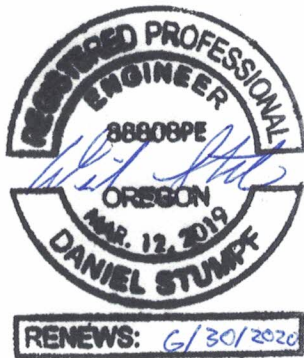




Cedar Creek Subdivision

Transportation Impact Analysis

Sherwood, Oregon



Date:
April 8, 2020

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Riverside Homes

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Executive Summary

1. The property located at 17433 SW Brookman Road in Sherwood, Oregon is proposed for the construction of 28 single-family houses. The site currently has one single-family house which will be removed upon redevelopment. The site will be served by internal roads within the adjacent Middlebrook and Reserve developments with access taken along SW Brookman Road via the planned White Oak Terrace roadway alignment within the Middlebrook site.
2. The proposed development is projected to generate an additional 20 net new morning peak hour trips, 27 net new evening peak hour trips, and 254 net new average weekday trips
3. No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. No safety mitigation is recommended per the crash data analysis.
4. Left-turn lane warrants are not projected to be met at the site access intersection along SW Brookman Road upon completion and occupancy of the proposed development. Accordingly, installation of a left-turn lane at the site access intersection is not necessary or recommended.
5. All study intersections are projected to operate acceptably per their respective jurisdictional standards by year 2024 with buildout of the proposed subdivision. No operational mitigation is necessary as part of the proposed Cedar Creek Subdivision.
6. *The Reserve at Cedar Creek Transportation Impact Analysis (TIA) – Sherwood, Oregon*, dated September 19th, 2019, identified four intersections as currently exceeding acceptable jurisdictional standards. Based on the projected site trip impacts to these intersections, a total proportionate share fee to mitigate impacts of \$48,207.49 was calculated.



Project Description

Introduction

This report describes and evaluates the transportation impacts associated with the proposed development of the Cedar Creek subdivision located at 17433 SW Brookman Road in Sherwood, Oregon. The proposed development includes the construction of 28 single-family houses, removing one existing house for a net increase of 27 houses. Access to the site will be provided along SW Brookman Road via the planned White Oak Terrace roadway alignment within the in-process Middlebrook site.

Based on correspondence with the City of Sherwood, a safety and capacity/level of service analysis was conducted at the following intersections:

1. SW Elwert Road/SW Sunset Boulevard at Highway 99W
2. SW Brookman Road at Highway 99W
3. SW Brookman Road at Site Access

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Location Description

The subject site is located at 17433 SW Brookman Road and is situated between two in-process residential subdivision projects: Middlebrook and The Reserve at Cedar Creek. The site is located on the north side of SW Brookman Road with the Middlebrook development to the west and The Reserve to the east. The subject property consists of one tax lot (tax lot 3S1060000104) totaling approximately 10.35 acres. There is an existing single-family house on the property which will be removed upon development.

Vicinity Roadways

The proposed development is expected to impact three vicinity roadways. Table 1 on page 6 provides a description of each vicinity roadway.

Table 1: Vicinity Roadway Descriptions

| Roadway | Jurisdiction | Functional Classification | Cross-Section | Speed | On-street Parking | Bicycle Lanes | Curbs | Sidewalks |
|------------------------------------|-------------------|---------------------------|---------------|--------------------------------|-------------------|--------------------|------------|------------|
| Highway 99W | ODOT | Principal Arterial | 4 Lanes | 45 to 55 mph Posted | Not Permitted | Partial Both Sides | None | None |
| SW Elwert Road/SW Sunset Boulevard | City of Sherwood | Arterial | 2 to 3 Lanes | 35 mph Posted | Not Permitted | Both Sides | Both Sides | Both Sides |
| SW Brookman Road | Washington County | Arterial | 2 Lanes | 25/35/55 mph Posted/Staturtory | Not Permitted | None | None | None |

Notes: Functional Classification based on the City of Sherwood Transportation System Plan

Study Intersections

The proposed development is expected to impact three vicinity intersections of significance. Table 2 below provides a summarized description of each study intersection.

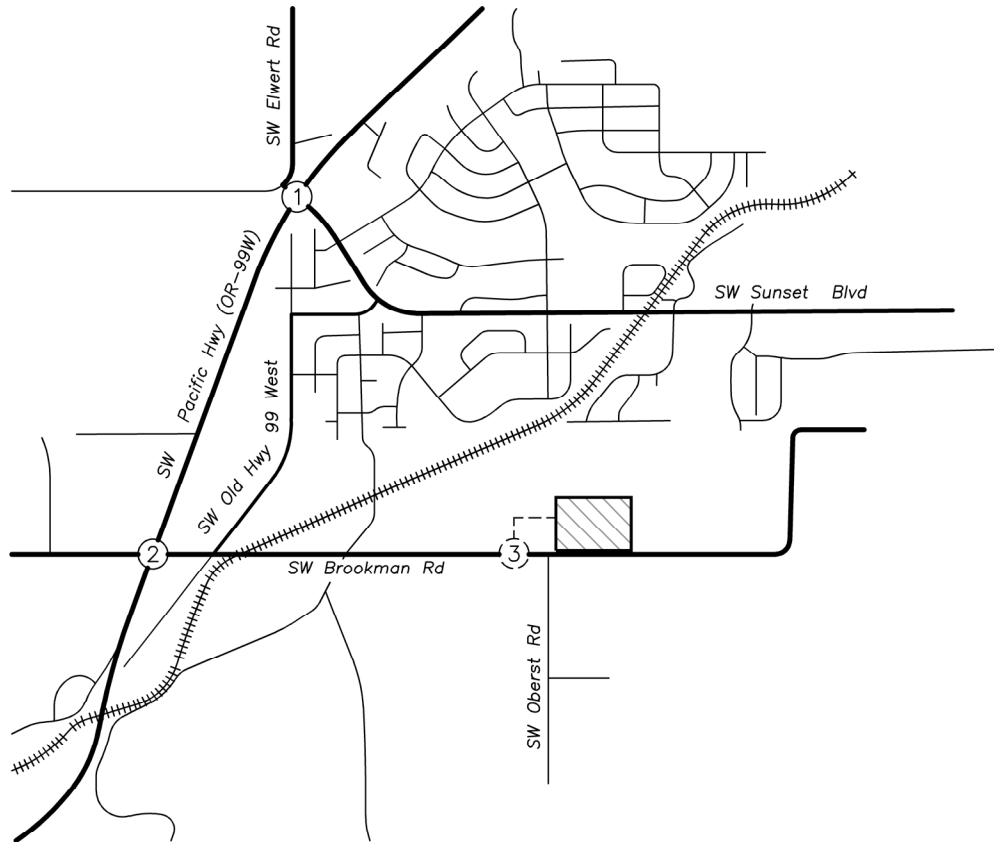
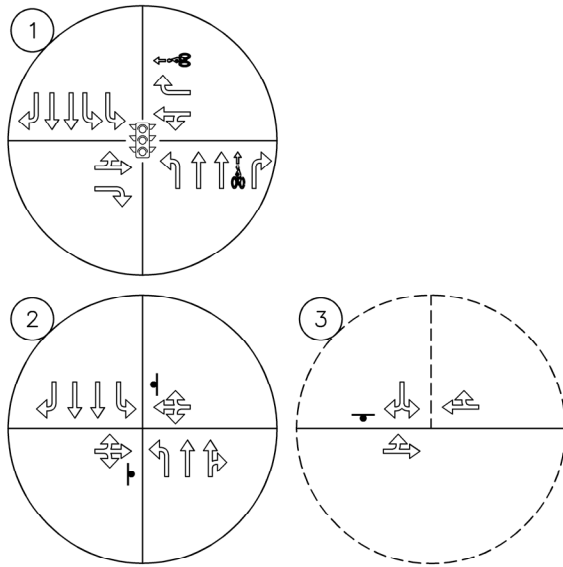
Table 2: Vicinity Intersection Descriptions

| Number | Name | Geometry | Traffic Control | Phasing/Stopped Approaches |
|--------|---|-----------------------|-----------------|--|
| 1 | SW Elwert Road/SW Sunset Boulevard at Highway 99W | Four-Legged | Signalized | WB/EB Permitted LT, NB/SB Protected LT |
| 2 | SW Brookman Road at Highway 99W | Four-Legged | Stop-Controlled | EB/WB Stop Controlled Approach |
| 3 | SW Brookman Road at Site Access | Three-Legged (Future) | Stop-Controlled | SB Stop Controlled Approach |

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations and control types is shown in Figure 1 on page 7.

LEGEND

- STUDY INTERSECTION (EXISTING)
- STUDY INTERSECTION (FUTURE)
- ⊥ STOP SIGN
- 🚦 TRAFFIC SIGNAL
- 🚲 BICYCLE LANE
- ▨ PROJECT SITE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY
- - - FUTURE ROADWAY
- ⚡ RAILROAD TRACKS



no scale

Site Trips

Trip Generation

The proposed development includes the construction of 28 single-family houses. As part of the proposed development, an existing single-family house will be removed for a net increase of 27 houses.

To estimate the number of site trips generated under existing and proposed conditions, trip rates from the *Trip Generation Manual*¹ were used. Specifically, data from land-use codes 210, *Single-Family Detached Housing*, was used based on the number of dwelling units.

The trip generation calculations show that the proposed development is projected to generate an additional 20 morning peak hour trips, 27 evening peak hour trips, and 254 average weekday trips. The trip generation estimates are summarized in Table 3 below. Detailed trip generation calculations are included in the technical appendix to this report.

Table 3: Trip Generation Summary

| | ITE Code | Units | Morning Peak Hour | | | Evening Peak Hour | | | Weekday Total |
|-----------------------------|----------|-------|-------------------|------|-------|-------------------|------|-------|---------------|
| | | | Enter | Exit | Total | Enter | Exit | Total | |
| Existing Conditions | | | | | | | | | |
| Single Family House | 210 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 10 |
| Proposed Development | | | | | | | | | |
| Single Family House | 210 | 28 | 5 | 16 | 21 | 18 | 10 | 28 | 264 |
| Net New Site Trips | | | 5 | 15 | 20 | 17 | 10 | 27 | 254 |

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

Trip Distribution

The directional distribution of site trips to/from the project site was referenced from *The Reserve at Cedar Creek Transportation Impact Analysis (TIA) – Sherwood, Oregon*, dated September 19th, 2019. The following trip distribution was used for analysis:

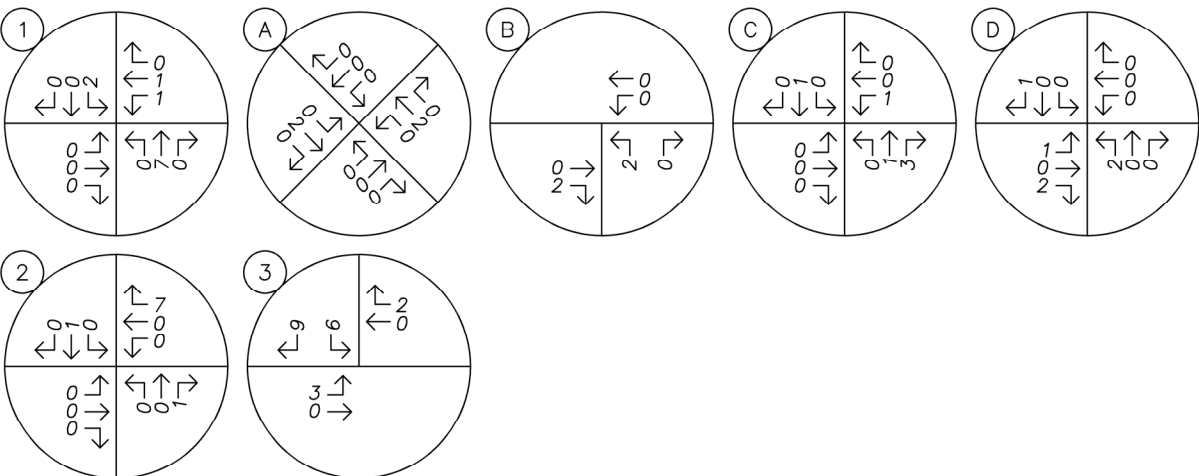
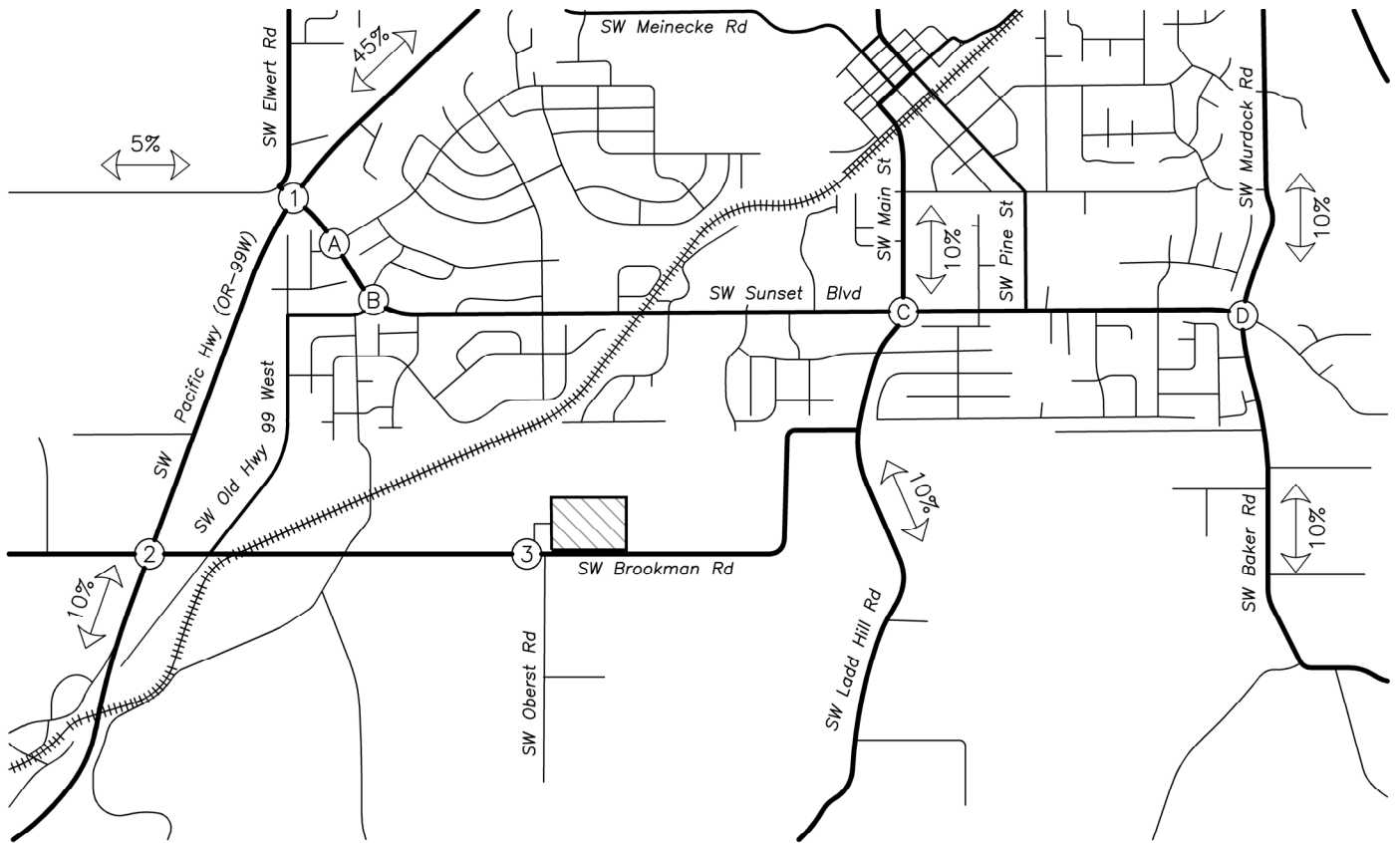
- Approximately 45 percent of site trips will travel to/from the north along Highway 99W
- Approximately 10 percent of site trips will travel to/from the north along SW Main Street
- Approximately 10 percent of site trips will travel to/from the north along SW Murdock Road
- Approximately 10 percent of site trips will travel to/from the south along Highway 99W
- Approximately 10 percent of site trips will travel to/from the south along SW Ladd Hill Road
- Approximately 10 percent of site trips will travel to/from the south along SW Baker Road
- Approximately 5 percent of site trips will travel to/from the west along SW Kruger Road

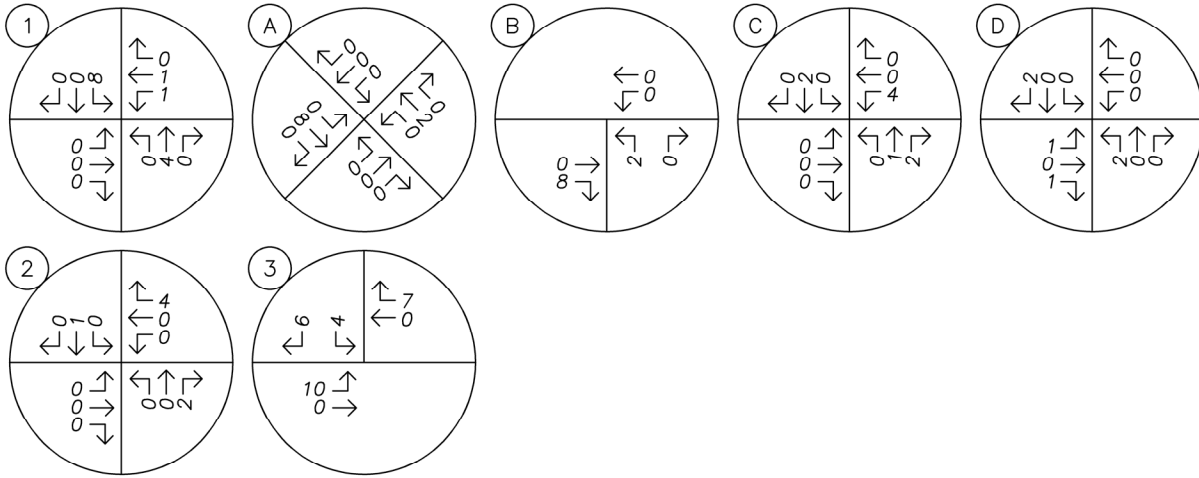
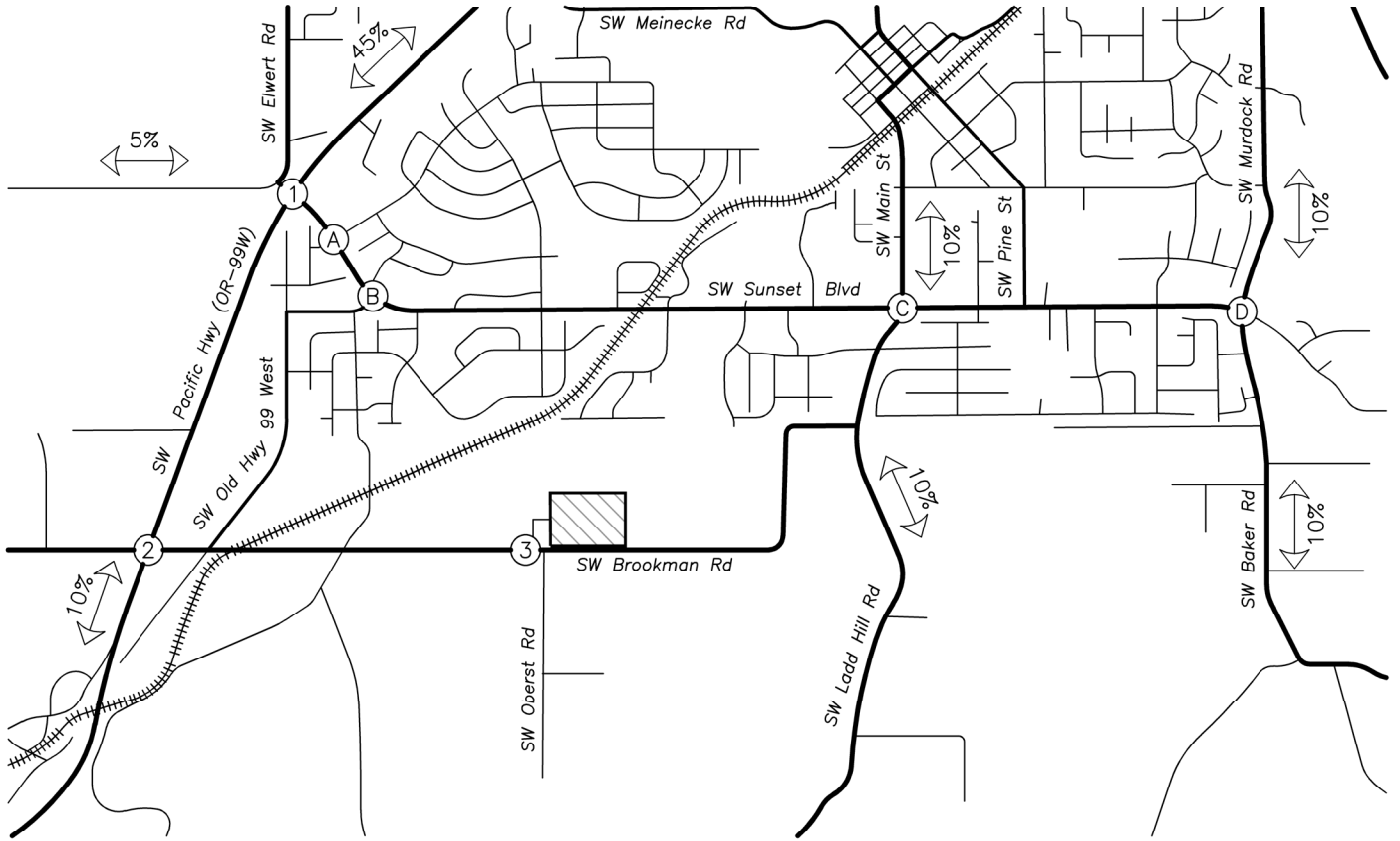
Four intersections were identified as exceeding acceptable operation standards in *The Reserve TIA*:

- | | |
|--|--|
| A. SW Sunset Boulevard at SW Woodhaven Drive | C. SW Sunset Boulevard at SW Main Street/SW Ladd Hill Road |
| B. SW Sunset Boulevard at SW Timbrel Lane | D. SW Sunset Boulevard at SW Murdock Road/SW Baker Road |

Site trip assignment through these intersections was conducted to determine expected impacts from the proposed development to these intersections.

The trip distribution for site trips generated by the proposed development during is shown in Figure 2 on page 10 for the morning peak hour and Figure 3 on page 11 for the evening peak hour.





Traffic Volumes

Existing Conditions

To estimate existing traffic conditions, year 2017 traffic count data was referenced *The Reserve TIA*, specifically volumes from Figures 4 and 5. Consistent with background growth methodologies used in *The Reserve TIA*, the year 2017 volumes were increased by 1% annually along Highway 99W and by 2% annually on all other movements at the study intersections to reflect existing year 2020 conditions.

Figure 4 on page 13 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

Background Conditions

To provide analysis of the impact of the proposed development on the existing transportation facilities, an estimation of future traffic volumes is required. In order to reflect future traffic conditions without the proposed subdivision, the *Year 2024 Total Intersection Operations* (Figures 12 and 13) volumes were referenced from *The Reserve TIA*.

It should be noted that *The Reserve TIA* assumed that by year 2024 the intersection of SW Elwert Road/SW Sunset Boulevard at Highway 99W will be reconstructed to include a second northeast-bound left-turn lane, and a dedicated left-turn lane, through lane, and shared through/right-turn lane on the southeast-bound and northwest-bound approaches. In addition, turning movement restrictions at the intersection of SW Brookman Road at Highway 99W would be implemented by year 2024. Specific restrictions include access to minor-street approaches (i.e. eastbound and westbound approaches) being restricted to right-in/right-out only. In addition, U-turns along Highway 99W at the intersection would also be restricted.

