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**WALDPORT TRANSPORTATION PROJECT LIST**

| # | Project | Priority | Cost Implications | Constraints | Potential Implementation Mechanisms |
|---|---|---|---|---|---|
| **A.** | **STREET DESIGN STANDARDS** | | | | |
| | Develop Street Design Standards | High | -- | -- | City of Waldport |
| **B.** | **STREET MAINTENANCE** | | | | |
| | Improve and maintain existing streets | High | -- | Limited funding | City, County, ODOT |
| **C.** | **ENFORCE AND REDUCE SPEEDING AT COMMUNITY GATEWAYS** | | | | |
| C.1 | Southbound Highway 101 traffic coming off the bridge. | High | Funding for increased enforcement | -- | City, ODOT |
| C.2 | Northbound Highway 101 traffic | High | Funding for increased enforcement; Gateways improvement costs | -- | State and Federal Grants, City, Job Corps, Volunteers |
| C.3 | Westbound Highway 34 traffic | High | Funding for increased enforcement; Gateways improvement costs | -- | State and Federal Grants, City, Job Corps, Volunteers |
| **D.** | **RANGE DRIVE IMPROVEMENTS** | | | | |
| | Widening, ped/bike facilities, curve and sight distance improvements | High | Potential land acquisition near curves to improve sight distance | Topography; sight distance at curves | City, State and Federal Grants |
| **E.** | **HIGHWAY 101/RANGE DRIVE INTERSECTION IMPROVEMENTS** | | | | |
| | Realignment and center turn-lane | High | -- | -- | City, ODOT |
| **F.** | **CRESTLINE DRIVE IMPROVEMENTS** | | | | |
| | Continuous ped/bike facilities and safety improvements at the hill/curves section | High | Potential land acquisition for hill/curve improvements | Topography; sight distance at curves; ADA compliance at hill | City, County |
| **G.** | **MAINTAIN ACCESS TO AMENITIES AND TO UNDEVELOPED LAND** | | | | |
| | Maintain public access to amenities and to improve connectivity. | High | -- | -- | City of Waldport |

| # | Project | Priority | Cost Implications | Constraints | Potential Implementation Mechanisms |
|---|---|---|---|---|---|
| H. | **NEW DEVELOPMENT - CONNECTIONS TO EXISTING TRANSPORTATION SYSTEM** | | | | |
| | Require new development to provide connections to the existing transportation system | High | -- | Topography | City, Developers |
| I. | **REDEVELOPMENT ACCESS IMPROVEMENTS** | | | | |
| | Ensure adequate and safe access occurs with redevelopment | High | -- | Timing of redevelopment | City, County, ODOT, Property owners/developers |
| J. | **ENSURE TRANSPORTATION FACILITIES AND SERVICES ACCOMMODATE SPECIAL NEEDS** | | | | |
| | Ensure transportation facilities are in accordance with Americans with Disability Act (ADA) standards wherever possible, and that public transportation services accommodate special needs, i.e. disabled and elderly. | High | -- | Topography | City, County, ODOT |
| K. | **NEW EAST-WEST ROAD IN SOUTH WALDPORT** | | | | |
| | New road(s) connecting Highway 101 and Crestline Drive. | Medium | -- | Statewide Goal exception if outside UGB | City, County, ODOT, Developers |
| L. | **HIGHWAY 101/SEARR STREET/NORWOOD DRIVE INTERSECTION IMPROVEMENTS** | | | | |
| | Realign this intersection for safer and more efficient traffic flow | Medium | -- | Maintaining efficient traffic flow, Norwood Drive topography | City, ODOT, State and Federal Grants |
| M. | **HIGHWAY 34/CRESTLINE DRIVE/MILL STREET INTERSECTION IMPROVEMENTS** | | | | |
| | Turning movement improvements for improved safety and traffic flow | Medium | -- | -- | City, ODOT |
| N. | **HIGHWAY 34/BAY STREET INTERSECTION IMPROVEMENT** | | | | |
| | Improvements to improve ingress and egress at the Middle School and City Hall | Medium | -- | -- | City, ODOT |
| O. | **HIGHWAY 101/HIGHWAY 34 INTERSECTION IMPROVEMENTS** | | | | |
| | Improve ingress and egress when redevelopment occurs | Low | -- | Timing of redevelopment | City, ODOT |

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| # | Project | Priority | Cost Implications | Constraints | Potential Implementation Mechanisms |
|---|---|---|---|---|---|
| P. | **PAVEMENT STRIPING IMPROVEMENTS** | | | | |
| | Crosswalk, bicycle lane, and fog line improvements | Low | Limited funding | -- | City, County, ODOT |
| Q. | **HIGHWAY 34 SIGHT DISTANCE IMPROVEMENT** | | | | |
| | Improve the inadequate sight distance on Highway 34 in east Waldport, east of the bridge near the RV Park. | Low | Potential land acquisition | Physical features – topography | ODOT |
| R. | **RED DITCH IMPROVEMENTS** | | | | |
| | Conduct detailed study to determine appropriate improvements | Low | -- | Potential storm drainage issues | City, Job Corps, Volunteers |
| S. | **(SOUTH) HIGHWAY 101 CONTINUOUS CENTER TURN LANE** | | | | |
| | Long-term, provide a continuous center turn lane from just south of the seawall to Beachside State Park | Low | -- | -- | ODOT |
| T. | **HIGHWAY 101/SPRING STREET TURNING MOVEMENT IMPROVEMENT** | | | | |
| | Improvements to physically prevent southbound Highway 101 traffic turning eastbound on Spring Street. | Low | -- | -- | ODOT |
| U. | **ADDITIONAL DOWNTOWN PARKING** | | | | |
| | Provide additional parking for downtown businesses | Low | Land acquisition | Limited location opportunities | City, ODOT |
| V. | **DOWNTOWN ACCESS MANAGEMENT AND PEDESTRIAN CIRCULATION IMPROVEMENTS** | | | | |
| | Detailed study to ensure safe and efficient highway access, and pedestrian connectivity | Low | -- | Limited highway ingress/egress improvement opportunities w/out redevelopment | City, ODOT |
| W. | **IMPROVED HIGH SCHOOL AUTOMOBILE, BUS, BICYCLE, AND PEDESTRIAN CIRCULATION** | | | | |
| | Better define vehicular and ped/bike circulation with additional parking | Low | -- | -- | School District |
| Y. | **PUBLIC TRANSPORTATION** | | | | |
| | Increase public transportation (bus and van service between Waldport and other cities | High | -- | -- | City, County, Private Entities |

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| # | Project | Priority | Cost Implications | Constraints | Potential Implementation Mechanisms |
|---|---|---|---|---|---|
| A | **PEDESTRIAN CROSSINGS ON HIGHWAY 101 AND HIGHWAY 34** | | | | |
| | Provide safe pedestrian crossings at intersections on Highway 101 and Highway 34 | High | -- | -- | ODOT, State and Federal Grants |
| AA | **CONNECTED COMMUNITY-WIDE PEDESTRIAN/BICYCLE SYSTEM** | | | | |
| AA1 | Arterial and Collector Street Ped/Bike Facilities | High | -- | -- | City, County, ODOT, State and Federal Grants, Property Owners/Developers |
| AA2 | Crestline Drive - Ball Field Ped/Bike Connection | High | -- | Topography, ADA compliance | State and Federal Grants, City, Job Corps, Volunteers |
| AA3 | Elementary School - Range Drive Connection | High | Potential land acquisition | Land acquisition, easements, safe route | State and Federal Grants, City, Job Corps, Volunteers |
| AA4 | Crestline Drive - High School Connection | Medium | Potential land acquisition | Public access, topography, ADA compliance | State and Federal Grants, City, Job Corps, Volunteers |
| AA5 | Norwood Drive - Range Drive Connection | Medium | -- | Public access, topography | Property Owners, Developers |
| AA6 | Kelsie Way – Highway 101 Connection | Low | -- | Public access, topography | State and Federal Grants, Oregon State Parks, City, Job Corps, Volunteers |
| AA7 | Slough Pathway | Low | -- | Environmental issues, physical feature limitations - wetlands, trees, topography | State and Federal Grants, U.S. Forest Service, City, Job Corps, Volunteers |
| AA8 | Bay Pathway | Low | -- | Environmental issues, high tide, winter weather | State and Federal Grants, Oregon State Parks, City, Job Corps, Volunteers |

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## APPENDIX

Traffic Volume Data
Existing Analysis Worksheets for Level of Service, Left-Turn Warrants, Signal Warrants
Worksheets for Growth Forecasts, Trip Generation, Trip Assignment
Future Conditions Analysis Worksheets for Level of Service, Left-Turn Warrants, Signal Warrants
Conceptual Intersection Layouts
Questionnaire

# Traffic Volume Data

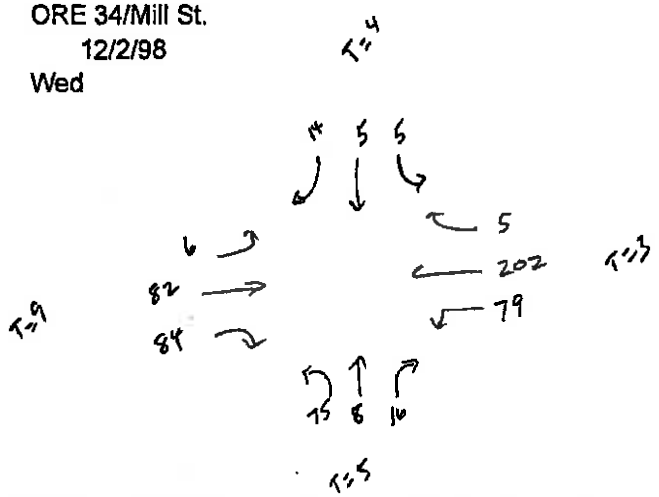
April 30, 1999

Kittelson & Associates, Inc.
Project 2890

## *Turning Movement Worksheet*

Project: 2890
Intersection: ORE 34/Mill St.
Count Date: 12/2/98
Wed

Count Time: 7-9 a.m.
Peak Hour: 7:30-8:30
PHF: .69

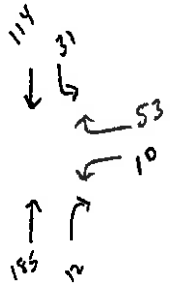



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left 1 | Through 2 | Right 3 | Left 4 | Through 5 | Right 6 | Left 7 | Through 8 | Right 9 | Left 10 | Through 11 | Right 12 |
| 7:00-7:15 | 2 | 0 | 2 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 4 | 2 |
| trucks | | | 1 | | | | | | | | | |
| 7:15-7:30 | 4 | 0 | 3 | 2 | 51 | 0 | 1 | 0 | 1 | 1 | 6 | 8 |
| trucks | | | | | | | | | | | 1 | |
| 7:30-7:45 | 6 | 1 | 1 | 9 | 49 | 3 | 1 | 0 | 3 | 1 | 19 | 17 |
| trucks | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 1 |
| 7:45-8:00 | 16 | 0 | 3 | 31 | 51 | 0 | 1 | 0 | 4 | 1 | 11 | 16 |
| trucks | | | | | 2 | | | | | 1 | 1 | |
| 8:00-8:15 | 32 | 4 | 3 | 29 | 58 | 2 | 2 | 3 | 5 | 2 | 23 | 38 |
| trucks | 1 | 2 | 1 | 2 | | | | 1 | | 2 | 2 | 3 |
| 8:15-8:30 | 9 | 3 | 6 | 8 | 38 | 2 | 1 | 1 | 2 | 2 | 18 | 9 |
| trucks | 2 | | 2 | | 2 | | | | | | 4 | |
| 8:30-8:45 | 4 | 2 | 4 | 1 | 28 | 2 | | 2 | 4 | 2 | 18 | 2 |
| trucks | 2 | | | | 3 | | 1 | | | | 4 | |
| 8:45-9:00 | 3 | 2 | 3 | 2 | 25 | | | 1 | 2 | 3 | 20 | 1 |
| trucks | | 1 | 1 | | | | | | | | 1 | 1 |
| PH Trucks | 2 | 0 | 3 | 2 | 6 | 0 | 0 | 1 | 0 | 1 | 11 | 4 |
| PH All Traffic | 75 | 8 | 16 | 79 | 202 | 5 | 5 | 5 | 14 | 6 | 82 | 84 |
| PH Truck % | | 5% | | | 3% | | | 4% | | | 9% | |

## *Turning Movement Worksheet*

Project: 2890
Intersection: US 101/Range
Count Date: 12/2/98
Wed

Count Time: 7-9 a.m.
Peak Hour: 7:45-8:45
PHF: 0.90

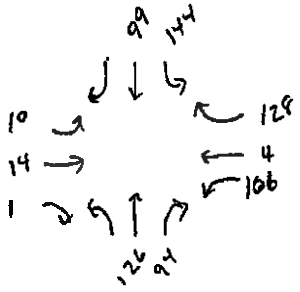



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | Left | hroug | Right | Left | hroug | Right | Left | hroug | Right |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 7:00-7:15 | | 24 | 1 | 1 | 1 | 7 | 2 | 16 | 1 | | | |
| truc | | 1 | | | | | | 2 | | | | |
| 7:15-7:30 | | 33 | 0 | 2 | 0 | 10 | 2 | 19 | 0 | | | |
| truc | | 2 | | | | | | 2 | | | | |
| 7:30-7:45 | | 33 | 3 | 3 | 0 | 10 | 7 | 20 | | | | |
| truc | | 2 | | | | | | 1 | | | | |
| 7:45-8:00 | | 55 | 1 | 2 | | 8 | 7 | 32 | | | | |
| truc | | 5 | | | | 1 | 1 | | | | | |
| 8:00-8:15 | | 40 | 2 | 2 | | 10 | 10 | 22 | | | | |
| truc | | 1 | | | | | | | | | | |
| 8:15-8:30 | | 37 | 5 | 4 | 1 | 18 | 6 | 26 | | | | |
| truc | | 3 | | | | | | 2 | | | | |
| 8:30-8:45 | | 44 | 1 | 2 | | 16 | 3 | 29 | | | | |
| truc | | 2 | | | | | | 3 | | | | |
| 8:45-9:00 | | 31 | | | | 7 | 4 | 43 | | | | |
| truc | | 1 | | | | | | 1 | | | | |
| PH Trucks | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 |
| PH All Traf | 0 | 174 | 11 | 11 | 0 | 47 | 35 | 103 | 0 | 0 | 0 | 0 |
| PH Truck % | | 5% | | | 2% | | | 3% | | | ##### | |

