812	1866	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5			
Lane Util. Factor		0.88	0.95			
Frt		0.85	0.92			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2787	3270			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2787	3270			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2558	1970	2028	0	0
RTOR Reduction (vph)	0	2	371	0	0	0
Lane Group Flow (vph)	0	2556	3628	0	0	0
Turn Type		Prot	NA			
Protected Phases		8	2			
Permitted Phases						
Actuated Green, G (s)		19.5	21.5			
Effective Green, g (s)		19.5	21.5			
Actuated g/C Ratio		0.39	0.43			
Clearance Time (s)		4.5	4.5			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		1086	1406			
v/s Ratio Prot		c0.92	c1.11			
v/s Ratio Perm						
v/c Ratio		2.35	2.58			
Uniform Delay, d1		15.2	14.2			
Progression Factor		1.00	1.14			
Incremental Delay, d2		612.1	711.2			
Delay (s)		627.3	727.5			
Level of Service		F	F			
Approach Delay (s)	627.3		727.5		0.0	
Approach LOS	F		F		A	

Intersection Summary			
HCM 2000 Control Delay	688.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.47		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	199.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1801	2048	0	0	0	1877
Future Volume (vph)	1801	2048	0	0	0	1877
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.95					0.88
Frt	0.92					0.85
Flt Protected	1.00					1.00
Satd. Flow (prot)	3257					2787
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3257					2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1958	2226	0	0	0	2040
RTOR Reduction (vph)	410	0	0	0	0	2
Lane Group Flow (vph)	3774	0	0	0	0	2038
Turn Type	NA					Perm
Protected Phases	4					
Permitted Phases						2
Actuated Green, G (s)	21.5					19.5
Effective Green, g (s)	21.5					19.5
Actuated g/C Ratio	0.43					0.39
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	1400					1086
v/s Ratio Prot	c1.16					
v/s Ratio Perm						c0.73
v/c Ratio	2.70					1.88
Uniform Delay, d1	14.2					15.2
Progression Factor	0.85					1.00
Incremental Delay, d2	763.3					398.1
Delay (s)	775.5					413.3
Level of Service	F					F
Approach Delay (s)	775.5			0.0	413.3	
Approach LOS	F			A	F	

Intersection Summary			
HCM 2000 Control Delay	656.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.31		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	188.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	1774	0	0	2075	2181
Future Volume (vph)	0	1774	0	0	2075	2181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	
Lane Util. Factor		0.88			0.95	
Frt		0.85			0.92	
Flt Protected		1.00			1.00	
Satd. Flow (prot)		2787			3267	
Flt Permitted		1.00			1.00	
Satd. Flow (perm)		2787			3267	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1928	0	0	2255	2371
RTOR Reduction (vph)	0	1	0	0	378	0
Lane Group Flow (vph)	0	1927	0	0	4248	0
Turn Type		Perm			NA	
Protected Phases					6	
Permitted Phases		4				
Actuated Green, G (s)		19.5			21.5	
Effective Green, g (s)		19.5			21.5	
Actuated g/C Ratio		0.39			0.43	
Clearance Time (s)		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1086			1404	
v/s Ratio Prot					c1.30	
v/s Ratio Perm		c0.69				
v/c Ratio		1.77			3.03	
Uniform Delay, d1		15.2			14.2	
Progression Factor		1.00			1.12	
Incremental Delay, d2		352.4			911.6	
Delay (s)		367.6			927.6	
Level of Service		F			F	
Approach Delay (s)	367.6			0.0	927.6	
Approach LOS	F			A	F	

Intersection Summary			
HCM 2000 Control Delay	762.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.43		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	197.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

09/20/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	242	77	349	90	98	105	1669	33	715	1053	22
Future Volume (veh/h)	41	242	77	349	90	98	105	1669	33	715	1053	22
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	275	88	379	105	102	114	1814	36	761	1120	23
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	336	105	226	410	347	137	1399	624	428	1979	883
Arrive On Green	0.03	0.13	0.13	0.13	0.22	0.22	0.08	0.39	0.39	0.24	0.56	0.56
Sat Flow, veh/h	1781	2663	834	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	47	182	181	379	105	102	114	1814	36	761	1120	23
Grp Sat Flow(s),veh/h/ln	1781	1777	1720	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.9	14.9	15.5	19.0	7.0	8.1	9.5	59.0	2.1	36.0	30.6	1.0
Cycle Q Clear(g_c), s	3.9	14.9	15.5	19.0	7.0	8.1	9.5	59.0	2.1	36.0	30.6	1.0
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	224	217	226	410	347	137	1399	624	428	1979	883
V/C Ratio(X)	0.77	0.81	0.83	1.68	0.26	0.29	0.84	1.30	0.06	1.78	0.57	0.03
Avail Cap(c_a), veh/h	114	326	315	226	460	390	211	1399	624	428	1979	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	71.9	63.8	64.0	65.5	48.5	48.9	68.3	45.5	28.2	57.0	21.5	14.9
Incr Delay (d2), s/veh	18.6	9.3	12.1	323.8	0.3	0.4	15.4	138.9	0.2	351.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	7.4	7.5	28.9	3.3	3.3	4.9	52.8	0.9	58.0	12.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.5	73.1	76.1	389.3	48.8	49.3	83.7	184.4	28.4	408.9	21.6	14.9
LnGrp LOS	F	E	E	F	D	D	F	F	C	F	C	B
Approach Vol, veh/h		410			586			1964			1904	
Approach Delay, s/veh		76.4			269.1			175.7			176.3	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	88.6	9.1	36.8	40.0	64.0	23.0	23.0
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.8	68.7	9.6	36.9	36.0	50.5	19.0	27.5
Max Q Clear Time (g_c+I1), s	11.5	32.6	5.9	10.1	38.0	61.0	21.0	17.5
Green Ext Time (p_c), s	0.1	10.6	0.0	0.9	0.0	0.0	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	178.8
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
2: Foothill Boulevard & A Street

09/20/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	374	641	39	78	573	47	0	1384	219	0	1202	368
Future Volume (vph)	374	641	39	78	573	47	0	1384	219	0	1202	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95	1.00		0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		3539	1583		3539	1583
Flt Permitted	0.23	1.00	1.00	0.20	1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)	437	1863	1583	365	1863	1583		3539	1583		3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.93	0.93	0.93	0.90	0.90	0.90
Adj. Flow (vph)	407	697	42	88	644	53	0	1488	235	0	1336	409
RTOR Reduction (vph)	0	0	11	0	0	11	0	0	57	0	0	0
Lane Group Flow (vph)	407	697	31	88	644	42	0	1488	178	0	1336	409
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA	Perm		NA	custom
Protected Phases		4			4			6			6	
Permitted Phases	4		4	4		4		2	6			2
Actuated Green, G (s)	49.5	49.5	49.5	49.5	49.5	49.5		38.5	38.5		38.5	37.0
Effective Green, g (s)	49.5	49.5	49.5	49.5	49.5	49.5		38.5	38.5		38.5	37.0
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52		0.41	0.41		0.41	0.39
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	227	970	824	190	970	824		1434	641		1434	616
v/s Ratio Prot		0.37			0.35			c0.42			0.38	
v/s Ratio Perm	c0.93		0.02	0.24		0.03			0.11			0.26
v/c Ratio	1.79	0.72	0.04	0.46	0.66	0.05		1.04	0.28		0.93	0.66
Uniform Delay, d1	22.8	17.4	11.1	14.4	16.7	11.2		28.2	18.9		27.0	23.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	373.9	2.6	0.0	1.8	1.7	0.0		34.1	1.1		12.2	5.6
Delay (s)	396.7	20.0	11.1	16.1	18.4	11.2		62.4	20.0		39.2	29.4
Level of Service	F	B	B	B	B	B		E	C		D	C
Approach Delay (s)		153.4			17.6			56.6			36.9	
Approach LOS		F			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	480	54	570	529	87	26	1412	303	666	580	73
Future Volume (veh/h)	103	480	54	570	529	87	26	1412	303	666	580	73
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	522	59	606	563	93	27	1486	319	724	630	79
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	754	85	275	716	118	302	1212	253	103	1316	165
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	777	1650	187	833	1565	259	740	2926	612	260	3178	398
Grp Volume(v), veh/h	112	0	581	606	0	656	27	887	918	724	352	357
Grp Sat Flow(s),veh/h/ln	777	0	1837	833	0	1824	740	1777	1760	260	1777	1799
Q Serve(g_s), s	10.0	0.0	17.6	14.4	0.0	21.3	1.9	29.0	29.0	0.0	10.1	10.2
Cycle Q Clear(g_c), s	31.3	0.0	17.6	32.0	0.0	21.3	12.1	29.0	29.0	29.0	10.1	10.2
Prop In Lane	1.00		0.10	1.00		0.14	1.00		0.35	1.00		0.22
Lane Grp Cap(c), veh/h	221	0	840	275	0	834	302	736	729	103	736	745
V/C Ratio(X)	0.51	0.00	0.69	2.21	0.00	0.79	0.09	1.20	1.26	7.04	0.48	0.48
Avail Cap(c_a), veh/h	221	0	840	275	0	834	302	736	729	103	736	745
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.00	0.64	1.00	0.00	1.00	0.09	0.09	0.09	0.36	0.36	0.36
Uniform Delay (d), s/veh	29.4	0.0	15.1	30.5	0.0	16.1	19.4	20.5	20.5	35.0	15.0	15.0
Incr Delay (d2), s/veh	1.2	0.0	1.6	555.2	0.0	5.0	0.1	93.4	117.6	2724.8	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	6.9	46.9	0.0	9.0	0.3	29.8	34.4	79.6	3.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	16.7	585.7	0.0	21.1	19.5	113.9	138.1	2759.8	15.8	15.8
LnGrp LOS	C	A	B	F	A	C	B	F	F	F	B	B
Approach Vol, veh/h		693			1262			1832			1433	
Approach Delay, s/veh		18.9			292.2			124.7			1402.2	
Approach LOS		B			F			F			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.0	36.0	34.0	36.0
Change Period (Y+Rc), s	5.0	4.0	5.0	4.0
Max Green Setting (Gmax), s	29.0	32.0	29.0	32.0
Max Q Clear Time (g_c+I1), s	31.0	33.3	31.0	34.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	501.8
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	414	161	39	50	277	275	0	1087	264	0	1138	49
Future Volume (veh/h)	414	161	39	50	277	275	0	1087	264	0	1138	49
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	1870	1870	1870	1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	431	168	41	52	289	286	0	1132	275	0	1185	51
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	0	2	2
Cap, veh/h	363	794	194	668	472	467	0	2772	1236	0	2772	1236
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.00	0.78	0.78	0.00	0.78	0.78
Sat Flow, veh/h	838	1452	354	1173	863	854	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h	431	0	209	52	0	575	0	1132	275	0	1185	51
Grp Sat Flow(s),veh/h/ln	838	0	1807	1173	0	1717	0	1777	1585	0	1777	1585
Q Serve(g_s), s	23.9	0.0	4.4	1.8	0.0	17.1	0.0	7.7	3.5	0.0	8.3	0.5
Cycle Q Clear(g_c), s	41.0	0.0	4.4	6.2	0.0	17.1	0.0	7.7	3.5	0.0	8.3	0.5
Prop In Lane	1.00		0.20	1.00		0.50	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	363	0	988	668	0	938	0	2772	1236	0	2772	1236
V/C Ratio(X)	1.19	0.00	0.21	0.08	0.00	0.61	0.00	0.41	0.22	0.00	0.43	0.04
Avail Cap(c_a), veh/h	363	0	988	668	0	938	0	2772	1236	0	2772	1236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.00	0.91	0.96	0.00	0.96	0.00	1.00	1.00	0.00	0.09	0.09
Uniform Delay (d), s/veh	28.7	0.0	8.7	10.3	0.0	11.6	0.0	2.7	2.2	0.0	2.7	1.9
Incr Delay (d2), s/veh	107.2	0.0	0.0	0.0	0.0	1.1	0.0	0.4	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	0.0	1.6	0.4	0.0	6.0	0.0	1.6	0.7	0.0	1.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.9	0.0	8.8	10.4	0.0	12.7	0.0	3.1	2.6	0.0	2.8	1.9
LnGrp LOS	F	A	A	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		640			627			1407			1236	
Approach Delay, s/veh		94.4			12.5			3.0			2.7	
Approach LOS		F			B			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	64.5	45.5	64.5	45.5
Change Period (Y+Rc), s	5.0	* 4.5	* 5	4.5
Max Green Setting (Gmax), s	25.0	* 41	* 26	40.5
Max Q Clear Time (g_c+I1), s	9.7	43.0	10.3	19.1
Green Ext Time (p_c), s	10.2	0.0	7.8	4.3

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	561	302	1048	810	0	1228
Future Volume (veh/h)	561	302	1048	810	0	1228
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	0	1870
Adj Flow Rate, veh/h	591	318	1103	853	0	1335
Peak Hour Factor	0.95	0.95	0.95	0.95	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	2
Cap, veh/h	656	584	1667	744	0	1667
Arrive On Green	0.37	0.37	0.47	0.47	0.00	0.47
Sat Flow, veh/h	1781	1585	3647	1585	0	3741
Grp Volume(v), veh/h	591	318	1103	853	0	1335
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	0	1777
Q Serve(g_s), s	25.1	12.7	19.1	37.5	0.0	25.6
Cycle Q Clear(g_c), s	25.1	12.7	19.1	37.5	0.0	25.6
Prop In Lane	1.00	1.00		1.00	0.00	
Lane Grp Cap(c), veh/h	656	584	1667	744	0	1667
V/C Ratio(X)	0.90	0.54	0.66	1.15	0.00	0.80
Avail Cap(c_a), veh/h	802	713	1667	744	0	1667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	20.0	16.3	21.2	0.0	18.1
Incr Delay (d2), s/veh	2.2	0.1	2.1	81.5	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	4.5	7.6	29.3	0.0	10.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.1	20.1	18.4	102.7	0.0	22.2
LnGrp LOS	C	C	B	F	A	C
Approach Vol, veh/h	909		1956			1335
Approach Delay, s/veh	24.0		55.2			22.2
Approach LOS	C		E			C

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		44.0				44.0	36.0
Change Period (Y+Rc), s		6.5				6.5	6.5
Max Green Setting (Gmax), s		31.0				31.0	36.0
Max Q Clear Time (g_c+I1), s		39.5				27.6	27.1
Green Ext Time (p_c), s		0.0				2.6	2.4

Intersection Summary	
HCM 6th Ctrl Delay	38.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	657	106	66	916	0	24	361	294	0	288	4
Future Volume (veh/h)	205	657	106	66	916	0	24	361	294	0	288	4
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	223	714	115	71	985	0	32	488	397	0	360	5
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.74	0.74	0.74	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	849	719	188	849	719	1036	903	735	111	1741	24
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.00	0.95	0.95	0.95	0.00	0.95	0.95
Sat Flow, veh/h	571	1870	1585	661	1870	1585	1017	954	776	628	1840	26
Grp Volume(v), veh/h	223	714	115	71	985	0	32	0	885	0	0	365
Grp Sat Flow(s),veh/h/ln	571	1870	1585	661	1870	1585	1017	0	1731	628	0	1866
Q Serve(g_s), s	0.0	21.9	2.8	6.9	29.5	0.0	0.2	0.0	3.7	0.0	0.0	0.9
Cycle Q Clear(g_c), s	29.5	21.9	2.8	28.8	29.5	0.0	2.5	0.0	3.7	0.0	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		0.01
Lane Grp Cap(c), veh/h	111	849	719	188	849	719	1036	0	1637	111	0	1765
V/C Ratio(X)	2.01	0.84	0.16	0.38	1.16	0.00	0.03	0.00	0.54	0.00	0.00	0.21
Avail Cap(c_a), veh/h	111	849	719	188	849	719	1036	0	1637	111	0	1765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.28	0.28	0.28	0.70	0.70	0.00	0.25	0.00	0.25	0.00	0.00	1.00
Uniform Delay (d), s/veh	32.5	15.7	10.5	28.4	17.7	0.0	0.3	0.0	0.2	0.0	0.0	0.1
Incr Delay (d2), s/veh	464.8	2.3	0.0	0.9	81.7	0.0	0.0	0.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	8.6	0.9	1.1	30.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	497.3	18.0	10.5	29.3	99.4	0.0	0.3	0.0	0.5	0.0	0.0	0.4
LnGrp LOS	F	B	B	C	F	A	A	A	A	A	A	A
Approach Vol, veh/h		1052			1056			917			365	
Approach Delay, s/veh		118.8			94.7			0.5			0.4	
Approach LOS		F			F			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.0	34.0	66.0	34.0
Change Period (Y+Rc), s	3.5	4.5	3.5	* 4.5
Max Green Setting (Gmax), s	28.5	28.5	28.5	* 30
Max Q Clear Time (g_c+I1), s	5.7	31.5	2.9	31.5
Green Ext Time (p_c), s	7.9	0.0	2.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	66.5
HCM 6th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	481	134	34	585	8	24	475	121	36	416	24
Future Volume (veh/h)	173	481	134	34	585	8	24	475	121	36	416	24
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	188	523	146	37	636	9	26	516	132	39	452	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	703	196	277	920	13	254	527	135	129	642	37
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	785	1407	393	768	1840	26	916	1437	368	783	1751	101
Grp Volume(v), veh/h	188	0	669	37	0	645	26	0	648	39	0	478
Grp Sat Flow(s),veh/h/ln	785	0	1800	768	0	1866	916	0	1804	783	0	1852
Q Serve(g_s), s	14.1	0.0	17.8	2.4	0.0	15.9	1.5	0.0	21.3	0.7	0.0	13.2
Cycle Q Clear(g_c), s	30.0	0.0	17.8	20.2	0.0	15.9	14.7	0.0	21.3	22.0	0.0	13.2
Prop In Lane	1.00		0.22	1.00		0.01	1.00		0.20	1.00		0.05
Lane Grp Cap(c), veh/h	305	0	900	277	0	933	254	0	662	129	0	679
V/C Ratio(X)	0.62	0.00	0.74	0.13	0.00	0.69	0.10	0.00	0.98	0.30	0.00	0.70
Avail Cap(c_a), veh/h	305	0	900	277	0	933	254	0	662	129	0	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	0.57	0.00	0.57	0.77	0.00	0.77	0.92	0.00	0.92
Uniform Delay (d), s/veh	23.0	0.0	11.9	20.0	0.0	11.5	22.5	0.0	18.8	29.9	0.0	16.2
Incr Delay (d2), s/veh	7.4	0.0	4.6	0.1	0.0	1.3	0.1	0.0	25.6	1.2	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	6.9	0.4	0.0	5.7	0.3	0.0	12.5	0.6	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	0.0	16.5	20.1	0.0	12.7	22.6	0.0	44.4	31.1	0.0	19.3
LnGrp LOS	C	A	B	C	A	B	C	A	D	C	A	B
Approach Vol, veh/h		857			682			674			517	
Approach Delay, s/veh		19.6			13.1			43.6			20.1	
Approach LOS		B			B			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.0		34.0		26.0		34.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		22.0		30.0		22.0		30.0				
Max Q Clear Time (g_c+I1), s		23.3		32.0		24.0		22.2				
Green Ext Time (p_c), s		0.0		0.0		0.0		2.8				

