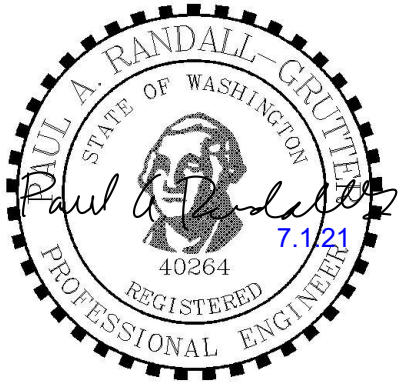
# 2020 Skagit County Road Segment & Intersection Concurrency



## INTRODUCTION

In conformance with Growth Management, RCW 36.70A, Skagit County Code 14.28.110 "Annual Concurrency Assessment" requires that the County Engineer annually produce this report to update the status of County road concurrency. The following is produced to meet said requirement.

## REQUIREMENTS

The concurrency assessment requires that "*The County Engineer must evaluate the high traffic County road segments (any County road segment on which there are at least 8,000 average daily trips) and high traffic County road intersections (any County road intersection into which the total approach volume is at least 7,000 average daily trips and the approach volume from all of the minor legs totals at least 1,000 average daily trips) using a Highway Capacity Manual type method (as selected by the County Engineer) to determine whether these road segments and intersections comply with the level of service standards adopted in the Comprehensive Plan.*" The Levels of Service (LOS) are described as follows in Skagit County's Comprehensive Plan.

**Policy 8A-2.1** Level of Service Standards – The Level of Service (LOS) standard for County roads is C. LOS D is acceptable for all road segments that:

*a) Have Annualized Average Daily Traffic (AADT) greater than 7,000 vehicles; and*

*b) Are NOT federally functionally classified as a Local Access Road; and*

*c) Are designated as a County Freight and Goods Transportation Systems Route (FGTS).*

The LOS standard for County road intersections is LOS D.

## LEVEL OF SERVICE DATA

### Road Segments

The methodology used to acquire the LOS of County road segments is outlined in Appendix C (Transportation Element Technical Appendix) of the Skagit County Comprehensive Plan.

> *"The Skagit County Public Works Traffic Engineering Unit has selected an LOS study volume unit threshold of 7,000 AADT. This threshold is an indicator that a road segment may be approaching the LOS C/D threshold and should be studied in depth."*

Table 1 shows the current County roads that meet the criteria for further study and the current LOS as determined using the Transportation Research Board's Highway Capacity Manual and Highway Capacity Software developed for this use by the University of Florida. Also shown is the projected 5-year LOS. This projected LOS was determined using a 2 percent yearly growth factor for each road segment. Projects along these roadways that are scheduled to be completed within this 5-year period were not significant enough to include as separate items. As one can see from Table 1, all the criteria for LOS concurrency have been met.