# *Turning Movement Worksheet*

Project: 2890
Intersection: US Highway 101/ORE 34
Count Date: 12/2/98
Wed

Count Time: 7-9 a.m.
Peak Hour: 7:30-8:30
PHF: 0.96

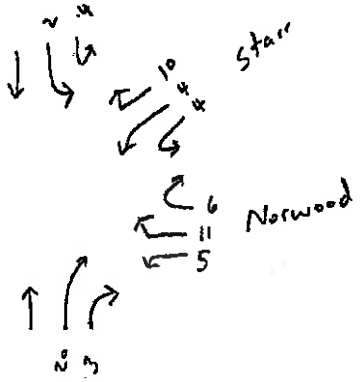



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 7:00-7:15 | | 25 | 3 | 17 | 2 | 17 | 8 | 9 | | 0 | 0 | 0 |
| trucks | | 1 | 0 | 3 | 0 | 1 | 0 | 1 | | 0 | 0 | 0 |
| 7:15-7:30 | | 25 | 5 | 10 | 0 | 24 | 15 | 12 | | 1 | 0 | 0 |
| trucks | | 2 | 5 | 0 | 0 | 0 | 1 | 1 | | 0 | 0 | 0 |
| 7:30-7:45 | | 45 | 18 | 22 | 3 | 36 | 31 | 21 | | 2 | 4 | 1 |
| trucks | | 0 | 1 | 0 | 0 | 2 | 3 | 1 | | 0 | 0 | 0 |
| 7:45-8:00 | | 23 | 22 | 27 | 0 | 24 | 42 | 28 | | 7 | 2 | 0 |
| trucks | | 1 | 4 | 2 | 0 | 0 | 1 | 0 | | 0 | 0 | 0 |
| 8:00-8:15 | | 23 | 28 | 25 | 1 | 28 | 33 | 17 | | 1 | 6 | 0 |
| trucks | | 1 | 0 | 0 | 0 | 1 | 6 | 0 | | 0 | 0 | 0 |
| 8:15-8:30 | | 31 | 24 | 29 | 0 | 37 | 28 | 29 | | 0 | 2 | 0 |
| trucks | | 2 | 2 | 1 | 0 | 0 | 0 | 3 | | 0 | 0 | 0 |
| 8:30-8:45 | | 34 | 20 | 15 | 1 | 17 | 22 | 27 | | 3 | 3 | 2 |
| trucks | | 2 | 0 | 1 | 0 | 3 | 0 | 2 | | 0 | 0 | 0 |
| 8:45-9:00 | | 27 | 15 | 33 | 4 | 16 | 17 | 23 | | 4 | 1 | 3 |
| trucks | | 1 | 1 | 1 | 0 | 0 | 0 | 1 | | 0 | 0 | 0 |
| PH Trucks | 0 | 4 | 7 | 3 | 0 | 3 | 10 | 4 | 0 | 0 | 0 | 0 |
| PH All Traffic | 0 | 126 | 94 | 106 | 4 | 128 | 144 | 99 | 0 | 10 | 14 | 1 |
| PH Truck % | | 5% | | | 3% | | | 6% | | | 0% | |

## *Turning Movement Worksheet*

Project: 2890
Intersection: 101/Starr/Norwood
Count Date: 12/2/98
Wed

Count Time: 7-9 a.m.
Peak Hour:
PHF:

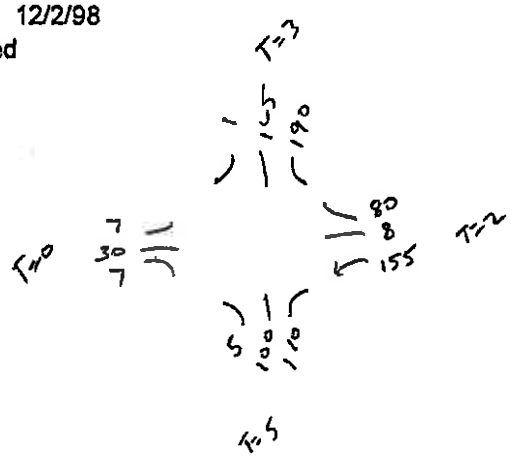



| | Northbound | | | Norwood | | | Starr | | | Southbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Throug | Starr 1 | orwoo 2 | SB101 4 | NB101 5 | Starr 6 | orwoo 7 | SB101 8 | NB101 9 | Starr S 10 | orwood 11 | hroug |
| 7:00-7:15 | | 4 | | | 2 | | | | | | | |
| trucks | | | | | | | | | | | | |
| 7:15-7:30 | | 6 | | | | 1 | | 4 | 3 | 1 | | |
| trucks | | | | | | | | | | | | |
| 7:30-7:45 | | 3 | 1 | | 5 | | | 3 | 3 | 1 | 1 | |
| trucks | | | | | | | | | | | | |
| 7:45-8:00 | | 9 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | |
| trucks | | | | | | | | | | | | |
| 8:00-8:15 | | 5 | | 3 | 3 | 5 | 2 | 1 | 2 | 2 | 1 | |
| trucks | | | | | | | | | | | | |
| 8:15-8:30 | | 3 | | | 1 | | 1 | | 4 | | | |
| trucks | | | | | | | | | | | | |
| 8:30-8:45 | | 8 | | 1 | 1 | | 2 | 5 | 3 | 1 | 1 | |
| trucks | | | | | | | | | | | | |
| 8:45-9:00 | | 2 | 2 | 1 | 4 | | 2 | 3 | 4 | | 1 | |
| trucks | | | | | | | | | | | | |
| PH Trucks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PH All Traffic | 0 | 20 | 3 | 5 | 11 | 6 | 4 | 4 | 10 | 4 | 2 | 0 |
| PH Truck % | | 0% | | | 0% | | | 0% | | | 0% | |

# *Turning Movement Worksheet*

Project: 2890
Intersection: US Highway 101/ORE 34
Count Date: 12/2/98
Wed

Count Time: 4-6 pm
Peak Hour: 4-5
PHF: 0.91

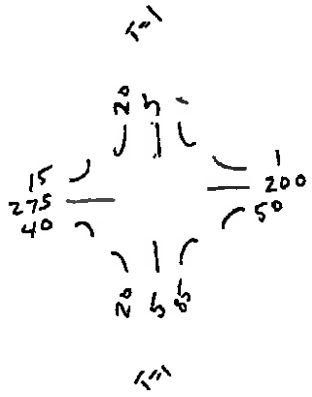



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left 1 | Through 2 | Right 3 | Left 4 | Through 5 | Right 6 | Left 7 | Through 8 | Right 9 | Left 10 | Through 11 | Right 12 |
| 4:00-4:15 | 2 | 28 | 33 | 33 | 4 | 26 | 55 | 38 | 0 | 1 | 7 | 3 |
| trucks | 1 | 2 | 1 | | | 2 | 1 | 1 | | | | |
| 4:15-4:30 | 0 | 23 | 24 | 42 | 1 | 23 | 51 | 54 | | 3 | 8 | 0 |
| trucks | | 2 | | | 0 | 1 | 2 | 0 | | | | |
| 4:30-4:45 | 2 | 22 | 28 | 40 | 1 | 16 | 33 | 39 | | 1 | 9 | 0 |
| trucks | 1 | 2 | 3 | 2 | 0 | 0 | 4 | 0 | | | | |
| 4:45-5:00 | 2 | 20 | 22 | 40 | 2 | 10 | 41 | 34 | | 2 | 6 | 4 |
| trucks | 1 | | 1 | | | | 1 | 1 | | | | |
| 5:00-5:15 | 1 | 27 | 22 | 45 | 7 | 18 | 33 | 54 | | 6 | 9 | 3 |
| trucks | | 1 | 2 | | | 2 | | 2 | | | | |
| 5:15-5:30 | 0 | 17 | 13 | 18 | 0 | 18 | 29 | 54 | 2 | 1 | 4 | 0 |
| trucks | | | | 0 | 0 | 0 | 0 | 0 | | | | |
| 5:30-5:45 | 1 | 18 | 22 | 26 | 2 | 5 | 40 | 32 | | 1 | 3 | 0 |
| trucks | 0 | 1 | 0 | | | | | | | | | |
| 5:45-6:00 | 0 | 16 | 19 | 13 | 4 | 10 | 33 | 24 | 1 | 1 | 3 | 1 |
| trucks | 0 | 0 | 0 | | | | | 1 | | | | |
| PH Trucks | 0 | 6 | 5 | 2 | 0 | 3 | 8 | 2 | 0 | 0 | 0 | 0 |
| PH All Traffic | 6 | 99 | 112 | 157 | 8 | 78 | 188 | 167 | 0 | 7 | 30 | 7 |
| PH Truck % | | 5% | | | 2% | | | 3% | | | 0% | |

## *Turning Movement Worksheet*

Project: 2890
Intersection: ORE 34/Cedar St.
Count Date: 12/2/98
Wed

Count Time: 4-6 p.m.
Peak Hour: 4:30-5:30
PHF: 0.82

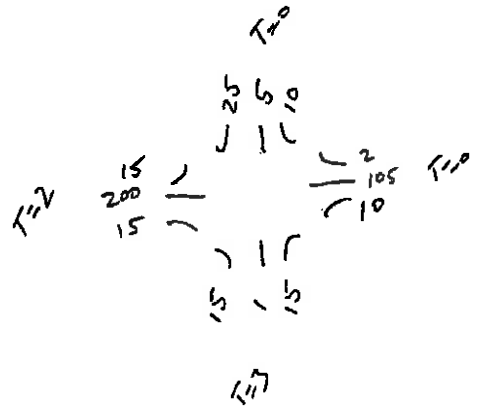



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left 1 | Through 2 | Right 3 | Left 4 | Through 5 | Right 6 | Left 7 | Through 8 | Right 9 | Left 10 | Through 11 | Right 12 |
| 4:00-4:15 | 10 | 4 | 33 | 14 | 52 | 1 | | | 6 | 10 | 74 | 13 |
| trucks | | | | | | | | | | | | |
| 4:15-4:30 | 5 | 0 | 13 | 15 | 46 | 0 | 0 | 3 | 0 | 3 | 49 | 4 |
| trucks | | | | | 1 | | | | | | | |
| 4:30-4:45 | 10 | 3 | 22 | 15 | 47 | 0 | 0 | 2 | 4 | 3 | 69 | 9 |
| trucks | | | | | | | | | | | 1 | |
| 4:45-5:00 | 3 | 0 | 17 | 10 | 50 | 0 | 1 | 3 | 4 | 7 | 64 | 9 |
| trucks | | | | | | | | | | | 2 | |
| 5:00-5:15 | 5 | 2 | 30 | 15 | 68 | 0 | 0 | 0 | 8 | 4 | 77 | 8 |
| trucks | 1 | | | | | | | | | | 1 | 1 |
| 5:15-5:30 | 2 | 1 | 15 | 10 | 34 | 0 | 0 | 2 | 2 | 0 | 62 | 5 |
| trucks | | | | | | | | | | | | |
| 5:30-5:45 | 4 | 0 | 16 | 8 | 30 | 0 | 0 | 0 | 1 | 0 | 71 | 11 |
| trucks | | | | | | | | | | | 2 | |
| 6:00 | 5 | 1 | 13 | 9 | 33 | 0 | 0 | 0 | 2 | 1 | 59 | 6 |
| trucks | | | | | | | | | | | 1 | |
| PH Trucks | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 3 | 0 |
| PH All Traffic | 21 | 6 | 84 | 50 | 199 | | 1 | 7 | 18 | 14 | 275 | 41 |
| PH Truck % | | 1% | | | 0% | | | 0% | | | 1% | |

## *Turning Movement Worksheet*

Project: 2890
Intersection: ORE 34/Mill St.
Count Date: 12/2/98
Wed

Count Time: 4-6 pm
Peak Hour: 4:30-5:30
PHF: 0.91

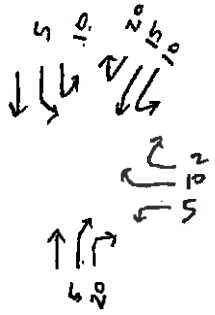


| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left 1 | Through 2 | Right 3 | Left 4 | Through 5 | Right 6 | Left 7 | Through 8 | Right 9 | Left 10 | Through 11 | Right 12 |
| 4:00-4:15 | 10 | 1 | 6 | 1 | 25 | 1 | 4 | 0 | 5 | 4 | 33 | 2 |
| trucks | | | | | | | | | | | 2 | |
| 4:15-4:30 | 2 | 2 | 1 | 1 | 20 | 1 | 0 | 1 | 5 | 2 | 40 | 5 |
| trucks | | | | | | | | | | | | |
| 4:30-4:45 | 4 | 2 | 2 | 2 | 16 | 0 | 1 | 0 | 4 | 1 | 41 | 9 |
| trucks | | | | | | 1 | | | | | 1 | 1 |
| 4:45-5:00 | 4 | 0 | 3 | 3 | 27 | 1 | 3 | 3 | 6 | 6 | 48 | 4 |
| trucks | | | 1 | | | | | | | | 4 | |
| 5:00-5:15 | 3 | 0 | 3 | | 29 | 1 | 3 | 0 | 5 | 5 | 54 | 3 |
| trucks | | | | | | | | | | | | |
| 5:15-5:30 | 2 | | 5 | 3 | 25 | 0 | 3 | 0 | 5 | | 45 | 3 |
| trucks | | | | | | | | | | | | |
| 5:30-5:45 | 7 | 0 | 2 | 4 | 22 | 0 | 3 | 0 | 6 | 4 | 46 | 3 |
| trucks | | | | | | | | | | | | |
| 6:00 | 4 | 0 | 0 | 3 | 21 | 1 | 2 | 0 | 4 | 1 | 49 | 3 |
| trucks | | | | | | | | | | | | |
| PH Trucks | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| PH All Traffic | 16 | 0 | 14 | 10 | 103 | 2 | 12 | 3 | 25 | 15 | 198 | 13 |
| PH Truck % | | 3% | | | 0% | | | 0% | | | 2% | |