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	383	396	45	11	254	17	23	203	87	91	482	19
Future Volume (veh/h)	383	396	45	11	254	17	23	203	87	91	482	19
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	399	412	47	11	265	18	24	211	91	95	502	20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	599	932	790	476	932	790	206	411	177	354	593	24
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1096	1870	1585	933	1870	1585	880	1240	535	1077	1786	71
Grp Volume(v), veh/h	399	412	47	11	265	18	24	0	302	95	0	522
Grp Sat Flow(s),veh/h/ln	1096	1870	1585	933	1870	1585	880	0	1774	1077	0	1858
Q Serve(g_s), s	16.7	7.1	0.8	0.4	4.1	0.3	1.3	0.0	6.9	3.9	0.0	13.1
Cycle Q Clear(g_c), s	20.9	7.1	0.8	7.5	4.1	0.3	14.4	0.0	6.9	10.7	0.0	13.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.30	1.00		0.04
Lane Grp Cap(c), veh/h	599	932	790	476	932	790	206	0	589	354	0	616
V/C Ratio(X)	0.67	0.44	0.06	0.02	0.28	0.02	0.12	0.00	0.51	0.27	0.00	0.85
Avail Cap(c_a), veh/h	599	932	790	476	932	790	231	0	639	384	0	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	0.80	0.80	0.80	1.00	0.00	1.00	0.69	0.00	0.69
Uniform Delay (d), s/veh	13.4	8.1	6.5	10.5	7.3	6.4	22.2	0.0	13.5	17.8	0.0	15.5
Incr Delay (d2), s/veh	4.6	1.2	0.1	0.0	0.1	0.0	0.1	0.0	0.3	0.1	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.5	0.2	0.1	1.3	0.1	0.3	0.0	2.4	0.9	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	9.3	6.6	10.5	7.5	6.4	22.3	0.0	13.7	17.9	0.0	21.6
LnGrp LOS	B	A	A	B	A	A	C	A	B	B	A	C
Approach Vol, veh/h		858			294			326			617	
Approach Delay, s/veh		13.2			7.5			14.3			21.1	
Approach LOS		B			A			B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.6	29.4	20.6	29.4
Change Period (Y+Rc), s	4.0	* 4.5	4.0	4.5
Max Green Setting (Gmax), s	18.0	* 24	18.0	23.5
Max Q Clear Time (g_c+I1), s	16.4	22.9	15.1	9.5
Green Ext Time (p_c), s	0.2	0.7	0.8	1.4

Intersection Summary	
HCM 6th Ctrl Delay	14.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	622	298	44	534	383	27	36	1251	625	45	1083	126
Future Volume (veh/h)	622	298	44	534	383	27	36	1251	625	45	1083	126
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	691	331	49	551	395	28	39	1360	679	51	1231	143
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	534	369	313	533	339	24	79	1019	469	50	1383	160
Arrive On Green	0.30	0.20	0.20	0.30	0.20	0.20	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	1726	122	395	2364	1087	207	3209	372
Grp Volume(v), veh/h	691	331	49	551	0	423	39	993	1046	51	680	694
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1848	395	1777	1675	207	1777	1803
Q Serve(g_s), s	43.5	25.0	3.7	43.4	0.0	28.5	10.9	62.5	62.5	0.0	51.1	51.6
Cycle Q Clear(g_c), s	43.5	25.0	3.7	43.4	0.0	28.5	62.5	62.5	62.5	62.5	51.1	51.6
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.65	1.00		0.21
Lane Grp Cap(c), veh/h	534	369	313	533	0	363	79	766	722	50	766	777
V/C Ratio(X)	1.29	0.90	0.16	1.03	0.00	1.16	0.49	1.30	1.45	1.03	0.89	0.89
Avail Cap(c_a), veh/h	534	369	313	533	0	363	79	766	722	50	766	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.00	0.09	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	56.8	48.2	50.8	0.0	58.3	68.4	41.3	41.3	72.5	38.0	38.2
Incr Delay (d2), s/veh	145.4	23.6	0.2	21.6	0.0	77.0	2.0	134.6	202.6	135.7	14.4	14.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	14.3	1.5	22.5	0.0	21.1	1.5	55.6	66.0	3.7	25.1	25.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	196.1	80.4	48.4	72.4	0.0	135.2	70.3	175.8	243.9	208.2	52.5	52.9
LnGrp LOS	F	F	D	F	A	F	E	F	F	F	D	D
Approach Vol, veh/h		1071			974			2078			1425	
Approach Delay, s/veh		153.6			99.7			208.1			58.3	
Approach LOS		F			F			F			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		66.0	47.0	32.0		66.0	46.9	32.1				
Change Period (Y+Rc), s		3.5	3.5	3.5		3.5	3.5	3.5				
Max Green Setting (Gmax), s		62.5	43.5	28.5		62.5	43.4	28.6				
Max Q Clear Time (g_c+I1), s		64.5	45.5	30.5		64.5	45.4	27.0				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	0.3				

Intersection Summary	
HCM 6th Ctrl Delay	140.1
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	553	400	33	409	206	17	316	1345	379	9	1170	478
Future Volume (veh/h)	553	400	33	409	206	17	316	1345	379	9	1170	478
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	601	435	36	476	240	20	343	1462	412	9	1206	493
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	529	786	65	366	786	65	111	1148	311	111	1035	407
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1119	1704	141	922	1703	142	289	2764	748	244	2491	980
Grp Volume(v), veh/h	601	0	471	476	0	260	343	918	956	9	847	852
Grp Sat Flow(s),veh/h/ln	1119	0	1845	922	0	1845	289	1777	1736	244	1777	1694
Q Serve(g_s), s	24.3	0.0	12.0	18.0	0.0	5.7	0.0	27.0	27.0	0.0	27.0	27.0
Cycle Q Clear(g_c), s	30.0	0.0	12.0	30.0	0.0	5.7	27.0	27.0	27.0	27.0	27.0	27.0
Prop In Lane	1.00		0.08	1.00		0.08	1.00		0.43	1.00		0.58
Lane Grp Cap(c), veh/h	529	0	852	366	0	851	111	738	721	111	738	704
V/C Ratio(X)	1.14	0.00	0.55	1.30	0.00	0.31	3.10	1.24	1.33	0.08	1.15	1.21
Avail Cap(c_a), veh/h	529	0	852	366	0	851	111	738	721	111	738	704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.69	0.00	0.69	0.09	0.09	0.09	0.25	0.25	0.25
Uniform Delay (d), s/veh	22.9	0.0	12.7	26.2	0.0	11.0	32.5	19.0	19.0	32.5	19.0	19.0
Incr Delay (d2), s/veh	64.1	0.0	0.1	148.2	0.0	0.1	945.6	110.9	147.5	0.4	70.8	98.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.4	0.0	4.3	20.6	0.0	2.1	30.8	32.4	39.0	0.1	24.2	28.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.0	0.0	12.7	174.5	0.0	11.1	978.1	129.9	166.5	32.9	89.8	117.5
LnGrp LOS	F	A	B	F	A	B	F	F	F	C	F	F
Approach Vol, veh/h		1072			736			2217			1708	
Approach Delay, s/veh		54.4			116.8			276.9			103.3	
Approach LOS		D			F			F			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.0		34.0		31.0		34.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		27.0		30.0		27.0		30.0				
Max Q Clear Time (g_c+I1), s		29.0		32.0		29.0		32.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			163.0									
HCM 6th LOS			F									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	334	71	293	0	3	0	2027	480	10	1569	0
Future Volume (veh/h)	25	334	71	293	0	3	0	2027	480	10	1569	0
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	352	75	308	0	3	0	2134	505	11	1652	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	607	593	126	250	0	629	48	1562	355	48	1931	0
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.40	0.00	0.54	0.54	0.54	0.54	0.00
Sat Flow, veh/h	1414	1495	318	961	0	1585	302	2875	654	114	3647	0
Grp Volume(v), veh/h	26	0	427	308	0	3	0	1286	1353	11	1652	0
Grp Sat Flow(s),veh/h/ln	1414	0	1813	961	0	1585	302	1777	1753	114	1777	0
Q Serve(g_s), s	1.7	0.0	27.9	31.6	0.0	0.2	0.0	81.5	81.5	0.0	59.5	0.0
Cycle Q Clear(g_c), s	1.9	0.0	27.9	59.5	0.0	0.2	0.0	81.5	81.5	81.5	59.5	0.0
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.37	1.00		0.00
Lane Grp Cap(c), veh/h	607	0	719	250	0	629	48	965	952	48	1931	0
V/C Ratio(X)	0.04	0.00	0.59	1.23	0.00	0.00	0.00	1.33	1.42	0.23	0.86	0.00
Avail Cap(c_a), veh/h	612	0	725	250	0	629	48	965	952	48	1931	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.97	0.00	0.97	0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	27.9	0.0	35.7	62.2	0.0	27.4	0.0	34.3	34.3	75.0	29.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.2	132.4	0.0	0.0	0.0	156.4	195.7	1.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	12.7	18.9	0.0	0.1	0.0	76.1	85.4	0.4	25.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	0.0	36.9	194.7	0.0	27.4	0.0	190.7	230.0	76.0	29.7	0.0
LnGrp LOS	C	A	D	F	A	C	A	F	F	E	C	A
Approach Vol, veh/h		453			311			2639			1663	
Approach Delay, s/veh		36.4			193.1			210.8			30.0	
Approach LOS		D			F			F			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	86.0	64.0	86.0	64.0
Change Period (Y+Rc), s	4.5	* 4.5	4.5	4.5
Max Green Setting (Gmax), s	81.5	* 60	81.5	59.5
Max Q Clear Time (g_c+I1), s	83.5	29.9	83.5	61.5
Green Ext Time (p_c), s	0.0	3.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	134.8
HCM 6th LOS	F

Notes

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	952	467	269	1554	1461	471
Future Volume (veh/h)	952	467	269	1554	1461	471
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1002	492	286	1653	1506	486
Peak Hour Factor	0.95	0.95	0.94	0.94	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	653	581	120	1718	1295	396
Arrive On Green	0.37	0.37	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1781	1585	217	3647	2774	820
Grp Volume(v), veh/h	1002	492	286	1653	970	1022
Grp Sat Flow(s),veh/h/ln	1781	1585	217	1777	1777	1723
Q Serve(g_s), s	22.0	17.1	0.0	27.0	29.0	29.0
Cycle Q Clear(g_c), s	22.0	17.1	29.0	27.0	29.0	29.0
Prop In Lane	1.00	1.00	1.00			0.48
Lane Grp Cap(c), veh/h	653	581	120	1718	859	833
V/C Ratio(X)	1.53	0.85	2.38	0.96	1.13	1.23
Avail Cap(c_a), veh/h	653	581	120	1718	859	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	17.4	30.0	15.0	15.5	15.5
Incr Delay (d2), s/veh	248.0	11.2	647.4	14.5	73.1	112.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	52.9	7.3	23.2	12.3	26.9	35.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	267.0	28.6	677.4	29.4	88.6	128.1
LnGrp LOS	F	C	F	C	F	F
Approach Vol, veh/h	1494			1939	1992	
Approach Delay, s/veh	188.5			125.0	108.9	
Approach LOS	F			F	F	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		34.0		26.0		34.0
Change Period (Y+Rc), s		5.0		4.0		5.0
Max Green Setting (Gmax), s		29.0		22.0		29.0
Max Q Clear Time (g_c+I1), s		31.0		24.0		31.0
Green Ext Time (p_c), s		0.0		0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	136.6
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	308	300	385	222	29	206	1905	644	14	1953	23
Future Volume (veh/h)	83	308	300	385	222	29	206	1905	644	14	1953	23
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	335	326	410	236	31	217	2005	678	15	2078	24
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	206	403	64	412	54	248	2458	771	24	2669	31
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.14	0.64	0.64	0.01	0.51	0.51
Sat Flow, veh/h	173	809	1585	774	1619	213	1781	3849	1208	1781	5204	60
Grp Volume(v), veh/h	425	0	326	410	0	267	217	1755	928	15	1359	743
Grp Sat Flow(s),veh/h/ln	982	0	1585	774	0	1832	1781	1702	1653	1781	1702	1860
Q Serve(g_s), s	14.3	0.0	21.6	0.0	0.0	14.2	13.4	43.1	51.8	0.9	36.3	36.3
Cycle Q Clear(g_c), s	28.5	0.0	21.6	28.5	0.0	14.2	13.4	43.1	51.8	0.9	36.3	36.3
Prop In Lane	0.21		1.00	1.00		0.12	1.00		0.73	1.00		0.03
Lane Grp Cap(c), veh/h	289	0	403	64	0	466	248	2173	1055	24	1746	954
V/C Ratio(X)	1.47	0.00	0.81	6.38	0.00	0.57	0.88	0.81	0.88	0.63	0.78	0.78
Avail Cap(c_a), veh/h	289	0	403	64	0	466	382	2173	1055	175	1746	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	39.2	56.0	0.0	36.4	47.3	15.1	16.7	55.0	22.1	22.1
Incr Delay (d2), s/veh	230.2	0.0	10.8	2452.8	0.0	1.1	9.2	3.3	10.4	9.9	3.5	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.6	0.0	9.5	45.6	0.0	6.5	6.5	16.1	20.7	0.5	14.7	16.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	277.2	0.0	50.0	2508.8	0.0	37.5	56.4	18.5	27.1	64.9	25.6	28.4
LnGrp LOS	F	A	D	F	A	D	E	B	C	E	C	C
Approach Vol, veh/h		751			677			2900			2117	
Approach Delay, s/veh		178.6			1534.1			24.1			26.9	
Approach LOS		F			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.5	75.5		32.0	18.6	61.4		32.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	11.0	62.0		28.5	24.0	49.0		28.5
Max Q Clear Time (g_c+I1), s	2.9	53.8		30.5	15.4	38.3		30.5
Green Ext Time (p_c), s	0.0	8.0		0.0	0.2	9.7		0.0

Intersection Summary	
HCM 6th Ctrl Delay	201.6
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
15: Watkins Street & B Street

09/21/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	332	152	575	382	43	67	13	630	24	32	0
Future Volume (veh/h)	27	332	152	575	382	43	67	13	630	24	32	0
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	361	165	625	415	47	73	14	685	26	35	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	518	227	508	724	82	499	12	570	125	121	580
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.37	0.37	0.37	0.37	0.37	0.00
Sat Flow, veh/h	41	1180	516	877	1650	187	1373	32	1558	0	331	1585
Grp Volume(v), veh/h	555	0	0	625	0	462	73	0	699	61	0	0
Grp Sat Flow(s),veh/h/ln	1736	0	0	877	0	1837	1373	0	1590	331	0	1585
Q Serve(g_s), s	0.8	0.0	0.0	7.5	0.0	7.7	0.0	0.0	15.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.5	0.0	0.0	18.0	0.0	7.7	2.3	0.0	15.0	15.0	0.0	0.0
Prop In Lane	0.05		0.30	1.00		0.10	1.00		0.98	0.43		1.00
Lane Grp Cap(c), veh/h	855	0	0	508	0	806	499	0	582	246	0	580
V/C Ratio(X)	0.65	0.00	0.00	1.23	0.00	0.57	0.15	0.00	1.20	0.25	0.00	0.00
Avail Cap(c_a), veh/h	855	0	0	508	0	806	499	0	582	246	0	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.00	0.09	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.4	0.0	0.0	15.0	0.0	8.6	9.0	0.0	13.0	10.4	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.0	104.8	0.0	0.1	0.6	0.0	106.5	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	19.1	0.0	2.2	0.4	0.0	21.2	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.1	0.0	0.0	119.8	0.0	8.7	9.6	0.0	119.5	12.8	0.0	0.0
LnGrp LOS	B	A	A	F	A	A	A	A	F	B	A	A
Approach Vol, veh/h		555			1087			772			61	
Approach Delay, s/veh		11.1			72.6			109.1			12.8	
Approach LOS		B			E			F			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.0		22.0		19.0		22.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		15.0		18.0		15.0		5.0				
Max Q Clear Time (g_c+I1), s		17.0		20.0		17.0		12.5				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			68.7									
HCM 6th LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	103	60	0	0	0	0	645	286	41	693	30
Future Volume (veh/h)	46	103	60	0	0	0	0	645	286	41	693	30
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	111	65	0	0	0	0	694	308	44	745	32
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	991	560	328	103	946	0	0	737	327	148	1068	46
Arrive On Green	0.51	0.51	0.51	0.00	0.00	0.00	0.00	0.60	0.60	0.60	0.60	0.60
Sat Flow, veh/h	1781	1106	648	1209	1870	0	0	1228	545	562	1780	76
Grp Volume(v), veh/h	49	0	176	0	0	0	0	0	1002	44	0	777
Grp Sat Flow(s),veh/h/ln	1781	0	1754	1209	1870	0	0	0	1772	562	0	1857
Q Serve(g_s), s	1.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	36.4	5.5	0.0	20.2
Cycle Q Clear(g_c), s	1.5	0.0	3.9	0.0	0.0	0.0	0.0	0.0	36.4	41.9	0.0	20.2
Prop In Lane	1.00		0.37	1.00		0.00	0.00		0.31	1.00		0.04
Lane Grp Cap(c), veh/h	991	0	887	103	946	0	0	0	1063	148	0	1114
V/C Ratio(X)	0.05	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.94	0.30	0.00	0.70
Avail Cap(c_a), veh/h	991	0	887	103	946	0	0	0	1063	148	0	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	12.9	32.2	0.0	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	15.5	0.4	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	15.8	0.7	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.0	10.0	0.0	0.0	0.0	0.0	0.0	28.4	32.6	0.0	11.3
LnGrp LOS	A	A	A	A	A	A	A	A	C	C	A	B
Approach Vol, veh/h		225			0			1002			821	
Approach Delay, s/veh		9.8			0.0			28.4			12.4	
Approach LOS		A						C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		46.0		40.4		46.0		40.4				
Change Period (Y+Rc), s		4.0		* 4.5		4.0		4.5				
Max Green Setting (Gmax), s		42.0		* 20		42.0		19.5				
Max Q Clear Time (g_c+I1), s		38.4		5.9		43.9		0.0				
Green Ext Time (p_c), s		1.9		0.6		0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

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

HCM 6th Signalized Intersection Summary
17: Watkins Street & Jackson Street

09/21/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	627	1901	214	0	1601	1	261	96	96	5	415	346
Future Volume (veh/h)	627	1901	214	0	1601	1	261	96	96	5	415	346
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	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	653	1980	223	0	1668	1	272	100	100	5	432	360
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	509	2391	267	0	1061	1	335	162	162	5	396	340
Arrive On Green	0.29	0.51	0.51	0.00	0.20	0.20	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1781	4661	520	0	5439	3	1781	858	858	21	1848	1585
Grp Volume(v), veh/h	653	1441	762	0	1077	592	272	0	200	437	0	360
Grp Sat Flow(s),veh/h/ln	1781	1702	1777	0	1702	1870	1781	0	1716	1869	0	1585
Q Serve(g_s), s	44.0	55.1	56.3	0.0	31.0	31.0	22.5	0.0	16.5	33.0	0.0	33.0
Cycle Q Clear(g_c), s	44.0	55.1	56.3	0.0	31.0	31.0	22.5	0.0	16.5	33.0	0.0	33.0
Prop In Lane	1.00		0.29	0.00		0.00	1.00		0.50	0.01		1.00
Lane Grp Cap(c), veh/h	509	1746	911	0	685	376	335	0	323	401	0	340
V/C Ratio(X)	1.28	0.83	0.84	0.00	1.57	1.57	0.81	0.00	0.62	1.09	0.00	1.06
Avail Cap(c_a), veh/h	509	1746	911	0	685	376	335	0	323	401	0	340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.0	31.7	32.0	0.0	61.5	61.5	59.9	0.0	57.4	60.5	0.0	60.5
Incr Delay (d2), s/veh	141.8	3.4	6.8	0.0	264.5	270.0	18.8	0.0	8.6	71.7	0.0	65.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	39.8	23.2	25.7	0.0	38.6	43.0	12.0	0.0	8.0	23.6	0.0	32.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	196.8	35.1	38.8	0.0	326.0	331.5	78.7	0.0	66.0	132.2	0.0	126.0
LnGrp LOS	F	D	D	A	F	F	E	A	E	F	A	F
Approach Vol, veh/h		2856			1669			472			797	
Approach Delay, s/veh		73.0			327.9			73.3			129.4	
Approach LOS		E			F			E			F	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		33.0		84.0		37.0	48.0	36.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green Setting (Gmax), s		29.0		79.0		33.0	44.0	31.0				
Max Q Clear Time (g_c+I1), s		24.5		58.3		35.0	46.0	33.0				
Green Ext Time (p_c), s		0.9		16.1		0.0	0.0	0.0				