Figure 5 on page 14 shows the background traffic volumes at the study intersections during the morning and evening peak hours.

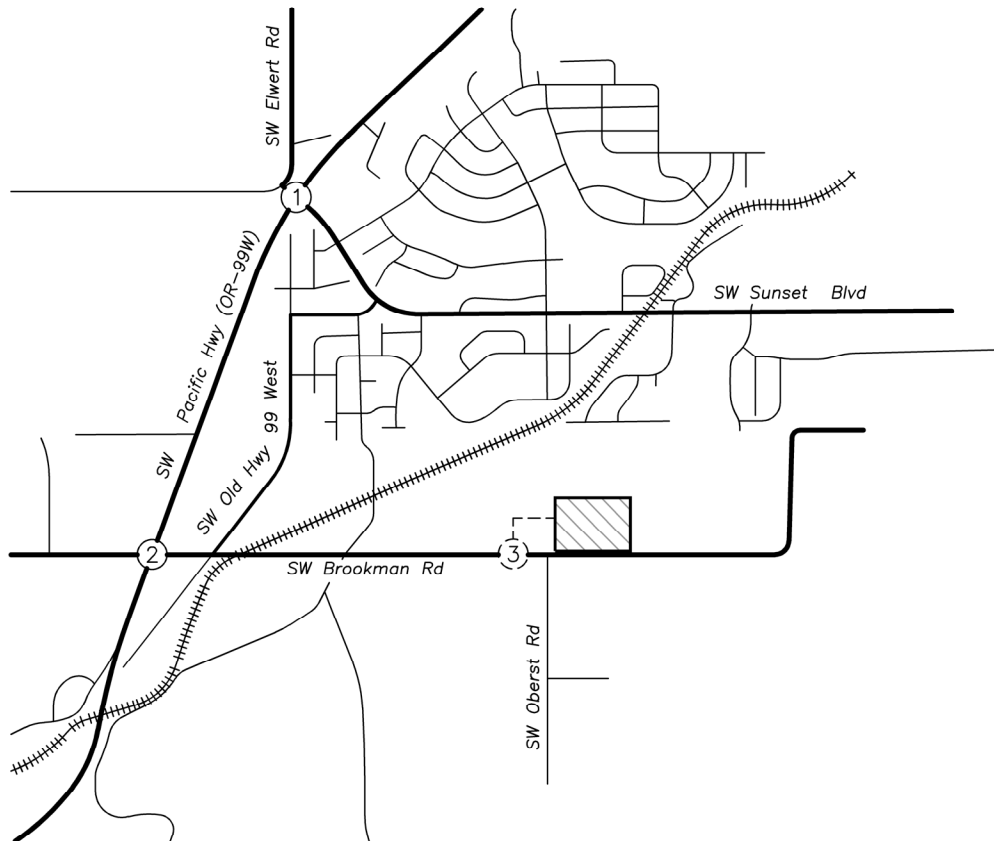
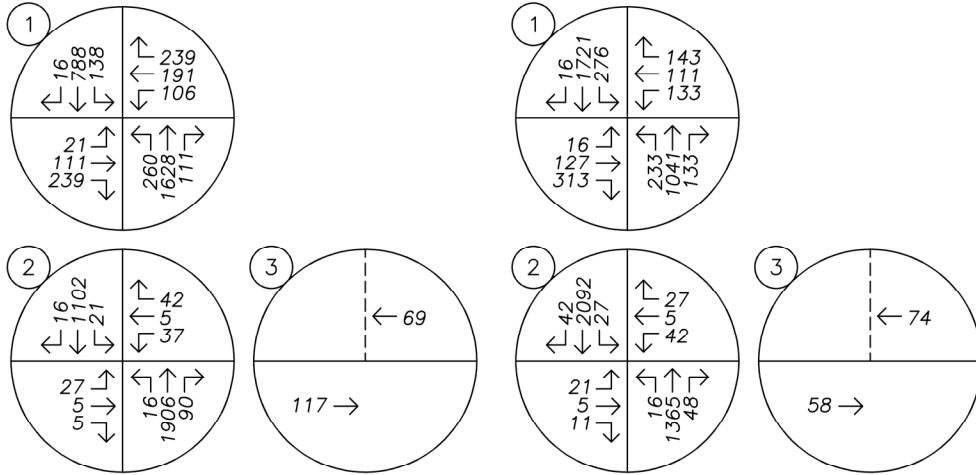
Build-Out Conditions

Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2024 background traffic volumes to obtain the expected 2024 build-out volumes.

Figure 6 on page 15 shows the build-out traffic volumes at the study intersections during the morning and evening peak hours.

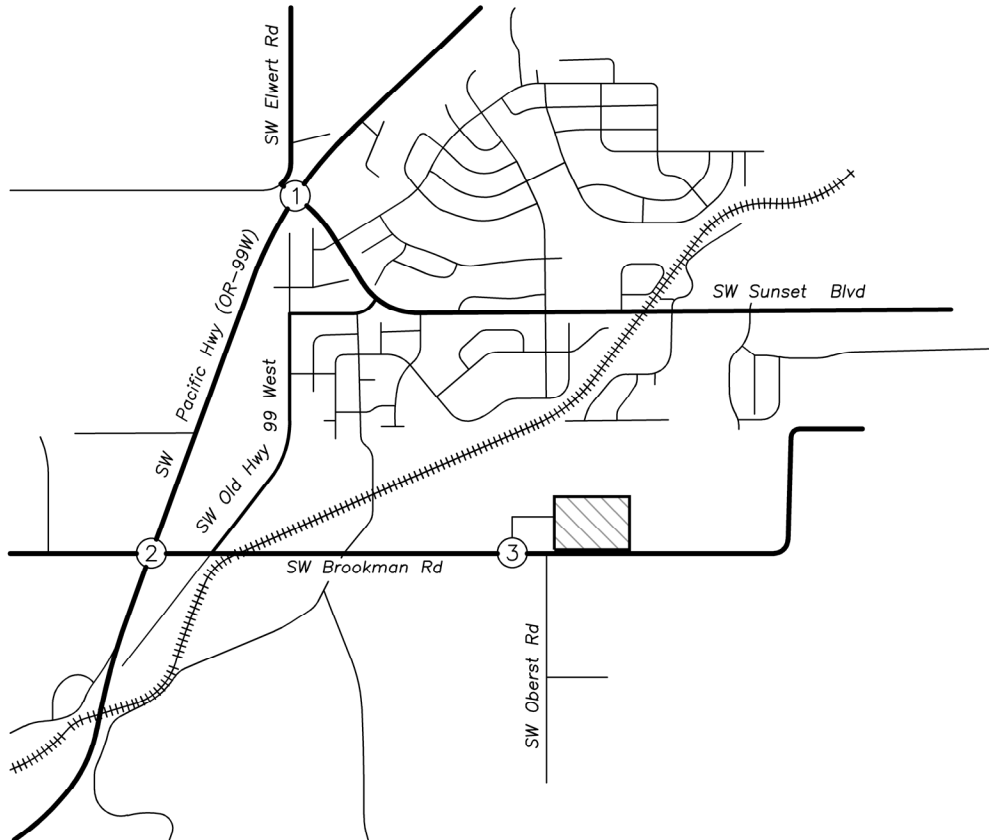
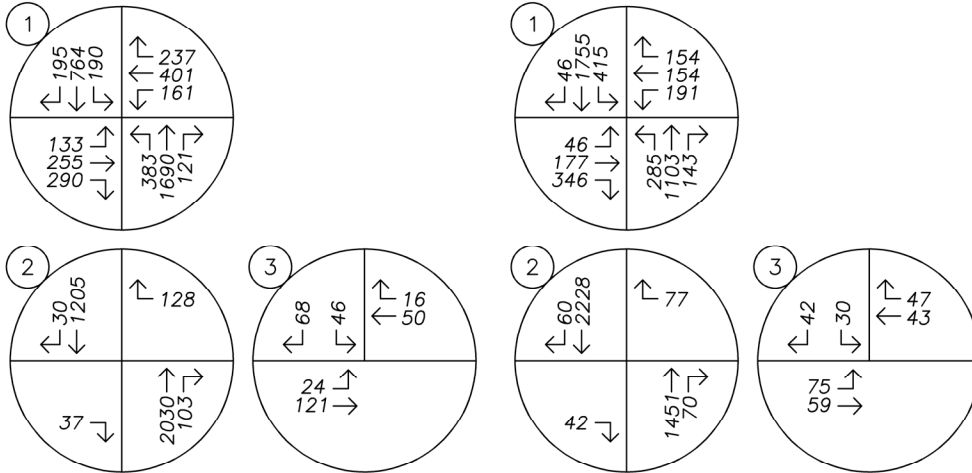
AM PEAK HOUR

PM PEAK HOUR



AM PEAK HOUR

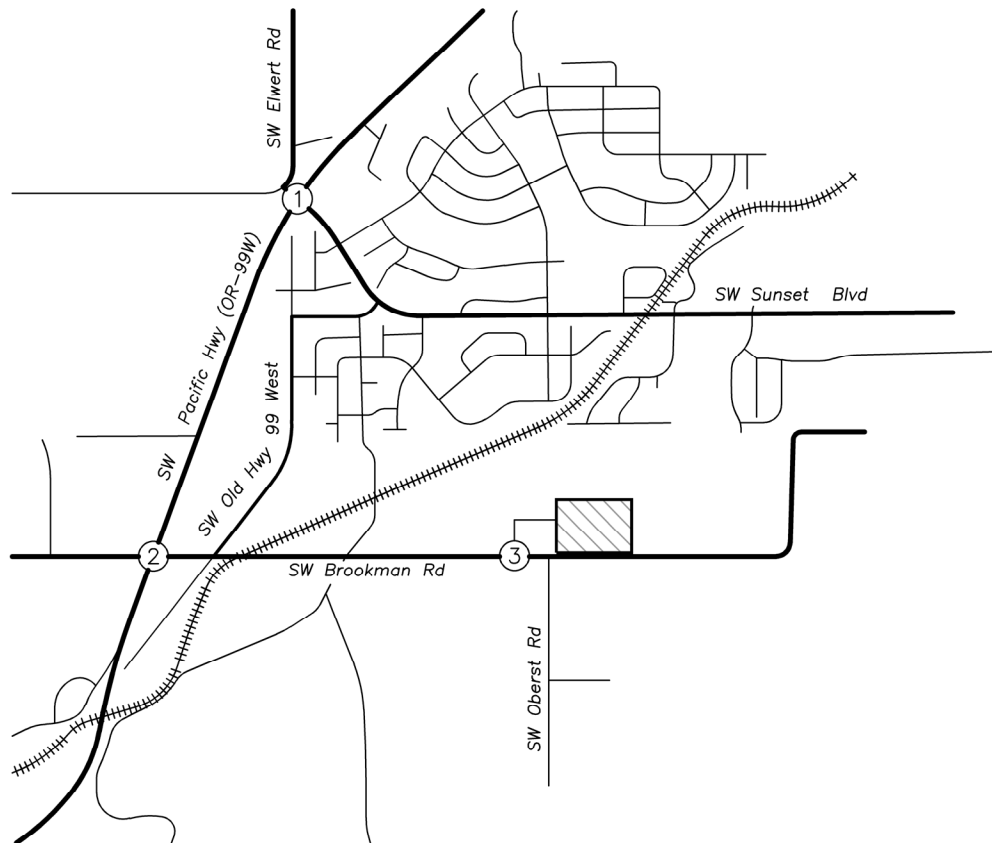
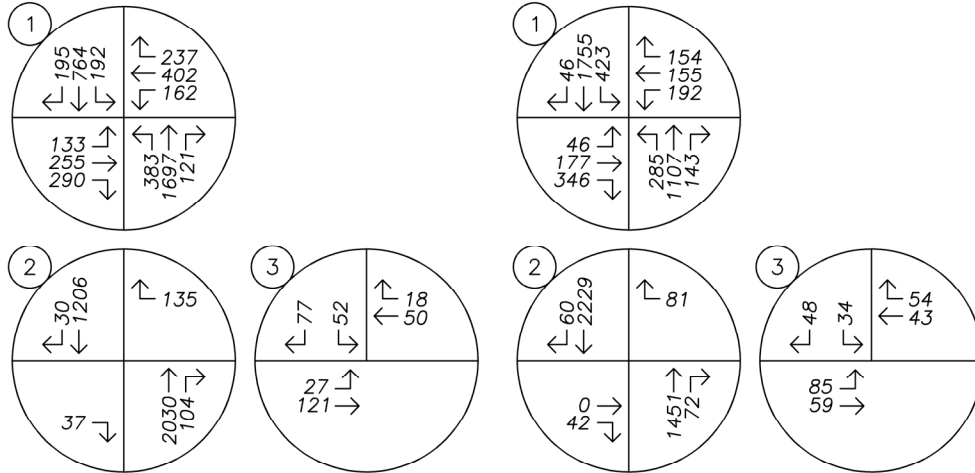
PM PEAK HOUR



no scale

AM PEAK HOUR

PM PEAK HOUR



no scale

Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Analysis and Reporting Unit, a review was performed of the most recent five years of available crash data at the study intersections (January 2013 through December 2017). The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for each intersection. Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated under the common assumption that traffic counted during the evening peak hour represents approximately ten percent of annual average daily traffic (AADT) at each intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation. Additionally, the crash rates for study intersections along Highway 99W were compared against ODOT's average and 90th percentile crash rates for intersections with similar approach configurations and traffic control types to determine whether safety mitigation is necessary or appropriate.

The study intersections along Highway 99W are ODOT facilities which adhere to the crash analysis methodologies within ODOT's APM². According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of their respective 90th percentile crash rates should be "flagged for further analysis". For intersections in urban settings, the following average and 90th percentile rates are applicable to the study intersections:

- Unsignalized, four-legged intersection: average rate of 0.198 CMEV and 90th percentile rate of 0.408 CMEV.
- Signalized, four-legged intersection: average rate of 0.477 CMEV and 90th percentile rate of 0.860 CMEV.

With regard to crash severity, ODOT classifies crashes in the following categories:

- Property Damage Only (PDO);
- Possible Injury – Complaint of Pain (Injury C);
- Non-Incapacitating Injury (Injury B);
- Incapacitating Injury – Bleeding, Broken Bones (Injury A); and
- Fatality or Fatal Injury.

Table 4 on page 17 provides a summary of crash types while Table 5 on page 17 summarizes crash severities and rates for each of the study intersections. Detailed crash reports are included in the technical appendix to this report.

² Oregon Department of Transportation, *Analysis Procedures Manual Version 2*. December 2019.

Table 4: Crash Type Summary

| Intersection | Crash Type | | | | | | | | | Total Crashes |
|---|------------|------|-------|--------------|------------|---------|-------|-----|------|---------------|
| | Rear End | Turn | Angle | Fixed Object | Side Swipe | Head On | Other | Ped | Bike | |
| 1 SW Elwert Road/SW Sunset Boulevard at Highway 99W | 22 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 29 |
| 2 SW Brookman Road at Highway 99W | 1 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |

Table 5: Crash Severity and Rate Summary

| Intersection | Crash Severity | | | | | Total Crashes | AADT | Crash Rate |
|---|----------------|----|---|---|-------|---------------|--------|------------|
| | PDO | C | B | A | Fatal | | | |
| 1 SW Elwert Road/SW Sunset Boulevard at Highway 99W | 15 | 11 | 3 | 0 | 0 | 29 | 40,930 | 0.39 |
| 2 SW Brookman Road at Highway 99W | 12 | 2 | 1 | 2 | 0 | 17 | 35,760 | 0.26 |

BOLDED text indicates a crash rate in excess of the 90th percentile crash rate.

At the intersection of SW Elwert Road/SW Sunset Boulevard at Highway 99W, there was one reported crash that involved a bicyclist. The crash occurred when the driver of a northwest-bound, left-turning passenger car failed to yield right-of-way to a northwest/southeast crossing bicyclist. The bicyclist sustained injuries consistent with *Injury B* classification.

At the intersection of SW Brookman Road at Highway 99W, there were two reported crashes classified as *Injury A* collisions. The following narrative describes each crash:

- The first crash occurred when an eastbound passenger car entered the intersection and collided with a southbound passenger car. The eastbound driver proceeded into the intersection after stopping at the stop sign but failed to yield the right-of-way to the southbound vehicle. The driver of the eastbound vehicle sustained injuries consistent with *Injury A* classification, while a passenger in the southbound vehicle sustained injuries consistent with *Injury C* classification. The driver of the southbound vehicle was uninjured.
- The second crash occurred when a westbound passenger car entered the intersection and collided with a northbound motorcyclist. The westbound driver proceeded into the intersection after stopping at the stop sign but failed to yield the right-of-way to the northbound motorcycle. The driver of the passenger car was uninjured, while the motorcyclist sustained injuries.

It should be noted that with restriction of the minor-street approaches to right-in/right-out only, future collisions similar to the above *Injury A* collisions are not expected to occur.

Based on the review of the crash data, no significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Warrant Analysis

Left-turn lane warrants were examined for the site access intersection under year 2024 buildout conditions. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream.

Warrants for an eastbound left-turn lane at the site access intersection were based on the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report Number 457³. This methodology evaluates the need for a left-turn lane based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

Left-turn lane warrants are not projected to be met upon completion and occupancy of the proposed development. Detailed warrant analyses for each study intersection are included in the technical appendix to this report.

³ Bonneson, James A. and Michael D. Fontaine, *NCHRP Report 457: An Engineering Study Guide for Evaluating Intersection Improvements*, Transportation Research Board, 2001.

Operational Analysis

A capacity and delay analysis was conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual*⁴ (HCM). Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Performance Standards

The operating standards adopted by Washington County, ODOT, and the City of Sherwood are summarized below.

Washington County

SW Brookman Road is under the jurisdiction of Washington County. The County has defined operating standards for signalized and stop controlled intersections as follows:

- For signalized intersections, the maximum intersection v/c ratio shall be no greater than 0.99.
- For unsignalized intersections, no movement shall experience a v/c ratio greater than 0.99.

ODOT

ODOT operates and maintains Highway 99W. ODOT's operating mobility target for intersections along Highway 99W in the study area is an intersection v/c ratio no greater than 0.99 during the 1st and 2nd peak hours per Table 7 of the *Oregon Highway Plan*⁵.

City of Sherwood

According to the City of Sherwood's Transportation System Plan (TSP), both signalized and unsignalized intersections under City jurisdiction must operate at LOS D or better with a v/c ratio of 0.85 or less; however, two-way stop-controlled intersections are required to operate at LOS E or better with a v/c ratio of 0.90 or less⁶.

Delay & Capacity Analysis

Synchro, a Trafficware analysis software, was used to calculate the LOS and v/c ratio of the study intersections for all analysis scenarios. The reported results are generally based on the analysis methodologies provided in the HCM 6th Edition; however, the HCM 6th edition (utilizing Trafficware software) does not report an overall v/c ratio for signalized intersections, which is the standard ODOT uses to evaluate intersection operation. Therefore, the v/c ratio for the signalized intersection of SW Elwert Road/SW Sunset Boulevard at Highway 99W was based on HCM 2000 methodologies.

⁴ Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

⁵ Oregon Department of Transportation, *Oregon Highway Plan*. 1999

⁶ City of Sherwood, *Sherwood Transportation System Plan*. Adopted June 17th, 2014.

The v/c, delay, and LOS results of the capacity analysis are shown in Table 6 below for the morning and evening peak hours. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 6: Intersection Capacity Analysis Summary

| | Morning Peak Hour | | | Evening Peak Hour | | |
|--|-------------------|-----------|-----------------|-------------------|-----------|-------------|
| | LOS | Delay (s) | v/c | LOS | Delay (s) | v/c |
| 1 SW Elwert Road/SW Sunset Boulevard at Highway 99W | | | | | | |
| 2020 Existing Conditions | F | >120 | 0.90 | F | >120 | 0.99 |
| 2024 Background Conditions | E | 69 | 1.00 | E | 77 | 1.01 |
| 2024 Buildout Conditions | E | 70 | 1.00 | E | 78 | 1.02 |
| 2 SW Brookman Road at Highway 99W | | | | | | |
| 2020 Existing Conditions | F | >120 | >1.10 | C | 22 | 0.07 |
| 2024 Background Conditions | F | 57 | 0.69 | D | 30 | 0.24 |
| 2024 Buildout Conditions | F | 63 | 0.73 | D | 30 | 0.25 |
| 3 SW Brookman Road at Site Access | | | | | | |
| 2024 Background Conditions | B | 11 | 0.21 | B | 11 | 0.14 |
| 2024 Buildout Conditions | B | 11 | 0.24 | B | 11 | 0.17 |

BOLDED results indicate operation above acceptable jurisdictional standards.

The delay and capacity analysis shows that the intersection of SW Brookman Road at Highway 99W is currently operating in excess of ODOT standards. However, by year 2024, the intersection is planned and assumed to be reconfigured to restrict minor-street turning movements to right-in/right-out. With implementation of this mitigation, the intersection is projected to operate acceptably per ODOT standards.

The intersection of SW Elwert Road/SW Sunset Boulevard at Highway 99W is projected to operate in excess of ODOT’s 0.99 v/c ratio standard for Highway 99W by year 2024, even with the planned installation of an additional northeast-bound left-turn lane and reconstructing the southeast-bound and northwest-bound approaches to each include a left-turn lane, through lane, and shared through/right-turn lane. Although the intersection is projected to exceed the v/c standard, according to the Oregon Highway Plan:

In applying OHP mobility targets to analyze mitigation, ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity ratios, particularly over a specified planning horizon. After negotiating reasonable levels of mitigation for actions required under OAR 660-012-0060, ODOT considers calculated values for v/c ratios that are within 0.03 of the adopted target in the OHP to be considered in compliance with the target. The adopted mobility target still applies for determining significant affect under OAR 660-012-0060.



Given the intersection is projected to operate at a v/c ratio no greater than 1.02 post planned improvements (i.e. within 0.03 of ODOT's 0.99 v/c standard), no further mitigation is necessary at the intersection as part of the proposed development.

Based on the above analysis and findings, all study intersections are projected to operate acceptably per their respective jurisdictional standards by year 2024 with buildout of the proposed subdivision. Accordingly, no operational mitigation is necessary as part of the proposed Cedar Creek Subdivision.

Proportionate Share Mitigation Assessment

Consistent with *The Reserve TIA*, proportionate share fees were evaluated at intersections determined as failing, using methodologies similar to those presented in Table 6 of the referenced TIA. Table 7 on the following page provides the methodology used to calculate proportionate share fees based on the proposed development's trip generation impacts.



Table 7: Proportional Share Methodology Summary

| Intersection | A. SW Sunset Boulevard at SW Woodehaven Drive | B. SW Sunset Boulevard at SW Timbrel Lane | C. SW Sunset Boulevard at SW Main Street/SW Ladd Hill Road | D. SW Sunset Boulevard at SW Murdock Road/SW Baker Road |
|--|--|--|---|--|
| Mitigation Project Summary | Construct Traffic Signal | Construct Mini Roundabout | Construct Traffic Signal | Construct NB LTL & SB RTL |
| City TSP Project ID | NA | D28 | D26 | D33 |
| Peak Hour | Weekday AM | Weekday AM | Weekday PM | Weekday PM |
| Scenario when Mitigation is Triggered | No Build (2024) | No Build (2024) | No Build (2024) | No Build (2024) |
| Existing Total Entering Volume, TEV (X) | 1,012 | 894 | 1,208 | 1,208 |
| 2024 No Build (Background with RIRO, Y) | 1,541 | 1,318 | 1,487 | 1,371 |
| 2024 Project Trips (PT) | 4 | 4 | 9 | 6 |
| Background Growth (Z=Y-X) | 529 | 424 | 279 | 163 |
| Proportional Share (% PT/(PT+Z)) | 0.75% | 0.93% | 3.13% | 3.55% |
| Mitigation Cost Estimate (\$) | \$1,050,000 | \$630,000 | \$250,000 | \$750,000 |
| Cost Estimate Reference | DKS (Ref 10) | DKS (Ref 10) | TSP (Ref 5) | TSP (Ref 5) |
| Proportional Share Cost | \$7,879.92 | \$5,887.85 | \$7,812.50 | \$26,627.22 |

Based on the proportionate share fee calculations, a total proportionate share fee to mitigate site trip impacts to the above intersections is \$48,207.49.