## *Turning Movement Worksheet*

Project: 2890
Intersection: 101/Starr/Norwood
Count Date: 12/2/98
Wed

Count Time: 4-6 pm
Peak Hour: 4:15-5:15
PHF: 0.83



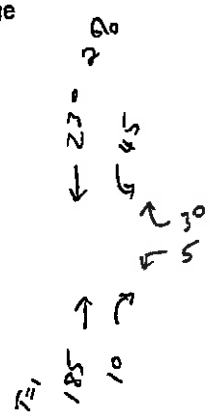
| | Northbound | | | Norwood | | | Starr | | | Southbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Throug | Starr 1 | orwoo 2 | SB101 4 | NB101 5 | Starr 6 | orwoo 7 | SB101 8 | NB101 9 | Starr S 10 | orwood 11 | hroug |
| 4:00-4:15 trucks | | 1 | 2 | | 2 | 1 | 1 | 3 | 5 | 3 | 1 | |
| 4:15-4:30 trucks | | 2 | 3 | 2 | 1 | | 2 | 5 | 2 | 4 | 0 | |
| 4:30-4:45 trucks | | 2 | 5 | 1 | 4 | | 1 | 2 | 6 | 1 | 3 | |
| 4:45-5:00 trucks | | 1 | 7 | 1 | 2 | 1 | 2 | 6 | 7 | 3 | 0 | |
| 5:00-5:15 trucks | | 1 | 3 | 2 | 1 | 1 | 3 | 2 | 7 | 0 | 1 | |
| 5:15-5:30 trucks | | 1 | | 1 | 1 | 3 | 1 | 3 | 2 | 3 | 6 | |
| 5:30-5:45 trucks | | 1 | | | | | | 3 | 2 | | 1 | |
| 5:45-6:00 trucks | | | 2 | | 1 | | 1 | 3 | 3 | | | |

| | | | | |
|---|---|---|---|---|
| PH Trucks | 0 | | | |
| PH All Traffic | | | | |
| PH Truck % | 0% | 0% | 0% | 0% |

## *Turning Movement Worksheet*

Project: 2890
Intersection: US 101/Range
Count Date: 12/2/98
Wed

Count Time: 7-9 a.m.
Peak Hour: ~~4:45-5:45~~ 4-5
PHF: ~~.000~~ .90



| | Northbound | | | Westbound | | | Southbound | | | Eastbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left 1 | Thru 2 | Right 3 | Left 4 | hroug 5 | Right 6 | Left 7 | hroug 8 | Right 9 | Left 10 | hroug 11 | Right 12 |
| 4:00- 4:15 | truc | 44 | 2 | 1 | | 11 | 3 | 66 | | | | |
| | ks | 1 | | | | | 2 | | | | | |
| 4:15- 4:30 | truc | 41 | 3 | 0 | | 9 | 15 | 53 | | | | |
| | ks | | | | | | 1 | | | | | |
| 4:30- 4:45 | truc | 45 | 3 | 1 | | 7 | 17 | 67 | | | | |
| | ks | 1 | | | | | 1 | | | | | |
| 4:45- 5:00 | truc | 54 | 2 | 1 | | 4 | 8 | 43 | | | | |
| | ks | 2 | | | | | 1 | | | | | |
| 5:00- 5:15 | truc | 44 | 3 | 5 | | 3 | 4 | 70 | | | | |
| | ks | | | | | | | | | | | |
| 5:15- 5:30 | truc | 30 | | 1 | | 4 | 3 | 54 | | | | |
| | ks | 1 | | | | | | | | | | |
| 5:30- 5:45 | truc | 29 | 5 | 2 | | 9 | 11 | 47 | | | | |
| | ks | 1 | | | | | | 2 | | | | |
| 5:45- 6:00 | truc | 24 | 2 | 4 | | 5 | 17 | 41 | | | | |
| | ks | 2 | | | | | | | | | | |
| PH Trucks | | 1 | 0 | 0 | | 0 | 2 | 3 | | | | |
| PH All Traffic | | 185 | 10 | 3 | | 31 | 45 | 232 | | | | |
| PH Truck % | | 1% | 0% | 0% | | 0% | 4% | 1% | | | | |

# Existing Conditions Analysis Worksheets for

# Level of Service,
# Left-Turn Lane Warrants,
# Signal Warrants

April 30, 1999

Kittelson & Associates, Inc.
Project 2890

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Turning Movement Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 | | | | | | | | | | | | | |
| Base | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 | 1013 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 | 1013 |
| #2 US 101/Norwood/Starr | | | | | | | | | | | | | |
| Base | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 | 695 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 | 695 |
| #3 US 101/Range | | | | | | | | | | | | | |
| Base | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 | 555 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 | 555 |
| #4 Highway 34/Cedar | | | | | | | | | | | | | |
| Base | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| #5 Highway 34/Mill | | | | | | | | | | | | | |
| Base | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 | 640 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 | 640 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

| Intersection | Base LOS | Del/ Veh | V/ C | Future LOS | Del/ Veh | V/ C | Change in |
|---|---|---|---|---|---|---|---|
| # 1 US 101/ORE 34 | C | 18.0 | 0.353 | C | 18.0 | 0.353 | + 0.000 D/V |
| # 2 US 101/Norwood/Starr | B | 0.4 | 0.000 | B | 0.4 | 0.000 | + 0.000 V/C |
| # 3 US 101/Range | A | 0.7 | 0.000 | A | 0.7 | 0.000 | + 0.000 V/C |
| # 5 Highway 34/Mill | B | 1.9 | 0.000 | B | 1.9 | 0.000 | + 0.000 V/C |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

**Intersection #1 US 101/ORE 34**

| | | | |
|---|---|---|---|
| Cycle (sec): | 110 | Critical Vol./Cap. (X): | 0.353 |
| Loss Time (sec): | 12 (Y+R = 4 sec) | Average Delay (sec/veh): | 18.0 |
| Optimal Cycle: | 33 | Level Of Service: | C |

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 3 | 10 | 10 | 3 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 |
| Growth 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 |
| Initial Bse: | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 |
| User 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 |
| PHF Adj: | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| PHF Volume: | 1 | 224 | 120 | 182 | 203 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 1 | 224 | 120 | 182 | 203 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| PCE 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 |
| MLF Adj: | 1.00 | 1.05 | 1.05 | 1.00 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Final Vol.: | 1 | 235 | 126 | 182 | 213 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.79 | 0.79 | 0.79 | 0.82 | 0.82 | 0.83 |
| Lanes: | 1.00 | 1.30 | 0.70 | 1.00 | 1.99 | 0.01 | 0.37 | 0.59 | 0.04 | 0.96 | 0.04 | 1.00 |
| Final Sat.: | 1719 | 2238 | 1200 | 1703 | 3568 | 17 | 557 | 892 | 56 | 1492 | 57 | 1568 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.11 | 0.11 | 0.11 | 0.06 | 0.06 | 0.02 | 0.02 | 0.02 | 0.09 | 0.09 | 0.10 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.14 | 0.30 | 0.30 | 0.30 | 0.46 | 0.46 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| Volume/Cap: | 0.00 | 0.35 | 0.35 | 0.35 | 0.13 | 0.13 | 0.06 | 0.06 | 0.06 | 0.30 | 0.30 | 0.35 |
| Level Of Service Module: | | | | | | | | | | | | |
| Delay/Veh: | 26.4 | 19.7 | 19.7 | 19.5 | 11.0 | 11.0 | 18.2 | 18.2 | 18.2 | 19.7 | 19.7 | 20.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 26.4 | 19.7 | 19.7 | 19.5 | 11.0 | 11.0 | 18.2 | 18.2 | 18.2 | 19.7 | 19.7 | 20.1 |
| Queue: | 0 | 6 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 4 |







Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Detailed Computation Report
1994 HCM Operations Method
Base Volume Alternative

**Intersection #1 US 101/ORE 34**

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| HCM Ops Adjusted Lane Utilization Module: | | | | | | | | | | | | |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Lane Group: | L | RT | RT | L | RT | RT | LTR | LTR | LTR | LT | LT | R |
| #LnsInGrps: | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| HCM Ops Input Saturation Adj Module: | | | | | | | | | | | | |
| Lane Width: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| % Hev Veh: | | 5 | | | 6 | | | 0 | | | 3 | |
| Grade: | | 0% | | | 0% | | | 0% | | | 0% | |
| Parking/Hr: | | No | | | No | | | No | | | No | |
| Bus Stp/Hr: | | 0 | | | 0 | | | 0 | | | 0 | |
| Area Type: | < < < < < < < < < < < < < < < | | | | | | Other | > > > > > > > > > > > > > > > | | | | |
| Cnft Ped/Hr: | | 0 | | | 0 | | | 0 | | | 0 | |
| ExclusiveRT: | | Include | | | Include | | | Include | | | Include | |
| % RT Prtct: | | 0 | | | 0 | | | 0 | | | 0 | |
| HCM Ops f(rt) and f(lt) Adj Case Module: | | | | | | | | | | | | |
| f(rt) Case: | xxxx | 5 | 5 | xxxx | 5 | 5 | 7 | 7 | 7 | xxxx | xxxx | 2 |
| f(lt) Case: | 1 | xxxx | xxxx | 1 | xxxx | xxxx | 5 | 5 | 5 | 5 | 5 | xxxx |
| HCM Ops Saturation Adj Module: | | | | | | | | | | | | |
| Ln Wid 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 |
| Hev Veh Adj: | 0.95 | 0.95 | 0.95 | 0.94 | 0.94 | 0.94 | 1.00 | 1.00 | 1.00 | 0.97 | 0.97 | 0.97 |
| Grade 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 |
| Parking Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | xxxx | xxxx | 1.00 |
| Bus Stp Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | xxxx | xxxx | 1.00 |
| Area 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 |
| RT Adj: | xxxx | 0.95 | 0.95 | xxxx | 1.00 | 1.00 | 0.89 | 0.89 | 0.89 | xxxx | xxxx | 0.85 |
| LT Adj: | 0.95 | xxxx | xxxxx | 0.95 | xxxx | xxxxx | 0.89 | 0.89 | 0.89 | 0.84 | 0.84 | xxxxx |
| HCM Sat Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.79 | 0.79 | 0.79 | 0.82 | 0.82 | 0.83 |
| Usr Sat 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 |
| MLF Sat 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 |
| Fnl Sat Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.79 | 0.79 | 0.79 | 0.82 | 0.82 | 0.83 |
| Delay Adjustment Factor Module: | | | | | | | | | | | | |
| Coordinated: | < < < < < < < < < < < < < < < | | | | | | No | > > > > > > > > > > > > > > > | | | | |
| Signal Type: | < < < < < < < < < < < < | | | | | | Actuated | > > > > > > > > > > > > | | | | |
| DelAdjFctr: | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
1994 HCM Operations Method
Base Volume Alternative

Intersection #1 US 101/ORE 34

| Approach: | North | South | East | West |
|---|---|---|---|---|
| Cycle Length, C: | xxxxxx | xxxxxx | 110 | 110 |
| Actual Green Time Per Lane Group, G: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Effective Green Time Per Lane Group, g: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Opposing Effective Green Time, go: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Number Of Opposing Lanes, No: | xxxxxx | xxxxxx | 1 | 1 |
| Number Of Lanes In Lane Group, N: | xxxxxx | xxxxxx | 1 | 1 |
| Adjusted Left-Turn Flow Rate, Vlt: | xxxxxx | xxxxxx | 10 | 130 |
| Proportion of Left Turns in Lane Group, Plt: | xxxxxx | xxxxxx | 0.37 | 0.96 |
| Proportion of Left Turns in Opp Flow, Plto: | xxxxxx | xxxxxx | xxxxxx | 0.37 |
| Left Turns Per Cycle, LTC: | xxxxxx | xxxxxx | 0.31 | 3.97 |
| Adjusted Opposing Flow Rate, Vo: | xxxxxx | xxxxxx | 135 | 27 |
| Opposing Flow Per Lane Per Cycle, Volc: | xxxxxx | xxxxxx | 4.13 | 0.82 |
| Opposing Platoon Ratio, Rpo: | xxxxxx | xxxxxx | 1.00 | 1.00 |
| Lost Time Per Phase, tl: | xxxxxx | xxxxxx | 4.00 | 4.00 |
| Eff grn until arrival of left-turn car, gf: | xxxxxx | xxxxxx | 17.27 | 0.00 |
| Opposing Queue Ratio, qro: | xxxxxx | xxxxxx | 0.71 | 0.71 |
| Eff grn blocked by opposing queue, gq: | xxxxxx | xxxxxx | 2.33 | 0.00 |
| Eff grn while left turns filter thru, gu: | xxxxxx | xxxxxx | 14.72 | 31.99 |
| Max opposing cars arriving during gq-gf, n: | xxxxxx | xxxxxx | xxxxxx | 0.00 |
| Proportion of Opposing Thru & RT cars, ptho: | xxxxxx | xxxxxx | xxxxxx | 0.63 |
| Left-turn Saturation Factor, fs: | xxxxxx | xxxxxx | 0.79 | xxxxxx |
| Proportion of Left Turns in Shared Lane, pl: | xxxxxx | xxxxxx | 0.37 | 0.96 |
| Through-car Equivalents, el1: | xxxxxx | xxxxxx | 1.83 | 1.21 |
| Single Lane Through-car Equivalents, el2: | xxxxxx | xxxxxx | xxxxxx | 0.00 |
| Minimum Left Turn Adjustment Factor, fmin: | xxxxxx | xxxxxx | 0.09 | 0.12 |
| Single Lane Left Turn Adjustment Factor, fm: | xxxxxx | xxxxxx | 0.89 | 0.84 |
| Left Turn Adjustment Factor, flt: | xxxxxx | xxxxxx | 0.89 | 0.84 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 US 101/Norwood/Starr

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 |
| Growth 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 |
| Initial Bse: | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 |
| User 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 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 27 | 0 | 16 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 27 | 0 | 16 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | -4% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.96 | | xxxx | xxxx | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.04 | 0.00 | | xxxx | xxxx | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.30 | 0.80 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.00 | 1.20 | |
| Adj Vol.: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 22 | 0 | 13 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 376 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 691 | xxxx | 363 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1134 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 421 | xxxx | 907 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.99 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1134 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 419 | xxxx | 907 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.2 | xxxx | 4.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | - LTR | - RT | LT | - LTR | - RT | LT | - LTR | - RT | LT | - LTR | - RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 525 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.5 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | B | * |
| ApproachDel: | | 0.0 | | | 0.1 | | | 0.0 | | | 7.3 | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #3 US 101/Range**

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: A

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1! | 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 |
| Growth 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 |
| Initial Bse: | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 306 | 11 | 33 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 61 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 306 | 11 | 33 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 61 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.97 | | xxxx | xxxx | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.03 | 0.00 | | xxxx | xxxx | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| Adj Vol.: | 0 | 306 | 11 | 34 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 62 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 317 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 539 | xxxx | 311 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 516 | xxxx | 963 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.97 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 500 | xxxx | 963 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 7.4 | xxxx | 4.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 843 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.7 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | A | * |
| ApproachDel: | | 0.0 | | | 0.5 | | | 0.0 | | | 4.5 | |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #5 Highway 34/Mill**