Intersection Summary	
HCM 6th Ctrl Delay	154.2
HCM 6th LOS	F

Intersection	
Intersection Delay, s/veh	103.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	325	337	64	6	58	385	0	0	0	174	136	0
Future Vol, veh/h	325	337	64	6	58	385	0	0	0	174	136	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	353	366	70	7	63	418	0	0	0	189	148	0
Number of Lanes	0	1	0	0	2	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	186.9	25.1	22.8
HCM LOS	F	D	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	45%	17%	0%	56%
Vol Thru, %	46%	83%	7%	44%
Vol Right, %	9%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	726	35	414	310
LT Vol	325	6	0	174
Through Vol	337	29	29	136
RT Vol	64	0	385	0
Lane Flow Rate	789	38	450	337
Geometry Grp	5	7	7	2
Degree of Util (X)	1.348	0.071	0.753	0.64
Departure Headway (Hd)	6.15	7.247	6.489	7.48
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	592	497	563	485
Service Time	4.198	4.947	4.189	5.48
HCM Lane V/C Ratio	1.333	0.076	0.799	0.695
HCM Control Delay	186.9	10.5	26.3	22.8
HCM Lane LOS	F	B	D	C
HCM 95th-tile Q	33.9	0.2	6.6	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	645	969	49	100	574	87	308	99	354	76	77	41
Future Volume (veh/h)	645	969	49	100	574	87	308	99	354	76	77	41
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	658	989	50	102	586	89	314	101	361	78	79	42
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	1051	890	120	569	482	335	499	530	157	153	72
Arrive On Green	0.32	0.56	0.56	0.07	0.30	0.30	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1270	1870	1585	431	574	269
Grp Volume(v), veh/h	658	989	50	102	586	89	314	101	361	199	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1270	1870	1585	1274	0	0
Q Serve(g_s), s	39.0	59.0	1.7	6.8	36.5	5.0	15.3	5.0	23.6	11.7	0.0	0.0
Cycle Q Clear(g_c), s	39.0	59.0	1.7	6.8	36.5	5.0	32.0	5.0	23.6	16.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.39		0.21
Lane Grp Cap(c), veh/h	579	1051	890	120	569	482	335	499	530	381	0	0
V/C Ratio(X)	1.14	0.94	0.06	0.85	1.03	0.18	0.94	0.20	0.68	0.52	0.00	0.00
Avail Cap(c_a), veh/h	579	1051	890	120	569	482	335	499	530	381	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.55	0.55	0.55	1.00	0.00	0.00
Uniform Delay (d), s/veh	40.5	24.5	11.9	55.3	41.8	30.8	47.5	34.1	34.4	38.4	0.0	0.0
Incr Delay (d2), s/veh	81.1	16.8	0.1	40.2	45.7	0.8	22.2	0.1	2.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.8	29.5	0.6	4.4	23.8	2.0	11.6	2.3	9.3	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.6	41.3	12.0	95.5	87.4	31.6	69.7	34.2	36.4	39.7	0.0	0.0
LnGrp LOS	F	D	B	F	F	C	E	C	D	D	A	A
Approach Vol, veh/h		1697			777			776			199	
Approach Delay, s/veh		71.6			82.1			49.6			39.7	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.1	71.9		36.0	43.0	41.0		36.0
Change Period (Y+Rc), s	4.0	4.5		4.0	4.0	4.5		4.0
Max Green Setting (Gmax), s	8.1	67.4		32.0	39.0	36.5		32.0
Max Q Clear Time (g_c+I1), s	8.8	61.0		18.7	41.0	38.5		34.0
Green Ext Time (p_c), s	0.0	3.8		1.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	67.1
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	119	0	27	31	0	40	668	607	0	147	79
Future Volume (veh/h)	91	119	0	27	31	0	40	668	607	0	147	79
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	128	0	29	33	0	43	718	653	0	158	85
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	336	284	335	352	0	71	928	764	0	1205	616
Arrive On Green	0.18	0.18	0.00	0.19	0.19	0.00	0.53	0.53	0.53	0.00	0.53	0.53
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	72	1752	1442	0	2368	1163
Grp Volume(v), veh/h	98	128	0	29	33	0	761	0	653	0	122	121
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1824	0	1442	0	1777	1661
Q Serve(g_s), s	5.6	7.1	0.0	1.6	1.7	0.0	20.8	0.0	45.5	0.0	4.0	4.3
Cycle Q Clear(g_c), s	5.6	7.1	0.0	1.6	1.7	0.0	39.0	0.0	45.5	0.0	4.0	4.3
Prop In Lane	1.00		1.00	1.00		0.00	0.06		1.00	0.00		0.70
Lane Grp Cap(c), veh/h	320	336	284	335	352	0	999	0	764	0	942	880
V/C Ratio(X)	0.31	0.38	0.00	0.09	0.09	0.00	0.76	0.00	0.85	0.00	0.13	0.14
Avail Cap(c_a), veh/h	320	336	284	335	352	0	999	0	764	0	942	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	42.3	0.0	39.2	39.3	0.0	21.9	0.0	23.6	0.0	13.9	13.9
Incr Delay (d2), s/veh	2.5	3.3	0.0	0.5	0.5	0.0	5.5	0.0	11.7	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.6	0.0	0.7	0.8	0.0	17.6	0.0	17.3	0.0	1.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.1	45.5	0.0	39.7	39.8	0.0	27.4	0.0	35.3	0.0	14.2	14.3
LnGrp LOS	D	D	A	D	D	A	C	A	D	A	B	B
Approach Vol, veh/h		226			62			1414			243	
Approach Delay, s/veh		44.9			39.8			31.1			14.2	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.0	25.0	66.0	26.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	62.0	21.0	62.0	22.0
Max Q Clear Time (g_c+I1), s	47.5	9.1	6.3	3.7
Green Ext Time (p_c), s	6.4	0.4	1.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	118	714	322	199	7	82	218	471	8	131	256
Future Volume (veh/h)	159	118	714	322	199	7	82	218	471	8	131	256
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	137	830	413	255	9	91	242	523	9	154	301
Peak Hour Factor	0.86	0.86	0.86	0.78	0.78	0.78	0.90	0.90	0.90	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	797	675	288	765	27	544	571	484	280	280	249
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.31	0.31	0.31	0.16	0.16	0.16
Sat Flow, veh/h	1115	1870	1585	581	1796	63	1781	1870	1585	1781	1777	1585
Grp Volume(v), veh/h	185	137	830	413	0	264	91	242	523	9	154	301
Grp Sat Flow(s),veh/h/ln	1115	1870	1585	581	0	1859	1781	1870	1585	1781	1777	1585
Q Serve(g_s), s	14.4	4.9	46.0	41.1	0.0	10.3	4.0	11.1	33.0	0.5	8.6	17.0
Cycle Q Clear(g_c), s	24.6	4.9	46.0	46.0	0.0	10.3	4.0	11.1	33.0	0.5	8.6	17.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	436	797	675	288	0	792	544	571	484	280	280	249
V/C Ratio(X)	0.42	0.17	1.23	1.43	0.00	0.33	0.17	0.42	1.08	0.03	0.55	1.21
Avail Cap(c_a), veh/h	436	797	675	288	0	792	544	571	484	280	280	249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	19.2	31.0	38.2	0.0	20.7	27.4	29.9	37.5	38.5	42.0	45.5
Incr Delay (d2), s/veh	1.4	0.2	116.0	214.5	0.0	0.5	0.7	2.3	64.1	0.1	4.0	124.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	2.2	38.6	24.9	0.0	4.5	1.8	5.4	21.1	0.2	4.1	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	19.4	147.0	252.8	0.0	21.3	28.1	32.2	101.6	38.6	46.0	169.9
LnGrp LOS	C	B	F	F	A	C	C	C	F	D	D	F
Approach Vol, veh/h		1152			677			856			464	
Approach Delay, s/veh		113.1			162.5			74.2			126.2	
Approach LOS		F			F			E			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	37.0	50.0	21.0	50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	33.0	46.0	17.0	46.0
Max Q Clear Time (g_c+I1), s	35.0	48.0	19.0	48.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	115.1
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	498	235	487	604	441	44	284	638	572	521	49
Future Volume (veh/h)	126	498	235	487	604	441	44	284	638	572	521	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	566	267	524	649	474	47	305	686	602	548	52
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	446	378	368	671	569	61	399	338	416	771	654
Arrive On Green	0.09	0.24	0.24	0.21	0.36	0.36	0.03	0.21	0.21	0.23	0.41	0.41
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	143	566	267	524	649	474	47	305	686	602	548	52
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.0	35.8	23.1	31.0	51.1	41.0	3.9	23.0	32.0	35.0	36.5	3.0
Cycle Q Clear(g_c), s	12.0	35.8	23.1	31.0	51.1	41.0	3.9	23.0	32.0	35.0	36.5	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	154	446	378	368	671	569	61	399	338	416	771	654
V/C Ratio(X)	0.93	1.27	0.71	1.42	0.97	0.83	0.77	0.76	2.03	1.45	0.71	0.08
Avail Cap(c_a), veh/h	154	446	378	368	673	571	71	399	338	416	771	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.59	0.59	0.59
Uniform Delay (d), s/veh	68.0	57.1	52.3	59.5	47.2	44.0	71.8	55.5	59.0	57.5	36.6	26.8
Incr Delay (d2), s/veh	50.3	137.3	6.5	205.7	26.8	10.6	3.2	1.3	463.9	209.7	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	33.9	9.9	35.0	28.7	17.8	1.9	11.0	56.4	40.0	17.5	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.3	194.4	58.7	265.2	74.0	54.7	75.0	56.8	522.9	267.2	39.9	26.9
LnGrp LOS	F	F	E	F	E	D	E	E	F	F	D	C
Approach Vol, veh/h		976			1647			1038			1202	
Approach Delay, s/veh		146.2			129.3			365.6			153.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.0	36.0	35.0	40.0	9.2	65.8	17.0	58.0
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	35.0	32.0	31.0	* 36	6.0	61.0	13.0	* 54
Max Q Clear Time (g_c+I1), s	37.0	34.0	33.0	37.8	5.9	38.5	14.0	53.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	189.0
HCM 6th LOS	F

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	299	487	633	222	732	88	78	579	300	235	652	357
Future Volume (veh/h)	299	487	633	222	732	88	78	579	300	235	652	357
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	352	573	745	234	771	93	91	673	349	261	724	397
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.86	0.86	0.86	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	395	335	534	561	476	116	447	379	129	460	390
Arrive On Green	0.21	0.21	0.21	0.30	0.30	0.30	0.07	0.24	0.24	0.07	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	352	573	745	234	771	93	91	673	349	261	724	397
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.5	19.0	19.0	9.5	27.0	3.9	4.5	21.5	19.3	6.5	22.1	22.1
Cycle Q Clear(g_c), s	17.5	19.0	19.0	9.5	27.0	3.9	4.5	21.5	19.3	6.5	22.1	22.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	376	395	335	534	561	476	116	447	379	129	460	390
V/C Ratio(X)	0.94	1.45	2.23	0.44	1.37	0.20	0.78	1.51	0.92	2.03	1.57	1.02
Avail Cap(c_a), veh/h	376	395	335	534	561	476	129	447	379	129	460	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.15	0.15	0.15	0.18	0.18	0.18
Uniform Delay (d), s/veh	34.9	35.5	35.5	25.4	31.5	23.4	41.4	34.3	33.4	41.8	33.9	33.9
Incr Delay (d2), s/veh	30.6	216.8	561.5	0.6	179.4	0.2	4.4	229.6	7.0	467.9	260.0	24.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	32.2	59.3	4.0	39.7	1.5	2.1	38.0	8.0	19.5	43.0	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.5	252.3	597.0	26.0	210.9	23.6	45.8	263.8	40.4	509.6	293.9	57.9
LnGrp LOS	E	F	F	C	F	C	D	F	D	F	F	F
Approach Vol, veh/h		1670			1098			1113			1382	
Approach Delay, s/veh		366.7			155.6			176.0			266.9	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	25.5		23.0	9.9	26.1		31.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.5	21.5		19.0	6.5	21.5		27.0
Max Q Clear Time (g_c+I1), s	8.5	23.5		21.0	6.5	24.1		29.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	256.1
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	37	37	258	96	63	15	443	509	65	944	183
Future Volume (veh/h)	180	37	37	258	96	63	15	443	509	65	944	183
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	196	40	40	374	139	91	18	534	613	71	1037	201
Peak Hour Factor	0.92	0.92	0.92	0.69	0.69	0.69	0.83	0.83	0.83	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	230	195	261	274	232	145	516	593	48	1216	1030
Arrive On Green	0.12	0.12	0.12	0.15	0.15	0.15	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	450	794	912	490	1870	1585
Grp Volume(v), veh/h	196	40	40	374	139	91	18	0	1147	71	1037	201
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	450	0	1706	490	1870	1585
Q Serve(g_s), s	16.3	2.9	3.4	22.0	10.3	7.8	4.9	0.0	97.5	0.0	65.3	7.6
Cycle Q Clear(g_c), s	16.3	2.9	3.4	22.0	10.3	7.8	70.2	0.0	97.5	97.5	65.3	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	220	230	195	261	274	232	145	0	1109	48	1216	1030
V/C Ratio(X)	0.89	0.17	0.20	1.43	0.51	0.39	0.12	0.00	1.03	1.48	0.85	0.20
Avail Cap(c_a), veh/h	273	287	243	261	274	232	145	0	1109	48	1216	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	0.09	0.00	0.09	0.09	0.09	0.09
Uniform Delay (d), s/veh	64.8	58.9	59.1	64.0	59.0	57.9	48.2	0.0	26.2	75.0	20.6	10.5
Incr Delay (d2), s/veh	21.6	0.1	0.2	214.9	0.6	0.4	0.2	0.0	18.9	225.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	1.4	1.4	25.6	5.0	3.2	0.6	0.0	42.9	4.9	27.5	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.3	59.0	59.3	278.9	59.6	58.3	48.3	0.0	45.2	300.6	21.4	10.6
LnGrp LOS	F	E	E	F	E	E	D	A	F	F	C	B
Approach Vol, veh/h		276			604			1165			1309	
Approach Delay, s/veh		78.5			195.2			45.2			34.9	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	101.5	22.5	101.5	26.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	93.0	23.0	93.0	22.0
Max Q Clear Time (g_c+I1), s	99.5	18.3	99.5	24.0
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	70.9
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	619	176	109	49	238	0	236	163	310	88	543	423
Future Volume (veh/h)	619	176	109	49	238	0	236	163	310	88	543	423
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	711	202	125	52	253	0	284	196	373	96	590	460
Peak Hour Factor	0.87	0.87	0.87	0.94	0.94	0.94	0.83	0.83	0.83	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	570	466	288	67	277	0	226	648	549	116	533	452
Arrive On Green	0.32	0.43	0.43	0.04	0.15	0.00	0.13	0.35	0.35	0.13	0.57	0.57
Sat Flow, veh/h	1781	1081	669	1781	1870	0	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	711	0	327	52	253	0	284	196	373	96	590	460
Grp Sat Flow(s),veh/h/ln	1781	0	1750	1781	1870	0	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	48.0	0.0	19.6	4.3	20.0	0.0	19.0	11.5	30.2	7.9	42.7	42.7
Cycle Q Clear(g_c), s	48.0	0.0	19.6	4.3	20.0	0.0	19.0	11.5	30.2	7.9	42.7	42.7
Prop In Lane	1.00		0.38	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	570	0	754	67	277	0	226	648	549	116	533	452
V/C Ratio(X)	1.25	0.00	0.43	0.78	0.91	0.00	1.26	0.30	0.68	0.83	1.11	1.02
Avail Cap(c_a), veh/h	570	0	754	119	299	0	226	648	549	178	533	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	1.00	0.00	1.00	1.00	1.00	0.16	0.16	0.16
Uniform Delay (d), s/veh	51.0	0.0	29.9	71.6	62.9	0.0	65.5	35.8	41.9	64.4	32.3	32.3
Incr Delay (d2), s/veh	120.4	0.0	0.2	17.3	29.3	0.0	147.1	1.2	6.6	3.2	53.1	21.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.4	0.0	8.4	2.3	11.8	0.0	17.9	5.5	12.9	3.5	22.9	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	171.4	0.0	30.1	88.8	92.2	0.0	212.6	37.0	48.5	67.5	85.4	54.0
LnGrp LOS	F	A	C	F	F	A	F	D	D	E	F	F
Approach Vol, veh/h		1038			305			853			1146	
Approach Delay, s/veh		126.9			91.6			100.5			71.3	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	57.0	9.6	69.6	23.0	47.7	52.0	27.3
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	15.0	45.0	10.0	62.0	19.0	41.0	48.0	24.0
Max Q Clear Time (g_c+I1), s	9.9	32.2	6.3	21.6	21.0	44.7	50.0	22.0
Green Ext Time (p_c), s	0.1	2.1	0.0	2.3	0.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	97.9
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	814	38	30	2	101	783	30	1841	0	820	1846	181
Future Volume (veh/h)	814	38	30	2	101	783	30	1841	0	820	1846	181
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	915	43	34	2	111	860	34	2116	0	891	2007	197
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	385	304	4	387	328	44	1042	465	344	1642	733
Arrive On Green	0.19	0.40	0.40	0.00	0.21	0.21	0.02	0.29	0.00	0.19	0.46	0.46
Sat Flow, veh/h	1781	968	765	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	915	0	77	2	111	860	34	2116	0	891	2007	197
Grp Sat Flow(s),veh/h/ln	1781	0	1733	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	29.0	0.0	4.2	0.2	7.5	31.0	2.8	44.0	0.0	29.0	69.3	11.4
Cycle Q Clear(g_c), s	29.0	0.0	4.2	0.2	7.5	31.0	2.8	44.0	0.0	29.0	69.3	11.4
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	0	689	4	387	328	44	1042	465	344	1642	733
V/C Ratio(X)	2.66	0.00	0.11	0.53	0.29	2.63	0.78	2.03	0.00	2.59	1.22	0.27
Avail Cap(c_a), veh/h	344	0	689	53	387	328	53	1042	465	344	1642	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	0.0	28.5	74.8	50.2	59.5	72.8	53.0	0.0	60.5	40.3	24.8
Incr Delay (d2), s/veh	753.9	0.0	0.1	82.2	0.4	740.2	5.4	463.8	0.0	722.7	105.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	85.2	0.0	1.8	0.2	3.6	79.8	1.4	86.7	0.0	82.2	53.9	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	814.4	0.0	28.5	157.0	50.6	799.7	78.1	516.8	0.0	783.2	145.9	25.7
LnGrp LOS	F	A	C	F	D	F	E	F	A	F	F	C
Approach Vol, veh/h		992			973			2150			3095	
Approach Delay, s/veh		753.4			712.9			509.8			321.7	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	74.3	33.0	35.0	33.0	49.0	4.3	63.7
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	4.5	68.5	29.0	31.0	29.0	44.0	4.5	55.5
Max Q Clear Time (g_c+I1), s	4.8	71.3	31.0	33.0	31.0	46.0	2.2	6.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	490.0
HCM 6th LOS	F

HCM Signalized Intersection Capacity Analysis
1: Roundabout & Mission Blvd.