Conclusions

No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. Accordingly, no safety mitigation is recommended per the crash data analysis.

Left-turn lane warrants are not projected to be met at the site access intersection along SW Brookman Road upon completion and occupancy of the proposed development. Accordingly, installation of a left-turn lane at the site access intersection is not necessary or recommended.

All study intersections are projected to operate acceptably per their respective jurisdictional standards by year 2024 with buildout of the proposed subdivision. Accordingly, no operational mitigation is necessary as part of the proposed Cedar Creek Subdivision.

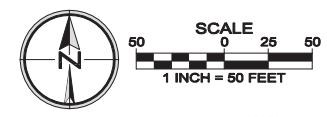
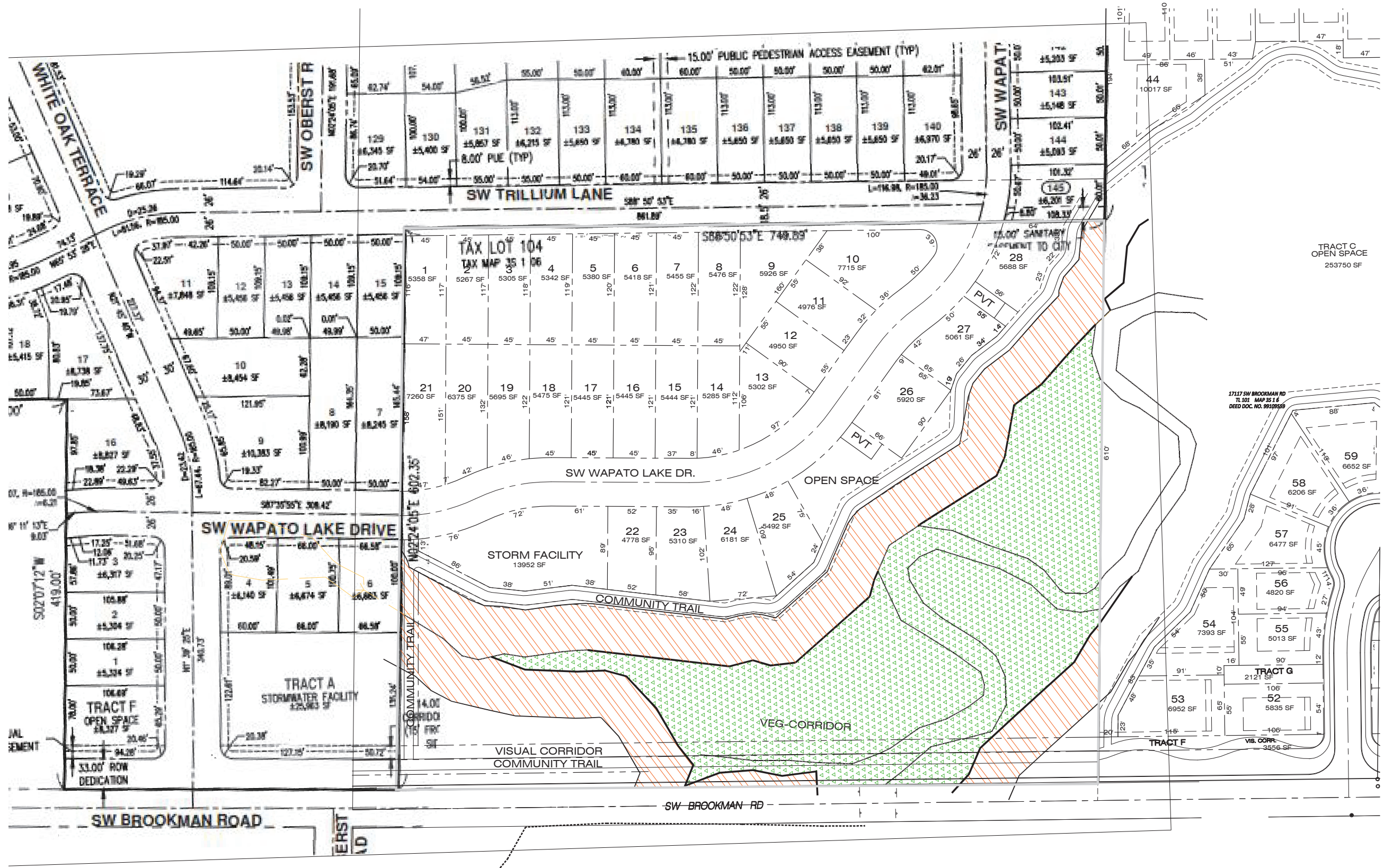
The Reserve at Cedar Creek Transportation Impact Analysis (TIA) – Sherwood, Oregon, dated September 19th, 2019, identified four intersections as currently exceeding acceptable jurisdictional standards. Based on the projected site trip impacts to these intersections, a total proportionate share fee to mitigate impacts of \$48,207.49 was calculated.



Appendix



B:\Projects\131-999\Brookman Road\Scott Property\2.dwg 10/10/2019 3:58:51 PM



PRELIMINARY SITE PLAN

| Designed by | MIS | Date | 10/19 |
|---------------|---------|------|-------|
| Drawn by | TCC | Date | 10/19 |
| Reviewed by | MIS | Date | 10/19 |
| Project No. | 131-999 | REF. | |
| Horiz. Scale: | 1"=50' | | |
| Vert. Scale: | | | |

| Revision | Date | No. | Project |
|----------|------|-----|----------------|
| | | | SCOTT PROPERTY |
| | | | No. 131-999 |
| | | | Type PLANNING |
| | | | Sheet |

PIONEER DESIGN GROUP
 CIVIL ENGINEERING - LAND USE PLANNING - LAND SURVEYING - LANDSCAPE ARCHITECTURE
 PORTLAND, OREGON | HONOLULU, HAWAII
 PH: 503.443.8288 | WWW.PD-GRP.COM

SCOTT PROPERTY
 CITY OF SHERWOOD, OREGON

P0.0



TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 1

AM PEAK HOUR

Trip Rate: 0.74

| | Enter | Exit | Total |
|--------------------------|-------|------|-------|
| Directional Distribution | 25% | 75% | |
| Trip Ends | 0 | 1 | 1 |

PM PEAK HOUR

Trip Rate: 0.99

| | Enter | Exit | Total |
|--------------------------|-------|------|-------|
| Directional Distribution | 63% | 37% | |
| Trip Ends | 1 | 0 | 1 |

WEEKDAY

Trip Rate: 9.44

| | Enter | Exit | Total |
|--------------------------|-------|------|-------|
| Directional Distribution | 50% | 50% | |
| Trip Ends | 5 | 5 | 10 |

SATURDAY

Trip Rate: 9.54

| | Enter | Exit | Total |
|--------------------------|-------|------|-------|
| Directional Distribution | 50% | 50% | |
| Trip Ends | 5 | 5 | 10 |

Source: Trip Generation Manual, Tenth Edition



TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 28

AM PEAK HOUR

Trip Rate: 0.74

| | Enter | Exit | Total |
|--------------------------|----------|-----------|-----------|
| Directional Distribution | 25% | 75% | |
| Trip Ends | 5 | 16 | 21 |

PM PEAK HOUR

Trip Rate: 0.99

| | Enter | Exit | Total |
|--------------------------|-----------|-----------|-----------|
| Directional Distribution | 63% | 37% | |
| Trip Ends | 18 | 10 | 28 |

WEEKDAY

Trip Rate: 9.44

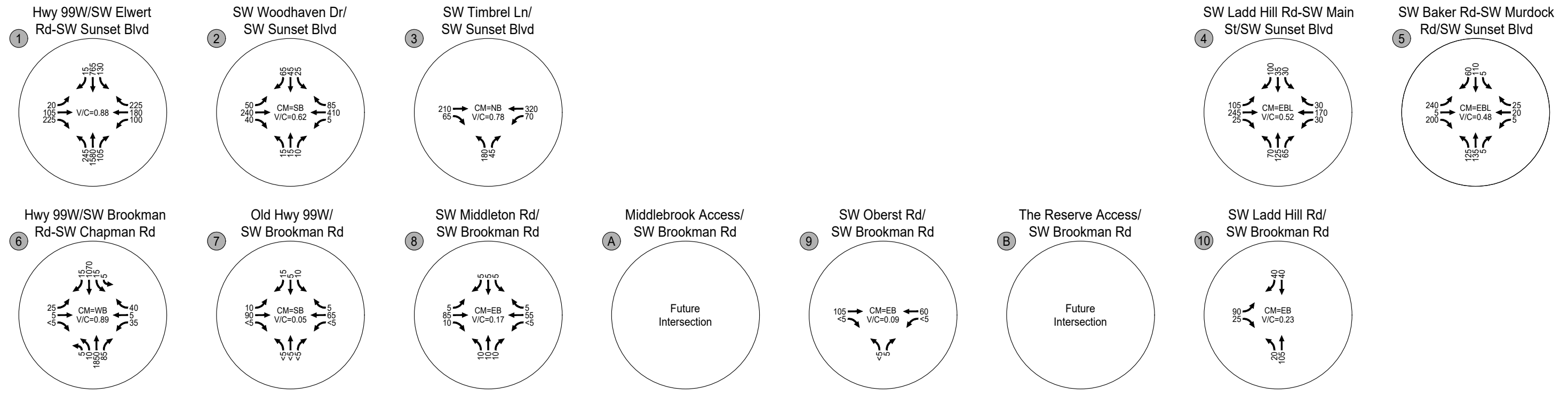
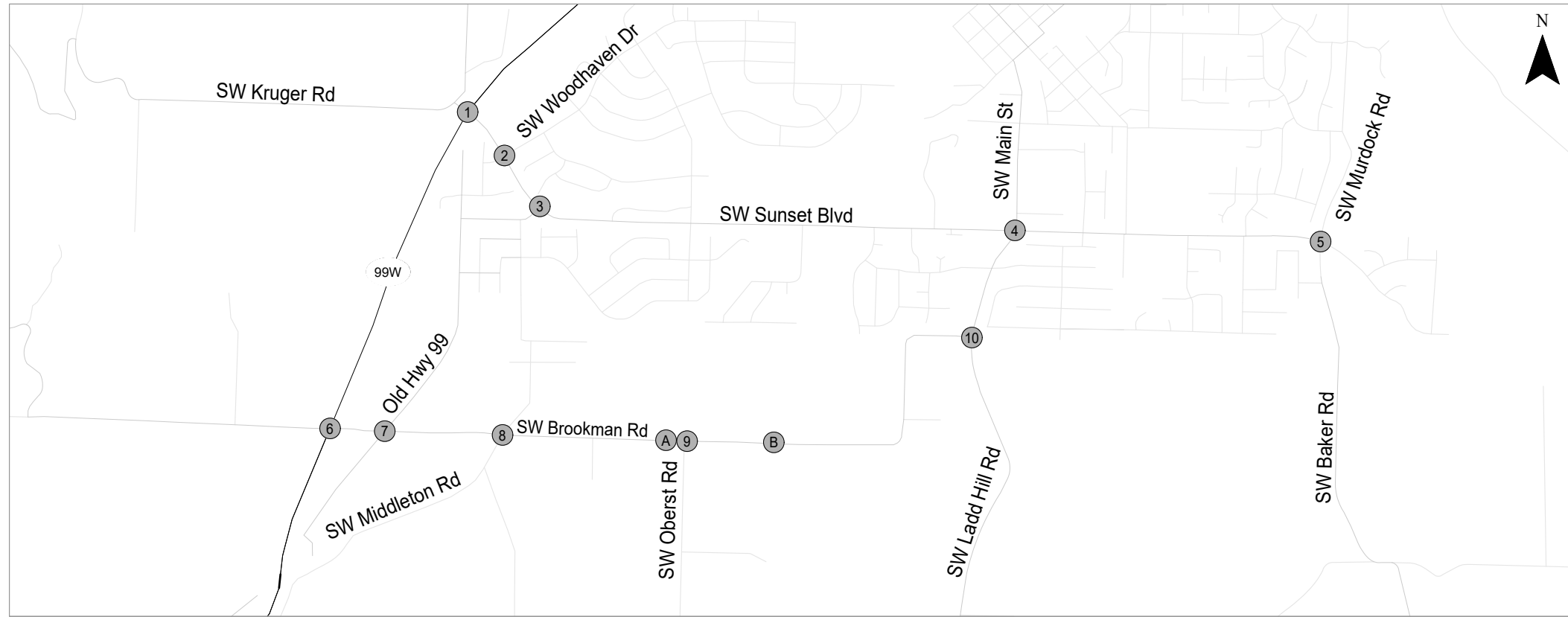
| | Enter | Exit | Total |
|--------------------------|------------|------------|------------|
| Directional Distribution | 50% | 50% | |
| Trip Ends | 132 | 132 | 264 |

SATURDAY

Trip Rate: 9.54

| | Enter | Exit | Total |
|--------------------------|------------|------------|------------|
| Directional Distribution | 50% | 50% | |
| Trip Ends | 134 | 134 | 268 |

Source: Trip Generation Manual, Tenth Edition

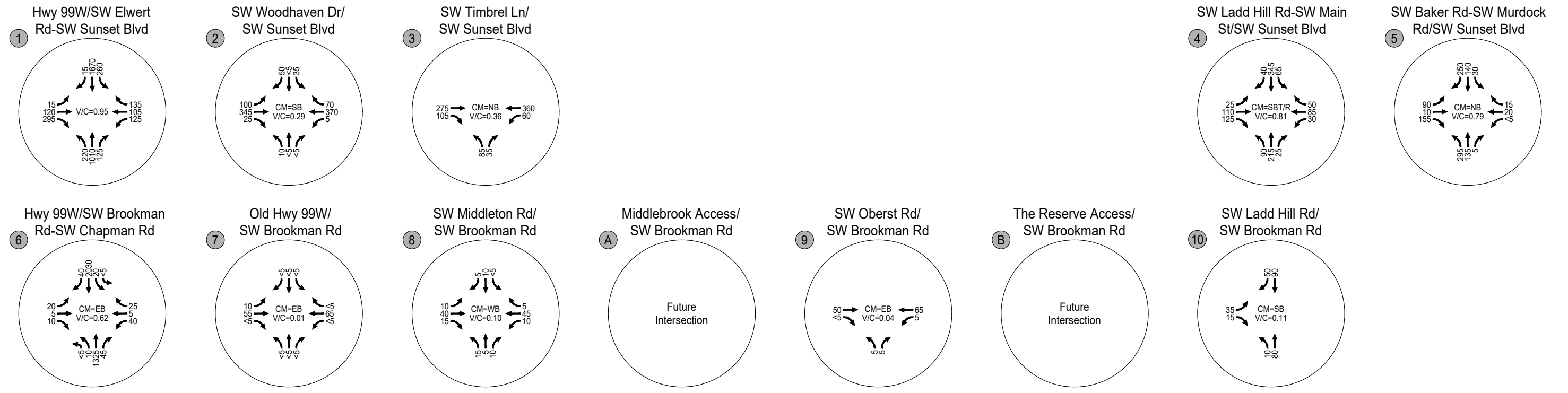
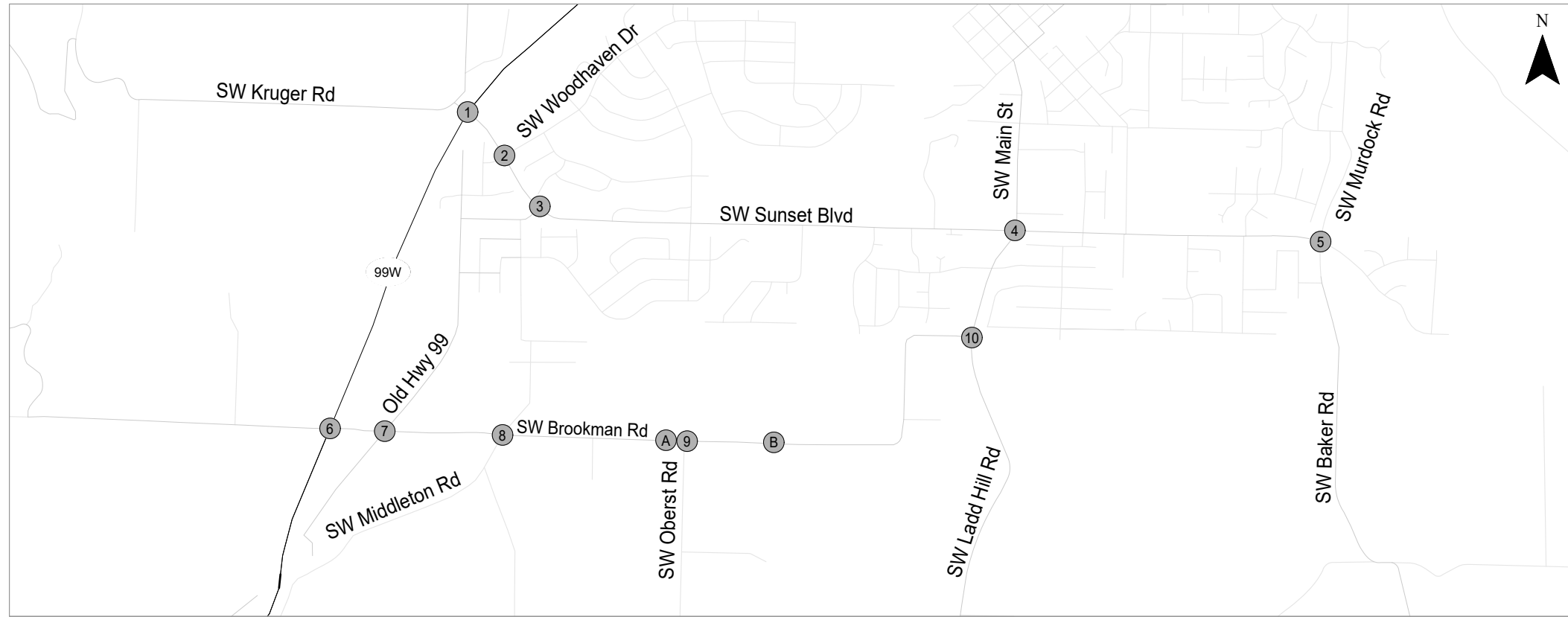


CM = CRITICAL MOVEMENT (TWSC)
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED/AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED/AWSC) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
 TWSC = TWO-WAY STOP CONTROL
 AWSC = ALL-WAY STOP CONTROL

Existing Intersection Operations
 Weekday AM Peak Hour
 Sherwood, Oregon

Figure 4

C:\KAI Applications\Autodesk\TEMP\AcPublish_10660\24316_The Reserve_Figures_NP_2019-09-09.dwg Sep 17, 2019 12:25pm nick Layout Tab: 4_EX_AM

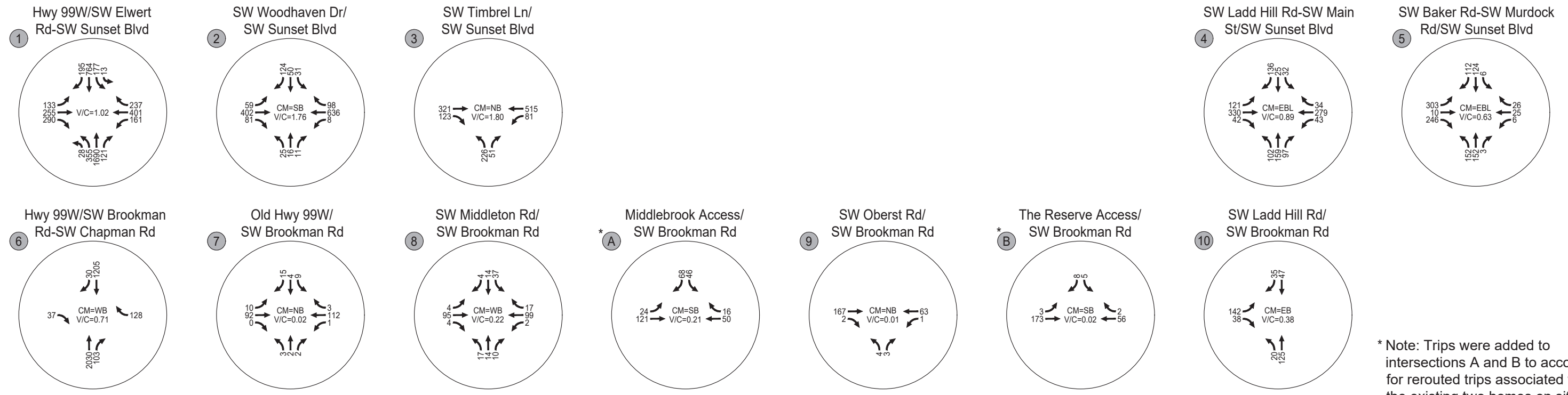


CM = CRITICAL MOVEMENT (TWSC)
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED/AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED/AWSC) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
 TWSC = TWO-WAY STOP CONTROL
 AWSC = ALL-WAY STOP CONTROL

Existing Intersection Operations
 Weekday PM Peak Hour
 Sherwood, Oregon

Figure 5

C:\KAI Applications\Autodesk\TEMP\AcPublish_10660\24316_The Reserve_Figures_NP_2019-09-09.dwg Sep 17, 2019 12:25pm nick Layout Tab: 5_EX_PM



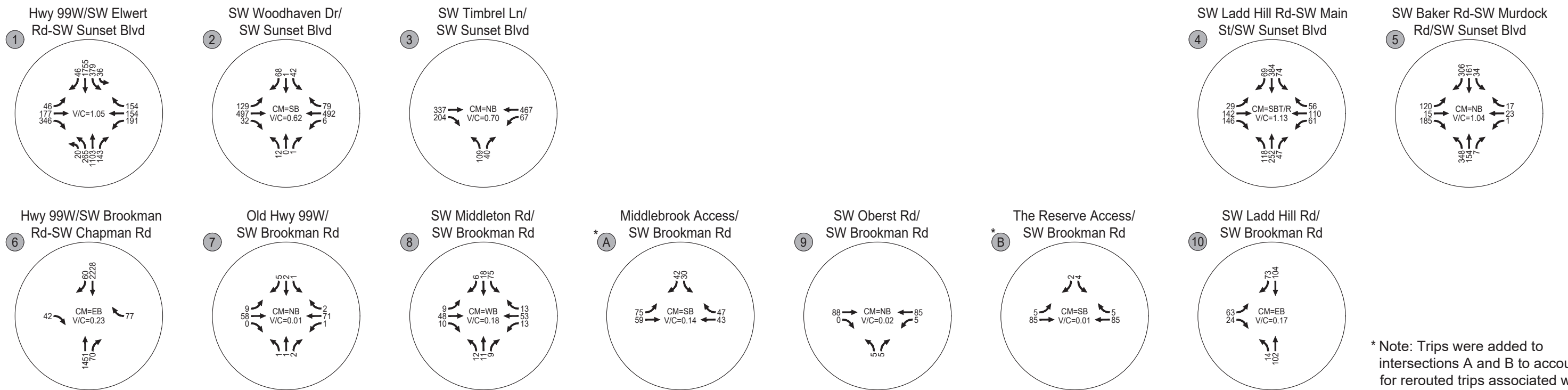
* Note: Trips were added to intersections A and B to account for rerouted trips associated with the existing two homes on site.