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 1! | 0 | 0 | 0 | 0 | 0 | 1! | 0 | 0 | 1 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 |
| Growth 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 |
| Initial Bse: | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 |
| User 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 |
| PHF Adj: | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| PHF Volume: | 84 | 11 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 90 | 270 | 6 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 84 | 11 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 90 | 270 | 6 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.96 | | 0.00 | 0.91 | | 0.00 | 0.97 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.04 | 0.00 | | 0.09 | 0.00 | | 0.03 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 86 | 12 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 91 | 270 | 6 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 539 | 531 | 160 | 542 | 576 | 272 | 275 | xxxx | xxxxx | 208 | xxxx | xxxxx |
| Potent Cap.: | 516 | 574 | 1149 | 514 | 544 | 1008 | 1267 | xxxx | xxxxx | 1365 | xxxx | xxxxx |
| Adj Cap: | 0.92 | 0.93 | 1.00 | 0.92 | 0.93 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 475 | 533 | 1149 | 471 | 505 | 1008 | 1267 | xxxx | xxxxx | 1365 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 9.2 | 6.9 | 3.2 | 7.7 | 7.2 | 3.6 | 2.9 | xxxx | xxxxx | 2.8 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 527 | xxxxx | xxxx | 706 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 8.7 | xxxxx | xxxxx | 5.3 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 8.1 | | | 5.2 | | | 0.1 | | | 0.7 | |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Turning Movement Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 | | | | | | | | | | | | | |
| Base | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 | 1206 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 | 1206 |
| #2 US 101/Norwood/Starr | | | | | | | | | | | | | |
| Base | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 860 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 860 |
| #3 US 101/Range | | | | | | | | | | | | | |
| Base | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 | 715 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 | 715 |
| #4 Highway 34/Cedar | | | | | | | | | | | | | |
| Base | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 | 812 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 | 812 |
| #5 Highway 34/Mill | | | | | | | | | | | | | |
| Base | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 | 478 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 | 478 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

| Intersection | Base LOS | Base Del/ Veh | Base V/ C | Future LOS | Future Del/ Veh | Future V/ C | Change in |
|---|---|---|---|---|---|---|---|
| # 1 US 101/ORE 34 | C | 17.3 | 0.447 | C | 17.3 | 0.447 | + 0.000 D/V |
| # 2 US 101/Norwood/Starr | C | 0.6 | 0.000 | C | 0.6 | 0.000 | + 0.000 V/C |
| # 3 US 101/Range | A | 0.4 | 0.000 | A | 0.4 | 0.000 | + 0.000 V/C |
| # 4 Highway 34/Cedar | B | 1.3 | 0.000 | B | 1.3 | 0.000 | + 0.000 V/C |
| # 5 Highway 34/Mill | B | 0.8 | 0.000 | B | 0.8 | 0.000 | + 0.000 V/C |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

**Intersection #1 US 101/ORE 34**

| | | | |
|---|---|---|---|
| Cycle (sec): | 110 | Critical Vol./Cap. (X): | 0.447 |
| Loss Time (sec): | 12 (Y+R = 4 sec) | Average Delay (sec/veh): | 17.3 |
| Optimal Cycle: | 38 | Level Of Service: | C |

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| Control: | Protected | | | | Protected | | | | Permitted | | | | Permitted | | | |
| Rights: | Include | | | | Include | | | | Include | | | | Include | | | |
| Min. Green: | 3 | | 10 | 10 | 3 | | 10 | 10 | 5 | | 5 | 5 | 5 | | 5 | 5 |
| Lanes: | 1 | 0 | 1 | 1 0 | 1 | 0 | 1 | 1 0 | 0 | 0 | 1! | 0 0 | 0 | 1 | 0 | 0 1 |
| **Volume Module:** | | | | | | | | | | | | | | | | |
| Base Vol: | 5 | 195 | | 130 | 230 | 305 | | 1 | 5 | 30 | | 10 | 185 | 10 | | 100 |
| Growth 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 |
| Initial Bse: | 5 | 195 | | 130 | 230 | 305 | | 1 | 5 | 30 | | 10 | 185 | 10 | | 100 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | | 0.91 | 0.91 | 0.91 | | 0.91 | 0.91 | 0.91 | | 0.91 | 0.91 | 0.91 | | 0.91 |
| PHF Volume: | 5 | 214 | | 143 | 253 | 335 | | 1 | 5 | 33 | | 11 | 203 | 11 | | 110 |
| Reduct Vol: | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |
| Reduced Vol: | 5 | 214 | | 143 | 253 | 335 | | 1 | 5 | 33 | | 11 | 203 | 11 | | 110 |
| PCE 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 |
| MLF Adj: | 1.00 | 1.05 | | 1.05 | 1.00 | 1.05 | | 1.05 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| Final Vol.: | 5 | 225 | | 150 | 253 | 352 | | 1 | 5 | 33 | | 11 | 203 | 11 | | 110 |
| **Saturation Flow Module:** | | | | | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | | 1900 | 1900 | 1900 | | 1900 | 1900 | 1900 | | 1900 | 1900 | 1900 | | 1900 |
| Adjustment: | 0.90 | 0.90 | | 0.90 | 0.92 | 0.97 | | 0.97 | 0.84 | 0.84 | | 0.84 | 0.78 | 0.78 | | 0.83 |
| Lanes: | 1.00 | 1.20 | | 0.80 | 1.00 | 1.99 | | 0.01 | 0.10 | 0.68 | | 0.22 | 0.95 | 0.05 | | 1.00 |
| Final Sat.: | 1719 | 2041 | | 1361 | 1752 | 3679 | | 10 | 162 | 1069 | | 356 | 1414 | 77 | | 1583 |
| **Capacity Analysis Module:** | | | | | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.11 | | 0.11 | 0.14 | 0.10 | | 0.10 | 0.03 | 0.03 | | 0.03 | 0.14 | 0.14 | | 0.07 |
| Crit Moves: | | **** | | | **** | | | | | | | | | **** | | |
| Green/Cycle: | 0.03 | 0.25 | | 0.25 | 0.32 | 0.54 | | 0.54 | 0.32 | 0.32 | | 0.32 | 0.32 | 0.32 | | 0.32 |
| Volume/Cap: | 0.11 | 0.45 | | 0.45 | 0.45 | 0.18 | | 0.18 | 0.10 | 0.10 | | 0.10 | 0.45 | 0.45 | | 0.22 |
| **Level Of Service Module:** | | | | | | | | | | | | | | | | |
| Delay/Veh: | 33.8 | 22.9 | | 22.9 | 19.4 | 8.2 | | 8.2 | 16.9 | 16.9 | | 16.9 | 19.6 | 19.6 | | 17.6 |
| User DelAdj: | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 |
| AdjDel/Veh: | 33.8 | 22.9 | | 22.9 | 19.4 | 8.2 | | 8.2 | 16.9 | 16.9 | | 16.9 | 19.6 | 19.6 | | 17.6 |
| Queue: | 0 | 6 | | 4 | 6 | 5 | | 0 | 0 | 1 | | 0 | 5 | 0 | | 2 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Detailed Computation Report
1994 HCM Operations Method
Base Volume Alternative

**Intersection #1 US 101/ORE 34**

| Approach: | North Bound | | | | South Bound | | | | East Bound | | | | West Bound | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - R | L | - | T | - R | L | - | T | - R | L | - | T | - R |
| **HCM Ops Adjusted Lane Utilization Module:** | | | | | | | | | | | | | | | | |
| Lanes: | 1 | 0 | 1 | 1 0 | 1 | 0 | 1 | 1 0 | 0 | 0 | 1! | 0 0 | 0 | 1 | 0 | 0 1 |
| Lane Group: | L | | RT | RT | L | | RT | RT | LTR | | LTR | LTR | LT | | LT | R |
| #LnsInGrps: | 1 | | 2 | 2 | 1 | | 2 | 2 | 1 | | 1 | 1 | 1 | | 1 | 1 |
| **HCM Ops Input Saturation Adj Module:** | | | | | | | | | | | | | | | | |
| Lane Width: | 12 | | 12 | 12 | 12 | | 12 | 12 | 12 | | 12 | 12 | 12 | | 12 | 12 |
| % Hev Veh: | 5 | | | | 3 | | | | 0 | | | | 2 | | | |
| Grade: | 0% | | | | 0% | | | | 0% | | | | 0% | | | |
| Parking/Hr: | No | | | | No | | | | No | | | | No | | | |
| Bus Stp/Hr: | 0 | | | | 0 | | | | 0 | | | | 0 | | | |
| Area Type: | < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > | | | | | | | | | | | | | | | |
| Cnft Ped/Hr: | 0 | | | | 0 | | | | 0 | | | | 0 | | | |
| ExclusiveRT: | Include | | | | Include | | | | Include | | | | Include | | | |
| % RT Prtct: | 0 | | | | 0 | | | | 0 | | | | 0 | | | |
| **HCM Ops f(rt) and f(lt) Adj Case Module:** | | | | | | | | | | | | | | | | |
| f(rt) Case: | xxxx | 5 | | 5 | xxxx | 5 | | 5 | 7 | 7 | | 7 | xxxx | xxxx | | 2 |
| f(lt) Case: | 1 | xxxx | | xxxx | 1 | xxxx | | xxxx | 5 | 5 | | 5 | 5 | 5 | | xxxx |
| **HCM Ops Saturation Adj Module:** | | | | | | | | | | | | | | | | |
| Ln Wid 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 |
| Hev Veh Adj: | 0.95 | 0.95 | | 0.95 | 0.97 | 0.97 | | 0.97 | 1.00 | 1.00 | | 1.00 | 0.98 | 0.98 | | 0.98 |
| Grade 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 |
| Parking Adj: | xxxx | 1.00 | | 1.00 | xxxx | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | xxxx | xxxx | | 1.00 |
| Bus Stp Adj: | xxxx | 1.00 | | 1.00 | xxxx | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | xxxx | xxxx | | 1.00 |
| Area 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 |
| RT Adj: | xxxx | 0.94 | | 0.94 | xxxx | 1.00 | | 1.00 | 0.87 | 0.87 | | 0.87 | xxxx | xxxx | | 0.85 |
| LT Adj: | 0.95 | xxxx | | xxxxx | 0.95 | xxxx | | xxxxx | 0.96 | 0.96 | | 0.96 | 0.80 | 0.80 | | xxxxx |
| HCM Sat Adj: | 0.90 | 0.90 | | 0.90 | 0.92 | 0.97 | | 0.97 | 0.84 | 0.84 | | 0.84 | 0.78 | 0.78 | | 0.83 |
| Usr Sat 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 |
| MLF Sat 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 |
| Fnl Sat Adj: | 0.90 | 0.90 | | 0.90 | 0.92 | 0.97 | | 0.97 | 0.84 | 0.84 | | 0.84 | 0.78 | 0.78 | | 0.83 |
| **Delay Adjustment Factor Module:** | | | | | | | | | | | | | | | | |
| Coordinated: | < < < < < < < < < < < < < < < No > > > > > > > > > > > > > > > | | | | | | | | | | | | | | | |
| Signal Type: | < < < < < < < < < < < < < Actuated > > > > > > > > > > > > > | | | | | | | | | | | | | | | |
| DelAdjFctr: | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | | 0.85 |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
1994 HCM Operations Method
Base Volume Alternative

**********

Intersection #1 US 101/ORE 34

**********

| Approach: | North | South | East | West |
|---|---|---|---|---|
| Cycle Length, C: | xxxxxx | xxxxxx | 110 | 110 |
| Actual Green Time Per Lane Group, G: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Effective Green Time Per Lane Group, g: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Opposing Effective Green Time, go: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Number Of Opposing Lanes, No: | xxxxxx | xxxxxx | 1 | 1 |
| Number Of Lanes In Lane Group, N: | xxxxxx | xxxxxx | 1 | 1 |
| Adjusted Left-Turn Flow Rate, Vlt: | xxxxxx | xxxxxx | 5 | 203 |
| Proportion of Left Turns in Lane Group, Plt: | xxxxxx | xxxxxx | 0.10 | 0.95 |
| Proportion of Left Turns in Opp Flow, Plto: | xxxxxx | xxxxxx | xxxxxx | 0.10 |
| Left Turns Per Cycle, LTC: | xxxxxx | xxxxxx | 0.15 | 6.20 |
| Adjusted Opposing Flow Rate, Vo: | xxxxxx | xxxxxx | 214 | 49 |
| Opposing Flow Per Lane Per Cycle, Volc: | xxxxxx | xxxxxx | 6.54 | 1.50 |
| Opposing Platoon Ratio, Rpo: | xxxxxx | xxxxxx | 1.00 | 1.00 |
| Lost Time Per Phase, tl: | xxxxxx | xxxxxx | 4.00 | 4.00 |
| Eff grn until arrival of left-turn car, gf: | xxxxxx | xxxxxx | 23.20 | 0.00 |
| Opposing Queue Ratio, qro: | xxxxxx | xxxxxx | 0.68 | 0.68 |
| Eff grn blocked by opposing queue, gq: | xxxxxx | xxxxxx | 6.06 | 0.45 |
| Eff grn while left turns filter thru, gu: | xxxxxx | xxxxxx | 12.21 | 34.96 |
| Max opposing cars arriving during gq-gf, n: | xxxxxx | xxxxxx | xxxxxx | 0.23 |
| Proportion of Opposing Thru & RT cars, ptho: | xxxxxx | xxxxxx | xxxxxx | 0.90 |
| Left-turn Saturation Factor, fs: | xxxxxx | xxxxxx | 0.74 | xxxxxx |
| Proportion of Left Turns in Shared Lane, pl: | xxxxxx | xxxxxx | 0.10 | 0.95 |
| Through-car Equivalents, el1: | xxxxxx | xxxxxx | 2.36 | 1.33 |
| Single Lane Through-car Equivalents, el2: | xxxxxx | xxxxxx | xxxxxx | 0.24 |
| Minimum Left Turn Adjustment Factor, fmin: | xxxxxx | xxxxxx | 0.06 | 0.11 |
| Single Lane Left Turn Adjustment Factor, fm: | xxxxxx | xxxxxx | 0.96 | 0.80 |
| Left Turn Adjustment Factor, flt: | xxxxxx | xxxxxx | 0.96 | 0.80 |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**********

Intersection #2 US 101/Norwood/Starr

**********

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C

**********

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 0 1 | 0 | 0 1 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 0 | 1! 0 | 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 |
| Growth 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 |
| Initial Bse: | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 44 | 0 | 22 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 44 | 0 | 22 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | -4% | | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.92 | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.06 | 0.02 | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.30 | 0.80 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.00 | 1.20 | |
| Adj Vol.: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 36 | 0 | 18 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 344 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 875 | xxxx | 331 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 330 | xxxx | 942 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.98 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 323 | xxxx | 942 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 12.9 | xxxx | 3.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 413 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.4 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | C | * |
| ApproachDel: | 0.0 | | | 0.1 | | | 0.0 | | | 9.9 | | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #3 US 101/Range**