08/23/2018

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	1836	1823	0	1928
Future Volume (vph)	0	0	1836	1823	0	1928
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5			4.5
Lane Util. Factor			0.95			0.88
Frt			0.93			0.85
Flt Protected			1.00			1.00
Satd. Flow (prot)			3275			2787
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3275			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1996	1982	0	2096
RTOR Reduction (vph)	0	0	357	0	0	2
Lane Group Flow (vph)	0	0	3621	0	0	2094
Turn Type			NA			Perm
Protected Phases			8			
Permitted Phases						6
Actuated Green, G (s)			21.5			19.5
Effective Green, g (s)			21.5			19.5
Actuated g/C Ratio			0.43			0.39
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1408			1086
v/s Ratio Prot			c1.11			
v/s Ratio Perm						c0.75
v/c Ratio			2.57			1.93
Uniform Delay, d1			14.2			15.2
Progression Factor			0.77			1.00
Incremental Delay, d2			707.3			421.2
Delay (s)			718.4			436.4
Level of Service			F			F
Approach Delay (s)		0.0	718.4		436.4	
Approach LOS		A	F		F	

Intersection Summary			
HCM 2000 Control Delay	621.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.26		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	184.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1917	1742	2449	0	0
Future Volume (vph)	0	1917	1742	2449	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5			
Lane Util. Factor		0.88	0.95			
Frt		0.85	0.91			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		2787	3229			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		2787	3229			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2084	1893	2662	0	0
RTOR Reduction (vph)	0	2	507	0	0	0
Lane Group Flow (vph)	0	2082	4048	0	0	0
Turn Type		Prot	NA			
Protected Phases		8	2			
Permitted Phases						
Actuated Green, G (s)		19.5	21.5			
Effective Green, g (s)		19.5	21.5			
Actuated g/C Ratio		0.39	0.43			
Clearance Time (s)		4.5	4.5			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		1086	1388			
v/s Ratio Prot		c0.75	c1.25			
v/s Ratio Perm						
v/c Ratio		1.92	2.92			
Uniform Delay, d1		15.2	14.2			
Progression Factor		1.00	1.13			
Incremental Delay, d2		416.0	862.5			
Delay (s)		431.2	878.5			
Level of Service		F	F			
Approach Delay (s)	431.2		878.5		0.0	
Approach LOS	F		F		A	

Intersection Summary			
HCM 2000 Control Delay	738.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.44		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	201.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2174	1990	0	0	0	2017
Future Volume (vph)	2174	1990	0	0	0	2017
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.95					0.88
Frt	0.93					0.85
Flt Protected	1.00					1.00
Satd. Flow (prot)	3286					2787
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3286					2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2363	2163	0	0	0	2192
RTOR Reduction (vph)	330	0	0	0	0	1
Lane Group Flow (vph)	4196	0	0	0	0	2191
Turn Type	NA					Perm
Protected Phases	4					
Permitted Phases						2
Actuated Green, G (s)	21.5					19.5
Effective Green, g (s)	21.5					19.5
Actuated g/C Ratio	0.43					0.39
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	1412					1086
v/s Ratio Prot	c1.28					
v/s Ratio Perm						c0.79
v/c Ratio	2.97					2.02
Uniform Delay, d1	14.2					15.2
Progression Factor	0.87					1.00
Incremental Delay, d2	887.4					461.3
Delay (s)	899.8					476.5
Level of Service	F					F
Approach Delay (s)	899.8			0.0	476.5	
Approach LOS	F			A	F	

Intersection Summary			
HCM 2000 Control Delay	761.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.52		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	202.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	2002	0	0	2162	1602
Future Volume (vph)	0	2002	0	0	2162	1602
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	
Lane Util. Factor		0.88			0.95	
Frt		0.85			0.94	
Flt Protected		1.00			1.00	
Satd. Flow (prot)		2787			3313	
Flt Permitted		1.00			1.00	
Satd. Flow (perm)		2787			3313	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2176	0	0	2350	1741
RTOR Reduction (vph)	0	1	0	0	267	0
Lane Group Flow (vph)	0	2175	0	0	3824	0
Turn Type		Perm			NA	
Protected Phases					6	
Permitted Phases		4				
Actuated Green, G (s)		19.5			21.5	
Effective Green, g (s)		19.5			21.5	
Actuated g/C Ratio		0.39			0.43	
Clearance Time (s)		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1086			1424	
v/s Ratio Prot					c1.15	
v/s Ratio Perm		c0.78				
v/c Ratio		2.00			2.69	
Uniform Delay, d1		15.2			14.2	
Progression Factor		1.00			1.22	
Incremental Delay, d2		454.7			758.7	
Delay (s)		469.9			776.1	
Level of Service		F			F	
Approach Delay (s)	469.9			0.0	776.1	
Approach LOS	F			A	F	

Intersection Summary			
HCM 2000 Control Delay	669.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	188.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Appendix 5: Cumulative (2040) Plus Specific Plan (Mitigated) Intersection Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	292	32	927	664	124	31	1394	328	494	499	9
Future Volume (veh/h)	239	292	32	927	664	124	31	1394	328	494	499	9
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	260	317	35	1173	841	128	32	1452	342	537	542	10
Peak Hour Factor	0.92	0.92	0.92	0.79	0.79	0.97	0.96	0.96	0.96	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	635	70	1294	912	139	44	1536	885	417	1416	26
Arrive On Green	0.16	0.20	0.20	0.26	0.29	0.29	0.02	0.30	0.30	0.12	0.40	0.40
Sat Flow, veh/h	1781	3230	354	5023	3092	471	1781	5106	1585	3456	3570	66
Grp Volume(v), veh/h	260	173	179	1173	483	486	32	1452	342	537	270	282
Grp Sat Flow(s),veh/h/ln	1781	1777	1807	1674	1777	1786	1781	1702	1585	1728	1777	1859
Q Serve(g_s), s	20.8	12.6	12.8	32.8	38.2	38.2	2.6	40.3	17.6	17.5	15.7	15.7
Cycle Q Clear(g_c), s	20.8	12.6	12.8	32.8	38.2	38.2	2.6	40.3	17.6	17.5	15.7	15.7
Prop In Lane	1.00		0.20	1.00		0.26	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	284	349	355	1294	524	527	44	1536	885	417	705	737
V/C Ratio(X)	0.92	0.50	0.50	0.91	0.92	0.92	0.72	0.95	0.39	1.29	0.38	0.38
Avail Cap(c_a), veh/h	326	380	386	1403	551	554	85	1536	885	417	705	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	1.00	1.00	1.00	0.09	0.09	0.09	0.48	0.48	0.48
Uniform Delay (d), s/veh	60.0	51.9	51.9	52.1	49.5	49.5	70.2	49.5	18.0	63.8	31.1	31.1
Incr Delay (d2), s/veh	22.6	0.8	0.8	8.3	20.6	20.6	2.0	1.7	0.1	138.1	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.2	5.7	5.9	14.8	19.9	20.0	1.2	17.3	6.5	15.7	6.9	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.5	52.7	52.8	60.5	70.1	70.1	72.2	51.2	18.1	201.8	31.9	31.9
LnGrp LOS	F	D	D	E	E	E	E	D	B	F	C	C
Approach Vol, veh/h		612			2142			1826			1089	
Approach Delay, s/veh		65.4			64.8			45.4			115.7	
Approach LOS		E			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	48.6	41.9	32.5	8.1	62.5	27.6	46.8
Change Period (Y+Rc), s	4.5	5.0	4.5	4.0	4.5	5.0	4.5	4.0
Max Green Setting (Gmax), s	17.5	38.0	40.5	31.0	6.9	48.6	26.5	45.0
Max Q Clear Time (g_c+I1), s	19.5	42.3	34.8	14.8	4.6	17.7	22.8	40.2
Green Ext Time (p_c), s	0.0	0.0	2.6	1.8	0.0	3.6	0.3	2.6

Intersection Summary	
HCM 6th Ctrl Delay	68.4
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	783	75	414	578	3	17	152	113	0	174	431
Future Volume (veh/h)	99	783	75	414	578	3	17	152	113	0	174	431
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	396	3132	300	422	590	3	30	271	202	0	210	519
Peak Hour Factor	0.25	0.25	0.25	0.98	0.98	0.98	0.56	0.56	0.56	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	3047	946	334	854	724	139	222	166	48	418	729
Arrive On Green	0.24	0.60	0.60	0.10	0.46	0.46	0.22	0.22	0.22	0.00	0.22	0.22
Sat Flow, veh/h	1781	5106	1585	3456	1870	1585	726	995	742	921	1870	1585
Grp Volume(v), veh/h	396	3132	300	422	590	3	30	0	473	0	210	519
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1870	1585	726	0	1737	921	1870	1585
Q Serve(g_s), s	32.7	89.5	14.1	14.5	37.5	0.2	5.7	0.0	33.5	0.0	14.7	33.5
Cycle Q Clear(g_c), s	32.7	89.5	14.1	14.5	37.5	0.2	20.4	0.0	33.5	0.0	14.7	33.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	421	3047	946	334	854	724	139	0	388	48	418	729
V/C Ratio(X)	0.94	1.03	0.32	1.26	0.69	0.00	0.22	0.00	1.22	0.00	0.50	0.71
Avail Cap(c_a), veh/h	493	3047	946	334	854	724	139	0	388	48	418	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	0.56	0.56	0.56	0.90	0.00	0.90	0.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	30.3	15.0	67.8	32.3	22.2	59.9	0.0	58.3	0.0	51.0	32.5
Incr Delay (d2), s/veh	15.3	19.8	0.1	131.5	1.3	0.0	3.2	0.0	118.1	0.0	4.3	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	40.6	5.2	12.5	17.3	0.1	1.2	0.0	27.4	0.0	7.5	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.5	50.0	15.1	199.3	33.7	22.2	63.1	0.0	176.4	0.0	55.2	38.4
LnGrp LOS	E	F	B	F	C	C	E	A	F	A	E	D
Approach Vol, veh/h		3828			1015			503			729	
Approach Delay, s/veh		49.5			102.5			169.6			43.2	
Approach LOS		D			F			F			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		37.0	19.0	94.0		37.0	40.0	73.0				
Change Period (Y+Rc), s		3.5	4.5	4.5		3.5	4.5	* 4.5				
Max Green Setting (Gmax), s		33.5	14.5	89.5		33.5	41.5	* 64				
Max Q Clear Time (g_c+I1), s		35.5	16.5	91.5		35.5	34.7	39.5				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.7	4.2				

Intersection Summary	
HCM 6th Ctrl Delay	67.6
HCM 6th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	208	44	774	188	64	78	637	712	37	1259	682
Future Volume (veh/h)	54	208	44	774	188	64	78	637	712	37	1259	682
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	226	48	815	198	67	85	692	774	40	1354	733
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	258	219	590	564	191	74	1630	727	168	1630	802
Arrive On Green	0.05	0.14	0.14	0.33	0.42	0.42	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	1781	1337	452	198	3554	1585	362	3554	1585
Grp Volume(v), veh/h	59	226	48	815	0	265	85	692	774	40	1354	733
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1789	198	1777	1585	362	1777	1585
Q Serve(g_s), s	4.7	17.2	3.9	48.0	0.0	14.6	18.2	19.0	66.5	12.1	48.3	61.7
Cycle Q Clear(g_c), s	4.7	17.2	3.9	48.0	0.0	14.6	66.5	19.0	66.5	31.1	48.3	61.7
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	258	219	590	0	755	74	1630	727	168	1630	802
V/C Ratio(X)	0.70	0.88	0.22	1.38	0.00	0.35	1.14	0.42	1.06	0.24	0.83	0.91
Avail Cap(c_a), veh/h	338	348	295	590	0	755	74	1630	727	168	1630	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.00	0.72	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.1	61.3	55.6	48.5	0.0	28.4	69.5	26.4	39.3	36.9	34.3	32.9
Incr Delay (d2), s/veh	10.1	16.9	0.5	179.6	0.0	0.2	78.3	0.1	32.5	3.3	5.1	16.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	9.4	1.6	50.6	0.0	6.4	4.4	8.1	31.9	1.2	21.9	26.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.2	78.2	56.1	228.1	0.0	28.6	147.8	26.5	71.7	40.2	39.4	49.7
LnGrp LOS	E	E	E	F	A	C	F	C	F	D	D	D
Approach Vol, veh/h		333			1080			1551			2127	
Approach Delay, s/veh		75.0			179.1			55.7			43.0	
Approach LOS		E			F			E			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		70.0	10.3	64.7		70.0	51.5	23.5				
Change Period (Y+Rc), s		3.5	3.5	3.5		3.5	3.5	3.5				
Max Green Setting (Gmax), s		59.5	27.5	47.5		59.5	48.0	27.0				
Max Q Clear Time (g_c+I1), s		68.5	6.7	16.6		63.7	50.0	19.2				
Green Ext Time (p_c), s		0.0	0.1	1.7		0.0	0.0	0.8				

Intersection Summary	
HCM 6th Ctrl Delay	77.8
HCM 6th LOS	E

HCM 6th Signalized Intersection Summary
10: Mission Boulevard & B Street

09/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	78	118	71	639	26	42	1225	542	21	1697	358
Future Volume (veh/h)	178	78	118	71	639	26	42	1225	542	21	1697	358
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	193	85	128	76	680	28	46	1332	589	24	1907	402
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	305	460	489	809	33	76	2183	974	139	2183	974
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	741	674	1014	1168	1784	73	159	3554	1585	233	3554	1585
Grp Volume(v), veh/h	193	0	213	76	0	708	46	1332	589	24	1907	402
Grp Sat Flow(s),veh/h/ln	741	0	1688	1168	0	1857	159	1777	1585	233	1777	1585
Q Serve(g_s), s	16.4	0.0	11.0	6.1	0.0	47.1	21.8	32.4	31.9	10.1	62.5	18.3
Cycle Q Clear(g_c), s	63.5	0.0	11.0	17.1	0.0	47.1	86.0	32.4	31.9	43.5	62.5	18.3
Prop In Lane	1.00		0.60	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	766	489	0	842	76	2183	974	139	2183	974
V/C Ratio(X)	1.40	0.00	0.28	0.16	0.00	0.84	0.60	0.61	0.60	0.17	0.87	0.41
Avail Cap(c_a), veh/h	138	0	766	489	0	842	76	2183	974	139	2183	974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	0.51	0.00	0.51	0.09	0.09	0.09	0.09	0.09	0.09
Uniform Delay (d), s/veh	64.9	0.0	23.9	29.3	0.0	33.8	64.1	16.7	16.6	30.5	22.5	14.0
Incr Delay (d2), s/veh	216.1	0.0	0.2	0.1	0.0	4.1	3.2	0.1	0.3	0.2	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.3	0.0	4.5	1.8	0.0	22.0	1.7	12.9	11.4	0.6	25.1	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	281.0	0.0	24.1	29.4	0.0	37.9	67.3	16.8	16.8	30.7	23.0	14.1
LnGrp LOS	F	A	C	C	A	D	E	B	B	C	C	B
Approach Vol, veh/h		406			784			1967			2333	
Approach Delay, s/veh		146.2			37.0			18.0			21.5	
Approach LOS		F			D			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		90.5		67.5		90.5		67.5				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		69.0		63.5		69.0		63.5				
Max Q Clear Time (g_c+I1), s		88.0		65.5		64.5		49.1				
Green Ext Time (p_c), s		0.0		0.0		4.1		4.6				

Intersection Summary												
HCM 6th Ctrl Delay			31.7									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	388	53	59	665	0	39	0	1377	491	64	1811	0
Future Volume (veh/h)	388	53	59	665	0	39	0	1377	491	64	1811	0
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	417	57	63	715	0	42	0	1481	528	69	1947	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	69	76	493	0	181	48	1432	481	48	1948	0
Arrive On Green	0.25	0.09	0.09	0.28	0.00	0.11	0.00	0.55	0.55	1.00	1.00	0.00
Sat Flow, veh/h	1781	812	897	1781	0	1585	227	2612	878	213	3647	0
Grp Volume(v), veh/h	417	0	120	715	0	42	0	979	1030	69	1947	0
Grp Sat Flow(s),veh/h/ln	1781	0	1709	1781	0	1585	227	1777	1712	213	1777	0
Q Serve(g_s), s	34.5	0.0	10.4	41.5	0.0	3.6	0.0	82.2	82.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	34.5	0.0	10.4	41.5	0.0	3.6	0.0	82.2	82.2	82.2	0.0	0.0
Prop In Lane	1.00		0.52	1.00		1.00	1.00		0.51	1.00		0.00
Lane Grp Cap(c), veh/h	441	0	145	493	0	181	48	974	939	48	1948	0
V/C Ratio(X)	0.94	0.00	0.83	1.45	0.00	0.23	0.00	1.00	1.10	1.44	1.00	0.00
Avail Cap(c_a), veh/h	496	0	262	493	0	235	48	974	939	48	1948	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.92	0.00	0.92	0.76	0.00	0.76	0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	55.4	0.0	67.5	54.3	0.0	60.5	0.0	33.9	33.9	41.1	0.0	0.0
Incr Delay (d2), s/veh	24.3	0.0	10.3	211.4	0.0	0.5	0.0	30.0	59.7	207.4	6.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	0.0	5.0	47.5	0.0	1.5	0.0	42.5	48.7	4.5	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.7	0.0	77.8	265.7	0.0	61.0	0.0	63.8	93.5	248.5	6.0	0.0
LnGrp LOS	E	A	E	F	A	E	A	F	F	F	A	A
Approach Vol, veh/h		537			757			2009			2016	
Approach Delay, s/veh		79.3			254.3			79.1			14.3	
Approach LOS		E			F			E			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		86.7	46.0	17.3		86.7	41.7	21.6				
Change Period (Y+Rc), s		4.5	4.5	* 4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		72.5	41.5	* 23		72.5	41.8	22.2				
Max Q Clear Time (g_c+I1), s		84.2	43.5	12.4		84.2	36.5	5.6				
Green Ext Time (p_c), s		0.0	0.0	0.4		0.0	0.7	0.1				