CM = CRITICAL MOVEMENT (TWSC)
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED/AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED/AWSC) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
 TWSC = TWO-WAY STOP CONTROL
 AWSC = ALL-WAY STOP CONTROL

Year 2024 Total Intersection Operations
 Weekday AM Peak Hour
 Sherwood, Oregon

Figure 12

C:\KAI Applications\Autodesk\TEMP\AcPublish_10660\24316_The Reserve_Figures_NP_2019-09-09.dwg Sep 17, 2019 - 12:25pm - nick Layout Tab: 12_TL_AM



* Note: Trips were added to intersections A and B to account for rerouted trips associated with the existing two homes on site.

CM = CRITICAL MOVEMENT (TWSC)
 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED/AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED/AWSC) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
 TWSC = TWO-WAY STOP CONTROL
 AWSC = ALL-WAY STOP CONTROL

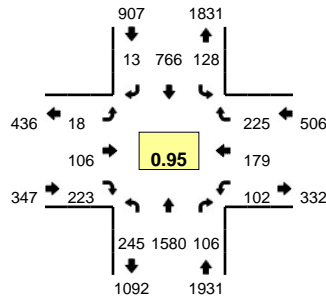
Year 2024 Total Intersection Operations
 Weekday PM Peak Hour
 Sherwood, Oregon

Figure 13

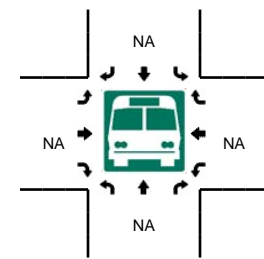
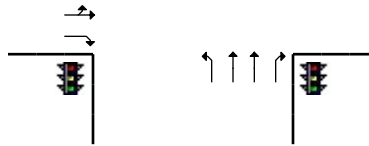
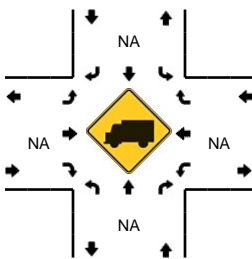
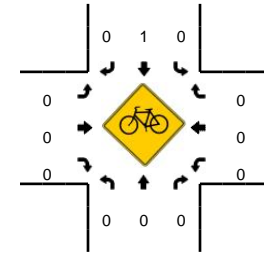
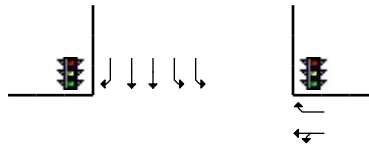
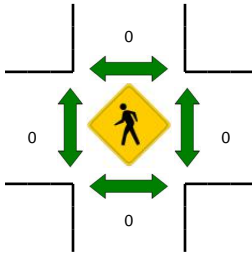
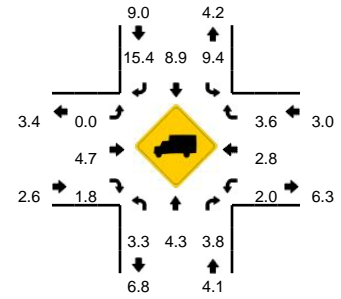
C:\KAI Applications\Autodesk\TEMP\AcPublish_10660\24316_The Reserve_Figures_NP_2019-09-09.dwg Sep 17, 2019 - 12:25pm - nick Layout Tab: 13_TL_PM

LOCATION: SW Pacific Hwy -- SW Elwert Rd/SW Sunset Blvd
CITY/STATE: Sherwood, OR

QC JOB #: 14401717
DATE: Thu, May 11 2017



Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

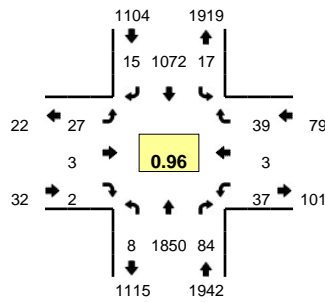


| 5-Min Count Period Beginning At | SW Pacific Hwy (Northbound) | | | | SW Pacific Hwy (Southbound) | | | | SW Elwert Rd/SW Sunset Blvd (Eastbound) | | | | SW Elwert Rd/SW Sunset Blvd (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|----|---|------|-------|---|---|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 7:00 AM | 22 | 126 | 6 | 0 | 2 | 43 | 0 | 1 | 0 | 5 | 15 | 0 | 11 | 13 | 12 | 0 | 256 | |
| 7:05 AM | 10 | 136 | 9 | 0 | 3 | 71 | 2 | 0 | 3 | 5 | 19 | 0 | 8 | 8 | 17 | 0 | 291 | |
| 7:10 AM | 20 | 118 | 8 | 0 | 8 | 54 | 1 | 1 | 1 | 7 | 25 | 0 | 14 | 19 | 12 | 0 | 288 | |
| 7:15 AM | 34 | 127 | 9 | 0 | 6 | 44 | 1 | 1 | 1 | 9 | 17 | 0 | 9 | 15 | 19 | 0 | 292 | |
| 7:20 AM | 23 | 140 | 8 | 0 | 5 | 60 | 0 | 0 | 3 | 5 | 16 | 0 | 16 | 8 | 16 | 0 | 300 | |
| 7:25 AM | 22 | 154 | 14 | 0 | 7 | 76 | 1 | 0 | 0 | 5 | 14 | 0 | 3 | 15 | 16 | 0 | 327 | |
| 7:30 AM | 19 | 119 | 7 | 0 | 11 | 50 | 1 | 1 | 4 | 14 | 20 | 0 | 4 | 21 | 17 | 0 | 288 | |
| 7:35 AM | 22 | 123 | 5 | 0 | 12 | 52 | 1 | 1 | 1 | 9 | 14 | 0 | 13 | 25 | 16 | 0 | 294 | |
| 7:40 AM | 20 | 139 | 9 | 0 | 13 | 64 | 0 | 1 | 1 | 9 | 14 | 0 | 7 | 19 | 19 | 0 | 315 | |
| 7:45 AM | 23 | 122 | 7 | 0 | 20 | 69 | 2 | 2 | 2 | 9 | 21 | 0 | 7 | 15 | 23 | 0 | 322 | |
| 7:50 AM | 14 | 121 | 8 | 0 | 11 | 100 | 2 | 0 | 0 | 13 | 24 | 0 | 8 | 14 | 23 | 0 | 338 | |
| 7:55 AM | 26 | 115 | 10 | 0 | 17 | 59 | 1 | 1 | 2 | 10 | 20 | 0 | 7 | 11 | 29 | 0 | 308 | 3619 |
| 8:00 AM | 11 | 166 | 12 | 1 | 7 | 67 | 1 | 0 | 0 | 11 | 19 | 0 | 6 | 9 | 18 | 0 | 328 | 3691 |
| 8:05 AM | 8 | 79 | 9 | 0 | 8 | 63 | 0 | 1 | 1 | 5 | 26 | 0 | 10 | 5 | 15 | 0 | 230 | 3630 |
| 8:10 AM | 16 | 81 | 4 | 0 | 6 | 48 | 0 | 3 | 2 | 2 | 11 | 0 | 7 | 14 | 12 | 0 | 206 | 3548 |
| 8:15 AM | 12 | 133 | 6 | 0 | 6 | 83 | 0 | 1 | 1 | 4 | 12 | 0 | 5 | 7 | 12 | 0 | 282 | 3538 |
| 8:20 AM | 23 | 98 | 8 | 0 | 6 | 40 | 0 | 4 | 0 | 6 | 16 | 0 | 7 | 8 | 7 | 0 | 223 | 3461 |
| 8:25 AM | 11 | 110 | 9 | 0 | 6 | 55 | 0 | 2 | 2 | 2 | 19 | 0 | 7 | 8 | 9 | 0 | 240 | 3374 |
| 8:30 AM | 16 | 76 | 5 | 0 | 13 | 51 | 0 | 3 | 0 | 3 | 10 | 0 | 7 | 6 | 14 | 0 | 204 | 3290 |
| 8:35 AM | 17 | 128 | 7 | 0 | 7 | 66 | 2 | 1 | 1 | 8 | 13 | 0 | 5 | 9 | 11 | 0 | 275 | 3271 |
| 8:40 AM | 9 | 112 | 11 | 0 | 9 | 62 | 1 | 1 | 1 | 3 | 10 | 0 | 3 | 4 | 3 | 0 | 229 | 3185 |
| 8:45 AM | 8 | 93 | 8 | 0 | 7 | 60 | 0 | 0 | 1 | 4 | 10 | 0 | 11 | 8 | 17 | 0 | 227 | 3090 |
| 8:50 AM | 9 | 96 | 11 | 0 | 3 | 59 | 0 | 1 | 1 | 7 | 23 | 0 | 7 | 6 | 12 | 0 | 235 | 2987 |
| 8:55 AM | 9 | 86 | 6 | 0 | 8 | 74 | 1 | 3 | 1 | 8 | 8 | 0 | 5 | 3 | 11 | 0 | 223 | 2902 |
| 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 | 228 | 1528 | 96 | 0 | 176 | 932 | 16 | 12 | 12 | 124 | 236 | 0 | 88 | 192 | 260 | 0 | 3900 | |
| Heavy Trucks | 12 | 68 | 4 | | 12 | 60 | 4 | | 0 | 4 | 0 | | 0 | 4 | 16 | | 184 | |
| Pedestrians | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |

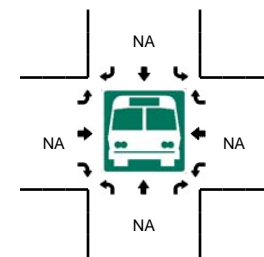
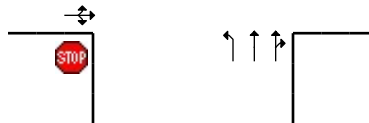
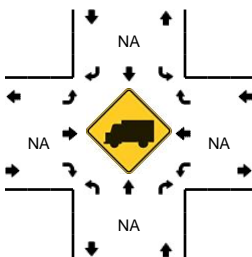
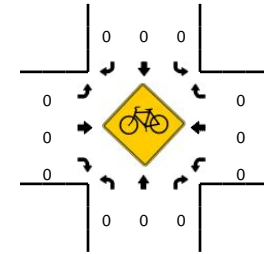
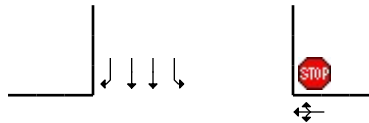
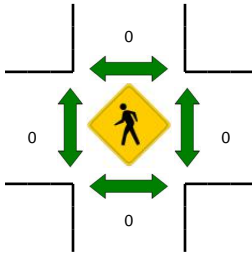
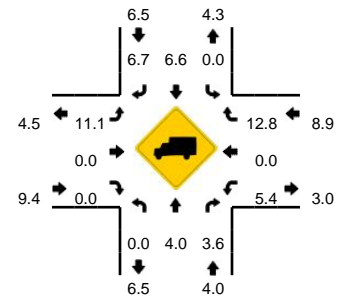
Comments:

LOCATION: SW Pacific Hwy -- SW Chapman Rd
CITY/STATE: Sherwood, OR

QC JOB #: 14401706
DATE: Thu, May 11 2017



Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

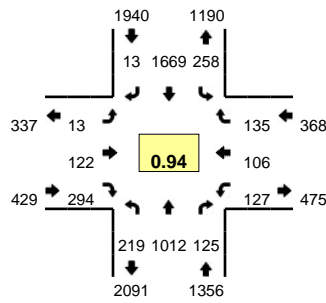


| 5-Min Count Period Beginning At | SW Pacific Hwy (Northbound) | | | | SW Pacific Hwy (Southbound) | | | | SW Chapman Rd (Eastbound) | | | | SW Chapman Rd (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|---|---------------------------|------|-------|---|---------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 7:00 AM | 0 | 133 | 2 | 0 | 0 | 74 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 3 | 0 | 217 | |
| 7:05 AM | 0 | 169 | 5 | 1 | 0 | 81 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 262 | |
| 7:10 AM | 0 | 159 | 6 | 0 | 0 | 99 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 269 | |
| 7:15 AM | 1 | 165 | 11 | 0 | 1 | 75 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 258 | |
| 7:20 AM | 0 | 174 | 7 | 0 | 0 | 100 | 0 | 1 | 1 | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 288 | |
| 7:25 AM | 0 | 141 | 8 | 1 | 1 | 78 | 1 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 239 | |
| 7:30 AM | 0 | 177 | 8 | 0 | 1 | 84 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 1 | 4 | 0 | 280 | |
| 7:35 AM | 0 | 177 | 8 | 0 | 0 | 85 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 0 | 278 | |
| 7:40 AM | 1 | 147 | 14 | 1 | 1 | 85 | 1 | 0 | 4 | 0 | 0 | 0 | 3 | 1 | 5 | 0 | 263 | |
| 7:45 AM | 1 | 142 | 9 | 0 | 4 | 99 | 2 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 266 | |
| 7:50 AM | 0 | 147 | 6 | 0 | 1 | 125 | 1 | 1 | 2 | 0 | 0 | 0 | 4 | 1 | 3 | 0 | 291 | |
| 7:55 AM | 1 | 133 | 1 | 0 | 3 | 82 | 2 | 0 | 1 | 1 | 1 | 0 | 8 | 0 | 6 | 0 | 239 | 3150 |
| 8:00 AM | 0 | 119 | 1 | 1 | 2 | 79 | 2 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 8 | 0 | 224 | 3157 |
| 8:05 AM | 0 | 98 | 4 | 0 | 2 | 85 | 4 | 0 | 5 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 202 | 3097 |
| 8:10 AM | 0 | 127 | 2 | 0 | 1 | 82 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 218 | 3046 |
| 8:15 AM | 0 | 130 | 3 | 0 | 2 | 72 | 2 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 217 | 3005 |
| 8:20 AM | 1 | 135 | 6 | 0 | 1 | 89 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 2 | 0 | 240 | 2957 |
| 8:25 AM | 0 | 115 | 5 | 0 | 3 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 187 | 2905 |
| 8:30 AM | 0 | 127 | 3 | 0 | 1 | 71 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 3 | 0 | 210 | 2835 |
| 8:35 AM | 0 | 118 | 3 | 0 | 1 | 83 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 211 | 2768 |
| 8:40 AM | 1 | 143 | 0 | 1 | 1 | 68 | 2 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 221 | 2726 |
| 8:45 AM | 0 | 108 | 1 | 0 | 1 | 87 | 4 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | 2 | 0 | 208 | 2668 |
| 8:50 AM | 1 | 127 | 3 | 0 | 0 | 88 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 224 | 2601 |
| 8:55 AM | 0 | 93 | 4 | 0 | 1 | 89 | 3 | 0 | 2 | 1 | 1 | 0 | 3 | 1 | 1 | 0 | 199 | 2561 |
| 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 | 2004 | 120 | 4 | 8 | 1016 | 8 | 0 | 32 | 0 | 4 | 0 | 28 | 8 | 48 | 0 | 3284 | |
| Heavy Trucks | 0 | 64 | 4 | | 0 | 100 | 0 | | 0 | 0 | 0 | | 4 | 0 | 4 | | 176 | |
| Pedestrians | 0 | | | | 0 | | | | 0 | | | | 0 | | | | 0 | |
| Bicycles | 0 | | | | 0 | | | | 0 | | | | 0 | | | | 0 | |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |

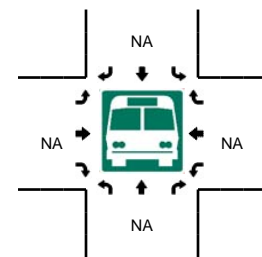
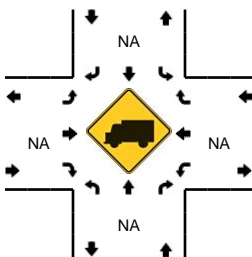
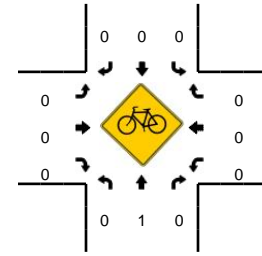
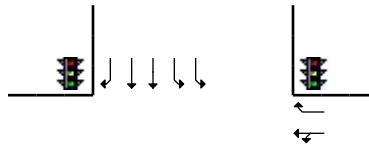
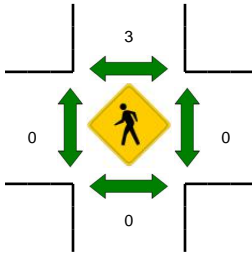
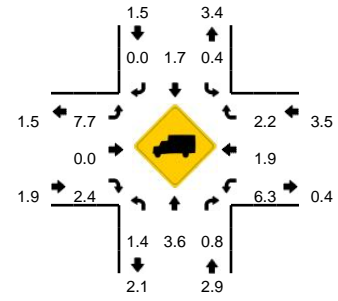
Comments:

LOCATION: SW Pacific Hwy -- SW Elwert Rd/SW Sunset Blvd
CITY/STATE: Sherwood, OR

QC JOB #: 14401718
DATE: Thu, May 11 2017



Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

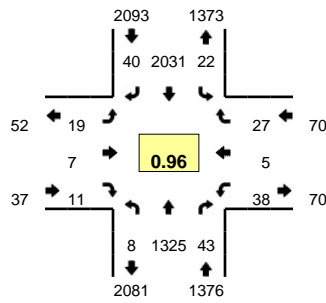


| 5-Min Count Period Beginning At | SW Pacific Hwy (Northbound) | | | | SW Pacific Hwy (Southbound) | | | | SW Elwert Rd/SW Sunset Blvd (Eastbound) | | | | SW Elwert Rd/SW Sunset Blvd (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|----|---|------|-------|---|---|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 4:00 PM | 15 | 71 | 6 | 1 | 11 | 141 | 3 | 4 | 3 | 11 | 27 | 0 | 10 | 6 | 6 | 0 | 315 | |
| 4:05 PM | 4 | 62 | 14 | 0 | 14 | 154 | 0 | 1 | 0 | 12 | 26 | 0 | 7 | 5 | 11 | 0 | 310 | |
| 4:10 PM | 12 | 76 | 3 | 0 | 11 | 132 | 0 | 2 | 0 | 10 | 27 | 0 | 9 | 8 | 10 | 0 | 300 | |
| 4:15 PM | 13 | 96 | 13 | 1 | 10 | 111 | 3 | 3 | 1 | 7 | 25 | 0 | 11 | 8 | 15 | 0 | 317 | |
| 4:20 PM | 16 | 91 | 13 | 1 | 13 | 149 | 0 | 5 | 0 | 12 | 18 | 0 | 13 | 7 | 11 | 0 | 349 | |
| 4:25 PM | 13 | 82 | 5 | 0 | 12 | 140 | 2 | 3 | 1 | 9 | 21 | 0 | 12 | 10 | 16 | 0 | 326 | |
| 4:30 PM | 22 | 73 | 10 | 0 | 12 | 110 | 3 | 2 | 0 | 11 | 28 | 0 | 6 | 7 | 11 | 0 | 295 | |
| 4:35 PM | 16 | 82 | 8 | 0 | 19 | 121 | 2 | 6 | 0 | 11 | 26 | 0 | 10 | 8 | 11 | 0 | 320 | |
| 4:40 PM | 24 | 100 | 17 | 1 | 13 | 129 | 1 | 2 | 0 | 7 | 29 | 0 | 12 | 8 | 9 | 0 | 352 | |
| 4:45 PM | 23 | 79 | 9 | 0 | 19 | 136 | 0 | 3 | 1 | 7 | 22 | 0 | 11 | 19 | 15 | 0 | 344 | |
| 4:50 PM | 22 | 87 | 11 | 0 | 22 | 124 | 1 | 3 | 2 | 12 | 27 | 0 | 11 | 10 | 12 | 0 | 344 | |
| 4:55 PM | 14 | 78 | 16 | 0 | 25 | 136 | 1 | 1 | 2 | 6 | 28 | 0 | 12 | 8 | 18 | 0 | 345 | 3917 |
| 5:00 PM | 19 | 77 | 8 | 0 | 10 | 117 | 0 | 5 | 2 | 11 | 29 | 0 | 9 | 11 | 10 | 0 | 308 | 3910 |
| 5:05 PM | 13 | 63 | 8 | 0 | 16 | 153 | 2 | 2 | 0 | 12 | 22 | 0 | 17 | 6 | 16 | 0 | 330 | 3930 |
| 5:10 PM | 16 | 80 | 9 | 0 | 22 | 158 | 0 | 0 | 1 | 13 | 23 | 0 | 13 | 4 | 10 | 0 | 349 | 3979 |
| 5:15 PM | 15 | 95 | 17 | 0 | 14 | 157 | 2 | 2 | 5 | 7 | 22 | 0 | 11 | 10 | 8 | 0 | 365 | 4027 |
| 5:20 PM | 14 | 108 | 4 | 0 | 25 | 154 | 1 | 4 | 0 | 12 | 22 | 0 | 12 | 9 | 12 | 0 | 377 | 4055 |
| 5:25 PM | 22 | 75 | 7 | 0 | 16 | 142 | 1 | 5 | 0 | 13 | 24 | 0 | 6 | 8 | 7 | 0 | 326 | 4055 |
| 5:30 PM | 21 | 93 | 11 | 0 | 25 | 110 | 2 | 1 | 0 | 9 | 27 | 0 | 7 | 6 | 11 | 0 | 323 | 4083 |
| 5:35 PM | 15 | 77 | 8 | 0 | 21 | 153 | 2 | 2 | 0 | 13 | 19 | 0 | 6 | 7 | 7 | 0 | 330 | 4093 |
| 5:40 PM | 17 | 89 | 9 | 0 | 21 | 131 | 0 | 7 | 0 | 10 | 25 | 0 | 4 | 8 | 8 | 0 | 329 | 4070 |
| 5:45 PM | 17 | 88 | 13 | 0 | 8 | 136 | 3 | 1 | 1 | 5 | 26 | 0 | 7 | 8 | 11 | 0 | 324 | 4050 |
| 5:50 PM | 19 | 87 | 15 | 0 | 22 | 134 | 0 | 3 | 1 | 11 | 25 | 0 | 10 | 5 | 11 | 0 | 343 | 4049 |
| 5:55 PM | 17 | 64 | 8 | 0 | 31 | 134 | 4 | 2 | 0 | 12 | 15 | 0 | 11 | 6 | 11 | 0 | 315 | 4019 |
| 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 | 180 | 1132 | 120 | 0 | 244 | 1876 | 12 | 24 | 24 | 128 | 268 | 0 | 144 | 92 | 120 | 0 | 4364 | |
| Heavy Trucks | 8 | 40 | 4 | | 0 | 20 | 0 | | 4 | 0 | 8 | | 8 | 0 | 0 | | 92 | |
| Pedestrians | | 0 | | | | 8 | | | | 0 | | | | 0 | | | 8 | |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |

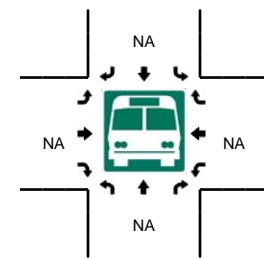
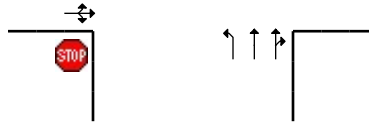
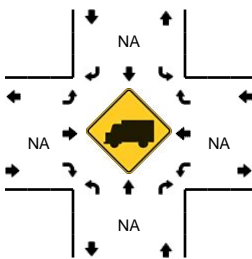
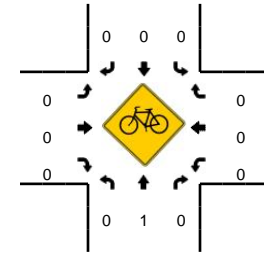
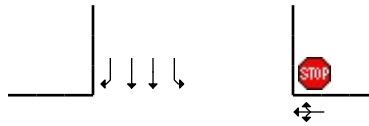
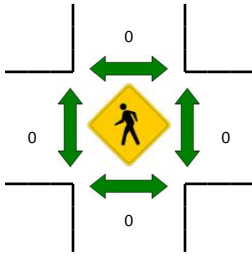
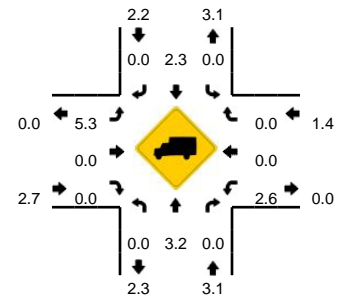
Comments:

LOCATION: SW Pacific Hwy -- SW Chapman Rd
CITY/STATE: Sherwood, OR

QC JOB #: 14401707
DATE: Thu, May 11 2017



Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:10 PM -- 5:25 PM



| 5-Min Count Period Beginning At | SW Pacific Hwy (Northbound) | | | | SW Pacific Hwy (Southbound) | | | | SW Chapman Rd (Eastbound) | | | | SW Chapman Rd (Westbound) | | | | Total | Hourly Totals |
|---------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|---|---------------------------|------|-------|---|---------------------------|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 4:00 PM | 0 | 89 | 1 | 0 | 1 | 184 | 2 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 281 | |
| 4:05 PM | 0 | 72 | 6 | 1 | 0 | 166 | 3 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 254 | |
| 4:10 PM | 1 | 103 | 2 | 1 | 1 | 160 | 1 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 275 | |
| 4:15 PM | 0 | 126 | 4 | 0 | 1 | 163 | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 308 | |
| 4:20 PM | 0 | 124 | 1 | 0 | 1 | 153 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 285 | |
| 4:25 PM | 1 | 92 | 5 | 0 | 1 | 172 | 4 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 282 | |
| 4:30 PM | 1 | 102 | 2 | 0 | 3 | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 263 | |
| 4:35 PM | 2 | 114 | 0 | 0 | 1 | 153 | 3 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 4 | 0 | 282 | |
| 4:40 PM | 0 | 117 | 2 | 0 | 3 | 149 | 4 | 0 | 5 | 1 | 3 | 0 | 6 | 0 | 4 | 0 | 294 | |
| 4:45 PM | 0 | 108 | 2 | 0 | 0 | 176 | 3 | 0 | 3 | 1 | 1 | 0 | 3 | 0 | 5 | 0 | 302 | |
| 4:50 PM | 0 | 117 | 5 | 0 | 2 | 177 | 4 | 0 | 0 | 1 | 1 | 0 | 4 | 1 | 1 | 0 | 313 | |
| 4:55 PM | 2 | 121 | 3 | 0 | 1 | 173 | 5 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 310 | 3449 |
| 5:00 PM | 0 | 102 | 6 | 0 | 4 | 159 | 1 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 1 | 0 | 279 | 3447 |
| 5:05 PM | 0 | 91 | 2 | 0 | 2 | 183 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 284 | 3477 |
| 5:10 PM | 0 | 110 | 6 | 0 | 4 | 187 | 2 | 1 | 4 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 320 | 3522 |
| 5:15 PM | 2 | 119 | 3 | 0 | 1 | 189 | 5 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 325 | 3539 |
| 5:20 PM | 1 | 107 | 1 | 1 | 0 | 161 | 3 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 287 | 3541 |
| 5:25 PM | 0 | 114 | 6 | 0 | 2 | 177 | 5 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 310 | 3569 |
| 5:30 PM | 0 | 105 | 7 | 0 | 0 | 147 | 2 | 0 | 1 | 1 | 0 | 0 | 3 | 2 | 2 | 0 | 270 | 3576 |
| 5:35 PM | 0 | 100 | 0 | 0 | 1 | 164 | 2 | 1 | 1 | 0 | 1 | 0 | 4 | 1 | 2 | 0 | 277 | 3571 |
| 5:40 PM | 0 | 132 | 4 | 0 | 0 | 156 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 297 | 3574 |
| 5:45 PM | 0 | 114 | 4 | 0 | 0 | 149 | 1 | 0 | 4 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 279 | 3551 |
| 5:50 PM | 0 | 93 | 3 | 0 | 3 | 158 | 1 | 0 | 0 | 4 | 0 | 0 | 5 | 1 | 1 | 0 | 269 | 3507 |
| 5:55 PM | 0 | 82 | 3 | 0 | 2 | 151 | 0 | 0 | 1 | 2 | 0 | 0 | 5 | 0 | 1 | 0 | 247 | 3444 |
| 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 | 1344 | 40 | 4 | 20 | 2148 | 40 | 4 | 24 | 4 | 4 | 0 | 52 | 4 | 28 | 0 | 3728 | |
| Heavy Trucks | 0 | 44 | 0 | | 0 | 40 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 84 | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | | 0 |
| Bicycles | 0 | 1 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 1 | |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |

Comments:

OREGON . DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF SHERWOOD, WASHINGTON COUNTY

PACIFIC HY 99W at SUNSET BLVD, City of Sherwood, Washington County, 01/01/2013 to 12/31/2017

9 - 12 of 17 Crash records shown.

| SER# | P | R | J | S | W | DATE | CLASS | CITY STREET | INT-TYPE | SPCL USE | ACT | EVENT | CAUSE | | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|--------------------------|------------|-------------------|-------------------|----------|----------|------------|-------|-------|----------|----------|-----------|------|--------|--------|-------|-------|-----|------|-----|---------|-----|-------|-------|----|--|
| INVEST | E | A | U | I | C | O | DAY | DIST | FIRST STREET | RD CHAR | (MEDIAN) | INT-REL | OFFRD | WTHR | CRASH | TRLR QTY | MOVE | A | S | | | | | | | | | | | | |
| RD DPT | E | L | G | N | H | R | TIME | FROM | SECOND STREET | DIRECT | LEGS | TRAF- | RNDBT | SURF | COLL | OWNER | FROM | PRTC | INJ | G | E | LICNS | PED | | | | | | | | |
| UNLOC? | D | C | S | V | L | K | LAT | LONG | LRS | LOCTN | (#LANES) | CONTL | DRVWY | LIGHT | SVRTY | V# | TYPE | TO | P# | TYPE | SVRTY | E | X | RES | LOC | ERROR | ACT | EVENT | CAUSE | | |
| 05463 | N | N | N | | | 09/04/2015 | 14 | SW PACIFIC HY 99W | INTER | CROSS | N | | N | CLR | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | | 29 | | |
| NONE | | | | | | FR | | SW SUNSET BLVD | SW | | | TRF SIGNAL | N | DRY | REAR | | PRVTE | | SW-NE | | | | | | | | | 000 | 00 | | |
| N | | | | | | 11A | | | 06 | 0 | | | N | DAY | PDO | | PSNGR CAR | | 01 | DRVR | NONE | 18 | M | OR-Y | | 026 | 000 | | 29 | | |
| N | | | | | | 45 21 11.45 -122 52 3.31 | | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 011 | 00 | | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | NONE | 00 | M | OR-Y | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01834 | Y | Y | N | | | N | 03/19/2016 | 14 | SW PACIFIC HY 99W | INTER | CROSS | N | | CLD | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | 013 | 07,30 | | |
| CITY | | | | | | SA | | SW SUNSET BLVD | SW | | | TRF SIGNAL | N | DRY | REAR | | PRVTE | | SW-NE | | | | | | | | | 000 | 00 | | |
| N | | | | | | 6P | | | 06 | 0 | | | N | DAY | INJ | | PSNGR CAR | | 01 | DRVR | NONE | 23 | M | NONE | | 043,050 | 000 | | 07,30 | | |
| N | | | | | | 45 21 11.45 -122 52 3.31 | | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 012 | 013 | 00 | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJC | 46 | M | OR-Y | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 012 | 013 | 00 | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 02 | PSNG | INJC | 28 | F | | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | 03 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 022 | 00 | | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | NONE | 34 | M | OR-Y | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02965 | N | N | N | | | 05/06/2016 | 14 | SW PACIFIC HY 99W | INTER | CROSS | N | | N | CLR | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | | 29 | | |
| NONE | | | | | | FR | | SW SUNSET BLVD | SW | | | TRF SIGNAL | N | DRY | REAR | | PRVTE | | SW-NE | | | | | | | | | 000 | 00 | | |
| N | | | | | | 8A | | | 06 | 0 | | | N | DAY | INJ | | PSNGR CAR | | 01 | DRVR | NONE | 32 | M | OR-Y | | 026 | 000 | | 29 | | |
| N | | | | | | 45 21 11.45 -122 52 3.31 | | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 011 | 00 | | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJC | 40 | M | OR-Y | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06420 | N | N | N | | | N | 09/22/2016 | 14 | SW PACIFIC HY 99W | INTER | CROSS | N | | CLD | S-STRGHT | 01 | NONE | 0 | STRGHT | | | | | | | | | | 087 | 07 | |
| CITY | | | | | | TH | | SW SUNSET BLVD | SW | | | TRF SIGNAL | N | SNO | REAR | | PRVTE | | SW-NE | | | | | | | | | 000 | 087 | 00 | |
| N | | | | | | 5P | | | 06 | 0 | | | N | DAY | INJ | | PSNGR CAR | | 01 | DRVR | NONE | 17 | M | OR-Y | | 043 | 000 | | 07 | | |
| N | | | | | | 45 21 11.45 -122 52 3.31 | | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | PRVTE | | SW-NE | | | | | | | | | 006 | 087 | 00 | |
| | | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJC | 28 | F | OR-Y | | 000 | 000 | | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091: PACIFIC HIGHWAY WEST

Highway 091 ALL ROAD TYPES, MP 16.66 to 16.67 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

1 - 4 of 27 Crash records shown.

| SER# | S | D | M | P | R | J | S | W | DATE | COUNTY | RD# | FC | CONN# | RD CHAR | INT-TYPE | INT-REL | OFFRD | WTHR | CRASH | SPCL USE | TRLR | QTY | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | | |
|--------|---|---|---|---|---|---|-------------|---|------|--------------|---------|----------------|-------------------|----------|------------|---------|-------|-------|-----------|----------|------|-----|--------|-------|-------|-----|-------|-------|---------|-------|-------|-------|--|--|--|--|--|--|
| INVEST | E | A | U | I | C | O | DAY | | | CITY | COMPNT | FIRST STREET | DIRECT | (MEDIAN) | INT-REL | OFFRD | WTHR | CRASH | TRLR | QTY | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | | | | |
| RD DPT | E | L | G | N | H | R | TIME | | | URBAN AREA | MLG TYP | SECOND STREET | LOCTN | LEGS | TRAF-CONTL | RNDBT | SURF | COLL | OWNER | FROM | PRTC | INJ | G | E | LICNS | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | | |
| UNLOC7 | D | C | S | V | L | K | LAT | | | LONG | MILEPNT | LRS | | (#LANES) | CONTL | DRVWY | LIGHT | SVRTY | V# | TYPE | TO | P# | TYPE | SVRTY | E | X | RES | LOC | ERROR | ACT | EVENT | CAUSE | | | | | | |
| 07197 | N | N | N | N | N | N | 10/23/2014 | | | WASHINGTON | 1 | 14 | | INTER | CROSS | N | N | RAIN | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | 27,29 | | | | | | | |
| CITY | | | | | | | TH | | | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | NE | TRF SIGNAL | N | WET | REAR | PRVTE | | | | | | | | | | | 000 | 00 | | | | | | | |
| N | | | | | | | 4P | | | PORTLAND UA | 16.66 | SW SUNSET BLVD | 06 | 0 | | N | DAY | PDO | PSNGR CAR | | | | | | | | | | 016,026 | 038 | 27,29 | | | | | | | |
| N | | | | | | | 45 21 11.85 | | | -122 52 4.18 | | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | |
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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091: PACIFIC HIGHWAY WEST

Highway 091 ALL ROAD TYPES, MP 16.66 to 16.67 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

14 - 18 of 27 Crash records shown.

| SER# | P | R | J | S | W | DATE | COUNTY | RD# | FC | CONN# | RD CHAR | INT-TYPE | OFFRD | WTHR | CRASH | SPCL USE | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | |
|--------|---|---|---|---|---|-------------|--------------|------------|---------|----------------|----------------|----------|---------|--------|-------|----------|-------|-------|-------|--------|-------|-------|-------|-------|------|------|-----|-----|-----|----|----|
| INVEST | E | A | U | I | C | DAY | CITY | COMPNT | FIRST | STREET | DIRECT | (MEDIAN) | INT-REL | RNDBT | SURF | COLL | TRLR | QTY | FROM | PRTC | INJ | G | E | LICNS | RES | | | | | | |
| RD DPT | E | L | G | N | H | R | TIME | URBAN AREA | MLG TYP | SECOND | STREET | LOCTN | LEGS | TRAF- | DRVWY | LIGHT | SVRTY | OWNER | TO | P# | TYPE | SVRTY | E | X | RES | LOC | | | | | |
| UNLOC? | D | C | S | V | L | K | LAT | LONG | MILEPNT | LRS | | (#LANES) | CONTL | | | | V# | TYPE | TO | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 03 | NONE | 0 | STOP | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | 022 | 013 | 00 | | | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 20 | F | OR-Y | 000 | 000 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 04 | NONE | 0 | STOP | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | 022 | 000 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | INJC | 49 | F | OR-Y | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01988 | N | N | N | N | N | 03/05/2014 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLD | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | 29 | | |
| CITY | | | | | | WE | SHERWOOD | MN | 0 | SW | PACIFIC HY 99W | SW | TRF | SIGNAL | N | WET | REAR | PRVTE | SW-NE | | | | | | | | | 000 | 00 | | |
| N | | | | | | 3P | PORTLAND UA | 16.66 | SW | SUNSET BLVD | 06 | 0 | | N | DAY | PDO | PSNGR | CAR | | | | | | | | | 026 | 000 | 29 | | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | | 009100200S00 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | | | 011 | 00 | | |
| | | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 42 | F | EXP | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06054 | N | N | N | N | N | 10/15/2014 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | RAIN | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | | 29 | |
| NO RPT | | | | | | WE | SHERWOOD | MN | 0 | SW | PACIFIC HY 99W | SW | TRF | SIGNAL | N | WET | REAR | PRVTE | SW-NE | | | | | | | | | | 000 | 00 | |
| N | | | | | | 7A | PORTLAND UA | 16.66 | SW | SUNSET BLVD | 06 | 0 | | N | DAY | INJ | PSNGR | CAR | | | | | | | | | 026 | 000 | 29 | | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | | 009100200S00 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | | | | 011 | 00 | |
| | | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | INJC | 39 | M | OR-Y | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04990 | N | N | N | N | N | 07/21/2015 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLR | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | | 07 | |
| CITY | | | | | | TU | SHERWOOD | MN | 0 | SW | ELWERT RD | SW | TRF | SIGNAL | N | DRY | REAR | PRVTE | SW-NE | | | | | | | | | | 000 | 00 | |
| N | | | | | | 4P | PORTLAND UA | 16.66 | SW | PACIFIC HY 99W | 06 | 0 | | N | DAY | PDO | PSNGR | CAR | | | | | | | | | 043 | 000 | 07 | | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | | 009100200S00 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | | | | 011 | 00 | |
| | | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 61 | M | OR-Y | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05463 | N | N | N | N | N | 09/04/2015 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLR | S-1STOP | 01 | NONE | 0 | STRGHT | | | | | | | | | | | 29 |
| NONE | | | | | | FR | SHERWOOD | MN | 0 | SW | PACIFIC HY 99W | SW | TRF | SIGNAL | N | DRY | REAR | PRVTE | SW-NE | | | | | | | | | | 000 | 00 | |
| N | | | | | | 11A | PORTLAND UA | 16.66 | SW | SUNSET BLVD | 06 | 0 | | N | DAY | PDO | PSNGR | CAR | | | | | | | | | 026 | 000 | 29 | | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | | 009100200S00 | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | | | | 011 | 00 | |
| | | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 00 | M | OR-Y | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091: PACIFIC HIGHWAY WEST

Highway 091 ALL ROAD TYPES, MP 16.66 to 16.67 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

22 - 26 of 27 Crash records shown.

| SER# | P | R | J | S | W | DATE | COUNTY | RD# | FC | CONN# | RD CHAR | INT-TYPE | OFFRD | WTHR | CRASH | SPCL USE | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | | |
|--------|---|---|---|---|---|-----------------|-------------------|---------|-------------------|-------------------|---------|----------|------------|-------|-------|------------|-------|-------|-------|--------|-------|-------|-------|-------|------|-----|-----|----|--|
| INVEST | E | A | U | I | C | O | CITY | COMPNT | FIRST | STREET | DIRECT | (MEDIAN) | INT-REL | OFFRD | WTHR | CRASH | TRLR | QTY | | | | | | | | | | | |
| RD DPT | E | L | G | N | H | R | URBAN AREA | MLG TYP | SECOND | STREET | LOCTN | LEGS | TRAF- | RNDBT | SURF | COLL | OWNER | FROM | | | | | | | | | | | |
| UNLOC? | D | C | S | V | L | K | LONG | MILEPNT | LRS | | | (#LANES) | CONTL | DRVWY | LIGHT | SVRTY | V# | TYPE | TO | P# | TYPE | SVRTY | E | X | RES | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STOP | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | PRVTE | SW-NE | | | | | | | 011 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 03 | PSNG | INJC | 54 | M | | 000 | 000 | 00 | |
| 07321 | N | N | N | N | N | 11/18/2017 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | FOG | S-STRGHT | 01 | NONE | 9 | STRGHT | | | | | | 07 | | | |
| CITY | | | | | | SA | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | SW | | TRF SIGNAL | N | DRY | REAR | N/A | | | | | | | | | 000 | 00 | | |
| N | | | | | | 8P | PORTLAND UA | 16.66 | SW SUNSET BLVD | 06 | 0 | | | N | DARK | PDO | | PSNGR | CAR | 01 | DRVR | NONE | 00 | Unk | UNK | 000 | 000 | 00 | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | 009100200S00 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 9 | STRGHT | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | N/A | SW-NE | | | | | | | 006 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 00 | Unk | UNK | 000 | 000 | 00 | |
| 04827 | N | N | N | N | N | 08/24/2015 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLR | ANGL-OTH | 01 | NONE | 0 | STRGHT | | | | | | 04 | | | |
| CITY | | | | | | MO | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | CN | | TRF SIGNAL | N | DRY | TURN | | PRVTE | | | | | | | | 000 | 00 | | |
| N | | | | | | 1P | PORTLAND UA | 16.66 | SW SUNSET BLVD | 02 | 0 | | | N | DAY | INJ | | PSNGR | CAR | 01 | DRVR | INJB | 93 | F | OR-Y | 020 | 000 | 04 | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | 009100200S00 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | TURN-L | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | PRVTE | SE-SW | | | | | | | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | INJB | 35 | F | OR-Y | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | TURN-L | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | PRVTE | SE-SW | | | | | | | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 02 | PSNG | INJC | 05 | M | | 000 | 000 | 00 | |
| 06861 | N | N | N | N | N | 10/30/2017 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLR | O-1 L-TURN | 01 | NONE | 9 | TURN-L | | | | | | 04 | | | |
| CITY | | | | | | MO | SHERWOOD | MN | 0 | SW ELWERT RD | CN | | TRF SIGNAL | N | DRY | TURN | | N/A | | | | | | | | 000 | 00 | | |
| N | | | | | | 6A | PORTLAND UA | 16.66 | SW PACIFIC HY 99W | 03 | 0 | | | N | DLIT | PDO | | PSNGR | CAR | 01 | DRVR | NONE | 00 | Unk | UNK | 000 | 000 | 00 | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | 009100200S00 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 9 | STRGHT | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | N/A | NW-SE | | | | | | | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 00 | Unk | UNK | 000 | 000 | 00 | |
| 00574 | N | N | N | N | N | 01/31/2014 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | N | CLD | O-1 L-TURN | 01 | NONE | 0 | STRGHT | | | | | | 04 | | | |
| CITY | | | | | | FR | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | CN | | L-GRN-SIG | N | WET | TURN | | PRVTE | | | | | | | | 000 | 00 | | |
| N | | | | | | 2P | PORTLAND UA | 16.66 | SW SUNSET BLVD | 04 | 0 | | | N | DAY | PDO | | PSNGR | CAR | 01 | DRVR | NONE | 16 | F | OR-Y | 020 | 000 | 04 | |
| N | | | | | | 45 21 11.446164 | -122 52 3.3149279 | | | 009100200S00 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 02 | NONE | 0 | TURN-L | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | PRVTE | NE-SE | | | | | | | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | PSNGR | CAR | 01 | DRVR | NONE | 37 | F | OR-Y | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091: PACIFIC HIGHWAY WEST

Highway 091 ALL ROAD TYPES, MP 16.66 to 16.67 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

27 - 27 of 27 Crash records shown.

| SER# | P | R | J | S | W | DATE | COUNTY | RD# | FC | CONN# | RD CHAR | INT-TYPE | OFFRD | WTHR | CRASH | SPCL USE | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | |
|--------|---|---|---|---|---|-------------|--------------|---------|---------------|-------------------|----------|------------|-------|-------|----------|-----------|--------|------|------|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| INVEST | E | A | U | I | C | O | CITY | COMPNT | FIRST STREET | DIRECT | (MEDIAN) | INT-REL | RNDBT | SURF | COLL | TRLR QTY | FROM | G | E | LICNS | LOC | | | | | | | |
| RD DPT | E | L | G | N | H | R | URBAN AREA | MLG TYP | SECOND STREET | LOCTN | LEGS | TRAF- | RNDVT | SURF | COLL | OWNER | TO | PRTC | INJ | G | E | RES | LOC | ERROR | ACT | EVENT | CAUSE | |
| UNLOC? | D | C | S | V | L | K | LONG | MILEPNT | LRS | | (#LANES) | CONTL | DRVWY | LIGHT | SVRTY | V# | TYPE | P# | TYPE | SVRTY | E | X | RES | LOC | ERROR | ACT | EVENT | CAUSE |
| 05152 | N | N | N | N | N | 08/23/2017 | WASHINGTON | 2 | 14 | | INTER | CROSS | N | CLR | ANGL-OTH | 01 | NONE | 0 | | | | | | | | | 04 | |
| CITY | | | | | | WE | SHERWOOD | MN | 0 | SW PACIFIC HY 99W | CN | TRF SIGNAL | N | DRY | ANGL | PRVTE | SW-NE | | | | | | | | | 00 | | |
| N | | | | | | 12P | PORTLAND UA | 16.66 | | SW SUNSET BLVD | 04 | 0 | N | DAY | INJ | PSNGR CAR | | 01 | DRVR | NONE | 59 | M | EXP | | 020 | 000 | 04 | |
| N | | | | | | 45 21 11.45 | -122 52 3.31 | | | 009100200S00 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 02 | NONE | 0 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | PRVTE | NW-SE | | | | | | | | | 000 | 00 | |
| | | | | | | | | | | | | | | | | PSNGR CAR | | 01 | DRVR | INJC | 36 | F | OR-Y | | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 03 | NONE | 0 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | PRVTE | TURN-R | | | | | | | | | | 022 | 00 |
| | | | | | | | | | | | | | | | | PSNGR CAR | SE-NE | 01 | DRVR | INJC | 19 | F | OR-Y | | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

091: PACIFIC HIGHWAY WEST

Highway 091 ALL ROAD TYPES, MP 17.46 to 17.47 01/01/2013 to 12/31/2017, Both Add and Non-Add mileage

7 - 11 of 18 Crash records shown.