## Table 1 – Road Segments

| Skagit County Roads with Over 7,000 ADT | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road # | Road Name | FFC | Truck Rt | Beg MP | End MP | Length | 2020 ADT | 2021 ADT | 2022 ADT | 2023 ADT | 2024 ADT | 2025 ADT | 2020 LOS | 2025 LOS |
| 63000 | COOK ROAD | 07 | T2 | 1.750 | 1.800 | 0.050 | 16111 | 16433 | 16762 | 17097 | 17439 | 17788 | These two segments | |
| 63000 | COOK ROAD | 07 | T2 | 1.800 | 1.860 | 0.060 | 16111 | 16433 | 16762 | 17097 | 17439 | 17788 | are in WSDOT ROW | |
| 63000 | COOK ROAD | 07 | T2 | 1.860 | 1.970 | 0.110 | 15101 | 15403 | 15711 | 16025 | 16346 | 16673 | | |
| 63000 | COOK ROAD | 07 | T2 | 1.970 | 3.080 | 1.110 | 15101 | 15403 | 15711 | 16025 | 16346 | 16673 | D | D |
| 63000 | COOK ROAD | 07 | T2 | 3.080 | 3.360 | 0.280 | 15101 | 15403 | 15711 | 16025 | 16346 | 16673 | | |
| 63000 | COOK ROAD | 07 | T2 | 3.360 | 3.820 | 0.460 | 14040 | 14321 | 14607 | 14899 | 15197 | 15501 | | |
| 63000 | COOK ROAD | 07 | T2 | 3.820 | 4.100 | 0.280 | 14040 | 14321 | 14607 | 14899 | 15197 | 15501 | D | D |
| 63000 | COOK ROAD | 07 | T2 | 4.100 | 4.320 | 0.220 | 14040 | 14321 | 14607 | 14899 | 15197 | 15501 | | |
| 63000 | COOK ROAD | 07 | T2 | 4.320 | 4.600 | 0.280 | 14040 | 14321 | 14607 | 14899 | 15197 | 15501 | | |
| 63000 | COOK ROAD | 07 | T2 | 4.600 | 5.000 | 0.400 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | | |
| 63000 | COOK ROAD | 07 | T2 | 5.000 | 5.260 | 0.260 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | | |
| 63000 | COOK ROAD | 07 | T2 | 5.260 | 5.320 | 0.060 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | D | D |
| 63000 | COOK ROAD | 07 | T2 | 5.320 | 5.390 | 0.070 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | | |
| 63000 | COOK ROAD | 16 | T2 | 5.390 | 5.510 | 0.120 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | | |
| 63000 | COOK ROAD | 16 | T2 | 5.510 | 5.620 | 0.110 | 14215 | 14499 | 14789 | 15085 | 15387 | 15695 | | |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.000 | 0.063 | 0.063 | 8214 | 8378 | 8546 | 8717 | 8891 | 9069 | C | C |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.063 | 0.274 | 0.211 | 8214 | 8378 | 8546 | 8717 | 8891 | 9069 | | |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.545 | 0.553 | 0.008 | 8284 | 8450 | 8619 | 8791 | 8967 | 9146 | | |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.553 | 0.701 | 0.148 | 8284 | 8450 | 8619 | 8791 | 8967 | 9146 | | |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.701 | 0.715 | 0.014 | 8284 | 8450 | 8619 | 8791 | 8967 | 9146 | C | C |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.715 | 0.730 | 0.015 | 8284 | 8450 | 8619 | 8791 | 8967 | 9146 | | |
| 71500 | SOUTH LAVENTURE | 14 | Non | 0.730 | 0.773 | 0.043 | 8284 | 8450 | 8619 | 8791 | 8967 | 9146 | | |
| 80090 | PIONEER HIGHWAY | 07 | T3 | 0.000 | 0.883 | 0.883 | 9442 | 9631 | 9823 | 10020 | 10220 | 10425 | C | C |
| 80090 | PIONEER HIGHWAY | 07 | T3 | 0.883 | 1.418 | 0.535 | 9516 | 9706 | 9900 | 10098 | 10300 | 10506 | C | C |
| 80090 | PIONEER HIGHWAY | 07 | T3 | 1.418 | 1.748 | 0.330 | 9516 | 9706 | 9900 | 10098 | 10300 | 10506 | | |
| 80090 | PIONEER HIGHWAY | 07 | T3 | 1.748 | 3.065 | 1.317 | 9389 | 9577 | 9768 | 9964 | 10163 | 10366 | C | C |
| 80090 | PIONEER HIGHWAY | 07 | T3 | 3.065 | 3.089 | 0.024 | 12302 | 12548 | 12799 | 13055 | 13316 | 13582 | D | D |

Due to the COVID-19 Pandemic that significantly reduced travel and road usage in 2020, Skagit County decided to not use 2020 traffic studies and counts and their lowered volumes to determine concurrency. Therefore, the traffic studies and counts from 2019 were used for a second time. As these older, higher-volume counts resulted in actual concurrency on all County road segments, it was obvious that the lower 2020 traffic levels would remain concurrent.

## Road Intersections

As with Road Segment LOS, Intersection LOS methodology is outlined in the Transportation Element Technical Appendix (TETA) Appendix C of the Comprehensive Plan. Intersection LOS, according to the Highway Capacity Manual, cannot be determined at stop-controlled intersections. The individual stop-controlled leg LOS can be determined, but the overall intersection LOS cannot be determined. With regard to stop-controlled intersections, the TETA states that:

> *"Intersection LOS will be calculated using Traffic Signal Warrants in conjunction with LOS methods. The analysis will use real time data, which focuses on turn movements and volumes of the entire intersection. This type of analysis can be made on any intersection in the County Road System."*

Table 2 shows the intersection on which Skagit County is collecting LOS data on a regular basis. In recent years, other intersections have fallen off this list due to intersection improvement projects, namely roundabouts. These include the intersections at Best and McLean Roads in 2008 and Pioneer Hwy at Fir Island Road in 2014.