Intersection Summary	
HCM 6th Ctrl Delay	79.5
HCM 6th LOS	E

Notes

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

HCM 6th Signalized Intersection Summary
12: Mission Boulevard & D Street

09/30/2018

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	276	382	260	1591	1560	974
Future Volume (veh/h)	276	382	260	1591	1560	974
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	554	283	1729	1660	1036
Peak Hour Factor	0.80	0.80	0.92	0.92	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	365	650	132	2403	2403	1072
Arrive On Green	0.21	0.21	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1781	3170	108	3647	3647	1585
Grp Volume(v), veh/h	274	554	283	1729	1660	1036
Grp Sat Flow(s),veh/h/ln	1781	1585	108	1777	1777	1585
Q Serve(g_s), s	11.6	13.5	31.4	24.5	22.7	48.9
Cycle Q Clear(g_c), s	11.6	13.5	54.1	24.5	22.7	48.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	365	650	132	2403	2403	1072
V/C Ratio(X)	0.75	0.85	2.14	0.72	0.69	0.97
Avail Cap(c_a), veh/h	401	713	132	2403	2403	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	30.6	35.0	8.2	7.9	12.1
Incr Delay (d2), s/veh	7.0	9.1	536.9	1.9	1.7	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.8	22.3	7.9	7.3	19.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.9	39.7	571.9	10.1	9.5	32.7
LnGrp LOS	D	D	F	B	A	C
Approach Vol, veh/h	828			2012	2696	
Approach Delay, s/veh	38.8			89.1	18.4	
Approach LOS	D			F	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		59.1		20.9		59.1
Change Period (Y+Rc), s		5.0		4.5		5.0
Max Green Setting (Gmax), s		52.5		18.0		52.5
Max Q Clear Time (g_c+I1), s		56.1		15.5		50.9
Green Ext Time (p_c), s		0.0		0.9		1.5

Intersection Summary	
HCM 6th Ctrl Delay	47.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	133	475	745	211	11	251	1852	165	11	1859	178
Future Volume (veh/h)	14	133	475	745	211	11	251	1852	165	11	1859	178
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	162	579	898	254	13	292	2153	192	12	2043	196
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	30	290	757	798	408	21	341	2499	1142	19	1903	181
Arrive On Green	0.17	0.17	0.17	0.23	0.23	0.23	0.10	0.49	0.49	0.01	0.40	0.40
Sat Flow, veh/h	177	1685	2790	3456	1764	90	3456	5106	1585	1781	4742	451
Grp Volume(v), veh/h	179	0	579	898	0	267	292	2153	192	12	1461	778
Grp Sat Flow(s),veh/h/ln	1862	0	1395	1728	0	1854	1728	1702	1585	1781	1702	1789
Q Serve(g_s), s	12.8	0.0	25.0	33.5	0.0	18.8	12.1	54.0	5.6	1.0	58.2	58.2
Cycle Q Clear(g_c), s	12.8	0.0	25.0	33.5	0.0	18.8	12.1	54.0	5.6	1.0	58.2	58.2
Prop In Lane	0.09		1.00	1.00		0.05	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	321	0	757	798	0	428	341	2499	1142	19	1366	718
V/C Ratio(X)	0.56	0.00	0.77	1.12	0.00	0.62	0.86	0.86	0.17	0.64	1.07	1.08
Avail Cap(c_a), veh/h	321	0	757	798	0	428	453	2499	1142	49	1366	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	0.0	48.6	55.8	0.0	50.1	64.3	32.7	6.4	71.5	43.4	43.4
Incr Delay (d2), s/veh	1.3	0.0	4.2	72.0	0.0	2.1	9.4	4.2	0.3	12.5	45.5	58.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	10.1	22.6	0.0	9.0	5.8	22.9	4.0	0.5	32.8	37.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	0.0	52.8	127.7	0.0	52.2	73.7	36.9	6.8	84.0	88.9	101.9
LnGrp LOS	E	A	D	F	A	D	E	D	A	F	F	F
Approach Vol, veh/h		758			1165			2637			2251	
Approach Delay, s/veh		53.6			110.4			38.8			93.4	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.5	75.0		28.5	17.3	62.2		37.0
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	4.0	68.5		25.0	19.0	53.5		33.5
Max Q Clear Time (g_c+I1), s	3.0	56.0		27.0	14.1	60.2		35.5
Green Ext Time (p_c), s	0.0	11.6		0.0	0.3	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	70.7
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	1673	181	0	2132	49	405	147	98	2	46	713
Future Volume (veh/h)	405	1673	181	0	2132	49	405	147	98	2	46	713
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	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	426	1761	191	0	2244	52	426	155	103	2	48	751
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	346	2301	249	0	2380	55	696	211	140	16	394	893
Arrive On Green	0.10	0.49	0.49	0.00	0.37	0.37	0.20	0.20	0.20	0.22	0.22	0.22
Sat Flow, veh/h	3456	4678	505	0	6780	151	3456	1048	697	75	1792	2790
Grp Volume(v), veh/h	426	1279	673	0	1661	635	426	0	258	50	0	751
Grp Sat Flow(s),veh/h/ln	1728	1702	1779	0	1609	1843	1728	0	1745	1867	0	1395
Q Serve(g_s), s	15.0	45.9	46.3	0.0	50.0	50.0	16.8	0.0	20.8	3.2	0.0	33.0
Cycle Q Clear(g_c), s	15.0	45.9	46.3	0.0	50.0	50.0	16.8	0.0	20.8	3.2	0.0	33.0
Prop In Lane	1.00		0.28	0.00		0.08	1.00		0.40	0.04		1.00
Lane Grp Cap(c), veh/h	346	1674	875	0	1762	673	696	0	352	411	0	893
V/C Ratio(X)	1.23	0.76	0.77	0.00	0.94	0.94	0.61	0.00	0.73	0.12	0.00	0.84
Avail Cap(c_a), veh/h	346	1679	878	0	1769	676	696	0	352	411	0	893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.5	31.0	31.1	0.0	46.1	46.1	54.5	0.0	56.1	46.9	0.0	47.5
Incr Delay (d2), s/veh	127.4	2.1	4.2	0.0	10.7	21.7	4.0	0.0	12.8	0.1	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	19.2	20.8	0.0	21.7	26.9	7.8	0.0	10.4	1.5	0.0	27.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	194.9	33.2	35.3	0.0	56.8	67.8	58.5	0.0	68.9	47.0	0.0	54.7
LnGrp LOS	F	C	D	A	E	E	E	A	E	D	A	D
Approach Vol, veh/h		2378			2296			684			801	
Approach Delay, s/veh		62.7			59.8			62.4			54.3	
Approach LOS		E			E			E			D	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		34.2		78.8		37.0	19.0	59.8				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green Setting (Gmax), s		30.0		74.0		33.0	15.0	55.0				
Max Q Clear Time (g_c+I1), s		22.8		48.3		35.0	17.0	52.0				
Green Ext Time (p_c), s		1.9		16.8		0.0	0.0	2.8				

Intersection Summary												
HCM 6th Ctrl Delay			60.5									
HCM 6th LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	64	19	114	121	126	0	0	0	136	138	442
Future Volume (veh/h)	0	64	19	114	121	126	0	0	0	136	138	442
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	0	74	22	133	141	147				158	160	514
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86				0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	0	418	124	327	316	337				174	176	565
Arrive On Green	0.00	0.30	0.30	0.30	0.30	0.30				0.55	0.55	0.55
Sat Flow, veh/h	0	1385	412	766	1046	1119				317	321	1031
Grp Volume(v), veh/h	0	0	96	224	0	197				832	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1796	1430	0	1501				1669	0	0
Q Serve(g_s), s	0.0	0.0	2.4	5.8	0.0	6.3				26.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.4	8.2	0.0	6.3				26.9	0.0	0.0
Prop In Lane	0.00		0.23	0.59		0.75				0.19		0.62
Lane Grp Cap(c), veh/h	0	0	542	527	0	453				915	0	0
V/C Ratio(X)	0.00	0.00	0.18	0.42	0.00	0.44				0.91	0.00	0.00
Avail Cap(c_a), veh/h	0	0	542	527	0	453				915	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	15.5	17.6	0.0	16.8				12.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.7	2.5	0.0	3.0				14.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.0	2.7	0.0	2.4				11.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	16.2	20.1	0.0	19.9				26.7	0.0	0.0
LnGrp LOS	A	A	B	C	A	B				C	A	A
Approach Vol, veh/h		96			421						832	
Approach Delay, s/veh		16.2			20.0						26.7	
Approach LOS		B			B						C	

Timer - Assigned Phs		4		6		8						
Phs Duration (G+Y+Rc), s		22.6		37.4		22.6						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		18.1		32.9		18.1						
Max Q Clear Time (g_c+I1), s		4.4		28.9		10.2						
Green Ext Time (p_c), s		0.3		2.2		1.6						

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	104	453	380	73	5	190	180	467	4	99	165
Future Volume (veh/h)	190	104	453	380	73	5	190	180	467	4	99	165
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	128	559	481	92	6	211	200	519	6	143	239
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.90	0.90	0.90	0.69	0.69	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	818	1149	389	760	50	512	538	456	223	222	198
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.29	0.29	0.29	0.13	0.13	0.13
Sat Flow, veh/h	1297	1870	1585	755	1737	113	1781	1870	1585	1781	1777	1585
Grp Volume(v), veh/h	235	128	559	481	0	98	211	200	519	6	143	239
Grp Sat Flow(s),veh/h/ln	1297	1870	1585	755	0	1850	1781	1870	1585	1781	1777	1585
Q Serve(g_s), s	10.5	3.3	12.0	31.7	0.0	2.5	7.7	6.8	23.0	0.2	6.1	10.0
Cycle Q Clear(g_c), s	13.0	3.3	12.0	35.0	0.0	2.5	7.7	6.8	23.0	0.2	6.1	10.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	617	818	1149	389	0	809	512	538	456	223	222	198
V/C Ratio(X)	0.38	0.16	0.49	1.24	0.00	0.12	0.41	0.37	1.14	0.03	0.64	1.21
Avail Cap(c_a), veh/h	617	818	1149	389	0	809	512	538	456	223	222	198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	13.6	4.7	27.8	0.0	13.4	23.0	22.7	28.5	30.7	33.3	35.0
Incr Delay (d2), s/veh	0.8	0.2	0.7	126.5	0.0	0.1	2.4	2.0	86.0	0.2	13.5	130.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	1.4	8.5	21.2	0.0	1.0	3.4	3.2	19.2	0.1	3.4	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	13.8	5.4	154.3	0.0	13.5	25.5	24.7	114.5	31.0	46.8	165.6
LnGrp LOS	B	B	A	F	A	B	C	C	F	C	D	F
Approach Vol, veh/h		922			579			930			388	
Approach Delay, s/veh		9.8			130.5			75.0			119.7	
Approach LOS		A			F			E			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	27.0	39.0	14.0	39.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	23.0	35.0	10.0	35.0
Max Q Clear Time (g_c+I1), s	25.0	15.0	12.0	37.0
Green Ext Time (p_c), s	0.0	8.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	71.2
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	704	6	683	391	350	117	479	383	263	327	320
Future Volume (veh/h)	62	704	6	683	391	350	117	479	383	263	327	320
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	757	6	727	416	372	134	551	440	299	372	364
Peak Hour Factor	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	731	462	794	691	721	153	679	940	296	679	681
Arrive On Green	0.07	0.21	0.21	0.23	0.37	0.37	0.09	0.36	0.36	0.09	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	67	757	6	727	416	372	134	551	440	299	372	364
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1870	1585	1728	1870	1585
Q Serve(g_s), s	5.1	28.8	0.4	28.7	25.3	23.4	10.4	37.2	21.9	12.0	22.1	23.8
Cycle Q Clear(g_c), s	5.1	28.8	0.4	28.7	25.3	23.4	10.4	37.2	21.9	12.0	22.1	23.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	731	462	794	691	721	153	679	940	296	679	681
V/C Ratio(X)	0.57	1.04	0.01	0.92	0.60	0.52	0.88	0.81	0.47	1.01	0.55	0.53
Avail Cap(c_a), veh/h	229	731	462	1160	775	793	153	679	940	296	679	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.14	0.14	0.14	0.72	0.72	0.72
Uniform Delay (d), s/veh	63.4	55.6	35.3	52.6	35.8	27.2	63.3	40.2	16.1	64.0	35.4	29.6
Incr Delay (d2), s/veh	1.6	42.8	0.0	6.6	1.4	0.8	8.0	1.6	0.2	46.8	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	17.2	0.2	13.2	11.9	9.1	5.1	17.4	7.9	7.2	10.6	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	98.4	35.3	59.2	37.2	28.0	71.3	41.8	16.3	110.8	37.7	31.8
LnGrp LOS	E	F	D	E	D	C	E	D	B	F	D	C
Approach Vol, veh/h		830			1515			1125			1035	
Approach Delay, s/veh		95.2			45.5			35.3			56.7	
Approach LOS		F			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	54.9	36.1	33.0	16.0	54.9	13.3	55.9
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	12.0	36.0	47.0	* 29	12.0	36.0	18.0	* 58
Max Q Clear Time (g_c+I1), s	14.0	39.2	30.7	30.8	12.4	25.8	7.1	27.3
Green Ext Time (p_c), s	0.0	0.0	1.4	0.0	0.0	3.7	0.0	6.6

Intersection Summary	
HCM 6th Ctrl Delay	54.7
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	375	498	127	935	177	74	580	312	6	321	690
Future Volume (veh/h)	222	375	498	127	935	177	74	580	312	6	321	690
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	271	457	607	137	1005	190	84	659	355	7	378	812
Peak Hour Factor	0.82	0.82	0.82	0.93	0.93	0.93	0.88	0.88	0.88	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	754	751	219	754	656	126	761	645	19	649	968
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.07	0.41	0.41	0.01	0.35	0.35
Sat Flow, veh/h	909	1870	1585	530	1870	1585	1781	1870	1585	1781	1870	2790
Grp Volume(v), veh/h	271	457	607	137	1005	190	84	659	355	7	378	812
Grp Sat Flow(s),veh/h/ln	454	1870	1585	530	1870	1585	1781	1870	1585	1781	1870	1395
Q Serve(g_s), s	0.0	12.9	21.9	14.1	27.0	5.3	3.1	21.6	11.5	0.3	11.1	18.0
Cycle Q Clear(g_c), s	27.0	12.9	21.9	27.0	27.0	5.3	3.1	21.6	11.5	0.3	11.1	18.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	754	751	219	754	656	126	761	645	19	649	968
V/C Ratio(X)	1.26	0.61	0.81	0.63	1.33	0.29	0.67	0.87	0.55	0.36	0.58	0.84
Avail Cap(c_a), veh/h	215	754	751	219	754	656	173	761	645	173	649	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.21	0.21	0.21	0.49	0.49	0.49
Uniform Delay (d), s/veh	33.5	15.8	15.0	27.8	20.0	13.1	30.4	18.2	15.2	32.9	17.9	20.1
Incr Delay (d2), s/veh	149.2	1.4	6.6	5.5	159.0	0.2	1.3	3.0	0.7	5.4	1.9	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	5.3	8.2	2.5	43.7	1.8	1.3	8.9	3.9	0.1	4.7	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	182.7	17.2	21.6	33.3	179.0	13.3	31.6	21.2	15.9	38.3	19.8	24.6
LnGrp LOS	F	B	C	C	F	B	C	C	B	D	B	C
Approach Vol, veh/h		1335			1332			1098			1197	
Approach Delay, s/veh		52.8			140.4			20.3			23.2	
Approach LOS		D			F			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.7	31.3		31.0	8.7	27.3		31.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.5	21.5		19.0	6.5	21.5		27.0
Max Q Clear Time (g_c+I1), s	2.3	23.6		29.0	5.1	20.0		29.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	1.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	62.0
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	631	315	0	18	448	10	238	322	145	0	693	135
Future Volume (veh/h)	631	315	0	18	448	10	238	322	145	0	693	135
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	734	366	0	21	527	12	270	366	165	0	806	157
Peak Hour Factor	0.86	0.86	0.86	0.85	0.85	0.85	0.88	0.88	0.88	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	778	927	0	43	550	467	153	712	603	1	946	422
Arrive On Green	0.23	0.50	0.00	0.02	0.29	0.29	0.09	0.38	0.38	0.00	0.53	0.53
Sat Flow, veh/h	3456	1870	0	1781	1870	1585	1781	1870	1585	1781	3554	1585
Grp Volume(v), veh/h	734	366	0	21	527	12	270	366	165	0	806	157
Grp Sat Flow(s),veh/h/ln	1728	1870	0	1781	1870	1585	1781	1870	1585	1781	1777	1585
Q Serve(g_s), s	29.3	17.2	0.0	1.6	38.8	0.8	12.0	21.1	10.1	0.0	27.2	8.1
Cycle Q Clear(g_c), s	29.3	17.2	0.0	1.6	38.8	0.8	12.0	21.1	10.1	0.0	27.2	8.1
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	778	927	0	43	550	467	153	712	603	1	946	422
V/C Ratio(X)	0.94	0.39	0.00	0.49	0.96	0.03	1.77	0.51	0.27	0.00	0.85	0.37
Avail Cap(c_a), veh/h	790	927	0	76	561	476	153	712	603	76	946	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.59	0.59	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.71	0.71
Uniform Delay (d), s/veh	53.4	22.1	0.0	67.5	48.5	35.1	64.0	33.4	30.0	0.0	30.4	25.9
Incr Delay (d2), s/veh	13.3	0.2	0.0	8.6	27.4	0.0	371.1	2.6	1.1	0.0	7.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	7.7	0.0	0.8	22.2	0.3	21.2	10.2	4.1	0.0	10.1	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	22.3	0.0	76.0	75.9	35.1	435.1	36.0	31.1	0.0	37.4	27.7
LnGrp LOS	E	C	A	E	E	D	F	D	C	A	D	C
Approach Vol, veh/h		1100			560			801			963	
Approach Delay, s/veh		51.9			75.0			169.5			35.8	
Approach LOS		D			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	58.3	7.3	74.4	16.0	42.3	35.5	46.2
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	6.0	42.0	6.0	68.0	12.0	36.0	32.0	42.0
Max Q Clear Time (g_c+I1), s	0.0	23.1	3.6	19.2	14.0	29.2	31.3	40.8
Green Ext Time (p_c), s	0.0	2.7	0.0	2.5	0.0	3.3	0.3	0.4

Intersection Summary	
HCM 6th Ctrl Delay	78.7
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	289	59	130	0	118	753	156	1732	0	628	1601	743
Future Volume (veh/h)	289	59	130	0	118	753	156	1732	0	628	1601	743
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	361	74	162	0	151	965	168	1862	0	668	1703	790
Peak Hour Factor	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	571	84	183	262	275	990	159	1966	610	718	1788	798
Arrive On Green	0.16	0.16	0.16	0.00	0.15	0.15	0.09	0.39	0.00	0.21	0.50	0.50
Sat Flow, veh/h	3563	522	1143	1781	1870	2790	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	361	0	236	0	151	965	168	1862	0	668	1703	790
Grp Sat Flow(s),veh/h/ln	1781	0	1665	1781	1870	1395	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	16.1	0.0	23.6	0.0	12.7	25.0	15.2	60.0	0.0	32.3	77.7	83.9
Cycle Q Clear(g_c), s	16.1	0.0	23.6	0.0	12.7	25.0	15.2	60.0	0.0	32.3	77.7	83.9
Prop In Lane	1.00		0.69	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	571	0	267	262	275	990	159	1966	610	718	1788	798
V/C Ratio(X)	0.63	0.00	0.88	0.00	0.55	0.98	1.05	0.95	0.00	0.93	0.95	0.99
Avail Cap(c_a), veh/h	681	0	318	262	275	990	159	1966	610	772	1788	798
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	1.00	0.09	0.09	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.7	0.0	69.8	0.0	67.3	54.1	77.4	50.6	0.0	66.2	40.3	41.8
Incr Delay (d2), s/veh	1.4	0.0	21.7	0.0	2.3	22.7	37.5	1.4	0.0	17.2	12.6	29.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	11.7	0.0	6.3	23.5	8.7	25.8	0.0	16.0	36.8	39.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.1	0.0	91.5	0.0	69.6	76.8	114.9	52.0	0.0	83.3	52.9	71.4
LnGrp LOS	E	A	F	A	E	E	F	D	A	F	D	E
Approach Vol, veh/h		597			1116			2030			3161	
Approach Delay, s/veh		77.4			75.8			57.2			64.0	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.2	90.6		29.0	39.3	70.5		31.2
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0
Max Green Setting (Gmax), s	15.2	80.8		25.0	38.0	58.0		32.5
Max Q Clear Time (g_c+I1), s	17.2	85.9		27.0	34.3	62.0		25.6
Green Ext Time (p_c), s	0.0	0.0		0.0	1.0	0.0		1.7

Intersection Summary	
HCM 6th Ctrl Delay	65.1
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
1: Roundabout & Mission Blvd.