| SER# | S | D | M | P | R | J | S | W | DATE | COUNTY | RD# | FC | CONN# | RD CHAR | INT-TYPE | INT-REL | OFFRD | WTHR | CRASH | SPCL USE | TRLR | QTY | MOVE | A | S | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | | | | | |
|--------|---|---|---|---|---|---|-----------------|--------------------|---------|---------------|----------|----------|---------|---------|----------|------------|-------|------|-------|----------|-------|-------|--------|---|-----|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|---------|-----|-----|-------|-----|----|
| INVEST | E | A | U | I | C | O | DAY | CITY | COMPNT | FIRST STREET | DIRECT | (MEDIAN) | INT-REL | OFFRD | WTHR | CRASH | TRLR | QTY | MOVE | OWNER | FROM | PRTC | INJ | G | E | LICNS | PED | ERROR | ACT | EVENT | CAUSE | | | | | | | | | | |
| RD DPT | E | L | G | N | H | R | TIME | URBAN AREA | MLG TYP | SECOND STREET | LOCTN | LEGS | TRAF- | RNDBT | SURF | COLL | OWNER | FROM | TYPE | TYPE | TYPE | SVRTY | E | X | RES | LOC | ERROR | ACT | EVENT | CAUSE | | | | | | | | | | | |
| UNLOC7 | D | C | S | V | L | K | LAT | LONG | MILEPNT | LRS | (#LANES) | CONTL | DRVWY | LIGHT | SVRTY | V# | TYPE | TO | TO | TO | TYPE | SVRTY | E | X | RES | LOC | ERROR | ACT | EVENT | CAUSE | | | | | | | | | | | |
| 07202 | N | N | N | N | N | N | 12/01/2014 | WASHINGTON | 1 | 14 | INTER | CROSS | N | N | CLD | ANGL-OTH | 01 | NONE | 0 | STRGHT | | | | | | | | | | | 02 | | | | | | | | | | |
| COUNTY | | | | | | | MO | | MN | 0 | CN | | | | | | | | | PRVTE | W - E | | | | | | | | | 015 | 00 | | | | | | | | | | |
| N | | | | | | | 10A | PORTLAND UA | 17.47 | | 03 | 0 | | | DAY | INJ | | | PSNGR | CAR | | | | | | | | | | 028 | 000 | 02 | | | | | | | | | |
| N | | | | | | | 45 20 32.89 | -122 52 26.13 | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PRVTE | N - S | | | | | | | | | | | 000 | 000 | 00 | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | 000 | 000 | 00 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PRVTE | N - S | | | | | | | | | | | | | 000 | 000 | 00 | | | | | |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | | | 000 | 000 | 00 | | | | |
| 02701 | N | N | N | N | N | N | 05/18/2015 | WASHINGTON | 1 | 14 | INTER | CROSS | N | N | CLR | O-1 L-TURN | 01 | NONE | 0 | STRGHT | | | | | | | | | | | | | 02 | | | | | | | | |
| NO RPT | | | | | | | MO | | MN | 0 | CN | | | | | | | | | PRVTE | W - E | | | | | | | | | | | | | 000 | 000 | 00 | | | | | |
| N | | | | | | | 5P | PORTLAND UA | 17.47 | | 03 | 0 | | | DAY | PDO | | | PSNGR | CAR | | | | | | | | | | | | | | 000 | 000 | 00 | | | | | |
| N | | | | | | | 45 20 32.89 | -122 52 26.13 | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | TURN-L | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PRVTE | E - S | | | | | | | | | | | | | | | 000 | 000 | 00 | | | |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | | | | 004,028 | 000 | 02 | | | |
| 01335 | N | N | N | N | N | N | 03/08/2017 | WASHINGTON | 1 | 14 | INTER | CROSS | N | N | RAIN | ANGL-OTH | 01 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | 058 | 02 | | | | | |
| COUNTY | | | | | | | WE | | MN | 0 | CN | | | | | | | | | PRVTE | W - E | | | | | | | | | | | | | | 000 | 053 | 00 | | | | |
| N | | | | | | | 5P | PORTLAND UA | 17.47 | | 03 | 0 | | | DUSK | INJ | | | PSNGR | CAR | | | | | | | | | | | | | | | 000 | 000 | 00 | | | | |
| N | | | | | | | 45 20 32.89 | -122 52 26.13 | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PRVTE | N - S | | | | | | | | | | | | | | | | 000 | 000 | 00 | | |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | | | | | 028 | 000 | 02 | | |
| 05249 | N | N | N | N | N | N | 08/27/2017 | WASHINGTON | 1 | 14 | INTER | CROSS | N | N | CLR | O-1 L-TURN | 01 | NONE | 9 | TURN-L | | | | | | | | | | | | | | | | | 000 | 000 | 00 | | |
| NONE | | | | | | | SU | | MN | 0 | CN | | | | | | | | | N/A | E - S | | | | | | | | | | | | | | | | 000 | 000 | 00 | | |
| N | | | | | | | 12P | PORTLAND UA | 17.47 | | 03 | 0 | | | DAY | PDO | | | PSNGR | CAR | | | | | | | | | | | | | | | | | 000 | 000 | 00 | | |
| N | | | | | | | 45 20 32.89 | -122 52 26.13 | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 9 | STRGHT | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | N/A | W - E | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00180 | N | N | N | N | N | N | 01/11/2014 | WASHINGTON | 1 | 14 | INTER | CROSS | N | N | RAIN | ANGL-OTH | 01 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | | | | | | | |
| COUNTY | | | | | | | SA | | MN | 0 | CN | | | | | | | | | PRVTE | S - N | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |
| N | | | | | | | 11P | PORTLAND UA | 17.47 | | 04 | 0 | | | DARK | INJ | | | PSNGR | CAR | | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |
| N | | | | | | | 45 20 32.885592 | -122 52 26.1274079 | | 009100100S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 02 | NONE | 0 | STRGHT | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | PRVTE | W - E | | | | | | | | | | | | | | | | | | 015 | 000 | 00 |
| | | | | | | | | | | | | | | | | | | | | PSNGR | CAR | | | | | | | | | | | | | | | | | | 028 | 000 | 02 |
| 00536 | Y | N | N | N | N | N | 01/28/2017 | WASHINGTON | 2 | 14 | INTER | CROSS | N | N | CLR | ANGL-STP | 01 | NONE | 9 | TURN-R | | | | | | | | | | | | | | | | | | | 01,08 | | |
| COUNTY | | | | | | | SA | | MN | 0 | E | | | | | | | | | N/A | S - E | | | | | | | | | | | | | | | | | 000 | 000 | | |
| N | | | | | | | 4P | PORTLAND UA | 17.46 | | 06 | 0 | | | DAY | PDO | | | PSNGR | CAR | | | | | | | | | | | | | | | | | | 000 | 000 | 00 | |
| N | | | | | | | 45 20 32.9 | -122 52 24.87 | | 009100200S00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Left-Turn Lane Warrant Analysis



Project: Cedar Creek Subdivision
 Intersection: Site Access at SW Brookman Road
 Date: 3/30/2020
 Scenario: Year 2024 Background Conditions AM

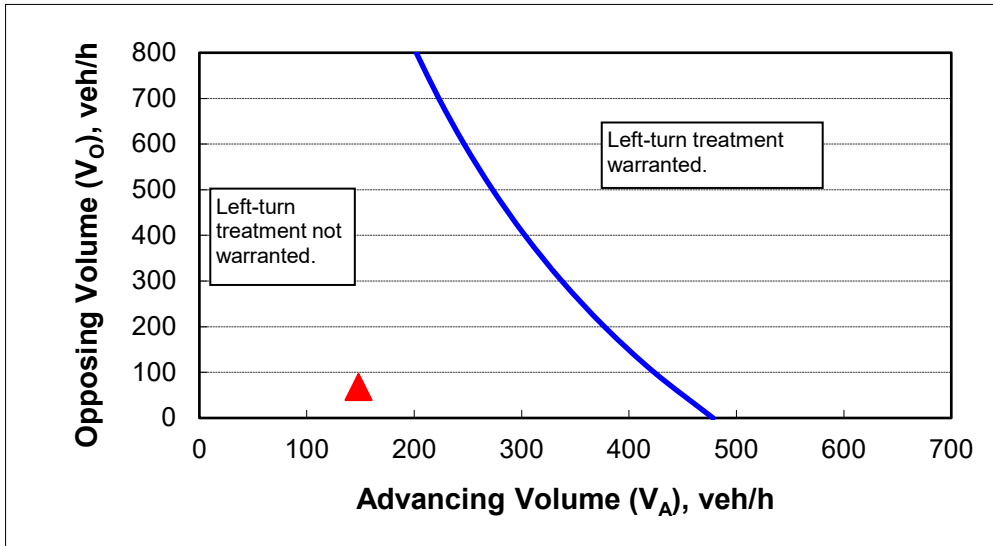
2-lane roadway (English)

INPUT

| Variable | Value |
|---|-------|
| 85 th percentile speed, mph: | 35 |
| Percent of left-turns in advancing volume (V_A), %: | 18% |
| Advancing volume (V_A), veh/h: | 148 |
| Opposing volume (V_O), veh/h: | 68 |

OUTPUT

| Variable | Value |
|--|-------|
| Limiting advancing volume (V_A), veh/h: | 440 |
| Guidance for determining the need for a major-road left-turn bay: | |
| Left-turn treatment NOT warranted. | |



CALIBRATION CONSTANTS

| Variable | Value |
|--|-------|
| Average time for making left-turn, s: | 3.0 |
| Critical headway, s: | 5.0 |
| Average time for left-turn vehicle to clear the advancing lane, s: | 1.9 |

Left-Turn Lane Warrant Analysis



Project: Cedar Creek Subdivision
 Intersection: Site Access at SW Brookman Road
 Date: 3/30/2020
 Scenario: Year 2024 Background Conditions PM

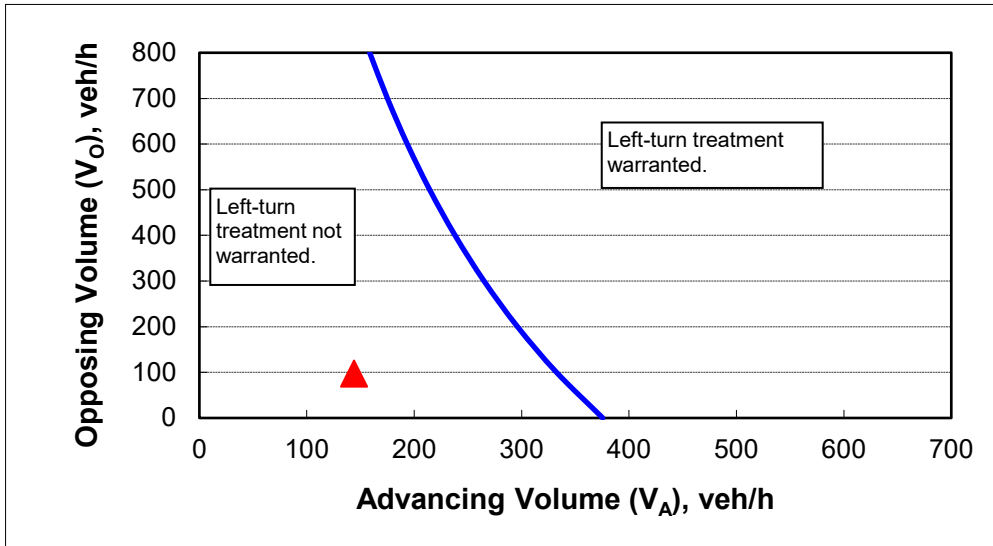
2-lane roadway (English)

INPUT

| Variable | Value |
|---|-------|
| 85 th percentile speed, mph: | 35 |
| Percent of left-turns in advancing volume (V_A), %: | 59% |
| Advancing volume (V_A), veh/h: | 144 |
| Opposing volume (V_O), veh/h: | 97 |

OUTPUT

| Variable | Value |
|--|-------|
| Limiting advancing volume (V_A), veh/h: | 334 |
| Guidance for determining the need for a major-road left-turn bay: | |
| Left-turn treatment NOT warranted. | |



CALIBRATION CONSTANTS

| Variable | Value |
|--|-------|
| Average time for making left-turn, s: | 3.0 |
| Critical headway, s: | 5.0 |
| Average time for left-turn vehicle to clear the advancing lane, s: | 1.9 |



LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS*























| LEVEL OF SERVICE | CONTROL DELAY PER VEHICLE (Seconds) |
|------------------------|---|
| A | <10 |
| B | 10-20 |
| C | 20-35 |
| D | 35-55 |
| E | 55-80 |
| F | >80 |

*LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS*

| LEVEL OF SERVICE | CONTROL DELAY PER VEHICLE (Seconds) |
|------------------------|---|
| A | <10 |
| B | 10-15 |
| C | 15-25 |
| D | 25-35 |
| E | 35-50 |
| F | >50 |























HCM Signalized Intersection Capacity Analysis
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/02/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Traffic Volume (vph) | 21 | 111 | 239 | 106 | 191 | 239 | 260 | 1628 | 111 | 138 | 788 | 16 |
| Future Volume (vph) | 21 | 111 | 239 | 106 | 191 | 239 | 260 | 1628 | 111 | 138 | 788 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.98 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1830 | 1568 | | 1812 | 1568 | 1736 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Flt Permitted | | 0.84 | 1.00 | | 0.76 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1550 | 1568 | | 1397 | 1568 | 1736 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 22 | 117 | 252 | 112 | 201 | 252 | 274 | 1714 | 117 | 145 | 829 | 17 |
| RTOR Reduction (vph) | 0 | 0 | 187 | 0 | 0 | 102 | 0 | 0 | 29 | 0 | 0 | 10 |
| Lane Group Flow (vph) | 0 | 139 | 65 | 0 | 313 | 150 | 274 | 1714 | 88 | 145 | 829 | 7 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 4% | 4% | 4% | 9% | 9% | 9% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | | 28.7 | 28.7 | | 28.7 | 28.7 | 22.7 | 60.5 | 60.5 | 7.9 | 45.7 | 45.7 |
| Effective Green, g (s) | | 28.7 | 28.7 | | 28.7 | 28.7 | 22.7 | 60.5 | 60.5 | 7.9 | 45.7 | 45.7 |
| Actuated g/C Ratio | | 0.26 | 0.26 | | 0.26 | 0.26 | 0.21 | 0.55 | 0.55 | 0.07 | 0.41 | 0.41 |
| Clearance Time (s) | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | | 402 | 406 | | 362 | 406 | 356 | 1898 | 849 | 229 | 1368 | 612 |
| v/s Ratio Prot | | | | | | | c0.16 | c0.49 | | 0.05 | 0.25 | |
| v/s Ratio Perm | | 0.09 | 0.04 | | c0.22 | 0.10 | | | 0.06 | | | 0.00 |
| v/c Ratio | | 0.35 | 0.16 | | 0.86 | 0.37 | 0.77 | 0.90 | 0.10 | 0.63 | 0.61 | 0.01 |
| Uniform Delay, d1 | | 33.3 | 31.6 | | 39.1 | 33.5 | 41.5 | 22.4 | 12.0 | 49.9 | 25.4 | 19.1 |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 0.5 | 0.2 | | 18.8 | 0.6 | 9.6 | 6.5 | 0.1 | 5.6 | 0.8 | 0.0 |
| Delay (s) | | 33.8 | 31.8 | | 57.9 | 34.1 | 51.1 | 28.9 | 12.1 | 55.6 | 26.2 | 19.1 |
| Level of Service | | C | C | | E | C | D | C | B | E | C | B |
| Approach Delay (s) | | 32.5 | | | 47.3 | | | 30.8 | | | 30.3 | |
| Approach LOS | | C | | | D | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 33.2 | | | | | | | | | C |
| HCM 2000 Volume to Capacity ratio | | | 0.90 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 110.6 | | | | | | | 13.5 | | |
| Intersection Capacity Utilization | | | 84.2% | | | | | | | | | E |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/02/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 21 | 111 | 239 | 106 | 191 | 239 | 260 | 1628 | 111 | 138 | 788 | 16 |
| Future Volume (veh/h) | 21 | 111 | 239 | 106 | 191 | 239 | 260 | 1628 | 111 | 138 | 788 | 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 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1841 | 1841 | 1841 | 1767 | 1767 | 1767 |
| Adj Flow Rate, veh/h | 22 | 117 | 252 | 112 | 201 | 252 | 274 | 1714 | 117 | 145 | 829 | 17 |
| 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, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 9 | 9 | 9 |
| Cap, veh/h | 36 | 161 | 447 | 42 | 26 | 447 | 307 | 1883 | 840 | 198 | 1424 | 635 |
| Arrive On Green | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.17 | 0.54 | 0.54 | 0.06 | 0.42 | 0.42 |
| Sat Flow, veh/h | 0 | 565 | 1572 | 0 | 91 | 1572 | 1753 | 3497 | 1560 | 3264 | 3357 | 1497 |
| Grp Volume(v), veh/h | 139 | 0 | 252 | 313 | 0 | 252 | 274 | 1714 | 117 | 145 | 829 | 17 |
| Grp Sat Flow(s),veh/h/ln | 565 | 0 | 1572 | 91 | 0 | 1572 | 1753 | 1749 | 1560 | 1632 | 1678 | 1497 |
| Q Serve(g_s), s | 0.0 | 0.0 | 15.8 | 0.0 | 0.0 | 15.8 | 17.7 | 51.3 | 4.3 | 5.1 | 21.9 | 0.8 |
| Cycle Q Clear(g_c), s | 32.9 | 0.0 | 15.8 | 32.9 | 0.0 | 15.8 | 17.7 | 51.3 | 4.3 | 5.1 | 21.9 | 0.8 |
| Prop In Lane | 0.16 | | 1.00 | 0.36 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 197 | 0 | 447 | 68 | 0 | 447 | 307 | 1883 | 840 | 198 | 1424 | 635 |
| V/C Ratio(X) | 0.71 | 0.00 | 0.56 | 4.60 | 0.00 | 0.56 | 0.89 | 0.91 | 0.14 | 0.73 | 0.58 | 0.03 |
| Avail Cap(c_a), veh/h | 197 | 0 | 447 | 68 | 0 | 447 | 453 | 1986 | 886 | 223 | 1424 | 635 |
| 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 | 34.3 | 0.0 | 35.3 | 45.7 | 0.0 | 35.3 | 46.7 | 24.2 | 13.3 | 53.4 | 25.5 | 19.4 |
| Incr Delay (d2), s/veh | 11.0 | 0.0 | 1.6 | 1652.2 | 0.0 | 1.6 | 14.4 | 6.6 | 0.1 | 10.4 | 0.6 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.6 | 0.0 | 6.2 | 33.2 | 0.0 | 6.2 | 8.7 | 20.7 | 1.4 | 2.3 | 8.3 | 0.3 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 45.3 | 0.0 | 36.9 | 1697.8 | 0.0 | 36.9 | 61.1 | 30.7 | 13.4 | 63.8 | 26.1 | 19.4 |
| LnGrp LOS | D | A | D | F | A | D | E | C | B | E | C | B |
| Approach Vol, veh/h | | 391 | | | 565 | | | 2105 | | | 991 | |
| Approach Delay, s/veh | | 39.9 | | | 957.0 | | | 33.7 | | | 31.5 | |
| Approach LOS | | D | | | F | | | C | | | C | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 11.5 | 66.8 | | 37.4 | 24.7 | 53.6 | | 37.4 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 | | | | |
| Max Green Setting (Gmax), s | 7.9 | 65.7 | | 32.9 | 29.9 | 43.7 | | 32.9 | | | | |
| Max Q Clear Time (g_c+I1), s | 7.1 | 53.3 | | 34.9 | 19.7 | 23.9 | | 34.9 | | | | |
| Green Ext Time (p_c), s | 0.0 | 8.9 | | 0.0 | 0.6 | 5.3 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | 162.5 | | | | | | | | | | | |
| HCM 6th LOS | F | | | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/02/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 321.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↕ | ↕ | | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 27 | 5 | 5 | 37 | 5 | 42 | 16 | 1906 | 90 | 21 | 1102 | 16 |
| Future Vol, veh/h | 27 | 5 | 5 | 37 | 5 | 42 | 16 | 1906 | 90 | 21 | 1102 | 16 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 275 | - | - | 260 | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 9 | 9 | 9 | 9 | 9 | 9 | 4 | 4 | 4 | 7 | 7 | 7 |
| Mvmt Flow | 28 | 5 | 5 | 39 | 5 | 44 | 17 | 1985 | 94 | 22 | 1148 | 17 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 2221 | 3305 | 574 | 2687 | 3275 | 1040 | 1165 | 0 | 0 | 2079 | 0 | 0 |
| Stage 1 | 1192 | 1192 | - | 2066 | 2066 | - | - | - | - | - | - | - |
| Stage 2 | 1029 | 2113 | - | 621 | 1209 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.68 | 6.68 | 7.08 | 7.68 | 6.68 | 7.08 | 4.18 | - | - | 4.24 | - | - |
| Critical Hdwy Stg 1 | 6.68 | 5.68 | - | 6.68 | 5.68 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.68 | 5.68 | - | 6.68 | 5.68 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.59 | 4.09 | 3.39 | 3.59 | 4.09 | 3.39 | 2.24 | - | - | 2.27 | - | - |
| Pot Cap-1 Maneuver | ~ 22 | 7 | 445 | ~ 9 | 8 | 215 | 584 | - | - | 246 | - | - |
| Stage 1 | 188 | 245 | - | 51 | 88 | - | - | - | - | - | - | - |
| Stage 2 | 238 | 83 | - | 425 | 240 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | ~ 6 | 6 | 445 | ~ 2 | 7 | 215 | 584 | - | - | 246 | - | - |
| Mov Cap-2 Maneuver | ~ 6 | 6 | - | ~ 2 | 7 | - | - | - | - | - | - | - |
| Stage 1 | 183 | 223 | - | 50 | 85 | - | - | - | - | - | - | - |
| Stage 2 | 173 | 81 | - | 374 | 219 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|-----------------------|--------|------------|-----|-----|
| HCM Control Delay, \$ | 3050.4 | \$ 11162.5 | 0.1 | 0.4 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-----------|------------|-------|-----|-----|
| Capacity (veh/h) | 584 | - | - | 7 | 4 | 246 | - | - |
| HCM Lane V/C Ratio | 0.029 | - | - | 5.506 | 21.875 | 0.089 | - | - |
| HCM Control Delay (s) | 11.3 | - | - | \$ 3050.4 | \$ 11162.5 | 21.1 | - | - |
| HCM Lane LOS | B | - | - | F | F | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 6.3 | 13 | 0.3 | - | - |