Table 2 – Intersections

| Intersection Name | Intersection Type | NB Approach LOS | SB Approach LOS | EB Approach LOS | WB Approach LOS | Overall LOS |
|---|---|---|---|---|---|---|
| 2020 | | | | | | |
| Cook Road / Old Hwy 99 N | Signalized | B | B | B | A | B |
| 2025 | | | | | | |
| Cook Road / Old Hwy 99 N | Signalized | B | B | B | B | B |

The full Highway Capacity Reports on the intersection of Cook Road and Old Hwy 99 N for the current year and 5-year estimate are included in this Assessment as Appendix A and Appendix B respectively. This 5-year projected LOS was determined using a 2 percent yearly growth factor for each approach volume. This is by far the busiest intersection under Skagit County jurisdiction.

A turn movement study at this intersection was not conducted in the years 2017-2019 as the Burlington Northern Overpass Replacement Project directly north of the intersection that closed Old Hwy 99 North beginning May 1, 2017 drastically affected the traffic at this intersection. The turn movement study used for this assessment was conducted in June of 2020. As such, the traffic volumes may be affected by the COVID-19 Pandemic. Turn movement studies in subsequent years may give a better long-term picture of LOS as traffic levels have decreased during the Pandemic.

It should also be noted that this intersection was studied during the Peak PM hour for the Highway Capacity report as per industry standards and Concurrency requirements. However, during the Peak AM hour the LOS from the Westbound (WB) and Eastbound (EB) approaches would differ due to the prevailing traffic patterns for work-bound and home-bound trips. There are also two to three AM peak hour trains that travel through the at-grade rail crossing just east of the intersection that directly affect LOS during the morning commute.

## SUMMARY

As of December 31, 2020 all Skagit County road segments and signalized intersections meet the current LOS standards as adopted in the Comprehensive Plan of Skagit County. Therefore, all Skagit County road segments and intersections are concurrent.

Skagit County Public Works has used the Highway Capacity Manual, Sixth Edition of 2016 and its associated software to determine all Level of Service calculations in this report.

# HCM 6th Signalized Intersection Summary

3: 06/15/2020

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 98 | 526 | 60 | 57 | 395 | 47 | 94 | 156 | 168 | 44 | 68 | 102 |
| Future Volume (veh/h) | 98 | 526 | 60 | 57 | 395 | 47 | 94 | 156 | 168 | 44 | 68 | 102 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 107 | 572 | 65 | 62 | 429 | 51 | 102 | 170 | 183 | 48 | 74 | 111 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 440 | 795 | 90 | 331 | 791 | 94 | 486 | 243 | 262 | 282 | 552 | 468 |
| Arrive On Green | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| Sat Flow, veh/h | 915 | 1649 | 187 | 791 | 1640 | 195 | 1199 | 824 | 887 | 1028 | 1870 | 1585 |
| Grp Volume(v), veh/h | 107 | 0 | 637 | 62 | 0 | 480 | 102 | 0 | 353 | 48 | 74 | 111 |
| Grp Sat Flow(s),veh/h/ln | 915 | 0 | 1837 | 791 | 0 | 1835 | 1199 | 0 | 1711 | 1028 | 1870 | 1585 |
| Q Serve(g_s), s | 4.0 | 0.0 | 11.8 | 2.9 | 0.0 | 7.9 | 2.9 | 0.0 | 7.9 | 1.9 | 1.2 | 2.3 |
| Cycle Q Clear(g_c), s | 11.9 | 0.0 | 11.8 | 14.7 | 0.0 | 7.9 | 4.2 | 0.0 | 7.9 | 9.8 | 1.2 | 2.3 |
| Prop In Lane | 1.00 | | 0.10 | 1.00 | | 0.11 | 1.00 | | 0.52 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 440 | 0 | 885 | 331 | 0 | 884 | 486 | 0 | 505 | 282 | 552 | 468 |
| V/C Ratio(X) | 0.24 | 0.00 | 0.72 | 0.19 | 0.00 | 0.54 | 0.21 | 0.00 | 0.70 | 0.17 | 0.13 | 0.24 |
| Avail Cap(c_a), veh/h | 1156 | 0 | 2322 | 961 | 0 | 2345 | 871 | 0 | 1053 | 825 | 1538 | 1304 |
| 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 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 12.0 | 0.0 | 8.8 | 14.7 | 0.0 | 7.8 | 12.7 | 0.0 | 13.5 | 17.8 | 11.1 | 11.5 |
| Incr Delay (d2), s/veh | 0.3 | 0.0 | 1.1 | 0.3 | 0.0 | 0.5 | 0.2 | 0.0 | 1.8 | 0.3 | 0.1 | 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 | 0.7 | 0.0 | 3.5 | 0.5 | 0.0 | 2.3 | 0.7 | 0.0 | 2.7 | 0.4 | 0.4 | 0.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 12.3 | 0.0 | 10.0 | 15.0 | 0.0 | 8.3 | 12.9 | 0.0 | 15.2 | 18.1 | 11.2 | 11.8 |
| LnGrp LOS | B | A | A | B | A | A | B | A | B | B | B | B |
| Approach Vol, veh/h | | 744 | | | 542 | | | 455 | | | 233 | |
| Approach Delay, s/veh | | 10.3 | | | 9.1 | | | 14.7 | | | 12.9 | |
| Approach LOS | | B | | | A | | | B | | | B | |