09/21/2018

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	2314	1851	0	1942
Future Volume (vph)	0	0	2314	1851	0	1942
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5	4.0		4.5
Lane Util. Factor			0.91	0.88		0.76
Frt			1.00	0.85		0.85
Flt Protected			1.00	1.00		1.00
Satd. Flow (prot)			5085	2787		3610
Flt Permitted			1.00	1.00		1.00
Satd. Flow (perm)			5085	2787		3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2515	2012	0	2111
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	2515	2012	0	2110
Turn Type			NA	Free		Perm
Protected Phases			8			
Permitted Phases				Free		6
Actuated Green, G (s)			44.5	100.0		46.5
Effective Green, g (s)			44.5	100.0		46.5
Actuated g/C Ratio			0.44	1.00		0.46
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			2262	2787		1678
v/s Ratio Prot			c0.49			
v/s Ratio Perm				0.72		c0.58
v/c Ratio			1.11	0.72		1.26
Uniform Delay, d1			27.8	0.0		26.8
Progression Factor			1.00	1.00		1.00
Incremental Delay, d2			57.3	1.7		121.0
Delay (s)			85.0	1.7		147.7
Level of Service			F	A		F
Approach Delay (s)		0.0	48.0		147.7	
Approach LOS		A	D		F	

Intersection Summary			
HCM 2000 Control Delay	79.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2353	1812	1866	0	0
Future Volume (vph)	0	2353	1812	1866	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0		
Lane Util. Factor		0.64	0.91	0.88		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		4053	5085	2787		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		4053	5085	2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2558	1970	2028	0	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	0	2557	1970	2028	0	0
Turn Type		Prot	NA	Free		
Protected Phases		8	2			
Permitted Phases				Free		
Actuated Green, G (s)		84.8	56.2	150.0		
Effective Green, g (s)		84.8	56.2	150.0		
Actuated g/C Ratio		0.57	0.37	1.00		
Clearance Time (s)		4.5	4.5			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		2291	1905	2787		
v/s Ratio Prot		c0.63	c0.39			
v/s Ratio Perm				0.73		
v/c Ratio		1.12	1.03	0.73		
Uniform Delay, d1		32.6	46.9	0.0		
Progression Factor		1.00	1.00	1.00		
Incremental Delay, d2		59.0	30.0	1.7		
Delay (s)		91.6	76.9	1.7		
Level of Service		F	E	A		
Approach Delay (s)	91.6		38.8			0.0
Approach LOS	F		D			A

Intersection Summary			
HCM 2000 Control Delay	59.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1801	2048	0	0	0	1877
Future Volume (vph)	1801	2048	0	0	0	1877
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				4.5
Lane Util. Factor	0.91	0.88				0.76
Frt	1.00	0.85				0.85
Flt Protected	1.00	1.00				1.00
Satd. Flow (prot)	5085	2787				3610
Flt Permitted	1.00	1.00				1.00
Satd. Flow (perm)	5085	2787				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1958	2226	0	0	0	2040
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	1958	2226	0	0	0	2039
Turn Type	NA	Free				Perm
Protected Phases	4					
Permitted Phases		Free				2
Actuated Green, G (s)	38.5	100.0				52.5
Effective Green, g (s)	38.5	100.0				52.5
Actuated g/C Ratio	0.38	1.00				0.52
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	1957	2787				1895
v/s Ratio Prot	c0.39					
v/s Ratio Perm		0.80				c0.56
v/c Ratio	1.00	0.80				1.08
Uniform Delay, d1	30.8	0.0				23.8
Progression Factor	0.89	1.00				1.00
Incremental Delay, d2	6.2	0.2				44.5
Delay (s)	33.7	0.2				68.3
Level of Service	C	A				E
Approach Delay (s)	15.9			0.0	68.3	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	1774	0	0	2075	2181
Future Volume (vph)	0	1774	0	0	2075	2181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.0
Lane Util. Factor		0.76			0.91	0.88
Frt		0.85			1.00	0.85
Flt Protected		1.00			1.00	1.00
Satd. Flow (prot)		3610			5085	2787
Flt Permitted		1.00			1.00	1.00
Satd. Flow (perm)		3610			5085	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1928	0	0	2255	2371
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	0	1927	0	0	2255	2371
Turn Type		Perm			NA	Free
Protected Phases					6	
Permitted Phases		4				Free
Actuated Green, G (s)		48.5			42.5	100.0
Effective Green, g (s)		48.5			42.5	100.0
Actuated g/C Ratio		0.48			0.42	1.00
Clearance Time (s)		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1750			2161	2787
v/s Ratio Prot					c0.44	
v/s Ratio Perm		c0.53				0.85
v/c Ratio		1.10			1.04	0.85
Uniform Delay, d1		25.8			28.8	0.0
Progression Factor		1.00			1.02	1.00
Incremental Delay, d2		54.9			21.2	0.3
Delay (s)		80.7			50.6	0.3
Level of Service		F			D	A
Approach Delay (s)	80.7			0.0	24.9	
Approach LOS	F			A	C	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
1: Foothill Boulevard & City Center Drive (S)

09/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	242	77	349	90	98	105	1669	33	715	1053	22
Future Volume (veh/h)	41	242	77	349	90	98	105	1669	33	715	1053	22
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	275	88	379	98	107	114	1814	36	761	1120	23
Peak Hour Factor	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	336	105	323	152	166	138	2384	888	691	2095	935
Arrive On Green	0.03	0.13	0.13	0.09	0.19	0.19	0.08	0.47	0.47	0.20	0.59	0.59
Sat Flow, veh/h	1781	2663	834	3456	817	892	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	47	182	181	379	0	205	114	1814	36	761	1120	23
Grp Sat Flow(s),veh/h/ln	1781	1777	1720	1728	0	1710	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	3.9	14.9	15.5	14.0	0.0	16.6	9.5	44.1	1.5	30.0	28.3	0.9
Cycle Q Clear(g_c), s	3.9	14.9	15.5	14.0	0.0	16.6	9.5	44.1	1.5	30.0	28.3	0.9
Prop In Lane	1.00		0.48	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	224	217	323	0	317	138	2385	888	691	2095	935
V/C Ratio(X)	0.78	0.81	0.83	1.18	0.00	0.65	0.83	0.76	0.04	1.10	0.53	0.02
Avail Cap(c_a), veh/h	95	326	315	323	0	382	356	2385	888	691	2095	935
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.00	0.96	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	71.9	63.8	64.0	68.0	0.0	56.5	68.2	33.0	14.8	60.0	18.4	12.8
Incr Delay (d2), s/veh	18.8	9.3	12.1	105.6	0.0	2.7	11.7	2.3	0.1	47.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	7.4	7.5	10.9	0.0	7.5	4.8	18.6	0.6	17.7	11.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.6	73.1	76.1	173.6	0.0	59.2	79.9	35.4	14.9	107.9	18.5	12.8
LnGrp LOS	F	E	E	F	A	E	E	D	B	F	B	B
Approach Vol, veh/h		410			584			1964			1904	
Approach Delay, s/veh		76.4			133.4			37.6			54.2	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	93.4	9.1	31.9	34.0	75.0	18.0	23.0
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	30.0	61.5	8.0	33.5	30.0	61.5	14.0	27.5
Max Q Clear Time (g_c+I1), s	11.5	30.3	5.9	18.6	32.0	46.1	16.0	17.5
Green Ext Time (p_c), s	0.3	10.1	0.0	1.0	0.0	11.2	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	58.9
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	480	54	570	529	87	26	1412	303	666	580	73
Future Volume (veh/h)	103	480	54	570	529	87	26	1412	303	666	580	73
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	522	59	606	563	93	27	1486	319	724	630	79
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	597	67	708	790	130	41	1799	782	682	1674	210
Arrive On Green	0.07	0.19	0.19	0.14	0.26	0.26	0.02	0.35	0.35	0.20	0.53	0.53
Sat Flow, veh/h	1781	3219	363	5023	3054	503	1781	5106	1585	3456	3178	398
Grp Volume(v), veh/h	112	287	294	606	327	329	27	1486	319	724	352	357
Grp Sat Flow(s),veh/h/ln	1781	1777	1805	1674	1777	1780	1781	1702	1585	1728	1777	1799
Q Serve(g_s), s	9.1	22.8	22.9	17.1	24.2	24.4	2.2	38.6	18.5	28.6	16.9	17.0
Cycle Q Clear(g_c), s	9.1	22.8	22.9	17.1	24.2	24.4	2.2	38.6	18.5	28.6	16.9	17.0
Prop In Lane	1.00		0.20	1.00		0.28	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	120	329	335	708	460	460	41	1799	782	682	936	947
V/C Ratio(X)	0.93	0.87	0.88	0.86	0.71	0.71	0.66	0.83	0.41	1.06	0.38	0.38
Avail Cap(c_a), veh/h	120	386	392	876	576	577	80	1799	782	682	936	947
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	1.00	1.00	1.00	0.09	0.09	0.09	0.36	0.36	0.36
Uniform Delay (d), s/veh	67.3	57.4	57.5	60.8	48.8	48.9	70.3	42.9	23.3	58.2	20.3	20.3
Incr Delay (d2), s/veh	46.1	11.9	12.3	7.0	3.0	3.1	1.7	0.4	0.1	39.5	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	11.3	11.6	7.7	11.2	11.3	1.0	16.3	7.0	16.2	7.2	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	113.3	69.3	69.7	67.9	51.9	52.0	72.0	43.3	23.4	97.7	20.7	20.7
LnGrp LOS	F	E	E	E	D	D	E	D	C	F	C	C
Approach Vol, veh/h		693			1262			1832			1433	
Approach Delay, s/veh		76.6			59.6			40.3			59.6	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.1	56.1	24.9	30.9	7.8	81.4	14.3	41.5
Change Period (Y+Rc), s	4.5	5.0	4.5	4.0	4.5	5.0	4.5	4.0
Max Green Setting (Gmax), s	28.6	41.6	25.3	31.5	6.5	63.7	9.8	47.0
Max Q Clear Time (g_c+I1), s	30.6	40.6	19.1	24.9	4.2	19.0	11.1	26.4
Green Ext Time (p_c), s	0.0	0.9	1.4	1.9	0.0	5.2	0.0	4.1

Intersection Summary	
HCM 6th Ctrl Delay	55.1
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	622	298	44	534	383	27	36	1251	625	45	1083	126
Future Volume (veh/h)	622	298	44	534	383	27	36	1251	625	45	1083	126
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	691	331	49	551	395	28	39	1360	679	51	1231	143
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.92	0.92	0.92	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	515	334	283	515	308	22	50	1835	818	58	1850	1283
Arrive On Green	0.29	0.18	0.18	0.29	0.18	0.18	0.03	0.52	0.52	0.03	0.52	0.52
Sat Flow, veh/h	1781	1870	1585	1781	1726	122	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	691	331	49	551	0	423	39	1360	679	51	1231	143
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1848	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	44.5	27.2	4.0	44.5	0.0	27.5	3.4	46.2	55.8	4.4	39.1	2.9
Cycle Q Clear(g_c), s	44.5	27.2	4.0	44.5	0.0	27.5	3.4	46.2	55.8	4.4	39.1	2.9
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	515	334	283	515	0	330	50	1835	818	58	1850	1283
V/C Ratio(X)	1.34	0.99	0.17	1.07	0.00	1.28	0.78	0.74	0.83	0.88	0.67	0.11
Avail Cap(c_a), veh/h	515	334	283	515	0	330	58	1835	818	58	1850	1283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.00	0.09	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	63.1	53.6	54.8	0.0	63.3	74.3	29.2	31.5	74.2	27.1	3.1
Incr Delay (d2), s/veh	166.8	46.7	0.3	35.9	0.0	128.9	5.2	0.3	1.0	77.2	1.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	43.8	17.3	1.7	25.1	0.0	24.8	1.6	19.7	21.4	3.3	17.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	221.5	109.8	53.9	90.7	0.0	192.2	79.6	29.4	32.5	151.4	29.0	3.2
LnGrp LOS	F	F	D	F	A	F	E	C	C	F	C	A
Approach Vol, veh/h		1071			974			2078			1425	
Approach Delay, s/veh		179.3			134.8			31.4			30.8	
Approach LOS		F			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	83.5	48.0	31.0	8.8	84.2	48.0	31.0
Change Period (Y+Rc), s	4.5	3.5	3.5	3.5	4.5	3.5	3.5	3.5
Max Green Setting (Gmax), s	5.0	62.5	44.5	27.5	5.0	62.5	44.5	27.5
Max Q Clear Time (g_c+I1), s	6.4	48.2	46.5	29.5	5.4	41.1	46.5	29.2
Green Ext Time (p_c), s	0.0	6.4	0.0	0.0	0.0	8.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	77.9
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	553	400	33	409	206	17	316	1345	379	9	1170	478
Future Volume (veh/h)	553	400	33	409	206	17	316	1345	379	9	1170	478
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	601	435	36	476	240	20	343	1462	412	9	1206	493
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	495	760	63	333	759	63	156	2168	967	20	1897	846
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.09	0.61	0.61	0.01	0.53	0.53
Sat Flow, veh/h	1119	1704	141	922	1703	142	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	601	0	471	476	0	260	343	1462	412	9	1206	493
Grp Sat Flow(s),veh/h/ln	1119	0	1845	922	0	1845	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	26.3	0.0	14.1	18.9	0.0	6.7	6.5	20.2	10.1	0.4	17.7	15.6
Cycle Q Clear(g_c), s	33.0	0.0	14.1	33.0	0.0	6.7	6.5	20.2	10.1	0.4	17.7	15.6
Prop In Lane	1.00		0.08	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	495	0	823	333	0	823	156	2168	967	20	1897	846
V/C Ratio(X)	1.21	0.00	0.57	1.43	0.00	0.32	2.19	0.67	0.43	0.44	0.64	0.58
Avail Cap(c_a), veh/h	495	0	823	333	0	823	156	2168	967	120	1897	846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.00	0.65	0.69	0.00	0.69	0.09	0.09	0.09	0.33	0.33	0.33
Uniform Delay (d), s/veh	26.4	0.0	15.3	30.3	0.0	13.2	33.8	9.6	7.6	36.3	12.2	11.7
Incr Delay (d2), s/veh	108.5	0.0	0.6	204.1	0.0	0.2	538.4	0.2	0.1	4.9	0.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.6	0.0	5.5	24.8	0.0	2.6	26.1	6.4	2.9	0.2	6.2	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	135.0	0.0	15.9	234.4	0.0	13.4	572.1	9.7	7.7	41.3	12.7	12.6
LnGrp LOS	F	A	B	F	A	B	F	A	A	D	B	B
Approach Vol, veh/h		1072			736			2217			1708	
Approach Delay, s/veh		82.7			156.3			96.4			12.8	
Approach LOS		F			F			F			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	49.7		37.0	11.0	44.0		37.0
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		4.0
Max Green Setting (Gmax), s	5.0	24.0		33.0	6.5	22.5		33.0
Max Q Clear Time (g_c+I1), s	2.4	22.2		35.0	8.5	19.7		35.0
Green Ext Time (p_c), s	0.0	1.5		0.0	0.0	1.8		0.0

Intersection Summary	
HCM 6th Ctrl Delay	76.6
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	334	71	293	0	3	0	2027	480	10	1569	0
Future Volume (veh/h)	25	334	71	293	0	3	0	2027	480	10	1569	0
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	352	75	308	0	3	0	2134	505	11	1652	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	40	288	61	235	0	479	51	2013	458	52	2488	0
Arrive On Green	0.02	0.19	0.19	0.13	0.00	0.30	0.00	0.70	0.70	0.70	0.70	0.00
Sat Flow, veh/h	1781	1495	318	1781	0	1585	302	2875	654	114	3647	0
Grp Volume(v), veh/h	26	0	427	308	0	3	0	1286	1353	11	1652	0
Grp Sat Flow(s),veh/h/ln	1781	0	1813	1781	0	1585	302	1777	1753	114	1777	0
Q Serve(g_s), s	2.0	0.0	27.0	18.5	0.0	0.2	0.0	98.0	98.0	0.5	36.5	0.0
Cycle Q Clear(g_c), s	2.0	0.0	27.0	18.5	0.0	0.2	0.0	98.0	98.0	98.0	36.5	0.0
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.37	1.00		0.00
Lane Grp Cap(c), veh/h	40	0	350	235	0	479	51	1244	1227	52	2488	0
V/C Ratio(X)	0.64	0.00	1.22	1.31	0.00	0.01	0.00	1.03	1.10	0.21	0.66	0.00
Avail Cap(c_a), veh/h	80	0	350	235	0	479	51	1244	1227	52	2488	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.97	0.00	0.97	0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	67.8	0.0	56.5	60.8	0.0	34.1	0.0	21.0	21.0	70.0	11.8	0.0
Incr Delay (d2), s/veh	15.0	0.0	121.6	165.3	0.0	0.0	0.0	34.6	58.8	0.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	24.2	19.2	0.0	0.1	0.0	48.3	55.9	0.4	13.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.8	0.0	178.1	226.0	0.0	34.2	0.0	55.6	79.8	70.8	11.9	0.0
LnGrp LOS	F	A	F	F	A	C	A	F	F	E	B	A
Approach Vol, veh/h		453			311			2639			1663	
Approach Delay, s/veh		172.7			224.2			68.0			12.3	
Approach LOS		F			F			E			B	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		103.0	23.0	31.5		103.0	7.7	46.8
Change Period (Y+Rc), s		4.5	4.5	* 4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		81.5	18.5	* 27		81.5	6.3	38.7
Max Q Clear Time (g_c+I1), s		100.0	20.5	29.0		100.0	4.0	2.2
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	68.7
HCM 6th LOS	E