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: A

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 1 0 | 0 | 1 | 0 0 | 0 | 0 | 0 0 | 0 | 0 | 1! 0 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| Growth 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 |
| Initial Bse: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 311 | 11 | 50 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 311 | 11 | 50 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 33 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | | 0% | | | 0% | | | 0% | | | 0% | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | xxxx | xxxx | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | xxxx | xxxx | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| Adj Vol.: | 0 | 311 | 11 | 51 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 34 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 322 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 750 | xxxx | 317 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 390 | xxxx | 957 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.95 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 368 | xxxx | 957 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.9 | xxxx | 3.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 779 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.9 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | A | * |
| ApproachDel: | | 0.0 | | | 0.4 | | | 0.0 | | | 4.8 | |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #4 Highway 34/Cedar**

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 1! 0 0 | 0 | 0 | 1! 0 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 |
| Growth 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 |
| Initial Bse: | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 |
| User 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 |
| PHF Adj: | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| PHF Volume: | 24 | 6 | 104 | 1 | 6 | 24 | 18 | 402 | 49 | 61 | 293 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 24 | 6 | 104 | 1 | 6 | 24 | 18 | 402 | 49 | 61 | 293 | 1 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | | 0% | | | 0% | | | 0% | | | 0% | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 25 | 6 | 104 | 1 | 6 | 25 | 18 | 402 | 49 | 62 | 293 | 1 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 815 | 800 | 427 | 854 | 824 | 293 | 294 | xxxx | xxxxx | 451 | xxxx | xxxxx |
| Potent Cap.: | 357 | 415 | 842 | 339 | 403 | 983 | 1242 | xxxx | xxxxx | 1045 | xxxx | xxxxx |
| Adj Cap: | 0.91 | 0.93 | 1.00 | 0.82 | 0.93 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 325 | 385 | 842 | 277 | 374 | 983 | 1242 | xxxx | xxxxx | 1045 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 12.0 | 9.5 | 4.9 | 13.1 | 9.8 | 3.8 | 2.9 | xxxx | xxxxx | 3.7 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 627 | xxxxx | xxxx | 697 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 7.3 | xxxxx | xxxxx | 5.4 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 6.4 | | | 5.3 | | | 0.1 | | | 0.6 | |

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City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**********

Intersection #5 Highway 34/Mill

**********

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B

**********

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! | 0 | 0 | 0 0 1! | 0 | 0 | 0 0 1! | 0 | 0 | 1 0 | 0 | 1 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 |
| Growth 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 |
| Initial Bse: | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 16 | 1 | 16 | 11 | 5 | 27 | 16 | 264 | 16 | 11 | 137 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 16 | 1 | 16 | 11 | 5 | 27 | 16 | 264 | 16 | 11 | 137 | 2 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.97 | | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.03 | 0.00 | | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 17 | 1 | 17 | 11 | 6 | 28 | 17 | 264 | 16 | 11 | 137 | 2 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 454 | 439 | 272 | 447 | 446 | 138 | 140 | xxxx | xxxxx | 280 | xxxx | xxxxx |
| Potent Cap.: | 578 | 642 | 1008 | 584 | 636 | 1178 | 1471 | xxxx | xxxxx | 1261 | xxxx | xxxxx |
| Adj Cap: | 0.95 | 0.98 | 1.00 | 0.97 | 0.98 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 551 | 628 | 1008 | 563 | 622 | 1178 | 1471 | xxxx | xxxxx | 1261 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 6.7 | 5.7 | 3.6 | 6.5 | 5.8 | 3.1 | 2.5 | xxxx | xxxxx | 2.9 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 709 | xxxxx | xxxx | 851 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 5.3 | xxxxx | xxxxx | 4.5 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | A | * | * | * | * | * | * | * |
| ApproachDel: | | 5.2 | | | 4.3 | | | 0.1 | | | 0.2 | |

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# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 25-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-ST |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | US 101/Starr-Norwood |
| **Conditions (yr, alt., etc.):** | Existing PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **NB** | **SB** |
|---|---|---|
| **Advancing Volume** | 310 | 490 |
| **Opposing Volume** | 475 | 310 |
| **Left-Turn Volume** | 0 | 15 |
| **%Left Turns (L)** | 0.0% | 3.1% |
| **Speed (mph)** | 60 | 60 |
| **Storage Probability** | 0.00000100 | 0.00000100 |
| **Warrant Utilization (3-veh)** | 0.0100 | 0.0100 |
| **4-vehicle** | 0.0316 | 0.0316 |
| **5-vehicle** | 0.0631 | 0.0631 |
| **6-vehicle** | 0.1000 | 0.1000 |
| **7-vehicle** | 0.1389 | 0.1389 |
| **8-vehicle** | 0.1778 | 0.1778 |
| **9-vehicle** | 0.2154 | 0.2154 |
| **10-vehicle** | 0.2512 | 0.2512 |
| **11-vehicle** | 0.2848 | 0.2848 |
| **12-vehicle** | 0.3162 | 0.3162 |

| **CALCULATIONS:** | **SB** |
|---|---|
| **Critical Gap (Gc)** | 5.0 |
| **Exit Time (Te)** | 1.9 |
| **Wait Time (Tw)** | 1.25 |
| **Manuever Time (T1)** | 3.0 |
| **Usable Gaps** | 132 |
| **Blocked Time/hr** | 718.3 |
| **Mean Headway (Ta)** | 7.35 |
| **Mean Arrival Rate** | 9.3 |
| **Mean Service Rate** | 960.6 |

**RESULTS:**

| | |
|---|---|
| **Utilization Factor** | 0.0097 |
| **LT Lane Warranted?** | NO |
| **Storage Length (ft)** | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 25-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-STA

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** US 101/Starr-Norwood
**Conditions (yr, alt., etc.):** Existing PM Peak

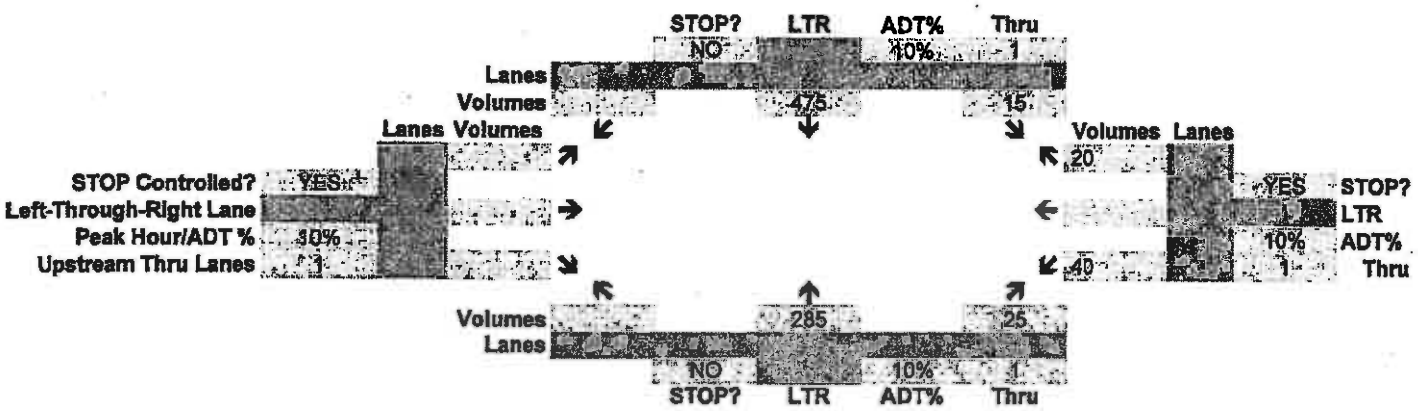
**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 800 vph |
| Highest minor approach: | 60 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | YES |
| Warrant Factor | 70% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 350 | 105 | | | 640 | 38 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 525 | 52.5 | | | 640 | 38 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 800 | 115 | | | 800 | 60 | NO |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | US 101/Starr-Norwood |
| Project Number: | 2890 | Conditions (year, alt.): | Existing PM Peak |
| Analyst: | JAG | Major Street Direction: | NS (NS or EW) |
| Date: | 25-Apr-99 | Major Street Speed: | 55 mph |
| Filename: | H:\PROJFILE\2890\QPRO\LT-STARR.W | Population<10,000? | NO (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 80% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 25-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-CE |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | ORE 34/Cedar |
| **Conditions (yr, alt., etc.):** | Existing PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 385 | 292 |
| **Opposing Volume** | 242 | 370 |
| **Left-Turn Volume** | 15 | 50 |
| **%Left Turns (L)** | 3.9% | 17.1% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 0.94 | 1.54 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 121 | 145 |
| **Blocked Time/hr** | 565.7 | 851.4 |
| **Mean Headway (Ta)** | 9.35 | 12.33 |
| **Mean Arrival Rate** | 6.6 | 17.3 |
| **Mean Service Rate** | 1011.4 | 916.2 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0065 | 0.0189 |
| **LT Lane Warranted?** | NO | NO |
| **Storage Length (ft)** | | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 25-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-CED

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Cedar
**Conditions (yr, alt., etc.):** Existing PM Peak

**GENERAL INPUT PARAMETERS:**

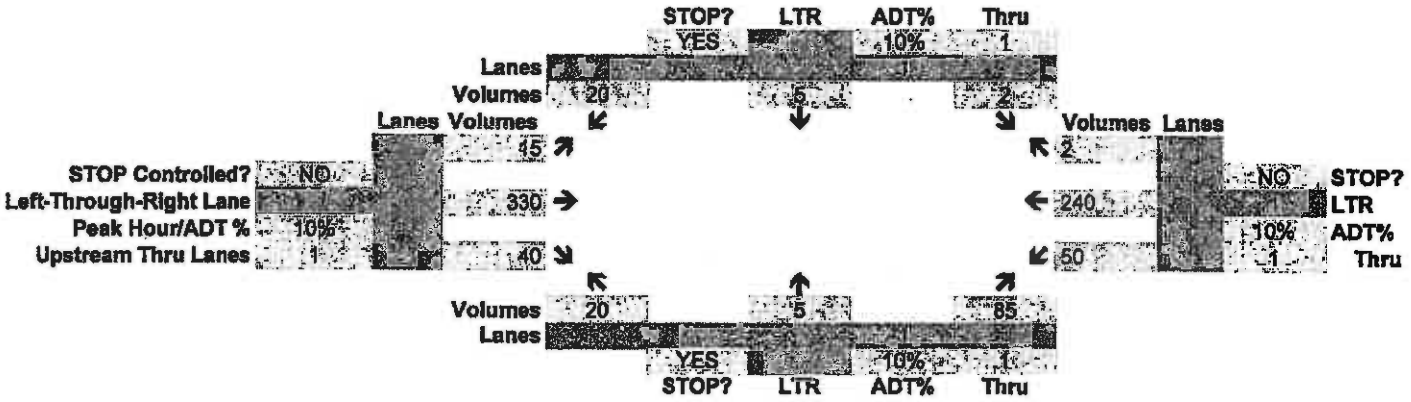
| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 677 vph |
| Highest minor approach: | 110 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | | | 541.6 | 66 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | | | 541.6 | 66 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 677 | 340 | 677 | 110 | 677 | 110 | YES |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 25-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\LT-CEDAR. |

| | | |
|---|---|---|
| Intersection: | ORE 34/Cedar | |
| Conditions (year, alt.): | Existing PM Peak | |
| Major Street Direction: | EW | (NS or EW) |
| Major Street Speed: | 40 | mph |
| Population<10,000? | NO | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 60% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 23-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\UNSIG2

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** US 101/Range Road
**Conditions (yr, alt., etc.):** Existing PM Peak

**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 680 vph |
| Highest minor approach: | 35 vph |
| Factor Peak Hour –> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | YES |
| Warrant Factor | 70% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 350 | 105 | 680 | | 544 | 21 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 525 | 52.5 | 680 | | 544 | 21 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 680 | 160 | 680 | | 680 | 35 | NO |

# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 23-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\UNSIG |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | US 101/Range Road |
| **Conditions (yr, alt., etc.):** | Existing PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **NB** | **SB** |
|---|---|---|
| **Advancing Volume** | 290 | 390 |
| **Opposing Volume** | 345 | 290 |
| **Left-Turn Volume** | 0 | 45 |
| **%Left Turns (L)** | 0.0% | 11.5% |
| **Speed (mph)** | 60 | 60 |
| **Storage Probability** | 0.00000100 | 0.00000100 |
| **Warrant Utilization (3-veh)** | 0.0100 | 0.0100 |
| **4-vehicle** | 0.0316 | 0.0316 |
| **5-vehicle** | 0.0631 | 0.0631 |
| **6-vehicle** | 0.1000 | 0.1000 |
| **7-vehicle** | 0.1389 | 0.1389 |
| **8-vehicle** | 0.1778 | 0.1778 |
| **9-vehicle** | 0.2154 | 0.2154 |
| **10-vehicle** | 0.2512 | 0.2512 |
| **11-vehicle** | 0.2848 | 0.2848 |
| **12-vehicle** | 0.3162 | 0.3162 |

| **CALCULATIONS:** | **SB** |
|---|---|
| **Critical Gap (Gc)** | 5.0 |
| **Exit Time (Te)** | 1.9 |
| **Wait Time (Tw)** | 1.16 |
| **Manuever Time (T1)** | 3.0 |
| **Usable Gaps** | 131 |
| **Blocked Time/hr** | 671.2 |
| **Mean Headway (Ta)** | 9.23 |
| **Mean Arrival Rate** | 19.8 |
| **Mean Service Rate** | 976.3 |