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/02/2020

























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|-------|------|-------|-------|------|------|-------|------|
| Lane Configurations | | ↕ | ↗ | | ↕ | ↗ | ↘ | ↕↕ | ↗ | ↖↗ | ↕↕ | ↗ |
| Traffic Volume (vph) | 16 | 127 | 313 | 133 | 111 | 143 | 233 | 1041 | 133 | 276 | 1721 | 16 |
| Future Volume (vph) | 16 | 127 | 313 | 133 | 111 | 143 | 233 | 1041 | 133 | 276 | 1721 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | | 0.99 | 1.00 | | 0.97 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1852 | 1583 | | 1779 | 1553 | 1752 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Flt Permitted | | 0.91 | 1.00 | | 0.63 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | | 1690 | 1583 | | 1155 | 1553 | 1752 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 17 | 135 | 333 | 141 | 118 | 152 | 248 | 1107 | 141 | 294 | 1831 | 17 |
| RTOR Reduction (vph) | 0 | 0 | 185 | 0 | 0 | 118 | 0 | 0 | 52 | 0 | 0 | 8 |
| Lane Group Flow (vph) | 0 | 152 | 148 | 0 | 259 | 34 | 248 | 1107 | 89 | 294 | 1831 | 9 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 4% | 4% | 3% | 3% | 3% | 2% | 2% | 2% |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | 1 | | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | | 26.5 | 26.5 | | 26.5 | 26.5 | 17.5 | 65.2 | 65.2 | 14.8 | 62.5 | 62.5 |
| Effective Green, g (s) | | 26.5 | 26.5 | | 26.5 | 26.5 | 17.5 | 65.2 | 65.2 | 14.8 | 62.5 | 62.5 |
| Actuated g/C Ratio | | 0.22 | 0.22 | | 0.22 | 0.22 | 0.15 | 0.54 | 0.54 | 0.12 | 0.52 | 0.52 |
| Clearance Time (s) | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | | 373 | 349 | | 255 | 342 | 255 | 1904 | 851 | 423 | 1843 | 824 |
| v/s Ratio Prot | | | | | | | c0.14 | c0.32 | | 0.09 | c0.52 | |
| v/s Ratio Perm | | 0.09 | 0.09 | | c0.22 | 0.02 | | | 0.06 | | | 0.01 |
| v/c Ratio | | 0.41 | 0.43 | | 1.02 | 0.10 | 0.97 | 0.58 | 0.10 | 0.70 | 0.99 | 0.01 |
| Uniform Delay, d1 | | 40.0 | 40.2 | | 46.8 | 37.2 | 51.0 | 18.3 | 13.3 | 50.4 | 28.5 | 13.9 |
| 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 | | 0.7 | 0.8 | | 60.4 | 0.1 | 48.4 | 0.5 | 0.1 | 4.9 | 19.3 | 0.0 |
| Delay (s) | | 40.8 | 41.0 | | 107.2 | 37.4 | 99.4 | 18.7 | 13.3 | 55.3 | 47.9 | 13.9 |
| Level of Service | | D | D | | F | D | F | B | B | E | D | B |
| Approach Delay (s) | | 40.9 | | | 81.4 | | | 31.6 | | | 48.6 | |
| Approach LOS | | D | | | F | | | C | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 45.2 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.99 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 13.5 |
| Intersection Capacity Utilization | 96.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/02/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 16 | 127 | 313 | 133 | 111 | 143 | 233 | 1041 | 133 | 276 | 1721 | 16 |
| Future Volume (veh/h) | 16 | 127 | 313 | 133 | 111 | 143 | 233 | 1041 | 133 | 276 | 1721 | 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 | 1841 | 1841 | 1841 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 17 | 135 | 333 | 141 | 118 | 152 | 248 | 1107 | 141 | 294 | 1831 | 17 |
| 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 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 |
| Cap, veh/h | 33 | 196 | 350 | 46 | 0 | 344 | 258 | 1985 | 886 | 358 | 1851 | 826 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.15 | 0.56 | 0.56 | 0.10 | 0.52 | 0.52 |
| Sat Flow, veh/h | 0 | 888 | 1585 | 0 | 0 | 1560 | 1767 | 3526 | 1572 | 3456 | 3554 | 1585 |
| Grp Volume(v), veh/h | 152 | 0 | 333 | 259 | 0 | 152 | 248 | 1107 | 141 | 294 | 1831 | 17 |
| Grp Sat Flow(s),veh/h/ln | 888 | 0 | 1585 | 0 | 0 | 1560 | 1767 | 1763 | 1572 | 1728 | 1777 | 1585 |
| Q Serve(g_s), s | 0.0 | 0.0 | 24.9 | 0.0 | 0.0 | 10.1 | 16.7 | 24.0 | 5.2 | 10.0 | 61.1 | 0.6 |
| Cycle Q Clear(g_c), s | 26.5 | 0.0 | 24.9 | 26.5 | 0.0 | 10.1 | 16.7 | 24.0 | 5.2 | 10.0 | 61.1 | 0.6 |
| Prop In Lane | 0.11 | | 1.00 | 0.54 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 229 | 0 | 350 | 46 | 0 | 344 | 258 | 1985 | 886 | 358 | 1851 | 826 |
| V/C Ratio(X) | 0.66 | 0.00 | 0.95 | 5.59 | 0.00 | 0.44 | 0.96 | 0.56 | 0.16 | 0.82 | 0.99 | 0.02 |
| Avail Cap(c_a), veh/h | 229 | 0 | 350 | 46 | 0 | 344 | 258 | 1985 | 886 | 481 | 1851 | 826 |
| 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 | 40.5 | 0.0 | 46.1 | 60.0 | 0.0 | 40.4 | 50.9 | 16.7 | 12.6 | 52.7 | 28.4 | 13.9 |
| Incr Delay (d2), s/veh | 6.9 | 0.0 | 35.5 | 2111.8 | 0.0 | 0.9 | 45.5 | 0.3 | 0.1 | 8.2 | 18.4 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.2 | 0.0 | 13.1 | 28.6 | 0.0 | 3.9 | 10.4 | 9.0 | 1.7 | 4.6 | 28.2 | 0.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 47.4 | 0.0 | 81.6 | 2171.8 | 0.0 | 41.2 | 96.5 | 17.0 | 12.7 | 60.9 | 46.8 | 13.9 |
| LnGrp LOS | D | A | F | F | A | D | F | B | B | E | D | B |
| Approach Vol, veh/h | | 485 | | | 411 | | | 1496 | | | 2142 | |
| Approach Delay, s/veh | | 70.9 | | | 1383.9 | | | 29.8 | | | 48.5 | |
| Approach LOS | | E | | | F | | | C | | | D | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 16.9 | 72.1 | | 31.0 | 22.0 | 67.0 | | 31.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | | 4.5 | | | | |
| Max Green Setting (Gmax), s | 16.7 | 63.3 | | 26.5 | 17.5 | 62.5 | | 26.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 12.0 | 26.0 | | 28.5 | 18.7 | 63.1 | | 28.5 | | | | |
| Green Ext Time (p_c), s | 0.4 | 9.7 | | 0.0 | 0.0 | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | 165.7 | | | | | | | | | | | |
| HCM 6th LOS | F | | | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/02/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↕ | ↕ | | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 21 | 5 | 11 | 42 | 5 | 27 | 16 | 1365 | 48 | 27 | 2092 | 42 |
| Future Vol, veh/h | 21 | 5 | 11 | 42 | 5 | 27 | 16 | 1365 | 48 | 27 | 2092 | 42 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 275 | - | - | 260 | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 2 | 2 | 2 |
| Mvmt Flow | 22 | 5 | 11 | 44 | 5 | 28 | 17 | 1422 | 50 | 28 | 2179 | 44 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 2983 | 3741 | 1090 | 2629 | 3760 | 736 | 2223 | 0 | 0 | 1472 | 0 | 0 |
| Stage 1 | 2235 | 2235 | - | 1481 | 1481 | - | - | - | - | - | - | - |
| Stage 2 | 748 | 1506 | - | 1148 | 2279 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.56 | 6.56 | 6.96 | 7.52 | 6.52 | 6.92 | 4.16 | - | - | 4.14 | - | - |
| Critical Hdwy Stg 1 | 6.56 | 5.56 | - | 6.52 | 5.52 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.56 | 5.56 | - | 6.52 | 5.52 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.53 | 4.03 | 3.33 | 3.51 | 4.01 | 3.31 | 2.23 | - | - | 2.22 | - | - |
| Pot Cap-1 Maneuver | ~ 6 | ~ 4 | 209 | ~ 12 | ~ 4 | 364 | 228 | - | - | 454 | - | - |
| Stage 1 | 43 | 77 | - | 133 | 189 | - | - | - | - | - | - | - |
| Stage 2 | 368 | 181 | - | 213 | 75 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | ~ 3 | 209 | - | ~ 3 | 364 | 228 | - | - | 454 | - | - |
| Mov Cap-2 Maneuver | - | ~ 3 | - | - | ~ 3 | - | - | - | - | - | - | - |
| Stage 1 | 40 | 72 | - | 123 | 175 | - | - | - | - | - | - | - |
| Stage 2 | 305 | 167 | - | 175 | 70 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|----|--|-----|--|-----|--|
| HCM Control Delay, s | | | | | 0.2 | | 0.2 | |
| HCM LOS | - | | - | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 228 | - | - | - | - | 454 | - | - |
| HCM Lane V/C Ratio | 0.073 | - | - | - | - | 0.062 | - | - |
| HCM Control Delay (s) | 22 | - | - | - | - | 13.5 | - | - |
| HCM Lane LOS | C | - | - | - | - | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.2 | - | - |

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis

1: Highway 99W & SW Elwert Road/SW Sunset Boulevard























04/03/2020



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|------|-------|-------|-------|---------------------------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 133 | 255 | 290 | 161 | 401 | 237 | 383 | 1690 | 121 | 190 | 764 | 195 |
| Future Volume (vph) | 133 | 255 | 290 | 161 | 401 | 237 | 383 | 1690 | 121 | 190 | 764 | 195 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 0.97 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 0.92 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | 3225 | | 1752 | 3310 | | 3367 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | 3225 | | 1752 | 3310 | | 3367 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 140 | 268 | 305 | 169 | 422 | 249 | 403 | 1779 | 127 | 200 | 804 | 205 |
| RTOR Reduction (vph) | 0 | 173 | 0 | 0 | 72 | 0 | 0 | 0 | 46 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 140 | 400 | 0 | 169 | 599 | 0 | 403 | 1779 | 81 | 200 | 804 | 88 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 4% | 4% | 4% | 9% | 9% | 9% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 10.1 | 19.0 | | 12.6 | 21.5 | | 18.9 | 62.3 | 62.3 | 8.1 | 51.5 | 51.5 |
| Effective Green, g (s) | 10.1 | 19.0 | | 12.6 | 21.5 | | 18.9 | 62.3 | 62.3 | 8.1 | 51.5 | 51.5 |
| Actuated g/C Ratio | 0.08 | 0.16 | | 0.10 | 0.18 | | 0.16 | 0.52 | 0.52 | 0.07 | 0.43 | 0.43 |
| Clearance Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | 147 | 510 | | 183 | 593 | | 530 | 1802 | 806 | 216 | 1421 | 636 |
| v/s Ratio Prot | 0.08 | 0.12 | | c0.10 | c0.18 | | c0.12 | c0.51 | | 0.06 | 0.24 | |
| v/s Ratio Perm | | | | | | | | | 0.05 | | | 0.06 |
| v/c Ratio | 0.95 | 0.79 | | 0.92 | 1.01 | | 0.76 | 0.99 | 0.10 | 0.93 | 0.57 | 0.14 |
| Uniform Delay, d1 | 54.7 | 48.5 | | 53.2 | 49.2 | | 48.4 | 28.5 | 14.6 | 55.7 | 25.8 | 20.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 59.6 | 7.8 | | 44.9 | 39.4 | | 6.4 | 18.1 | 0.1 | 40.8 | 0.5 | 0.1 |
| Delay (s) | 114.3 | 56.3 | | 98.1 | 88.6 | | 54.7 | 46.5 | 14.7 | 96.5 | 26.3 | 20.9 |
| Level of Service | F | E | | F | F | | D | D | B | F | C | C |
| Approach Delay (s) | | 67.7 | | | 90.6 | | | 46.2 | | | 37.0 | |
| Approach LOS | | E | | | F | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 54.4 | | | HCM 2000 Level of Service | | | D | | | |
| HCM 2000 Volume to Capacity ratio | | | 1.00 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 120.0 | | | Sum of lost time (s) | | | 18.0 | | | |
| Intersection Capacity Utilization | | | 93.2% | | | ICU Level of Service | | | F | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 133 | 255 | 290 | 161 | 401 | 237 | 383 | 1690 | 121 | 190 | 764 | 195 |
| Future Volume (veh/h) | 133 | 255 | 290 | 161 | 401 | 237 | 383 | 1690 | 121 | 190 | 764 | 195 |
| 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 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1841 | 1841 | 1841 | 1767 | 1767 | 1767 |
| Adj Flow Rate, veh/h | 140 | 268 | 305 | 169 | 422 | 249 | 403 | 1779 | 127 | 200 | 804 | 205 |
| 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, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 9 | 9 | 9 |
| Cap, veh/h | 149 | 279 | 249 | 186 | 384 | 224 | 471 | 1815 | 810 | 220 | 1504 | 671 |
| Arrive On Green | 0.08 | 0.16 | 0.16 | 0.11 | 0.18 | 0.18 | 0.14 | 0.52 | 0.52 | 0.07 | 0.45 | 0.45 |
| Sat Flow, veh/h | 1767 | 1763 | 1572 | 1767 | 2142 | 1251 | 3401 | 3497 | 1560 | 3264 | 3357 | 1497 |
| Grp Volume(v), veh/h | 140 | 268 | 305 | 169 | 347 | 324 | 403 | 1779 | 127 | 200 | 804 | 205 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 1763 | 1572 | 1767 | 1763 | 1630 | 1700 | 1749 | 1560 | 1632 | 1678 | 1497 |
| Q Serve(g_s), s | 9.5 | 18.1 | 19.0 | 11.4 | 21.5 | 21.5 | 13.9 | 59.7 | 5.1 | 7.3 | 20.9 | 10.5 |
| Cycle Q Clear(g_c), s | 9.5 | 18.1 | 19.0 | 11.4 | 21.5 | 21.5 | 13.9 | 59.7 | 5.1 | 7.3 | 20.9 | 10.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.77 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 149 | 279 | 249 | 186 | 316 | 292 | 471 | 1815 | 810 | 220 | 1504 | 671 |
| V/C Ratio(X) | 0.94 | 0.96 | 1.22 | 0.91 | 1.10 | 1.11 | 0.86 | 0.98 | 0.16 | 0.91 | 0.53 | 0.31 |
| Avail Cap(c_a), veh/h | 149 | 279 | 249 | 186 | 316 | 292 | 610 | 1817 | 810 | 220 | 1504 | 671 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 54.6 | 50.1 | 50.5 | 53.1 | 49.2 | 49.2 | 50.5 | 28.2 | 15.1 | 55.5 | 24.0 | 21.2 |
| Incr Delay (d2), s/veh | 56.1 | 42.8 | 131.3 | 41.6 | 79.2 | 85.5 | 9.3 | 16.6 | 0.1 | 36.5 | 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 | 6.5 | 11.2 | 16.5 | 7.1 | 16.3 | 15.6 | 6.4 | 26.7 | 1.8 | 4.0 | 7.9 | 3.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 110.8 | 92.9 | 181.8 | 94.8 | 128.4 | 134.7 | 59.8 | 44.8 | 15.2 | 92.0 | 24.4 | 21.4 |
| LnGrp LOS | F | F | F | F | F | F | E | D | B | F | C | C |
| Approach Vol, veh/h | | 713 | | | 840 | | | 2309 | | | 1209 | |
| Approach Delay, s/veh | | 134.4 | | | 124.1 | | | 45.8 | | | 35.1 | |
| Approach LOS | | F | | | F | | | D | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 12.6 | 66.7 | 17.1 | 23.5 | 21.1 | 58.2 | 14.6 | 26.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | | | |
| Max Green Setting (Gmax), s | 8.1 | 62.3 | 12.6 | 19.0 | 21.5 | 48.9 | 10.1 | 21.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 9.3 | 61.7 | 13.4 | 21.0 | 15.9 | 22.9 | 11.5 | 23.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.5 | 0.0 | 0.0 | 0.7 | 6.3 | 0.0 | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 68.7 | | | | | | | | | |
| HCM 6th LOS | | | E | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/03/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | ↗ | | | ↗ | | ↕ | | | ↕ | ↗ |
| Traffic Vol, veh/h | 0 | 0 | 37 | 0 | 0 | 128 | 0 | 2030 | 103 | 0 | 1205 | 30 |
| Future Vol, veh/h | 0 | 0 | 37 | 0 | 0 | 128 | 0 | 2030 | 103 | 0 | 1205 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | 0 | - | - | - | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 9 | 9 | 9 | 9 | 9 | 9 | 4 | 4 | 4 | 7 | 7 | 7 |
| Mvmt Flow | 0 | 0 | 39 | 0 | 0 | 133 | 0 | 2115 | 107 | 0 | 1255 | 31 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | - | - | 628 | - | - | 1111 | - | 0 |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | 7.08 | - | - | 7.08 | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | 3.39 | - | - | 3.39 | - | - |
| Pot Cap-1 Maneuver | 0 | 0 | 409 | 0 | 0 | 193 | 0 | - |
| Stage 1 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Stage 2 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 409 | - | - | 193 | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|------|----|----|
| HCM Control Delay, s | 14.7 | 57.2 | 0 | 0 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBT | SBR |
|-----------------------|-----|-----|------------|-------|-----|
| Capacity (veh/h) | - | - | 409 | 193 | - |
| HCM Lane V/C Ratio | - | - | 0.094 | 0.691 | - |
| HCM Control Delay (s) | - | - | 14.7 | 57.2 | - |
| HCM Lane LOS | - | - | B | F | - |
| HCM 95th %tile Q(veh) | - | - | 0.3 | 4.3 | - |

HCM 6th TWSC
 3: SW Brookman Road & Site Access

04/03/2020

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.3 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↶ | ↷ | | ↶ | |
| Traffic Vol, veh/h | 24 | 121 | 50 | 16 | 46 | 68 |
| Future Vol, veh/h | 24 | 121 | 50 | 16 | 46 | 68 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 1 | 1 | 8 | 8 | 0 | 0 |
| Mvmt Flow | 35 | 178 | 74 | 24 | 68 | 100 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 98 | 0 | - | 0 | 334 86 |
| Stage 1 | - | - | - | - | 86 - |
| Stage 2 | - | - | - | - | 248 - |
| Critical Hdwy | 4.11 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.209 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1501 | - | - | - | 665 978 |
| Stage 1 | - | - | - | - | 942 - |
| Stage 2 | - | - | - | - | 798 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1501 | - | - | - | 648 978 |
| Mov Cap-2 Maneuver | - | - | - | - | 648 - |
| Stage 1 | - | - | - | - | 918 - |
| Stage 2 | - | - | - | - | 798 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.2 | 0 | 10.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1501 | - | - | - | 811 |
| HCM Lane V/C Ratio | 0.024 | - | - | - | 0.207 |
| HCM Control Delay (s) | 7.5 | 0 | - | - | 10.6 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.8 |

HCM Signalized Intersection Capacity Analysis
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|-------|------|------|-------|------|------|------|-------|------|
| Lane Configurations | ↘ | ↕ | | ↘ | ↕ | | ↘ | ↕ | ↘ | ↘ | ↕ | ↘ |
| Traffic Volume (vph) | 46 | 177 | 346 | 191 | 154 | 154 | 285 | 1103 | 143 | 415 | 1755 | 46 |
| Future Volume (vph) | 46 | 177 | 346 | 191 | 154 | 154 | 285 | 1103 | 143 | 415 | 1755 | 46 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 0.97 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3188 | | 1736 | 3211 | | 3400 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3188 | | 1736 | 3211 | | 3400 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 49 | 188 | 368 | 203 | 164 | 164 | 303 | 1173 | 152 | 441 | 1867 | 49 |
| RTOR Reduction (vph) | 0 | 145 | 0 | 0 | 130 | 0 | 0 | 0 | 86 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 49 | 411 | 0 | 203 | 198 | 0 | 303 | 1173 | 66 | 441 | 1867 | 24 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 4% | 4% | 3% | 3% | 3% | 2% | 2% | 2% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 6.7 | 18.3 | | 13.6 | 25.2 | | 10.6 | 52.2 | 52.2 | 18.2 | 59.8 | 59.8 |
| Effective Green, g (s) | 6.7 | 18.3 | | 13.6 | 25.2 | | 10.6 | 52.2 | 52.2 | 18.2 | 59.8 | 59.8 |
| Actuated g/C Ratio | 0.06 | 0.15 | | 0.11 | 0.21 | | 0.09 | 0.43 | 0.43 | 0.15 | 0.50 | 0.50 |
| Clearance Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | 98 | 484 | | 196 | 672 | | 299 | 1520 | 680 | 519 | 1759 | 786 |
| v/s Ratio Prot | 0.03 | c0.13 | | c0.12 | 0.06 | | c0.09 | 0.33 | | 0.13 | c0.53 | |
| v/s Ratio Perm | | | | | | | | | 0.04 | | | 0.02 |
| v/c Ratio | 0.50 | 0.98dr | | 1.04 | 0.30 | | 1.01 | 0.77 | 0.10 | 0.85 | 1.06 | 0.03 |
| Uniform Delay, d1 | 55.2 | 49.7 | | 53.4 | 40.1 | | 54.9 | 29.0 | 20.1 | 49.7 | 30.2 | 15.5 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.0 | 13.1 | | 74.0 | 0.2 | | 55.5 | 2.5 | 0.1 | 12.3 | 39.9 | 0.0 |
| Delay (s) | 59.1 | 62.7 | | 127.3 | 40.3 | | 110.3 | 31.5 | 20.2 | 62.1 | 70.1 | 15.5 |
| Level of Service | E | E | | F | D | | F | C | C | E | E | B |
| Approach Delay (s) | | 62.4 | | | 73.6 | | | 45.1 | | | 67.5 | |
| Approach LOS | | E | | | E | | | D | | | E | |

Intersection Summary























| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 60.4 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.01 | | |
| Actuated Cycle Length (s) | 120.3 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 98.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

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

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 46 | 177 | 346 | 191 | 154 | 154 | 285 | 1103 | 143 | 415 | 1755 | 46 |
| Future Volume (veh/h) | 46 | 177 | 346 | 191 | 154 | 154 | 285 | 1103 | 143 | 415 | 1755 | 46 |
| 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 | 1841 | 1841 | 1841 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 49 | 188 | 368 | 203 | 164 | 164 | 303 | 1173 | 152 | 441 | 1867 | 49 |
| 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 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 |
| Cap, veh/h | 63 | 267 | 238 | 199 | 398 | 355 | 303 | 1559 | 695 | 500 | 1771 | 790 |
| Arrive On Green | 0.04 | 0.15 | 0.15 | 0.11 | 0.23 | 0.23 | 0.09 | 0.44 | 0.44 | 0.14 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1781 | 1777 | 1585 | 1753 | 1749 | 1560 | 3428 | 3526 | 1572 | 3456 | 3554 | 1585 |
| Grp Volume(v), veh/h | 49 | 188 | 368 | 203 | 164 | 164 | 303 | 1173 | 152 | 441 | 1867 | 49 |
| Grp Sat Flow(s),veh/h/ln | 1781 | 1777 | 1585 | 1753 | 1749 | 1560 | 1714 | 1763 | 1572 | 1728 | 1777 | 1585 |
| Q Serve(g_s), s | 3.3 | 12.1 | 18.0 | 13.6 | 9.6 | 10.9 | 10.6 | 33.4 | 7.2 | 15.0 | 59.8 | 1.9 |
| Cycle Q Clear(g_c), s | 3.3 | 12.1 | 18.0 | 13.6 | 9.6 | 10.9 | 10.6 | 33.4 | 7.2 | 15.0 | 59.8 | 1.9 |
| 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 | 63 | 267 | 238 | 199 | 398 | 355 | 303 | 1559 | 695 | 500 | 1771 | 790 |
| V/C Ratio(X) | 0.77 | 0.71 | 1.55 | 1.02 | 0.41 | 0.46 | 1.00 | 0.75 | 0.22 | 0.88 | 1.05 | 0.06 |
| Avail Cap(c_a), veh/h | 132 | 267 | 238 | 199 | 398 | 355 | 303 | 1559 | 695 | 544 | 1771 | 790 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 57.4 | 48.5 | 51.0 | 53.2 | 39.5 | 40.0 | 54.7 | 28.0 | 20.7 | 50.3 | 30.1 | 15.6 |
| Incr Delay (d2), s/veh | 18.0 | 8.2 | 266.3 | 69.6 | 0.7 | 0.9 | 51.9 | 2.1 | 0.2 | 14.8 | 37.3 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.8 | 5.9 | 24.6 | 9.8 | 4.2 | 4.2 | 6.6 | 13.7 | 2.6 | 7.3 | 32.4 | 0.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 75.4 | 56.7 | 317.3 | 122.8 | 40.2 | 40.9 | 106.6 | 30.1 | 20.8 | 65.2 | 67.4 | 15.6 |
| LnGrp LOS | E | E | F | F | D | D | F | C | C | E | F | B |
| Approach Vol, veh/h | | 605 | | | 531 | | | 1628 | | | 2357 | |
| Approach Delay, s/veh | | 216.7 | | | 72.0 | | | 43.5 | | | 65.9 | |
| Approach LOS | | F | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 21.9 | 57.5 | 18.1 | 22.5 | 15.1 | 64.3 | 8.8 | 31.8 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | | | |
| Max Green Setting (Gmax), s | 18.9 | 51.5 | 13.6 | 18.0 | 10.6 | 59.8 | 8.9 | 22.7 | | | | |
| Max Q Clear Time (g_c+I1), s | 17.0 | 35.4 | 15.6 | 20.0 | 12.6 | 61.8 | 5.3 | 12.9 | | | | |
| Green Ext Time (p_c), s | 0.3 | 7.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 77.2 | | | | | | | | | |
| HCM 6th LOS | | | E | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/03/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | ↗ | | | ↗ | | ↕↔ | | | ↕↕ | ↗ |
| Traffic Vol, veh/h | 0 | 0 | 42 | 0 | 0 | 77 | 0 | 1451 | 70 | 0 | 2228 | 60 |
| Future Vol, veh/h | 0 | 0 | 42 | 0 | 0 | 77 | 0 | 1451 | 70 | 0 | 2228 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | 0 | - | - | - | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 44 | 0 | 0 | 80 | 0 | 1511 | 73 | 0 | 2321 | 63 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | - | - | 1161 | - | - | 792 | - | 0 |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | 6.96 | - | - | 6.92 | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | 3.33 | - | - | 3.31 | - | - |
| Pot Cap-1 Maneuver | 0 | 0 | 187 | 0 | 0 | 334 | 0 | - |
| Stage 1 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Stage 2 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 187 | - | - | 334 | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|------|----|----|
| HCM Control Delay, s | 30 | 19.2 | 0 | 0 |
| HCM LOS | D | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBT | SBR |
|-----------------------|-----|-----|------------|------|-----|
| Capacity (veh/h) | - | - | 187 | 334 | - |
| HCM Lane V/C Ratio | - | - | 0.234 | 0.24 | - |
| HCM Control Delay (s) | - | - | 30 | 19.2 | - |
| HCM Lane LOS | - | - | D | C | - |
| HCM 95th %tile Q(veh) | - | - | 0.9 | 0.9 | - |