Notes

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	952	467	269	1554	1461	471
Future Volume (veh/h)	952	467	269	1554	1461	471
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1002	492	286	1653	1506	486
Peak Hour Factor	0.95	0.95	0.94	0.94	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1188	528	155	1836	1836	819
Arrive On Green	0.33	0.33	0.52	0.52	0.52	0.52
Sat Flow, veh/h	3563	1585	217	3647	3647	1585
Grp Volume(v), veh/h	1002	492	286	1653	1506	486
Grp Sat Flow(s),veh/h/ln	1781	1585	217	1777	1777	1585
Q Serve(g_s), s	15.7	18.0	9.7	25.2	21.3	12.8
Cycle Q Clear(g_c), s	15.7	18.0	31.0	25.2	21.3	12.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1188	528	155	1836	1836	819
V/C Ratio(X)	0.84	0.93	1.85	0.90	0.82	0.59
Avail Cap(c_a), veh/h	1188	528	155	1836	1836	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	19.3	28.9	13.1	12.2	10.1
Incr Delay (d2), s/veh	5.7	23.4	404.3	7.6	4.2	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	9.3	19.5	9.9	7.8	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.3	42.8	433.2	20.7	16.4	13.3
LnGrp LOS	C	D	F	C	B	B
Approach Vol, veh/h	1494			1939	1992	
Approach Delay, s/veh	30.4			81.5	15.6	
Approach LOS	C			F	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0
Change Period (Y+Rc), s		5.0		4.0		5.0
Max Green Setting (Gmax), s		31.0		20.0		31.0
Max Q Clear Time (g_c+I1), s		33.0		20.0		23.3
Green Ext Time (p_c), s		0.0		0.0		5.2

Intersection Summary	
HCM 6th Ctrl Delay	43.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	308	300	385	222	29	206	1905	644	14	1953	23
Future Volume (veh/h)	83	308	300	385	222	29	206	1905	644	14	1953	23
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	90	335	326	410	236	31	217	2005	678	15	2078	24
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	362	845	572	268	35	97	2498	1827	21	2325	27
Arrive On Green	0.25	0.25	0.25	0.17	0.17	0.17	0.05	0.49	0.49	0.01	0.45	0.45
Sat Flow, veh/h	392	1459	2790	3456	1619	213	1781	5106	2790	1781	5204	60
Grp Volume(v), veh/h	425	0	326	410	0	267	217	2005	678	15	1359	743
Grp Sat Flow(s),veh/h/ln	1851	0	1395	1728	0	1832	1781	1702	1395	1781	1702	1860
Q Serve(g_s), s	37.0	0.0	15.2	18.5	0.0	23.5	9.0	54.5	18.3	1.4	60.6	60.8
Cycle Q Clear(g_c), s	37.0	0.0	15.2	18.5	0.0	23.5	9.0	54.5	18.3	1.4	60.6	60.8
Prop In Lane	0.21		1.00	1.00		0.12	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	460	0	845	572	0	303	97	2498	1827	21	1521	831
V/C Ratio(X)	0.92	0.00	0.39	0.72	0.00	0.88	2.23	0.80	0.37	0.70	0.89	0.89
Avail Cap(c_a), veh/h	555	0	989	1037	0	550	97	2498	1827	76	1521	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	0.0	45.4	65.2	0.0	67.3	78.0	35.4	13.0	81.2	42.0	42.1
Incr Delay (d2), s/veh	17.9	0.0	0.1	0.6	0.0	3.3	586.8	2.8	0.6	14.1	8.4	14.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	0.0	5.4	8.3	0.0	11.3	20.0	23.2	9.3	0.7	27.2	31.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.4	0.0	45.5	65.8	0.0	70.6	664.8	38.3	13.6	95.3	50.5	56.2
LnGrp LOS	E	A	D	E	A	E	F	D	B	F	D	E
Approach Vol, veh/h		751			677			2900			2117	
Approach Delay, s/veh		64.1			67.7			79.4			52.8	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	84.7		44.5	12.0	77.7		30.8
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5
Max Green Setting (Gmax), s	7.0	45.0		49.5	9.0	43.0		49.5
Max Q Clear Time (g_c+I1), s	3.4	56.5		39.0	11.0	62.8		25.5
Green Ext Time (p_c), s	0.0	0.0		2.0	0.0	0.0		1.8

Intersection Summary	
HCM 6th Ctrl Delay	67.6
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	627	1901	214	0	1601	1	261	96	96	5	415	346
Future Volume (veh/h)	627	1901	214	0	1601	1	261	96	96	5	415	346
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	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	653	1980	223	0	1668	1	272	100	100	5	432	360
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	606	2361	263	0	1609	1	673	167	167	5	396	1087
Arrive On Green	0.18	0.51	0.51	0.00	0.31	0.31	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	3456	4661	520	0	5439	3	3456	858	858	21	1848	2790
Grp Volume(v), veh/h	653	1441	762	0	1077	592	272	0	200	437	0	360
Grp Sat Flow(s),veh/h/ln	1728	1702	1777	0	1702	1870	1728	0	1716	1869	0	1395
Q Serve(g_s), s	27.0	55.8	57.1	0.0	47.0	47.0	10.6	0.0	16.4	33.0	0.0	13.9
Cycle Q Clear(g_c), s	27.0	55.8	57.1	0.0	47.0	47.0	10.6	0.0	16.4	33.0	0.0	13.9
Prop In Lane	1.00		0.29	0.00		0.00	1.00		0.50	0.01		1.00
Lane Grp Cap(c), veh/h	606	1724	900	0	1039	571	673	0	334	401	0	1087
V/C Ratio(X)	1.08	0.84	0.85	0.00	1.04	1.04	0.40	0.00	0.60	1.09	0.00	0.33
Avail Cap(c_a), veh/h	606	1724	900	0	1039	571	673	0	334	401	0	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.5	32.5	32.8	0.0	53.5	53.5	54.2	0.0	56.5	60.5	0.0	32.9
Incr Delay (d2), s/veh	59.3	3.8	7.6	0.0	37.9	47.6	1.8	0.0	7.7	71.7	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	23.7	26.2	0.0	25.5	29.6	4.8	0.0	7.9	23.6	0.0	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.8	36.3	40.4	0.0	91.4	101.1	56.0	0.0	64.2	132.2	0.0	33.1
LnGrp LOS	F	D	D	A	F	F	E	A	E	F	A	C
Approach Vol, veh/h		2856			1669			472			797	
Approach Delay, s/veh		57.2			94.8			59.5			87.4	
Approach LOS		E			F			E			F	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		34.0		83.0		37.0	31.0	52.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green Setting (Gmax), s		30.0		78.0		33.0	27.0	47.0				
Max Q Clear Time (g_c+I1), s		18.4		59.1		35.0	29.0	49.0				
Green Ext Time (p_c), s		1.7		14.9		0.0	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			72.4									
HCM 6th LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	337	64	6	58	385	0	0	0	174	136	0
Future Volume (veh/h)	325	337	64	6	58	385	0	0	0	174	136	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
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	1870	1870	1870	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	353	366	70	7	63	418				189	148	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	370	326	62	126	1095	986				221	173	0
Arrive On Green	0.68	0.68	0.68	0.68	0.68	0.68				0.36	0.36	0.00
Sat Flow, veh/h	457	476	91	120	1603	1442				1020	799	0
Grp Volume(v), veh/h	789	0	0	70	0	418				337	0	0
Grp Sat Flow(s),veh/h/ln	1025	0	0	1723	0	1442				1819	0	0
Q Serve(g_s), s	49.9	0.0	0.0	0.0	0.0	11.6				15.4	0.0	0.0
Cycle Q Clear(g_c), s	61.5	0.0	0.0	1.1	0.0	11.6				15.4	0.0	0.0
Prop In Lane	0.45		0.09	0.10		1.00				0.56		0.00
Lane Grp Cap(c), veh/h	758	0	0	1221	0	986				394	0	0
V/C Ratio(X)	1.04	0.00	0.00	0.06	0.00	0.42				0.85	0.00	0.00
Avail Cap(c_a), veh/h	758	0	0	1221	0	986				394	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	21.9	0.0	0.0	4.7	0.0	6.4				27.4	0.0	0.0
Incr Delay (d2), s/veh	43.8	0.0	0.0	0.1	0.0	1.3				20.5	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	24.9	0.0	0.0	0.4	0.0	3.3				7.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.7	0.0	0.0	4.8	0.0	7.7				47.9	0.0	0.0
LnGrp LOS	F	A	A	A	A	A				D	A	A
Approach Vol, veh/h		789			488						337	
Approach Delay, s/veh		65.7			7.3						47.9	
Approach LOS		E			A						D	

Timer - Assigned Phs		4		6		8		
Phs Duration (G+Y+Rc), s		66.0		24.0		66.0		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		61.5		19.5		61.5		
Max Q Clear Time (g_c+I1), s		63.5		17.4		13.6		
Green Ext Time (p_c), s		0.0		0.4		3.9		

Intersection Summary	
HCM 6th Ctrl Delay	44.3
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
21: 2nd Street & City Center Drive (S)/City Center Drive

09/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	118	714	322	199	7	82	218	471	8	131	256
Future Volume (veh/h)	159	118	714	322	199	7	82	218	471	8	131	256
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	137	830	413	255	9	91	242	523	9	154	301
Peak Hour Factor	0.86	0.86	0.86	0.78	0.78	0.78	0.90	0.90	0.90	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	797	1159	288	765	27	544	571	484	280	280	249
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.43	0.31	0.31	0.31	0.16	0.16	0.16
Sat Flow, veh/h	1115	1870	1585	581	1796	63	1781	1870	1585	1781	1777	1585
Grp Volume(v), veh/h	185	137	830	413	0	264	91	242	523	9	154	301
Grp Sat Flow(s),veh/h/ln	1115	1870	1585	581	0	1859	1781	1870	1585	1781	1777	1585
Q Serve(g_s), s	14.4	4.9	31.9	41.1	0.0	10.3	4.0	11.1	33.0	0.5	8.6	17.0
Cycle Q Clear(g_c), s	24.6	4.9	31.9	46.0	0.0	10.3	4.0	11.1	33.0	0.5	8.6	17.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	436	797	1159	288	0	792	544	571	484	280	280	249
V/C Ratio(X)	0.42	0.17	0.72	1.43	0.00	0.33	0.17	0.42	1.08	0.03	0.55	1.21
Avail Cap(c_a), veh/h	436	797	1159	288	0	792	544	571	484	280	280	249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	19.2	8.2	38.2	0.0	20.7	27.4	29.9	37.5	38.5	42.0	45.5
Incr Delay (d2), s/veh	1.4	0.2	2.7	214.5	0.0	0.5	0.7	2.3	64.1	0.1	4.0	124.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	2.2	23.4	24.9	0.0	4.5	1.8	5.4	21.1	0.2	4.1	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	19.4	10.8	252.8	0.0	21.3	28.1	32.2	101.6	38.6	46.0	169.9
LnGrp LOS	C	B	B	F	A	C	C	C	F	D	D	F
Approach Vol, veh/h		1152			677			856			464	
Approach Delay, s/veh		15.0			162.5			74.2			126.2	
Approach LOS		B			F			E			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.0		50.0		21.0		50.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		33.0		46.0		17.0		46.0				
Max Q Clear Time (g_c+I1), s		35.0		33.9		19.0		48.0				
Green Ext Time (p_c), s		0.0		7.7		0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	79.2
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	498	235	487	604	441	44	284	638	572	521	49
Future Volume (veh/h)	126	498	235	487	604	441	44	284	638	572	521	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	566	267	524	649	474	47	305	686	602	548	52
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.93	0.93	0.93	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	1125	556	582	734	876	61	462	658	553	697	737
Arrive On Green	0.09	0.32	0.32	0.17	0.39	0.39	0.06	0.41	0.41	0.16	0.37	0.37
Sat Flow, veh/h	1781	3554	1585	3456	1870	1585	1781	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	143	566	267	524	649	474	47	305	686	602	548	52
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1870	1585	1781	1870	1585	1728	1870	1585
Q Serve(g_s), s	11.9	19.4	19.7	22.3	48.4	28.6	3.9	19.8	37.0	24.0	39.0	2.7
Cycle Q Clear(g_c), s	11.9	19.4	19.7	22.3	48.4	28.6	3.9	19.8	37.0	24.0	39.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	1125	556	582	734	876	61	462	658	553	697	737
V/C Ratio(X)	0.87	0.50	0.48	0.90	0.88	0.54	0.77	0.66	1.04	1.09	0.79	0.07
Avail Cap(c_a), veh/h	190	1125	556	945	848	972	71	462	658	553	697	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.66	0.66	0.66
Uniform Delay (d), s/veh	67.2	41.7	38.0	61.1	42.4	21.4	70.1	39.0	37.0	63.0	41.8	22.2
Incr Delay (d2), s/veh	26.8	0.5	0.9	4.6	10.5	0.7	3.2	0.7	23.8	58.1	5.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	8.7	7.9	10.2	24.4	10.8	1.8	8.3	29.6	15.0	19.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.0	42.2	38.9	65.7	52.9	22.2	73.3	39.7	60.8	121.1	47.7	22.3
LnGrp LOS	F	D	D	E	D	C	E	D	F	F	D	C
Approach Vol, veh/h		976			1647			1038			1202	
Approach Delay, s/veh		48.9			48.1			55.1			83.3	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	41.0	29.3	51.7	9.2	59.9	17.9	63.1
Change Period (Y+Rc), s	4.0	4.0	4.0	* 4.2	4.0	4.0	4.0	* 4.2
Max Green Setting (Gmax), s	24.0	26.0	41.0	* 43	6.0	44.0	16.0	* 68
Max Q Clear Time (g_c+I1), s	26.0	39.0	24.3	21.7	5.9	41.0	13.9	50.4
Green Ext Time (p_c), s	0.0	0.0	1.0	6.8	0.0	1.4	0.0	8.5

Intersection Summary	
HCM 6th Ctrl Delay	58.5
HCM 6th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	299	487	633	222	732	88	78	579	300	235	652	357
Future Volume (veh/h)	299	487	633	222	732	88	78	579	300	235	652	357
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	352	573	745	234	771	93	91	673	349	261	724	397
Peak Hour Factor	0.85	0.85	0.85	0.95	0.95	0.95	0.86	0.86	0.86	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	935	891	164	935	972	111	574	486	202	669	998
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.12	0.61	0.61	0.23	0.72	0.72
Sat Flow, veh/h	1242	1870	1585	417	1870	1585	1781	1870	1585	1781	1870	2790
Grp Volume(v), veh/h	352	573	745	234	771	93	91	673	349	261	724	397
Grp Sat Flow(s),veh/h/ln	621	1870	1585	417	1870	1585	1781	1870	1585	1781	1870	1395
Q Serve(g_s), s	22.4	33.1	58.2	41.9	52.6	3.6	7.5	46.0	22.8	17.0	53.6	8.5
Cycle Q Clear(g_c), s	75.0	33.1	58.2	75.0	52.6	3.6	7.5	46.0	22.8	17.0	53.6	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	935	891	164	935	972	111	574	486	202	669	998
V/C Ratio(X)	1.25	0.61	0.84	1.42	0.82	0.10	0.82	1.17	0.72	1.29	1.08	0.40
Avail Cap(c_a), veh/h	281	935	891	164	935	972	202	574	486	202	669	998
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.15	0.15	0.15	0.68	0.68	0.68
Uniform Delay (d), s/veh	67.6	27.0	27.1	60.2	31.9	11.9	64.8	29.0	24.5	58.0	21.4	14.9
Incr Delay (d2), s/veh	138.7	1.2	7.0	222.4	6.1	0.0	2.3	81.1	1.4	154.6	53.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	15.1	23.3	16.5	25.1	1.3	3.3	28.2	6.6	15.6	24.3	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	206.3	28.2	34.1	282.6	38.0	12.0	67.1	110.1	25.9	212.6	75.0	15.7
LnGrp LOS	F	C	C	F	D	B	E	F	C	F	F	B
Approach Vol, veh/h		1670			1098			1113			1382	
Approach Delay, s/veh		68.4			87.9			80.2			84.0	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	50.0		79.0	13.4	57.6		79.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	17.0	46.0		75.0	17.0	46.0		75.0
Max Q Clear Time (g_c+I1), s	19.0	48.0		77.0	9.5	55.6		77.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	0.0		0.0

Intersection Summary			
HCM 6th Ctrl Delay			79.0
HCM 6th LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	814	38	30	2	101	783	30	1841	0	820	1846	181
Future Volume (veh/h)	814	38	30	2	101	783	30	1841	0	820	1846	181
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	788	221	34	2	111	860	34	2116	0	891	2007	197
Peak Hour Factor	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	629	279	43	262	275	1017	44	2358	732	752	2327	1038
Arrive On Green	0.18	0.18	0.18	0.15	0.15	0.15	0.02	0.46	0.00	0.22	0.65	0.65
Sat Flow, veh/h	3563	1583	244	1781	1870	2790	1781	5106	1585	3456	3554	1585
Grp Volume(v), veh/h	788	0	255	2	111	860	34	2116	0	891	2007	197
Grp Sat Flow(s),veh/h/ln	1781	0	1827	1781	1870	1395	1781	1702	1585	1728	1777	1585
Q Serve(g_s), s	30.0	0.0	22.7	0.2	9.1	25.0	3.2	64.8	0.0	37.0	76.2	8.3
Cycle Q Clear(g_c), s	30.0	0.0	22.7	0.2	9.1	25.0	3.2	64.8	0.0	37.0	76.2	8.3
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	629	0	322	262	275	1017	44	2358	732	752	2327	1038
V/C Ratio(X)	1.25	0.00	0.79	0.01	0.40	0.85	0.78	0.90	0.00	1.18	0.86	0.19
Avail Cap(c_a), veh/h	629	0	322	262	275	1017	92	2358	732	752	2327	1038
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.0	0.0	67.0	61.9	65.7	49.6	82.4	42.1	0.0	66.5	23.3	11.6
Incr Delay (d2), s/veh	126.8	0.0	12.5	0.0	1.0	6.7	2.7	0.6	0.0	96.3	4.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.8	0.0	11.8	0.1	4.5	17.8	1.5	27.2	0.0	26.4	32.4	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	196.8	0.0	79.5	61.9	66.7	56.3	85.1	42.6	0.0	162.8	27.8	12.0
LnGrp LOS	F	A	E	E	E	E	F	D	A	F	C	B
Approach Vol, veh/h		1043			973			2150			3095	
Approach Delay, s/veh		168.1			57.5			43.3			65.7	
Approach LOS		F			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	116.8		29.0	41.0	84.0		34.0				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	8.8	89.7		25.0	37.0	61.5		30.0				
Max Q Clear Time (g_c+I1), s	5.2	78.2		27.0	39.0	66.8		32.0				
Green Ext Time (p_c), s	0.0	9.9		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	72.7
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

HCM Signalized Intersection Capacity Analysis
1: Roundabout & Mission Blvd.