**RESULTS:**

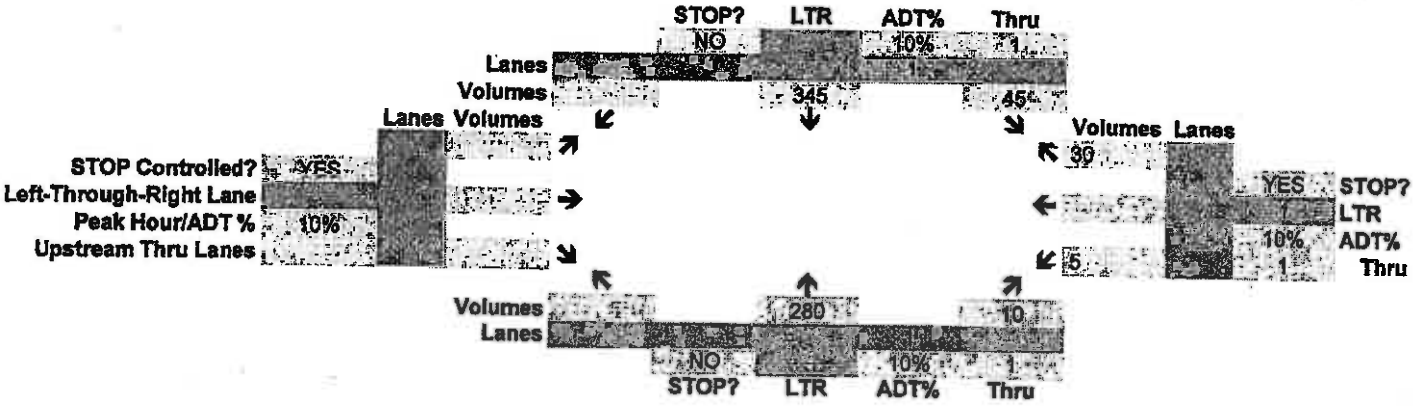
| | |
|---|---|
| **Utilization Factor** | 0.0203 |
| **LT Lane Warranted?** | YES |
| **Storage Length (ft)** | 75 |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *UNSIGNALIZED INTERSECTION ANALYSIS*

Project Name: Waldport TSP
Project Number: 2890
Analyst: JAG
Date: 23-Apr-99
Filename: H:\PROJFILE\2890\QPRO\UNSIG2.WB

| | | |
|---|---|---|
| Intersection: | US 101/Range Road | |
| Conditions (year, alt.): | Existing PM Peak | |
| Major Street Direction: | NS | (NS or EW) |
| Major Street Speed: | 55 | mph |
| Population<10,000? | NO | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 80% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 26-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-MIL |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | ORE 34/Mill-Crestline |
| **Conditions (yr, alt., etc.):** | Existing PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 270 | 137 |
| **Opposing Volume** | 127 | 255 |
| **Left-Turn Volume** | 15 | 10 |
| **%Left Turns (L)** | 5.6% | 7.3% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 0.47 | 1.00 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 82 | 121 |
| **Blocked Time/hr** | 308.6 | 593.6 |
| **Mean Headway (Ta)** | 13.33 | 26.28 |
| **Mean Arrival Rate** | 3.8 | 1.5 |
| **Mean Service Rate** | 1097.1 | 1002.1 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0034 | 0.0015 |
| **LT Lane Warranted?** | NO | NO |
| **Storage Length (ft)** | | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-MILL

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Mill-Crestline
**Conditions (yr, alt., etc.):** Existing PM Peak

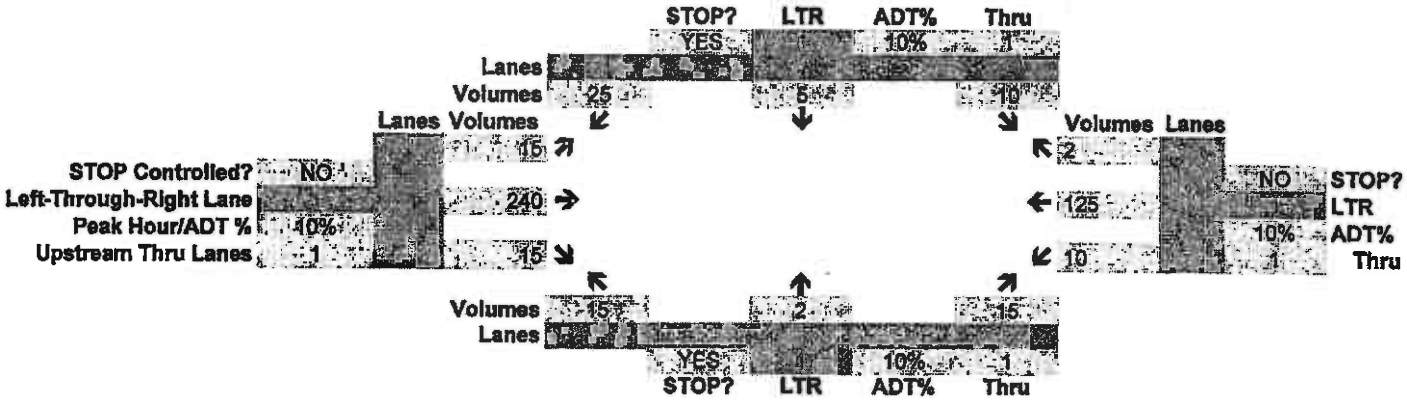
**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 407 vph |
| Highest minor approach: | 40 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | | | 325.6 | 24 | |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | | | 325.6 | 24 | |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 407 | NA | | | 407 | 40 | |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

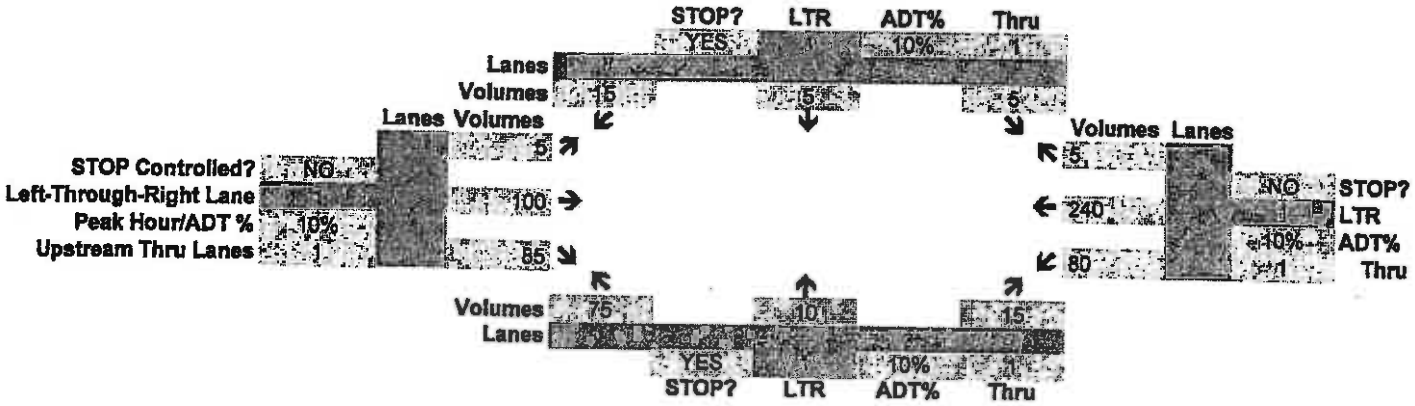
| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | ORE 34/Mill-Crestline |
| Project Number: | 2890 | Conditions (year, alt.): | Existing PM Peak |
| Analyst: | JAG | Major Street Direction: | EW (NS or EW) |
| Date: | 26-Apr-99 | Major Street Speed: | 40 mph |
| Filename: | H:\PROJFILE\2890\QPRO\LT-MILL.WB | Population<10,000? | NO (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 60% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 27-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\MILL-AM.WB |

| | | |
|---|---|---|
| Intersection: | ORE 34/Mill-Crestline | |
| Conditions (year, alt.): | Existing PM Peak | A-M |
| Major Street Direction: | EW | (NS or EW) |
| Major Street Speed: | 40 | mph |
| Population<10,000? | YES | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 80% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 27-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\MILL-A |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | ORE 34/Mill-Crestline |
| **Conditions (yr, alt., etc.):** | Existing ~~PM Peak~~ AM |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 190 | 325 |
| **Opposing Volume** | 245 | 185 |
| **Left-Turn Volume** | 5 | 80 |
| **%Left Turns (L)** | 2.6% | 24.6% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 0.96 | 0.70 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 123 | 104 |
| **Blocked Time/hr** | 572.7 | 439.3 |
| **Mean Headway (Ta)** | 18.95 | 11.08 |
| **Mean Arrival Rate** | 1.1 | 21.2 |
| **Mean Service Rate** | 1009.1 | 1053.6 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0011 | 0.0202 |
| **LT Lane Warranted?** | NO | YES |
| **Storage Length (ft)** | | 75 |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# Worksheets for Growth Forecasts, Trip Generation, Trip assignment

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

## Trip Generation Report

Forecast for

| Zone # | Subzone | Amount | Units | Rate In | Rate Out | Trips In | Trips Out | Total Trips | % Of Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Range Road D | 1.00 | New Trips | 125.00 | 150.00 | 125 | 150 | 275 | 44.4 |
| | Zone 1 Subtotal | | | | | 125 | 150 | 275 | 44.4 |
| 2 | Residential | 1.00 | New Trips | 65.00 | 40.00 | 65 | 40 | 105 | 16.9 |
| | Zone 2 Subtotal | | | | | 65 | 40 | 105 | 16.9 |
| 3 | | 1.00 | Newport Trips | 70.00 | 55.00 | 70 | 55 | 125 | 20.2 |
| | Zone 3 Subtotal | | | | | 70 | 55 | 125 | 20.2 |
| 4 | Yachats | 1.00 | New Trips | 40.00 | 30.00 | 40 | 30 | 70 | 11.3 |
| | Zone 4 Subtotal | | | | | 40 | 30 | 70 | 11.3 |
| 5 | Alsea | 1.00 | New Trips | 25.00 | 20.00 | 25 | 20 | 45 | 7.3 |
| | Zone 5 Subtotal | | | | | 25 | 20 | 45 | 7.3 |
| TOTAL | | | | | | 325 | 295 | 620 | 100.0 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

## Trip Distribution Report

Percent Of Trips

| Zone | To Gates 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | 0.0 | 22.0 | 40.0 | 22.0 | 16.0 |
| 2 | 50.0 | 0.0 | 25.0 | 12.0 | 13.0 |
| 3 | 75.0 | 25.0 | 0.0 | 0.0 | 0.0 |
| 4 | 75.0 | 25.0 | 0.0 | 0.0 | 0.0 |
| 5 | 80.0 | 20.0 | 0.0 | 0.0 | 0.0 |

Traffix 6.8.1511 (c) 1995 Dowling Assoc. Licensed to Kittelson, Portland, OR

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Turning Movement Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 | | | | | | | | | | | | | |
| Base | 6 | 234 | 156 | 276 | 366 | 1 | 6 | 36 | 12 | 222 | 12 | 120 | 1447 |
| Added | 0 | 60 | 59 | 14 | 41 | 0 | 0 | 0 | 0 | 37 | 0 | 10 | 221 |
| Total | 6 | 294 | 215 | 290 | 407 | 1 | 6 | 36 | 12 | 259 | 12 | 130 | 1668 |
| #2 US 101/Norwood/Starr | | | | | | | | | | | | | |
| Base | 0 | 342 | 30 | 18 | 570 | 0 | 0 | 0 | 0 | 48 | 0 | 24 | 1032 |
| Added | 0 | 119 | 6 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 |
| Total | 0 | 461 | 36 | 18 | 648 | 0 | 0 | 0 | 0 | 48 | 0 | 24 | 1235 |
| #3 US 101/Range | | | | | | | | | | | | | |
| Base | 0 | 336 | 12 | 54 | 414 | 0 | 0 | 0 | 0 | 6 | 0 | 36 | 858 |
| Added | 0 | 8 | 23 | 74 | 5 | 0 | 0 | 0 | 0 | 33 | 0 | 117 | 258 |
| Total | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 | 1116 |
| #4 Highway 34/Cedar | | | | | | | | | | | | | |
| Base | 24 | 6 | 102 | 1 | 6 | 24 | 18 | 396 | 48 | 60 | 288 | 1 | 974 |
| Added | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 73 | 0 | 1 | 47 | 0 | 124 |
| Total | 24 | 6 | 105 | 1 | 6 | 24 | 18 | 469 | 48 | 61 | 335 | 1 | 1098 |
| #5 Highway 34/Mill | | | | | | | | | | | | | |
| Base | 18 | 1 | 18 | 12 | 6 | 30 | 18 | 288 | 18 | 12 | 150 | 2 | 574 |
| Added | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 75 | 1 | 3 | 46 | 0 | 129 |
| Total | 20 | 1 | 21 | 12 | 6 | 30 | 18 | 363 | 19 | 15 | 196 | 2 | 703 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

| Intersection | Base LOS | Base Del/ Veh | Base V/ C | Future LOS | Future Del/ Veh | Future V/ C | Change in |
|---|---|---|---|---|---|---|---|
| # 1 US 101/ORE 34 | C | 18.2 | 0.546 | C | 19.2 | 0.637 | + 1.021 D/V |
| # 2 US 101/Norwood/Starr | C | 0.8 | 0.000 | D | 1.0 | 0.000 | + 0.000 V/C |
| # 3 US 101/Range | B | 0.5 | 0.000 | C | 1.8 | 0.000 | + 0.000 V/C |
| # 4 Highway 34/Cedar | B | 1.6 | 0.000 | C | 1.7 | 0.000 | + 0.000 V/C |
| # 5 Highway 34/Mill | B | 0.9 | 0.000 | B | 0.9 | 0.000 | + 0.000 V/C |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

Intersection #1 US 101/ORE 34

Cycle (sec): 110 Critical Vol./Cap. (X): 0.637
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 19.2
Optimal Cycle: 53 Level Of Service: C

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 3 | 10 | 10 | 3 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 6 | 234 | 156 | 276 | 366 | 1 | 6 | 36 | 12 | 222 | 12 | 120 |
| Added Vol: | 0 | 60 | 59 | 14 | 41 | 0 | 0 | 0 | 0 | 37 | 0 | 10 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 6 | 294 | 215 | 290 | 407 | 1 | 6 | 36 | 12 | 259 | 12 | 130 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 7 | 323 | 236 | 318 | 448 | 1 | 7 | 40 | 13 | 285 | 13 | 143 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 7 | 323 | 236 | 318 | 448 | 1 | 7 | 40 | 13 | 285 | 13 | 143 |
| PCE 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 |
| MLF Adj: | 1.00 | 1.05 | 1.05 | 1.00 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Final Vol.: | 7 | 339 | 248 | 318 | 470 | 1 | 7 | 40 | 13 | 285 | 13 | 143 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.90 | 0.90 | 0.90 | 0.92 | 0.97 | 0.97 | 0.80 | 0.80 | 0.80 | 0.74 | 0.74 | 0.83 |
| Lanes: | 1.00 | 1.16 | 0.84 | 1.00 | 1.99 | 0.01 | 0.12 | 0.66 | 0.22 | 0.96 | 0.04 | 1.00 |
| Final Sat.: | 1719 | 1965 | 1437 | 1752 | 3681 | 8 | 177 | 1014 | 329 | 1336 | 61 | 1583 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.17 | 0.17 | 0.18 | 0.13 | 0.13 | 0.04 | 0.04 | 0.04 | 0.21 | 0.21 | 0.09 |
| Crit Moves: | | **** | | **** | | | | | | | **** | |
| Green/Cycle: | 0.03 | 0.27 | 0.27 | 0.28 | 0.53 | 0.53 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| Volume/Cap: | 0.15 | 0.64 | 0.64 | 0.64 | 0.24 | 0.24 | 0.12 | 0.12 | 0.12 | 0.64 | 0.64 | 0.27 |
| Level Of Service Module: | | | | | | | | | | | | |
| Delay/Veh: | 33.9 | 23.9 | 23.9 | 24.1 | 9.1 | 9.1 | 16.4 | 16.4 | 16.4 | 22.0 | 22.0 | 17.3 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.9 | 23.9 | 23.9 | 24.1 | 9.1 | 9.1 | 16.4 | 16.4 | 16.4 | 22.0 | 22.0 | 17.3 |
| Queue: | 0 | 9 | 7 | 9 | 8 | 0 | 0 | 1 | 0 | 8 | 1 | 3 |