HCM 6th TWSC
 3: SW Brookman Road & Site Access

04/03/2020

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.5 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 75 | 59 | 43 | 47 | 30 | 42 |
| Future Vol, veh/h | 75 | 59 | 43 | 47 | 30 | 42 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 69 | 69 | 69 | 69 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 109 | 86 | 62 | 68 | 43 | 61 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 130 | 0 | - | 0 | 400 96 |
| Stage 1 | - | - | - | - | 96 - |
| Stage 2 | - | - | - | - | 304 - |
| Critical Hdwy | 4.12 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1455 | - | - | - | 610 966 |
| Stage 1 | - | - | - | - | 933 - |
| Stage 2 | - | - | - | - | 753 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1455 | - | - | - | 562 966 |
| Mov Cap-2 Maneuver | - | - | - | - | 562 - |
| Stage 1 | - | - | - | - | 859 - |
| Stage 2 | - | - | - | - | 753 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 4.3 | 0 | 10.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1455 | - | - | - | 743 |
| HCM Lane V/C Ratio | 0.075 | - | - | - | 0.14 |
| HCM Control Delay (s) | 7.7 | 0 | - | - | 10.6 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 0.5 |

HCM Signalized Intersection Capacity Analysis

1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020

























| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 133 | 255 | 290 | 162 | 402 | 237 | 383 | 1697 | 121 | 192 | 764 | 195 |
| Future Volume (vph) | 133 | 255 | 290 | 162 | 402 | 237 | 383 | 1697 | 121 | 192 | 764 | 195 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 0.97 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 0.92 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | 3225 | | 1752 | 3310 | | 3367 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | 3225 | | 1752 | 3310 | | 3367 | 3471 | 1553 | 3213 | 3312 | 1482 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 140 | 268 | 305 | 171 | 423 | 249 | 403 | 1786 | 127 | 202 | 804 | 205 |
| RTOR Reduction (vph) | 0 | 173 | 0 | 0 | 71 | 0 | 0 | 0 | 46 | 0 | 0 | 117 |
| Lane Group Flow (vph) | 140 | 400 | 0 | 171 | 601 | 0 | 403 | 1786 | 81 | 202 | 804 | 88 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 3% | 3% | 3% | 4% | 4% | 4% | 9% | 9% | 9% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 10.1 | 18.9 | | 12.7 | 21.5 | | 18.9 | 62.1 | 62.1 | 8.3 | 51.5 | 51.5 |
| Effective Green, g (s) | 10.1 | 18.9 | | 12.7 | 21.5 | | 18.9 | 62.1 | 62.1 | 8.3 | 51.5 | 51.5 |
| Actuated g/C Ratio | 0.08 | 0.16 | | 0.11 | 0.18 | | 0.16 | 0.52 | 0.52 | 0.07 | 0.43 | 0.43 |
| Clearance Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | 147 | 507 | | 185 | 593 | | 530 | 1796 | 803 | 222 | 1421 | 636 |
| v/s Ratio Prot | 0.08 | 0.12 | | c0.10 | c0.18 | | c0.12 | c0.51 | | 0.06 | 0.24 | |
| v/s Ratio Perm | | | | | | | | | 0.05 | | | 0.06 |
| v/c Ratio | 0.95 | 0.79 | | 0.92 | 1.01 | | 0.76 | 0.99 | 0.10 | 0.91 | 0.57 | 0.14 |
| Uniform Delay, d1 | 54.7 | 48.6 | | 53.2 | 49.2 | | 48.4 | 28.8 | 14.7 | 55.5 | 25.8 | 20.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 59.6 | 8.0 | | 44.8 | 40.2 | | 6.4 | 19.8 | 0.1 | 36.3 | 0.5 | 0.1 |
| Delay (s) | 114.3 | 56.6 | | 97.9 | 89.4 | | 54.7 | 48.6 | 14.8 | 91.8 | 26.3 | 20.9 |
| Level of Service | F | E | | F | F | | D | D | B | F | C | C |
| Approach Delay (s) | | 68.0 | | | 91.2 | | | 47.8 | | | 36.3 | |
| Approach LOS | | E | | | F | | | D | | | D | |

| Intersection Summary | | |
|-----------------------------------|-------|-----------------------------|
| HCM 2000 Control Delay | 55.1 | HCM 2000 Level of Service E |
| HCM 2000 Volume to Capacity ratio | 1.00 | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) 18.0 |
| Intersection Capacity Utilization | 93.5% | ICU Level of Service F |
| Analysis Period (min) | 15 | |
| c Critical Lane Group | | |

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 133 | 255 | 290 | 162 | 402 | 237 | 383 | 1697 | 121 | 192 | 764 | 195 |
| Future Volume (veh/h) | 133 | 255 | 290 | 162 | 402 | 237 | 383 | 1697 | 121 | 192 | 764 | 195 |
| 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 | 1856 | 1856 | 1856 | 1856 | 1856 | 1856 | 1841 | 1841 | 1841 | 1767 | 1767 | 1767 |
| Adj Flow Rate, veh/h | 140 | 268 | 305 | 171 | 423 | 249 | 403 | 1786 | 127 | 202 | 804 | 205 |
| 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, % | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 9 | 9 | 9 |
| Cap, veh/h | 149 | 278 | 248 | 187 | 384 | 224 | 471 | 1810 | 807 | 226 | 1504 | 671 |
| Arrive On Green | 0.08 | 0.16 | 0.16 | 0.11 | 0.18 | 0.18 | 0.14 | 0.52 | 0.52 | 0.07 | 0.45 | 0.45 |
| Sat Flow, veh/h | 1767 | 1763 | 1572 | 1767 | 2144 | 1250 | 3401 | 3497 | 1560 | 3264 | 3357 | 1497 |
| Grp Volume(v), veh/h | 140 | 268 | 305 | 171 | 347 | 325 | 403 | 1786 | 127 | 202 | 804 | 205 |
| Grp Sat Flow(s),veh/h/ln | 1767 | 1763 | 1572 | 1767 | 1763 | 1631 | 1700 | 1749 | 1560 | 1632 | 1678 | 1497 |
| Q Serve(g_s), s | 9.5 | 18.1 | 18.9 | 11.5 | 21.5 | 21.5 | 13.9 | 60.4 | 5.1 | 7.4 | 20.9 | 10.5 |
| Cycle Q Clear(g_c), s | 9.5 | 18.1 | 18.9 | 11.5 | 21.5 | 21.5 | 13.9 | 60.4 | 5.1 | 7.4 | 20.9 | 10.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.77 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 149 | 278 | 248 | 187 | 316 | 292 | 471 | 1810 | 807 | 226 | 1504 | 671 |
| V/C Ratio(X) | 0.94 | 0.97 | 1.23 | 0.91 | 1.10 | 1.11 | 0.86 | 0.99 | 0.16 | 0.89 | 0.53 | 0.31 |
| Avail Cap(c_a), veh/h | 149 | 278 | 248 | 187 | 316 | 292 | 609 | 1810 | 807 | 226 | 1504 | 671 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 54.7 | 50.2 | 50.6 | 53.1 | 49.2 | 49.3 | 50.5 | 28.5 | 15.2 | 55.4 | 24.0 | 21.2 |
| Incr Delay (d2), s/veh | 56.3 | 44.4 | 134.2 | 42.4 | 79.9 | 86.2 | 9.3 | 18.0 | 0.1 | 33.2 | 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 | 6.5 | 11.3 | 16.6 | 7.2 | 16.3 | 15.6 | 6.4 | 27.4 | 1.8 | 4.0 | 7.9 | 3.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 110.9 | 94.6 | 184.7 | 95.5 | 129.1 | 135.4 | 59.8 | 46.6 | 15.3 | 88.7 | 24.4 | 21.4 |
| LnGrp LOS | F | F | F | F | F | F | E | D | B | F | C | C |
| Approach Vol, veh/h | | 713 | | | 843 | | | 2316 | | | 1211 | |
| Approach Delay, s/veh | | 136.4 | | | 124.7 | | | 47.2 | | | 34.6 | |
| Approach LOS | | F | | | F | | | D | | | C | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 12.8 | 66.6 | 17.2 | 23.4 | 21.1 | 58.3 | 14.6 | 26.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | | | |
| Max Green Setting (Gmax), s | 8.3 | 62.1 | 12.7 | 18.9 | 21.5 | 48.9 | 10.1 | 21.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 9.4 | 62.4 | 13.5 | 20.9 | 15.9 | 22.9 | 11.5 | 23.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 6.3 | 0.0 | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 69.6 | | | | | | | | | |
| HCM 6th LOS | | | E | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/03/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | ↗ | | | ↗ | | ↕ | | | ↕ | ↗ |
| Traffic Vol, veh/h | 0 | 0 | 37 | 0 | 0 | 135 | 0 | 2030 | 104 | 0 | 1206 | 30 |
| Future Vol, veh/h | 0 | 0 | 37 | 0 | 0 | 135 | 0 | 2030 | 104 | 0 | 1206 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | 0 | - | - | - | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 9 | 9 | 9 | 9 | 9 | 9 | 4 | 4 | 4 | 7 | 7 | 7 |
| Mvmt Flow | 0 | 0 | 39 | 0 | 0 | 141 | 0 | 2115 | 108 | 0 | 1256 | 31 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | - | - | 628 | - | - | 1112 | - | 0 |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | 7.08 | - | - | 7.08 | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | 3.39 | - | - | 3.39 | - | - |
| Pot Cap-1 Maneuver | 0 | 0 | 409 | 0 | 0 | 192 | 0 | - |
| Stage 1 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Stage 2 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 409 | - | - | 192 | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|------|----|----|
| HCM Control Delay, s | 14.7 | 62.6 | 0 | 0 |
| HCM LOS | B | F | | |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBT | SBR |
|-----------------------|-----|-----|------------|-------|-----|
| Capacity (veh/h) | - | - | 409 | 192 | - |
| HCM Lane V/C Ratio | - | - | 0.094 | 0.732 | - |
| HCM Control Delay (s) | - | - | 14.7 | 62.6 | - |
| HCM Lane LOS | - | - | B | F | - |
| HCM 95th %tile Q(veh) | - | - | 0.3 | 4.7 | - |

HCM 6th TWSC
 3: SW Brookman Road & Site Access

04/03/2020

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.7 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↶ | ↷ | | ↶ | ↷ |
| Traffic Vol, veh/h | 27 | 121 | 50 | 18 | 52 | 77 |
| Future Vol, veh/h | 27 | 121 | 50 | 18 | 52 | 77 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 68 | 68 | 68 | 68 | 68 | 68 |
| Heavy Vehicles, % | 1 | 1 | 8 | 8 | 0 | 0 |
| Mvmt Flow | 40 | 178 | 74 | 26 | 76 | 113 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 100 | 0 | - | 0 | 345 87 |
| Stage 1 | - | - | - | - | 87 - |
| Stage 2 | - | - | - | - | 258 - |
| Critical Hdwy | 4.11 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.209 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1499 | - | - | - | 656 977 |
| Stage 1 | - | - | - | - | 941 - |
| Stage 2 | - | - | - | - | 790 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1499 | - | - | - | 636 977 |
| Mov Cap-2 Maneuver | - | - | - | - | 636 - |
| Stage 1 | - | - | - | - | 913 - |
| Stage 2 | - | - | - | - | 790 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.4 | 0 | 10.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1499 | - | - | - | 803 |
| HCM Lane V/C Ratio | 0.026 | - | - | - | 0.236 |
| HCM Control Delay (s) | 7.5 | 0 | - | - | 10.9 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.9 |

HCM Signalized Intersection Capacity Analysis

1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|-------|------|------|-------|------|------|-------|-------|------|
| Lane Configurations | ↘ | ↕ | | ↘ | ↕ | | ↘ | ↕ | ↘ | ↘ | ↕ | ↘ |
| Traffic Volume (vph) | 46 | 177 | 346 | 192 | 155 | 154 | 285 | 1107 | 143 | 423 | 1755 | 46 |
| Future Volume (vph) | 46 | 177 | 346 | 192 | 155 | 154 | 285 | 1107 | 143 | 423 | 1755 | 46 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 0.97 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 0.90 | | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3188 | | 1736 | 3212 | | 3400 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3188 | | 1736 | 3212 | | 3400 | 3505 | 1568 | 3433 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 49 | 188 | 368 | 204 | 165 | 164 | 303 | 1178 | 152 | 450 | 1867 | 49 |
| RTOR Reduction (vph) | 0 | 145 | 0 | 0 | 130 | 0 | 0 | 0 | 87 | 0 | 0 | 25 |
| Lane Group Flow (vph) | 49 | 411 | 0 | 204 | 199 | 0 | 303 | 1178 | 65 | 450 | 1867 | 24 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 4% | 4% | 4% | 3% | 3% | 3% | 2% | 2% | 2% |
| Turn Type | Prot | NA | | Prot | NA | | Prot | NA | Perm | Prot | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 6.7 | 18.3 | | 13.7 | 25.3 | | 10.6 | 51.8 | 51.8 | 18.5 | 59.7 | 59.7 |
| Effective Green, g (s) | 6.7 | 18.3 | | 13.7 | 25.3 | | 10.6 | 51.8 | 51.8 | 18.5 | 59.7 | 59.7 |
| Actuated g/C Ratio | 0.06 | 0.15 | | 0.11 | 0.21 | | 0.09 | 0.43 | 0.43 | 0.15 | 0.50 | 0.50 |
| Clearance Time (s) | 4.5 | 4.5 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 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) | 98 | 484 | | 197 | 675 | | 299 | 1509 | 675 | 527 | 1756 | 785 |
| v/s Ratio Prot | 0.03 | c0.13 | | c0.12 | 0.06 | | 0.09 | 0.34 | | c0.13 | c0.53 | |
| v/s Ratio Perm | | | | | | | | | 0.04 | | | 0.02 |
| v/c Ratio | 0.50 | 0.98dr | | 1.04 | 0.30 | | 1.01 | 0.78 | 0.10 | 0.85 | 1.06 | 0.03 |
| Uniform Delay, d1 | 55.2 | 49.7 | | 53.3 | 40.0 | | 54.9 | 29.4 | 20.4 | 49.6 | 30.3 | 15.5 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.0 | 13.1 | | 73.7 | 0.2 | | 55.5 | 2.7 | 0.1 | 12.7 | 40.5 | 0.0 |
| Delay (s) | 59.1 | 62.7 | | 127.0 | 40.2 | | 110.3 | 32.1 | 20.4 | 62.3 | 70.8 | 15.5 |
| Level of Service | E | E | | F | D | | F | C | C | E | E | B |
| Approach Delay (s) | | 62.4 | | | 73.5 | | | 45.5 | | | 68.1 | |
| Approach LOS | | E | | | E | | | D | | | E | |

Intersection Summary























| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 60.8 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.02 | | |
| Actuated Cycle Length (s) | 120.3 | Sum of lost time (s) | 18.0 |
| Intersection Capacity Utilization | 98.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

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

c Critical Lane Group

HCM 6th Signalized Intersection Summary
 1: Highway 99W & SW Elwert Road/SW Sunset Boulevard

04/03/2020

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Traffic Volume (veh/h) | 46 | 177 | 346 | 192 | 155 | 154 | 285 | 1107 | 143 | 423 | 1755 | 46 |
| Future Volume (veh/h) | 46 | 177 | 346 | 192 | 155 | 154 | 285 | 1107 | 143 | 423 | 1755 | 46 |
| 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 | 1841 | 1841 | 1841 | 1856 | 1856 | 1856 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 49 | 188 | 368 | 204 | 165 | 164 | 303 | 1178 | 152 | 450 | 1867 | 49 |
| 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 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 |
| Cap, veh/h | 63 | 267 | 238 | 200 | 400 | 357 | 303 | 1546 | 690 | 509 | 1768 | 789 |
| Arrive On Green | 0.04 | 0.15 | 0.15 | 0.11 | 0.23 | 0.23 | 0.09 | 0.44 | 0.44 | 0.15 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1781 | 1777 | 1585 | 1753 | 1749 | 1560 | 3428 | 3526 | 1572 | 3456 | 3554 | 1585 |
| Grp Volume(v), veh/h | 49 | 188 | 368 | 204 | 165 | 164 | 303 | 1178 | 152 | 450 | 1867 | 49 |
| Grp Sat Flow(s),veh/h/ln | 1781 | 1777 | 1585 | 1753 | 1749 | 1560 | 1714 | 1763 | 1572 | 1728 | 1777 | 1585 |
| Q Serve(g_s), s | 3.3 | 12.1 | 18.0 | 13.7 | 9.6 | 10.9 | 10.6 | 33.8 | 7.2 | 15.3 | 59.7 | 1.9 |
| Cycle Q Clear(g_c), s | 3.3 | 12.1 | 18.0 | 13.7 | 9.6 | 10.9 | 10.6 | 33.8 | 7.2 | 15.3 | 59.7 | 1.9 |
| 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 | 63 | 267 | 238 | 200 | 400 | 357 | 303 | 1546 | 690 | 509 | 1768 | 789 |
| V/C Ratio(X) | 0.77 | 0.71 | 1.55 | 1.02 | 0.41 | 0.46 | 1.00 | 0.76 | 0.22 | 0.88 | 1.06 | 0.06 |
| Avail Cap(c_a), veh/h | 132 | 267 | 238 | 200 | 400 | 357 | 303 | 1546 | 690 | 553 | 1768 | 789 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 57.4 | 48.5 | 51.0 | 53.2 | 39.4 | 39.9 | 54.7 | 28.4 | 20.9 | 50.2 | 30.2 | 15.6 |
| Incr Delay (d2), s/veh | 18.0 | 8.2 | 266.3 | 68.7 | 0.7 | 0.9 | 51.9 | 2.3 | 0.2 | 14.9 | 38.0 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.8 | 5.9 | 24.6 | 9.8 | 4.2 | 4.2 | 6.6 | 13.9 | 2.7 | 7.5 | 32.6 | 0.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 75.4 | 56.7 | 317.3 | 121.9 | 40.1 | 40.8 | 106.6 | 30.7 | 21.1 | 65.1 | 68.1 | 15.7 |
| LnGrp LOS | E | E | F | F | D | D | F | C | C | E | F | B |
| Approach Vol, veh/h | | 605 | | | 533 | | | 1633 | | | 2366 | |
| Approach Delay, s/veh | | 216.7 | | | 71.6 | | | 43.9 | | | 66.4 | |
| Approach LOS | | F | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 22.2 | 57.1 | 18.2 | 22.5 | 15.1 | 64.2 | 8.8 | 31.9 | | | | |
| Change Period (Y+Rc), s | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | | | | |
| Max Green Setting (Gmax), s | 19.2 | 51.1 | 13.7 | 18.0 | 10.6 | 59.7 | 8.9 | 22.8 | | | | |
| Max Q Clear Time (g_c+I1), s | 17.3 | 35.8 | 15.7 | 20.0 | 12.6 | 61.7 | 5.3 | 12.9 | | | | |
| Green Ext Time (p_c), s | 0.3 | 7.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 77.5 | | | | | | | | | |
| HCM 6th LOS | | | E | | | | | | | | | |

HCM 6th TWSC
2: Highway 99W & SW Brookman Road

04/03/2020

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.7 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | | ↗ | | | ↗ | | ↕↔ | | | ↕↕ | ↗ |
| Traffic Vol, veh/h | 0 | 0 | 42 | 0 | 0 | 81 | 0 | 1451 | 72 | 0 | 2229 | 60 |
| Future Vol, veh/h | 0 | 0 | 42 | 0 | 0 | 81 | 0 | 1451 | 72 | 0 | 2229 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | 0 | - | - | - | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 3 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 44 | 0 | 0 | 84 | 0 | 1511 | 75 | 0 | 2322 | 63 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | |
|----------------------|--------|---|--------|---|--------|------|--------|---|
| Conflicting Flow All | - | - | 1161 | - | - | 793 | - | 0 |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | 6.96 | - | - | 6.92 | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | 3.33 | - | - | 3.31 | - | - |
| Pot Cap-1 Maneuver | 0 | 0 | 187 | 0 | 0 | 334 | 0 | - |
| Stage 1 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Stage 2 | 0 | 0 | - | 0 | 0 | - | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | 187 | - | - | 334 | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|------|----|----|
| HCM Control Delay, s | 30 | 19.4 | 0 | 0 |
| HCM LOS | D | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | EBLn1WBLn1 | SBT | SBR |
|-----------------------|-----|-----|-------------|-----|-----|
| Capacity (veh/h) | - | - | 187 334 | - | - |
| HCM Lane V/C Ratio | - | - | 0.234 0.253 | - | - |
| HCM Control Delay (s) | - | - | 30 19.4 | - | - |
| HCM Lane LOS | - | - | D C | - | - |
| HCM 95th %tile Q(veh) | - | - | 0.9 1 | - | - |

HCM 6th TWSC
3: SW Brookman Road & Site Access

04/03/2020

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.8 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 85 | 59 | 43 | 54 | 34 | 48 |
| Future Vol, veh/h | 85 | 59 | 43 | 54 | 34 | 48 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 69 | 69 | 69 | 69 | 69 | 69 |
| Heavy Vehicles, % | 2 | 2 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 123 | 86 | 62 | 78 | 49 | 70 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 140 | 0 | - | 0 | 433 101 |
| Stage 1 | - | - | - | - | 101 - |
| Stage 2 | - | - | - | - | 332 - |
| Critical Hdwy | 4.12 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1443 | - | - | - | 584 960 |
| Stage 1 | - | - | - | - | 928 - |
| Stage 2 | - | - | - | - | 731 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1443 | - | - | - | 532 960 |
| Mov Cap-2 Maneuver | - | - | - | - | 532 - |
| Stage 1 | - | - | - | - | 845 - |
| Stage 2 | - | - | - | - | 731 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|----|
| HCM Control Delay, s | 4.6 | 0 | 11 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1443 | - | - | - | 720 |
| HCM Lane V/C Ratio | 0.085 | - | - | - | 0.165 |
| HCM Control Delay (s) | 7.7 | 0 | - | - | 11 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - | 0.6 |