| Timer - Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 17.3 | | 25.7 | | 17.3 | | 25.7 | | | | |
| Change Period (Y+Rc), s | | * 4.6 | | * 5 | | 4.6 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | * 27 | | * 54 | | 35.4 | | 55.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 9.9 | | 13.9 | | 11.8 | | 16.7 | | | | |
| Green Ext Time (p_c), s | | 2.4 | | 5.9 | | 0.9 | | 4.0 | | | | |

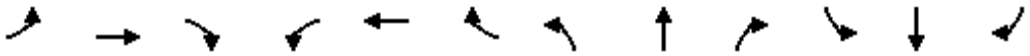
| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 6th Ctrl Delay | | | 11.3 | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |

Notes

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

# HCM 6th Signalized Intersection Summary

3: 06/15/2020



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 108 | 581 | 66 | 63 | 436 | 52 | 104 | 172 | 185 | 49 | 75 | 113 |
| Future Volume (veh/h) | 108 | 581 | 66 | 63 | 436 | 52 | 104 | 172 | 185 | 49 | 75 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h | 117 | 632 | 72 | 68 | 474 | 57 | 113 | 187 | 201 | 53 | 82 | 123 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 406 | 839 | 96 | 287 | 833 | 100 | 463 | 255 | 274 | 243 | 579 | 491 |
| Arrive On Green | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| Sat Flow, veh/h | 873 | 1649 | 188 | 743 | 1638 | 197 | 1177 | 825 | 886 | 996 | 1870 | 1585 |
| Grp Volume(v), veh/h | 117 | 0 | 704 | 68 | 0 | 531 | 113 | 0 | 388 | 53 | 82 | 123 |
| Grp Sat Flow(s),veh/h/ln | 873 | 0 | 1837 | 743 | 0 | 1835 | 1177 | 0 | 1711 | 996 | 1870 | 1585 |
| Q Serve(g_s), s | 5.7 | 0.0 | 16.1 | 4.2 | 0.0 | 10.6 | 4.1 | 0.0 | 10.7 | 2.7 | 1.7 | 3.1 |
| Cycle Q Clear(g_c), s | 16.2 | 0.0 | 16.1 | 20.4 | 0.0 | 10.6 | 5.7 | 0.0 | 10.7 | 13.4 | 1.7 | 3.1 |
| Prop In Lane | 1.00 | | 0.10 | 1.00 | | 0.11 | 1.00 | | 0.52 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 406 | 0 | 934 | 287 | 0 | 934 | 463 | 0 | 530 | 243 | 579 | 491 |
| V/C Ratio(X) | 0.29 | 0.00 | 0.75 | 0.24 | 0.00 | 0.57 | 0.24 | 0.00 | 0.73 | 0.22 | 0.14 | 0.25 |
| Avail Cap(c_a), veh/h | 859 | 0 | 1889 | 682 | 0 | 1908 | 689 | 0 | 857 | 601 | 1252 | 1061 |
| 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 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 14.6 | 0.0 | 10.3 | 18.5 | 0.0 | 9.0 | 15.2 | 0.0 | 16.3 | 22.3 | 13.2 | 13.7 |
| Incr Delay (d2), s/veh | 0.4 | 0.0 | 1.3 | 0.4 | 0.0 | 0.5 | 0.3 | 0.0 | 2.0 | 0.4 | 0.1 | 0.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.0 | 0.0 | 5.3 | 0.7 | 0.0 | 3.4 | 1.0 | 0.0 | 3.9 | 0.6 | 0.6 | 1.0 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 15.0 | 0.0 | 11.6 | 18.9 | 0.0 | 9.5 | 15.5 | 0.0 | 18.3 | 22.7 | 13.3 | 13.9 |
| LnGrp LOS | B | A | B | B | A | A | B | A | B | C | B | B |
| Approach Vol, veh/h | | 821 | | | 599 | | | 501 | | | 258 | |
| Approach Delay, s/veh | | 12.1 | | | 10.6 | | | 17.7 | | | 15.5 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer - Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 21.0 | | 31.9 | | 21.0 | | 31.9 | | | | |
| Change Period (Y+Rc), s | | * 4.6 | | * 5 | | 4.6 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | * 27 | | * 54 | | 35.4 | | 55.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 12.7 | | 18.2 | | 15.4 | | 22.4 | | | | |
| Green Ext Time (p_c), s | | 2.5 | | 6.8 | | 1.0 | | 4.5 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 6th Ctrl Delay | | | 13.4 | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |