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Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 US 101/Norwood/Starr

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: D

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 0 | 342 | 30 | 18 | 570 | 0 | 0 | 0 | 0 | 48 | 0 | 24 |
| Added Vol: | 0 | 119 | 6 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 461 | 36 | 18 | 648 | 0 | 0 | 0 | 0 | 48 | 0 | 24 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 512 | 40 | 20 | 721 | 0 | 0 | 0 | 0 | 53 | 0 | 27 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 512 | 40 | 20 | 721 | 0 | 0 | 0 | 0 | 53 | 0 | 27 |
| Adjusted Volume Module: | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | -4% | | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.92 | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.06 | 0.02 | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.30 | 0.80 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.00 | 1.20 | |
| Adj Vol.: | 0 | 512 | 40 | 20 | 721 | 0 | 0 | 0 | 0 | 43 | 0 | 21 |
| Critical Gap Module: | | | | | | | | | | | | |
| MoveUp Time: | xxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 552 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1272 | xxxx | 532 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 936 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 194 | xxxx | 744 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.96 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 936 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 187 | xxxx | 744 |
| Level Of Service Module: | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.9 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 26.8 | xxxx | 5.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 249 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 21.2 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | D | * |
| ApproachDel: | 0.0 | | | 0.1 | | | 0.0 | | | 19.5 | | |

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$\frac{44}{249} = .26$

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Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #3 US 101/Range

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: C

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 0 | 0 | 0 | 1! 0 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 0 | 336 | 12 | 54 | 414 | 0 | 0 | 0 | 0 | 6 | 0 | 36 |
| Added Vol: | 0 | 8 | 23 | 74 | 5 | 0 | 0 | 0 | 0 | 33 | 0 | 117 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 382 | 38 | 142 | 465 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 382 | 38 | 142 | 465 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| Adjusted Volume Module: | | | | | | | | | | | | |
| Grade: | | 0% | | | 0% | | | 0% | | | 0% | |
| % Cycle/Cars: | 0.00 | | 0.99 | 0.00 | | 0.98 | xxxx | | xxxx | 0.00 | | 0.99 |
| % Truck/Comb: | 0.01 | | 0.00 | 0.02 | | 0.00 | xxxx | | xxxx | 0.01 | | 0.00 |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| Adj Vol.: | 0 | 382 | 38 | 143 | 465 | 0 | 0 | 0 | 0 | 44 | 0 | 171 |
| Critical Gap Module: | | | | | | | | | | | | |
| MoveUp Time: | xxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 420 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1008 | xxxx | 401 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1081 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 276 | xxxx | 867 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.82 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1081 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 226 | xxxx | 867 |
| Level Of Service Module: | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 19.7 | xxxx | 5.2 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 550 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.6 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | C | * |
| ApproachDel: | | 0.0 | | | 0.9 | | | 0.0 | | | 8.1 | |

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$\frac{215}{550} = .39$





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Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 Highway 34/Cedar

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: C

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 1! 0 0 | 0 | 0 | 1! 0 0 | 1 | 0 | 0 1 0 | 1 | 0 | 0 1 0 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 24 | 6 | 102 | 1 | 6 | 24 | 18 | 396 | 48 | 60 | 288 | 1 |
| Added Vol: | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 73 | 0 | 1 | 47 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 24 | 6 | 105 | 1 | 6 | 24 | 18 | 469 | 48 | 61 | 335 | 1 |
| User 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 |
| PHF Adj: | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| PHF Volume: | 29 | 7 | 128 | 1 | 7 | 29 | 22 | 571 | 59 | 74 | 409 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 29 | 7 | 128 | 1 | 7 | 29 | 22 | 571 | 59 | 74 | 409 | 1 |
| Adjusted Volume Module: | | | | | | | | | | | | |
| Grade: | | 0% | | | 0% | | | 0% | | | 0% | |
| % Cycle/Cars: | 0.00 | | 0.99 | 0.00 | | 0.99 | 0.00 | | 0.98 | 0.00 | | 0.98 |
| % Truck/Comb: | 0.01 | | 0.00 | 0.01 | | 0.00 | 0.02 | | 0.00 | 0.02 | | 0.00 |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | | 1.00 | 0.50 | | 1.00 | 0.50 | | 1.00 | 0.50 | | 1.00 |
| Trck/Cmb PCE: | 1.50 | | 2.00 | 1.50 | | 2.00 | 1.50 | | 2.00 | 1.50 | | 2.00 |
| Adj Vol.: | 29 | 7 | 129 | 1 | 7 | 29 | 22 | 571 | 59 | 75 | 409 | 1 |
| Critical Gap Module: | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 1125 | 1107 | 601 | 1174 | 1136 | 410 | 410 | xxxx | xxxxx | 630 | xxxx | xxxxx |
| Potent Cap.: | 236 | 286 | 687 | 221 | 277 | 859 | 1093 | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Adj Cap: | 0.87 | 0.89 | 1.00 | 0.73 | 0.89 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 205 | 256 | 687 | 162 | 247 | 859 | 1093 | xxxx | xxxxx | 859 | xxxx | xxxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| Stopped Del: | 20.5 | 14.5 | 6.4 | 22.5 | 15.0 | 4.3 | 3.4 | xxxx | xxxxx | 4.6 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | | LT - LTR - RT | | |
| Shared Cap.: | xxxx | 460 | xxxxx | xxxx | 523 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 12.1 | xxxxx | xxxxx | 7.4 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | C | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 9.3 | | | 7.1 | | | 0.1 | | | 0.7 | |

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$\frac{165}{460} = .36$

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Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 Highway 34/Mill

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L - T - R | | | L - T - R | | | L - T - R | | | L - T - R | | |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 1 0 0 1 0 | | |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 18 | 1 | 18 | 12 | 6 | 30 | 18 | 288 | 18 | 12 | 150 | 2 |
| Added Vol: | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 75 | 1 | 3 | 46 | 0 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 20 | 1 | 21 | 12 | 6 | 30 | 18 | 363 | 19 | 15 | 196 | 2 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 22 | 1 | 23 | 13 | 7 | 33 | 20 | 399 | 21 | 16 | 216 | 3 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 22 | 1 | 23 | 13 | 7 | 33 | 20 | 399 | 21 | 16 | 216 | 3 |
| Adjusted Volume Module: | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.97 | | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.03 | 0.00 | | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 22 | 1 | 23 | 13 | 7 | 33 | 20 | 399 | 21 | 16 | 216 | 3 |
| Critical Gap Module: | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| Capacity Module: | | | | | | | | | | | | |
| Cnflict Vol: | 682 | 663 | 409 | 674 | 672 | 217 | 219 | xxxx | xxxxx | 419 | xxxx | xxxxx |
| Potent Cap.: | 427 | 490 | 859 | 431 | 484 | 1075 | 1349 | xxxx | xxxxx | 1082 | xxxx | xxxxx |
| Adj Cap: | 0.93 | 0.97 | 1.00 | 0.95 | 0.97 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 398 | 473 | 859 | 408 | 468 | 1075 | 1349 | xxxx | xxxxx | 1082 | xxxx | xxxxx |
| Level Of Service Module: | | | | | | | | | | | | |
| Stopped Del: | 9.6 | 7.6 | 4.3 | 9.1 | 7.8 | 3.5 | 2.7 | xxxx | xxxxx | 3.4 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 547 | xxxxx | xxxx | 684 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 7.2 | xxxxx | xxxxx | 5.7 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 6.9 | | | 5.4 | | | 0.1 | | | 0.2 | |

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46/547 = .08





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City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Turning Movement By Zone Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 [Base(LOS=C,Del=18.2,V/C=0.546)] [Future(LOS=C,Del=19.2,V/C=0.637)] [+1.021 D/V] | | | | | | | | | | | | | |
| Base | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 | 1206 |
| Growth | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| PassBy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| InitBs | 6 | 234 | 156 | 276 | 366 | 1 | 6 | 36 | 12 | 222 | 12 | 120 | 1447 |
| Zn 1 | 0 | 60 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 111 |
| Zn 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 10 | 33 |
| Zn 3 | 0 | 0 | 0 | 14 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 |
| Zn 4 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Zn 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 14 |
| Added | 0 | 60 | 59 | 14 | 41 | 0 | 0 | 0 | 0 | 37 | 0 | 10 | 221 |
| Future | 6 | 294 | 215 | 290 | 407 | 1 | 6 | 36 | 12 | 259 | 12 | 130 | 1668 |
| UseAdj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total | 6 | 294 | 215 | 290 | 407 | 1 | 6 | 36 | 12 | 259 | 12 | 130 | 1668 |
| #2 US 101/Norwood/Starr [Base(LOS=C,Del=0.8,V/C=0.000)] [Future(LOS=D,Del=1.0,V/C=0.000)] [+0.000 V/C] | | | | | | | | | | | | | |
| Base | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 860 |
| Growth | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| PassBy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| InitBs | 0 | 342 | 30 | 18 | 570 | 0 | 0 | 0 | 0 | 48 | 0 | 24 | 1032 |
| Zn 1 | 0 | 111 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 117 |
| Zn 2 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Zn 3 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| Zn 4 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Zn 5 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Added | 0 | 119 | 6 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 |
| Future | 0 | 461 | 36 | 18 | 648 | 0 | 0 | 0 | 0 | 48 | 0 | 24 | 1235 |
| UseAdj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total | 0 | 461 | 36 | 18 | 648 | 0 | 0 | 0 | 0 | 48 | 0 | 24 | 1235 |

Traffix 6.8.1511 (c) 1995 Dowling Assoc. Licensed to Kittelson, Portland, OR

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **#3 US 101/Range** | | | | | | | | | | | | | |
| [Base(LOS=B,Del=0.5,V/C=0.000)] | | | | | | | [Future(LOS=C,Del=1.8,V/C=0.000)] | | | [+0.000 V/C] | | | |
| Base | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 | 715 |
| Growth | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| PassBy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| InitBs | 0 | 336 | 12 | 54 | 414 | 0 | 0 | 0 | 0 | 6 | 0 | 36 | 858 |
| Zn 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 117 | 150 |
| Zn 2 | 0 | 0 | 0 | 18 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Zn 3 | 0 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| Zn 4 | 0 | 8 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Zn 5 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Added | 0 | 8 | 23 | 74 | 5 | 0 | 0 | 0 | 0 | 33 | 0 | 117 | 258 |
| Future | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 | 1116 |
| UseAdj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 | 1116 |
| **#4 Highway 34/Cedar** | | | | | | | | | | | | | |
| [Base(LOS=B,Del=1.6,V/C=0.000)] | | | | | | | [Future(LOS=C,Del=1.7,V/C=0.000)] | | | [+0.000 V/C] | | | |
| Base | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 | 812 |
| Growth | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| PassBy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| InitBs | 24 | 6 | 102 | 1 | 6 | 24 | 18 | 396 | 48 | 60 | 288 | 1 | 974 |
| Zn 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 54 |
| Zn 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 33 | 0 | 34 |
| Zn 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 |
| Zn 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 8 |
| Zn 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 14 |
| Added | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 73 | 0 | 1 | 47 | 0 | 124 |
| Future | 24 | 6 | 105 | 1 | 6 | 24 | 18 | 469 | 48 | 61 | 335 | 1 | 1098 |
| UseAdj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total | 24 | 6 | 105 | 1 | 6 | 24 | 18 | 469 | 48 | 61 | 335 | 1 | 1098 |
| **#5 Highway 34/Mill** | | | | | | | | | | | | | |
| [Base(LOS=B,Del=0.9,V/C=0.000)] | | | | | | | [Future(LOS=B,Del=0.9,V/C=0.000)] | | | [+0.000 V/C] | | | |
| Base | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 | 478 |
| Growth | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| PassBy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| InitBs | 18 | 1 | 18 | 12 | 6 | 30 | 18 | 288 | 18 | 12 | 150 | 2 | 574 |
| Zn 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 57 |
| Zn 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 32 | 0 | 35 |
| Zn 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 14 |
| Zn 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 8 |
| Zn 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 14 | 0 | 16 |
| Added | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 75 | 1 | 3 | 46 | 0 | 129 |
| Future | 20 | 1 | 21 | 12 | 6 | 30 | 18 | 363 | 19 | 15 | 196 | 2 | 703 |
| UseAdj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total | 20 | 1 | 21 | 12 | 6 | 30 | 18 | 363 | 19 | 15 | 196 | 2 | 703 |

Future Conditions Analysis Worksheets for

Level of Service,
Left-Turn Lane Warrants,
Signal Warrants

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Turning Movement Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 | | | | | | | | | | | | | |
| Base | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 | 1013 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 | 1013 |
| #2 US 101/Norwood/Starr | | | | | | | | | | | | | |
| Base | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 | 695 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 | 695 |
| #3 US 101/Range | | | | | | | | | | | | | |
| Base | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 | 555 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 | 555 |
| #4 Highway 34/Cedar | | | | | | | | | | | | | |
| Base | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| #5 Highway 34/Mill | | | | | | | | | | | | | |
| Base | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 | 640 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 | 640 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

| Intersection | Base LOS | Base Del/ Veh | Base V/ C | Future LOS | Future Del/ Veh | Future V/ C | Change in |
|---|---|---|---|---|---|---|---|
| # 1 US 101/ORE 34 | C | 18.0 | 0.353 | C | 18.0 | 0.353 | + 0.000 D/V |
| # 2 US 101/Norwood/Starr | B | 0.4 | 0.000 | B | 0.4 | 0.000 | + 0.000 V/C |
| # 3 US 101/Range | A | 0.7 | 0.000 | A | 0.7 | 0.000 | + 0.000 V/C |
| # 5 Highway 34/Mill | B | 1.9 | 0.000 | B | 1.9 | 0.000 | + 0.000 V/C |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #1 US 101/ORE 34