09/21/2018

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	1836	1823	0	1928
Future Volume (vph)	0	0	1836	1823	0	1928
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5	4.0		4.5
Lane Util. Factor			0.91	0.88		0.76
Frt			1.00	0.85		0.85
Flt Protected			1.00	1.00		1.00
Satd. Flow (prot)			5085	2787		3610
Flt Permitted			1.00	1.00		1.00
Satd. Flow (perm)			5085	2787		3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1996	1982	0	2096
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	1996	1982	0	2095
Turn Type			NA	Free		Perm
Protected Phases			8			
Permitted Phases				Free		6
Actuated Green, G (s)			38.5	100.0		52.5
Effective Green, g (s)			38.5	100.0		52.5
Actuated g/C Ratio			0.38	1.00		0.52
Clearance Time (s)			4.5			4.5
Vehicle Extension (s)			3.0			3.0
Lane Grp Cap (vph)			1957	2787		1895
v/s Ratio Prot			c0.39			
v/s Ratio Perm				0.71		c0.58
v/c Ratio			1.02	0.71		1.11
Uniform Delay, d1			30.8	0.0		23.8
Progression Factor			0.88	1.00		1.00
Incremental Delay, d2			16.3	0.4		56.0
Delay (s)			43.4	0.4		79.7
Level of Service			D	A		E
Approach Delay (s)		0.0	22.0		79.7	
Approach LOS		A	C		E	

Intersection Summary			
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1917	1742	2449	0	0
Future Volume (vph)	0	1917	1742	2449	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0		
Lane Util. Factor		0.64	0.91	0.88		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	1.00	1.00		
Satd. Flow (prot)		4053	5085	2787		
Flt Permitted		1.00	1.00	1.00		
Satd. Flow (perm)		4053	5085	2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2084	1893	2662	0	0
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	0	2083	1893	2662	0	0
Turn Type		Prot	NA	Free		
Protected Phases		8	2			
Permitted Phases				Free		
Actuated Green, G (s)		51.5	39.5	100.0		
Effective Green, g (s)		51.5	39.5	100.0		
Actuated g/C Ratio		0.52	0.40	1.00		
Clearance Time (s)		4.5	4.5			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		2087	2008	2787		
v/s Ratio Prot		0.51	0.37			
v/s Ratio Perm				c0.96		
v/c Ratio		1.00	0.94	0.96		
Uniform Delay, d1		24.2	29.2	0.0		
Progression Factor		1.00	1.06	1.00		
Incremental Delay, d2		19.0	1.3	1.2		
Delay (s)		43.2	32.2	1.2		
Level of Service		D	C	A		
Approach Delay (s)	43.2		14.1			0.0
Approach LOS	D		B			A

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2174	1990	0	0	0	2017
Future Volume (vph)	2174	1990	0	0	0	2017
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.0				4.5
Lane Util. Factor	0.91	0.88				0.76
Frt	1.00	0.85				0.85
Flt Protected	1.00	1.00				1.00
Satd. Flow (prot)	5085	2787				3610
Flt Permitted	1.00	1.00				1.00
Satd. Flow (perm)	5085	2787				3610
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2363	2163	0	0	0	2192
RTOR Reduction (vph)	0	0	0	0	0	1
Lane Group Flow (vph)	2363	2163	0	0	0	2191
Turn Type	NA	Free				Perm
Protected Phases	4					
Permitted Phases		Free				2
Actuated Green, G (s)	41.5	100.0				49.5
Effective Green, g (s)	41.5	100.0				49.5
Actuated g/C Ratio	0.42	1.00				0.50
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	2110	2787				1786
v/s Ratio Prot	c0.46					
v/s Ratio Perm		0.78				c0.61
v/c Ratio	1.12	0.78				1.23
Uniform Delay, d1	29.2	0.0				25.2
Progression Factor	0.87	1.00				1.00
Incremental Delay, d2	54.7	0.2				107.4
Delay (s)	80.2	0.2				132.6
Level of Service	F	A				F
Approach Delay (s)	42.0			0.0	132.6	
Approach LOS	D			A	F	

Intersection Summary			
HCM 2000 Control Delay	71.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	2002	0	0	2162	1602
Future Volume (vph)	0	2002	0	0	2162	1602
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.0
Lane Util. Factor		0.76			0.91	0.88
Frt		0.85			1.00	0.85
Flt Protected		1.00			1.00	1.00
Satd. Flow (prot)		3610			5085	2787
Flt Permitted		1.00			1.00	1.00
Satd. Flow (perm)		3610			5085	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2176	0	0	2350	1741
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	0	2175	0	0	2350	1741
Turn Type		Perm			NA	Free
Protected Phases					6	
Permitted Phases		4				Free
Actuated Green, G (s)		49.5			41.5	100.0
Effective Green, g (s)		49.5			41.5	100.0
Actuated g/C Ratio		0.50			0.42	1.00
Clearance Time (s)		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		1786			2110	2787
v/s Ratio Prot					c0.46	
v/s Ratio Perm		c0.60				0.62
v/c Ratio		1.22			1.11	0.62
Uniform Delay, d1		25.2			29.2	0.0
Progression Factor		1.00			1.00	1.00
Incremental Delay, d2		103.5			51.9	0.1
Delay (s)		128.7			81.0	0.1
Level of Service		F			F	A
Approach Delay (s)	128.7			0.0	46.6	
Approach LOS	F			A	D	

Intersection Summary			
HCM 2000 Control Delay	75.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix 6: Travel Demand Model Data

Table 1: Hayward - Demographics 10/1/2018

Hayward DT Specific Plan EIR

(Summary covers Plan TAZs only)

Scenario	Source	Households			Population	Employment
		Total	SF	Multi-Family		
2018 - Existing	ABAG	4,036	1,267	2,769	10,317	4,117
2040 No Project	ABAG	4,488	1,219	3,272	11,736	4,158
2040 Project (with Circulation)	LWC	7,915	1,219	6,695	25,244	10,491

Source: ACTC Model & LWC

Kittelson and Associates, Inc, 2018

Table 1b: Hayward 2018 -Sociodemographic Data by TAZ (Ala CTC Model)

Existing - 2018	Residential						Employment							sum pop + jobs
TAZ	TOTHH	HHPOP	TOTPOP	EMPRES	SFHH	MFHH	TEMP	RETEMP	SEREMP	OTHEMP	AGEMP	MANEMP	WHOEMP	Per capita
656	461	1010	1033	612	212	249	245	26	175	35	0	8	0	1278
657	51	115	119	58	15	36	56	17	22	14	0	2	0	175
659	85	192	198	97	25	60	246	72	103	60	0	7	4	444
660	134	304	315	155	39	95	369	109	155	90	0	10	6	684
661	55	124	129	63	16	39	193	58	58	64	0	9	3	322
662	31	70	73	36	9	22	139	15	31	81	0	11	1	212
663	75	169	175	86	22	53	134	39	56	33	0	4	2	309
665	60	137	141	69	18	43	290	143	108	27	0	5	8	431
666	413	935	968	475	118	295	275	81	115	67	0	7	5	1243
667	800	1813	1877	922	23	777	314	154	117	29	0	5	9	2191
668	135	306	317	156	39	96	98	7	65	25	0	1	1	415
669	515	1166	1207	593	148	367	533	157	223	130	0	14	9	1740
670	73	164	170	84	21	51	98	7	65	25	0	1	1	268
671	8	18	19	9	3	5	201	98	75	19	0	3	6	220
672	54	122	126	62	16	38	137	40	57	33	0	4	3	263
673	7	16	16	8	2	5	127	38	53	31	0	3	2	143
682	146	476	487	226	73	73	66	2	4	55	0	3	1	553
685	218	711	728	338	146	72	119	6	23	43	6	24	16	847
688	128	416	426	198	64	64	63	3	10	36	1	8	4	489
1494	168	381	394	194	49	119	187	57	73	48	0	6	3	581
1495	58	190	195	91	29	29	49	3	10	18	3	10	6	244
1496	361	1175	1204	559	180	181	178	8	29	103	4	21	13	1382
Total	**4,036**	**10,010**	**10,317**	**5,091**	**1,267**	**2,769**	**4,117**	**1,140**	**1,627**	**1,066**	**14**	**166**	**103**	**14,434**
2040 No-Project	Residential						Employment							sum pop + jobs+ School
Based on ABAG	TOTHH	HHPOP	TOTPOP	EMPRES	SFHH	MFHH	TOTEMP	RETEMP	SEREMP	OTHEMP	AGEMP	MANEMP	WHOEMP	Per capita
656	461	1040	1067	573	186	275	245	26	176	35	0	8	0	1312
657	84	196	201	89	18	66	54	0	11	38	0	5	0	255
659	138	322	331	147	29	109	248	72	107	57	0	6	4	579
660	249	580	596	264	53	196	371	109	161	86	0	9	6	967
661	135	315	323	143	28	107	208	64	65	67	0	9	3	531
662	53	124	128	57	12	42	146	16	35	83	0	11	1	274
663	160	373	383	170	34	126	136	40	59	31	0	4	2	519
665	112	262	269	119	24	89	310	152	119	27	0	4	8	579
666	561	1309	1343	596	119	443	277	81	120	64	0	7	5	1620
667	79	177	183	83	30	49	335	164	129	29	0	5	9	518
668	251	586	601	267	53	198	107	8	72	26	0	0	1	708
669	707	1649	1693	751	149	558	536	157	232	124	0	14	9	2229
670	111	258	265	118	24	87	107	8	72	26	0	0	1	372
671	14	33	34	15	3	11	216	105	83	19	0	3	6	250
672	93	216	222	98	20	73	144	42	63	34	0	3	3	366
673	13	31	32	14	3	10	130	38	56	30	0	3	2	162
682	189	635	651	278	78	111	75	3	6	62	0	4	1	726
685	243	813	834	356	68	174	93	5	20	33	4	19	13	927
688	127	426	437	187	52	75	52	2	9	30	1	6	4	489
1494	279	650	667	296	59	220	181	2	36	127	0	17	0	848
1495	67	226	232	99	28	40	38	2	8	13	2	8	5	270
1496	362	1213	1244	532	149	213	149	7	27	85	2	17	11	1393
Total	**4,488**	**11,434**	**11,736**	**5,252**	**1,219**	**3,272**	**4,158**	**1,103**	**1,666**	**1,126**	**9**	**162**	**94**	**15,894**

2040 Project	Residential						Employment							sum pop + jobs+ School
Based on LWC	TOTHH	HHPOP	TOTPOP	EMPRES	SFHH	MFHH	TOTEMP	RETEMP	SEREMP	OTHEMP	AGEMP	MANEMP	WHOEMP	Per capita
656	905	2806	2896	1358	186	719	2653	148	1654	818	0	32	0	5550
657	100	309	319	149	18	82	87	2	31	49	0	5	0	406
659	219	677	699	328	29	190	420	81	213	113	0	8	4	1119
660	271	841	869	407	53	218	401	111	179	96	0	9	6	1269
661	198	613	632	296	28	170	421	75	196	136	0	11	3	1054
662	293	909	938	440	12	281	1116	65	631	398	0	20	1	2055
663	420	1303	1345	630	34	386	279	47	147	78	0	5	2	1624
665	223	690	712	334	24	199	426	158	190	65	0	5	8	1138
666	699	2168	2238	1049	119	580	316	83	144	77	0	7	5	2553
667	795	2464	2543	1192	30	765	606	178	295	117	0	8	9	3149
668	263	816	842	395	53	210	124	9	82	32	0	0	1	966
669	769	2383	2460	1153	149	620	709	166	338	180	0	16	9	3169
670	264	818	844	396	24	240	445	25	279	136	0	4	1	1289
671	125	386	399	187	3	122	332	111	154	57	0	4	6	730
672	153	473	489	229	20	133	206	45	101	54	0	4	3	694
673	122	379	391	183	3	119	397	52	220	117	0	6	2	788
682	522	1619	1671	783	78	444	218	10	94	109	0	5	1	1889
685	243	813	834	356	68	174	93	5	20	33	4	19	13	927
688	585	1815	1873	878	52	533	767	38	448	262	1	14	4	2640
1494	279	650	667	296	59	220	181	2	36	127	0	17	0	848
1495	106	329	339	159	28	78	146	7	74	48	2	9	5	485
1496	362	1213	1244	532	149	213	149	7	27	85	2	17	11	1393
Total	**7,915**	**24,472**	**25,244**	**11,731**	**1,219**	**6,695**	**10,491**	**1,425**	**5,553**	**3,184**	**9**	**228**	**94**	**35,736**

2040 Project - net from LWC	Residential						Employment							sum pop + jobs+ School
Based on LWC	TOTHH	HHPOP	TOTPOP	EMPRES	SFHH	MFHH	TOTEMP	RETEMP	SEREMP	OTHEMP	AGEMP	MANEMP	WHOEMP	Per capita
656	444	977	977	710	0	444	2,408	122	1,478	783	-	24	-	3385
657	16	34	34	25	0	16	33	2	20	11	-	0	-	68
659	81	177	177	129	0	81	172	9	106	56	-	2	-	349
660	22	49	49	36	0	22	30	2	18	10	-	0	-	79
661	63	138	138	100	0	63	213	11	131	69	-	2	-	351
662	240	528	528	384	0	240	970	49	596	315	-	9	-	1499
663	260	573	573	416	0	260	143	7	88	47	-	1	-	716
665	111	243	243	177	0	111	116	6	71	38	-	1	-	359
666	138	304	304	221	0	138	39	2	24	13	-	0	-	343
667	716	1575	1575	1145	0	716	271	14	166	88	-	3	-	1846
668	12	27	27	19	0	12	17	1	10	6	-	0	-	44
669	62	136	136	99	0	62	173	9	106	56	-	2	-	309
670	153	336	336	244	0	153	338	17	207	110	-	4	-	674
671	111	243	243	177	0	111	116	6	71	38	-	1	-	359
672	60	131	131	95	0	60	62	3	38	20	-	1	-	193
673	109	240	240	175	0	109	267	14	164	87	-	3	-	507
682	333	733	733	533	0	333	143	7	88	47	-	1	-	876
685	39	86	86	62	0	39	108	5	66	35	-	1	-	193
688	458	1008	1008	733	0	458	715	36	439	232	-	8	-	1723
Total	**3,427**	**7,539**	**7,539**	**5,483**	**-**	**3,427**	**6,333**	**322**	**3,887**	**2,058**	**-**	**66**	**-**	**13,873**

Appendix 7: Project Alternatives

KITTELSON & ASSOCIATES
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MEMORANDUM

Date:	October 19, 2018	Project #: 19858
To:	Kathryn Slama – Lisa Wise Consulting Terri McCracken and Torina Wilson – Placeworks	
From:	Damian Stefanakis and Michael Sahimi – Kittelson & Associates, Inc.	
Project:	Downtown Hayward Specific Plan	
Subject:	Transportation Impacts of the Alternatives to the Proposed Project	

This memorandum discusses the level of transportation impacts associated with the following Alternatives to the Downtown Hayward Specific Plan (Proposed Project).

- No Project Alternative (General Plan 2040)
- General Plan Buildout with Circulation Changes Alternative
- Specific Plan Buildout without Circulation Changes Alternative
- Lower Intensity (30 Percent Reduction) Alternative

NO PROJECT ALTERNATIVE (GENERAL PLAN 2040)

Under this Alternative, the Specific Plan would not be adopted. Land use density in the Specific Plan area would be lower than under the Proposed Project, and circulation changes under the Specific Plan (including lane/capacity reductions on roads and conversions from one-way roads to two-way roads) would not occur. This Alternative would result in higher VMT per capita than the Proposed Project since the Specific Plan development (infill development and a mix of uses) and circulation changes would not be implemented.

Impacts to vehicle operations at study area intersections and on CMP segments would be lower compared to the Proposed Project since reductions in roadway vehicular capacity would not be implemented under the Alternative. Impacts to AC Transit bus operations (specifically, effects of vehicle traffic on mixed flow transit operations) would be lower under this Alternative compared to the Proposed Project due to fewer intersection and roadway segment operational impacts. In addition, vehicle traffic would be lower compared to the Proposed Project. Impacts to bicycles and pedestrian would be greater than the Proposed Project since the Specific Plan's improvements to bicycle and pedestrian facilities would not be implemented.

GENERAL PLAN BUILDOUT WITH CIRCULATION CHANGES ALTERNATIVE

Under this Alternative, circulation changes proposed under the Specific Plan (including lane/capacity reductions on roads and conversions from one-way roads to two-way roads and other multimodal improvements) would occur, but land use densities would be consistent with Genera Plan Buildout and would be lower than under the Proposed Project. This Alternative would result in greater VMT per capita than the Proposed Project since the Specific Plan development (infill development and a mix of uses) would not be implemented.

Impacts to vehicle operations at study area intersections and on CMP segments would be lower compared to the Proposed Project since while reductions in roadway vehicular capacity would be implemented under the Alternative, vehicle traffic would be lower compared to the Proposed Project due to lesser land use development. Impacts to AC Transit bus operations (specifically, effects of vehicle traffic on mixed flow transit operations) would be lower under this Alternative compared to the Proposed Project due to fewer intersection and roadway segment operational impacts. Impacts to bicycles and pedestrian would be lower than the Proposed Project since the Specific Plan's improvements to bicycle and pedestrian facilities would be implemented and vehicle traffic on Plan area roads would be lower compared to the Proposed Project.

SPECIFIC PLAN BUILDOUT WITHOUT CIRCULATION CHANGES ALTERNATIVE

Under this Alternative, land use projections under the Specific Plan would be implemented, but circulation changes (including lane/capacity reductions on roads and conversions from one-way roads to two-way roads and other multimodal improvements) would not occur. Similar to the Proposed Project, this Alternative would result in reduced VMT per capita due to the increased infill development and mix of uses in the Specific Plan area; this Alternative would also result in the benefits of lower VMT per capita. However, this Alternative would result in higher VMT per capita than the Proposed Project since the reduced vehicle capacity on Specific Plan area roads (which would encourage other travel modes) would not be implemented.

Impacts to vehicle operations at study area intersections and on CMP segments would be lower compared to the Proposed Project since reductions in roadway vehicular capacity would not be implemented under the Alternative. Impacts to AC Transit bus operations (specifically, effects of vehicle traffic on mixed flow transit operations) would be lower under this Alternative compared to the Proposed Project due to fewer intersection and roadway segment operational impacts. Impacts to bicycles and pedestrian would be greater than the Proposed Project since an increase in vehicle traffic in the area (due to increased development) would not be accompanied by the Specific Plan's improvements to bicycle and pedestrian facilities.

LOWER INTENSITY (30 PERCENT REDUCTION) ALTERNATIVE

Under this Alternative, the development potential proposed under the Specific Plan would be reduced by 30 percent. Circulation changes proposed under the Specific Plan (including lane/capacity reductions on roads and conversions from one-way roads to two-way roads and other multimodal improvements) would be implemented. Similar to the Proposed Project, this Alternative would result in reduced VMT per capita due to the increased infill development and mix of uses in the Specific Plan area as well as the circulation changes; this Alternative would also result in the benefits of lower VMT per capita. However, this Alternative would result in higher VMT per capita than the Proposed Project due to lower infill development density.

Impacts to vehicle operations at study area intersections and on CMP segments would be lower compared to the Proposed Project since while reductions in roadway vehicular capacity would be implemented under the Alternative, vehicle traffic would be lower compared to the Proposed Project due to lower development intensity. Impacts to AC Transit bus operations (specifically, effects of vehicle traffic on mixed flow transit operations) would be lower under this Alternative compared to the Proposed Project due to fewer intersection and roadway segment operational impacts. Impacts to bicycles and pedestrian would be lower than the Proposed Project since the Specific Plan's improvements to bicycle and pedestrian facilities would be implemented and vehicle traffic on Plan area roads would be lower compared to the Proposed Project.

A comparison of the number of facilities exceeding LOS standards under cumulative conditions for each Alternative is shown in Table 1.

Table 1: Study Facilities Exceeding LOS Standards per Alternatives

Facility	Proposed Project	No Project Alternative (General Plan 2040)	General Plan Buildout with Circulation Changes Alternative[1]	Specific Plan Buildout without Circulation Changes Alternative	Lower Intensity (30 Percent Reduction) Alternative[1]
Intersections	16	5	9 - 12	9	12 - 16
CMP Freeway Segments	12	11	11	12	Less than 12
CMP Arterial Segments	11	10	10 - 11	10	10 - 11

Note: 1) The number of facilities below standard for these Alternatives are estimates based on a qualitative assessment.