Notes

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

# HCS7 Two-Lane Highway Report

## Project Information

Appendix C

| | | | |
|---|---|---|---|
| Analyst | Given Kutz | Date | 6/15/2020 |
| Agency | Public Works | Analysis Year | 2019 |
| Jurisdiction | Skagit County | Time Period Analyzed | 2019 |
| Project Description | Annual Concurrency Assessment | Unit | United States Customary |

## Segment 1

### Vehicle Inputs

| | | | |
|---|---|---|---|
| Segment Type | Passing Zone | Length, ft | 7920 |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 50 | Access Point Density, pts/mi | 16.0 |

### Demand and Capacity

| | | | |
|---|---|---|---|
| Directional Demand Flow Rate, veh/h | 917 | Opposing Demand Flow Rate, veh/h | 664 |
| Peak Hour Factor | 0.94 | Total Trucks, % | 5.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.54 |

### Intermediate Results

| | | | |
|---|---|---|---|
| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 52.8 |
| Speed Slope Coefficient | 3.31248 | Speed Power Coefficient | 0.46317 |
| PF Slope Coefficient | -1.30426 | PF Power Coefficient | 0.75657 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 13.0 |
| %Improved % Followers | 0.0 | % Improved Avg Speed | 0.0 |

### Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|---|---|---|---|---|
| 1 | Tangent | 5280 | - | - | 49.8 |
| 2 | Tangent | 2640 | - | - | 49.8 |

### Vehicle Results

| | | | |
|---|---|---|---|
| Average Speed, mi/h | 49.8 | Percent Followers, % | 70.5 |
| Segment Travel Time, minutes | 1.81 | Followers Density, followers/mi/ln | 13.0 |
| Vehicle LOS | D | | |

# HCS7 Two-Lane Highway Report

## Project Information

Appendix D

| | | | |
|---|---|---|---|
| Analyst | Given Kutz | Date | 6/15/2020 |
| Agency | Public Works | Analysis Year | 2024 |
| Jurisdiction | Skagit County | Time Period Analyzed | 2024 |
| Project Description | Annual Concurrency Assessment | Unit | United States Customary |

## Segment 1

### Vehicle Inputs

| | | | |
|---|---|---|---|
| Segment Type | Passing Zone | Length, ft | 7920 |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 50 | Access Point Density, pts/mi | 16.0 |

### Demand and Capacity

| | | | |
|---|---|---|---|
| Directional Demand Flow Rate, veh/h | 1013 | Opposing Demand Flow Rate, veh/h | 733 |
| Peak Hour Factor | 0.94 | Total Trucks, % | 5.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.60 |

### Intermediate Results

| | | | |
|---|---|---|---|
| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 52.8 |
| Speed Slope Coefficient | 3.32605 | Speed Power Coefficient | 0.45664 |
| PF Slope Coefficient | -1.31036 | PF Power Coefficient | 0.75407 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 15.0 |
| %Improved % Followers | 0.0 | % Improved Avg Speed | 0.0 |

### Subsegment Data

| # | Segment Type | Length, ft | Radius, ft | Superelevation, % | Average Speed, mi/h |
|---|---|---|---|---|---|
| 1 | Tangent | 5280 | - | - | 49.6 |
| 2 | Tangent | 2640 | - | - | 49.6 |

### Vehicle Results

| | | | |
|---|---|---|---|
| Average Speed, mi/h | 49.6 | Percent Followers, % | 73.4 |
| Segment Travel Time, minutes | 1.81 | Followers Density, followers/mi/ln | 15.0 |
| Vehicle LOS | D | | |