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cycle (sec): | 110 | | | Critical Vol./Cap. (X): | | | 0.353 | | | | | | |
| Loss Time (sec): | 12 | (Y+R = 4 sec) | | Average Delay (sec/veh): | | | 18.0 | | | | | | |
| Optimal Cycle: | 33 | | | Level Of Service: | | | C | | | | | | |

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 3 | 10 | 10 | 3 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 |
| Growth 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 |
| Initial Bse: | 1 | 215 | 115 | 175 | 195 | 1 | 10 | 15 | 1 | 125 | 5 | 155 |
| User 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 |
| PHF Adj: | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| PHF Volume: | 1 | 224 | 120 | 182 | 203 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 1 | 224 | 120 | 182 | 203 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| PCE 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 |
| MLF Adj: | 1.00 | 1.05 | 1.05 | 1.00 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Final Vol.: | 1 | 235 | 126 | 182 | 213 | 1 | 10 | 16 | 1 | 130 | 5 | 161 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.79 | 0.79 | 0.79 | 0.82 | 0.82 | 0.83 |
| Lanes: | 1.00 | 1.30 | 0.70 | 1.00 | 1.99 | 0.01 | 0.37 | 0.59 | 0.04 | 0.96 | 0.04 | 1.00 |
| Final Sat.: | 1719 | 2238 | 1200 | 1703 | 3568 | 17 | 557 | 892 | 56 | 1492 | 57 | 1568 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.11 | 0.11 | 0.11 | 0.06 | 0.06 | 0.02 | 0.02 | 0.02 | 0.09 | 0.09 | 0.10 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.14 | 0.30 | 0.30 | 0.30 | 0.46 | 0.46 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 |
| Volume/Cap: | 0.00 | 0.35 | 0.35 | 0.35 | 0.13 | 0.13 | 0.06 | 0.06 | 0.06 | 0.30 | 0.30 | 0.35 |
| Level Of Service Module: | | | | | | | | | | | | |
| Delay/Veh: | 26.4 | 19.7 | 19.7 | 19.5 | 11.0 | 11.0 | 18.2 | 18.2 | 18.2 | 19.7 | 19.7 | 20.1 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 26.4 | 19.7 | 19.7 | 19.5 | 11.0 | 11.0 | 18.2 | 18.2 | 18.2 | 19.7 | 19.7 | 20.1 |
| Queue: | 0 | 6 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 4 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Detailed Computation Report
1994 HCM Operations Method
Base Volume Alternative

Intersection #1 US 101/ORE 34

| Approach: | North Bound | | | | | | South Bound | | | | | | East Bound | | | | | | West Bound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | | L | - | T | - | R | |
| HCM Ops Adjusted Lane Utilization Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Lanes: | 1 | 0 | 1 | 1 | 0 | | 1 | 0 | 1 | 1 | 0 | | 0 | 0 | 1! | 0 | 0 | | 0 | 1 | 0 | 0 | 1 | |
| Lane Group: | L | | RT | | RT | | L | | RT | | RT | | LTR | | LTR | | LTR | | LT | | LT | | R | |
| #LnsInGrps: | 1 | | 2 | | 2 | | 1 | | 2 | | 2 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | |
| HCM Ops Input Saturation Adj Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Lane Width: | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | | 12 | |
| % Hev Veh: | | | 5 | | | | | | 6 | | | | | | 0 | | | | | | 3 | | | |
| Grade: | | | 0% | | | | | | 0% | | | | | | 0% | | | | | | 0% | | | |
| Parking/Hr: | | | No | | | | | | No | | | | | | No | | | | | | No | | | |
| Bus Stp/Hr: | | | 0 | | | | | | 0 | | | | | | 0 | | | | | | 0 | | | |
| Area Type: | < < < < < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > > > > > | | | | | | | | | | | | | | | | | | | | | | | |
| Cnft Ped/Hr: | | | 0 | | | | | | 0 | | | | | | 0 | | | | | | 0 | | | |
| ExclusiveRT: | | | Include | | | | | | Include | | | | | | Include | | | | | | Include | | | |
| % RT Prtct: | | | 0 | | | | | | 0 | | | | | | 0 | | | | | | 0 | | | |
| HCM Ops f(rt) and f(lt) Adj Case Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| f(rt) Case: | xxxx | | 5 | | 5 | | xxxx | | 5 | | 5 | | 7 | | 7 | | 7 | | xxxx | | xxxx | | 2 | |
| f(lt) Case: | | 1 | xxxx | | xxxx | | | 1 | xxxx | | xxxx | | | 5 | 5 | | 5 | | | 5 | 5 | | xxxx | |
| HCM Ops Saturation Adj Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Ln Wid 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 | |
| Hev Veh Adj: | 0.95 | | 0.95 | | 0.95 | | 0.94 | | 0.94 | | 0.94 | | 1.00 | | 1.00 | | 1.00 | | 0.97 | | 0.97 | | 0.97 | |
| Grade 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 | |
| Parking Adj: | xxxx | | 1.00 | | 1.00 | | xxxx | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | xxxx | | xxxx | | 1.00 | |
| Bus Stp Adj: | xxxx | | 1.00 | | 1.00 | | xxxx | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | xxxx | | xxxx | | 1.00 | |
| Area 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 | |
| RT Adj: | xxxx | | 0.95 | | 0.95 | | xxxx | | 1.00 | | 1.00 | | 0.89 | | 0.89 | | 0.89 | | xxxx | | xxxx | | 0.85 | |
| LT Adj: | | 0.95 | xxxx | | xxxxx | | | 0.95 | xxxx | | xxxxx | | | 0.89 | 0.89 | | 0.89 | | | 0.84 | 0.84 | | xxxxx | |
| HCM Sat Adj: | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.94 | | 0.94 | | 0.79 | | 0.79 | | 0.79 | | 0.82 | | 0.82 | | 0.83 | |
| Usr Sat 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 | |
| MLF Sat 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 | |
| Fnl Sat Adj: | 0.90 | | 0.90 | | 0.90 | | 0.90 | | 0.94 | | 0.94 | | 0.79 | | 0.79 | | 0.79 | | 0.82 | | 0.82 | | 0.83 | |
| Delay Adjustment Factor Module: | | | | | | | | | | | | | | | | | | | | | | | | |
| Coordinated: | < < < < < < < < < < < < < < < < < < < No > > > > > > > > > > > > > > > > > > > | | | | | | | | | | | | | | | | | | | | | | | |
| Signal Type: | < < < < < < < < < < < < < < < < < < < Actuated > > > > > > > > > > > > > > > > > > > | | | | | | | | | | | | | | | | | | | | | | | |
| DelAdjFctr: | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | | 0.85 | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
1994 HCM Operations Method
Base Volume Alternative

Intersection #1 US 101/ORE 34

| Approach: | North | South | East | West |
|---|---|---|---|---|
| Cycle Length, C: | xxxxxx | xxxxxx | 110 | 110 |
| Actual Green Time Per Lane Group, G: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Effective Green Time Per Lane Group, g: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Opposing Effective Green Time, go: | xxxxxx | xxxxxx | 31.99 | 31.99 |
| Number Of Opposing Lanes, No: | xxxxxx | xxxxxx | 1 | 1 |
| Number Of Lanes In Lane Group, N: | xxxxxx | xxxxxx | 1 | 1 |
| Adjusted Left-Turn Flow Rate, Vlt: | xxxxxx | xxxxxx | 10 | 130 |
| Proportion of Left Turns in Lane Group, Plt: | xxxxxx | xxxxxx | 0.37 | 0.96 |
| Proportion of Left Turns in Opp Flow, Plto: | xxxxxx | xxxxxx | xxxxxx | 0.37 |
| Left Turns Per Cycle, LTC: | xxxxxx | xxxxxx | 0.31 | 3.97 |
| Adjusted Opposing Flow Rate, Vo: | xxxxxx | xxxxxx | 135 | 27 |
| Opposing Flow Per Lane Per Cycle, Volc: | xxxxxx | xxxxxx | 4.13 | 0.82 |
| Opposing Platoon Ratio, Rpo: | xxxxxx | xxxxxx | 1.00 | 1.00 |
| Lost Time Per Phase, tl: | xxxxxx | xxxxxx | 4.00 | 4.00 |
| Eff grn until arrival of left-turn car, gf: | xxxxxx | xxxxxx | 17.27 | 0.00 |
| Opposing Queue Ratio, qro: | xxxxxx | xxxxxx | 0.71 | 0.71 |
| Eff grn blocked by opposing queue, gq: | xxxxxx | xxxxxx | 2.33 | 0.00 |
| Eff grn while left turns filter thru, gu: | xxxxxx | xxxxxx | 14.72 | 31.99 |
| Max opposing cars arriving during gq-gf, n: | xxxxxx | xxxxxx | xxxxxx | 0.00 |
| Proportion of Opposing Thru & RT cars, ptho: | xxxxxx | xxxxxx | xxxxxx | 0.63 |
| Left-turn Saturation Factor, fs: | xxxxxx | xxxxxx | 0.79 | xxxxxx |
| Proportion of Left Turns in Shared Lane, pl: | xxxxxx | xxxxxx | 0.37 | 0.96 |
| Through-car Equivalents, el1: | xxxxxx | xxxxxx | 1.83 | 1.21 |
| Single Lane Through-car Equivalents, el2: | xxxxxx | xxxxxx | xxxxxx | 0.00 |
| Minimum Left Turn Adjustment Factor, fmin: | xxxxxx | xxxxxx | 0.09 | 0.12 |
| Single Lane Left Turn Adjustment Factor, fm: | xxxxxx | xxxxxx | 0.89 | 0.84 |
| Left Turn Adjustment Factor, flt: | xxxxxx | xxxxxx | 0.89 | 0.84 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 US 101/Norwood/Starr

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 | 0 1 0 | 0 | 1 | 0 0 0 | 0 | 0 | 0 0 0 | 0 | 0 | 1! 0 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 |
| Growth 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 |
| Initial Bse: | 0 | 325 | 25 | 5 | 300 | 0 | 0 | 0 | 0 | 25 | 0 | 15 |
| User 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 |
| PHF Adj: | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| PHF Volume: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 27 | 0 | 16 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 27 | 0 | 16 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | -4% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.96 | | xxxx | xxxx | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.04 | 0.00 | | xxxx | xxxx | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.30 | 0.80 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.00 | 1.20 | |
| Adj Vol.: | 0 | 349 | 27 | 5 | 323 | 0 | 0 | 0 | 0 | 22 | 0 | 13 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 376 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 691 | xxxx | 363 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1134 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 421 | xxxx | 907 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.99 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1134 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 419 | xxxx | 907 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.2 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.2 | xxxx | 4.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 525 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 7.5 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | B | * |
| ApproachDel: | 0.0 | | | 0.1 | | | 0.0 | | | 7.3 | | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #3 US 101/Range**

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: A

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 | 1 | 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 1! | 0 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 |
| Growth 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 |
| Initial Bse: | 0 | 275 | 10 | 30 | 175 | 0 | 0 | 0 | 0 | 10 | 0 | 55 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 306 | 11 | 33 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 61 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 306 | 11 | 33 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 61 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.97 | | xxxx | xxxx | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.03 | 0.00 | | xxxx | xxxx | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| Adj Vol.: | 0 | 306 | 11 | 34 | 194 | 0 | 0 | 0 | 0 | 11 | 0 | 62 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 317 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 539 | xxxx | 311 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 516 | xxxx | 963 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.97 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1211 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 500 | xxxx | 963 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 7.4 | xxxx | 4.0 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | A | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 843 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.7 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | A | * |
| ApproachDel: | | 0.0 | | | 0.5 | | | 0.0 | | | 4.5 | |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #5 Highway 34/Mill**

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 | 1! | 0 0 | 0 0 | 1! | 0 0 | 0 0 | 1! | 0 0 | 1 | 0 0 | 1 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 |
| Growth 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 |
| Initial Bse: | 75 | 10 | 15 | 5 | 5 | 15 | 5 | 100 | 85 | 80 | 240 | 5 |
| User 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 |
| PHF Adj: | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| PHF Volume: | 84 | 11 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 90 | 270 | 6 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 84 | 11 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 90 | 270 | 6 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.95 | | 0.00 | 0.96 | | 0.00 | 0.91 | | 0.00 | 0.97 | |
| % Truck/Comb: | 0.05 | 0.00 | | 0.04 | 0.00 | | 0.09 | 0.00 | | 0.03 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 86 | 12 | 17 | 6 | 6 | 17 | 6 | 112 | 96 | 91 | 270 | 6 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 539 | 531 | 160 | 542 | 576 | 272 | 275 | xxxx | xxxxx | 208 | xxxx | xxxxx |
| Potent Cap.: | 516 | 574 | 1149 | 514 | 544 | 1008 | 1267 | xxxx | xxxxx | 1365 | xxxx | xxxxx |
| Adj Cap: | 0.92 | 0.93 | 1.00 | 0.92 | 0.93 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 475 | 533 | 1149 | 471 | 505 | 1008 | 1267 | xxxx | xxxxx | 1365 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 9.2 | 6.9 | 3.2 | 7.7 | 7.2 | 3.6 | 2.9 | xxxx | xxxxx | 2.8 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 527 | xxxxx | xxxx | 706 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 8.7 | xxxxx | xxxxx | 5.3 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 8.1 | | | 5.2 | | | 0.1 | | | 0.7 | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Turning Movement Report

| Volume Type | Northbound Left | Thru | Right | Southbound Left | Thru | Right | Eastbound Left | Thru | Right | Westbound Left | Thru | Right | Total Volume |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 US 101/ORE 34 | | | | | | | | | | | | | |
| Base | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 | 1206 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 | 1206 |
| #2 US 101/Norwood/Starr | | | | | | | | | | | | | |
| Base | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 860 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 | 860 |
| #3 US 101/Range | | | | | | | | | | | | | |
| Base | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 | 715 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 | 715 |
| #4 Highway 34/Cedar | | | | | | | | | | | | | |
| Base | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 | 812 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 | 812 |
| #5 Highway 34/Mill | | | | | | | | | | | | | |
| Base | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 | 478 |
| Added | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 | 478 |





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

| Intersection | Base LOS | Del/ Veh | V/ C | Future LOS | Del/ Veh | V/ C | Change in |
|---|---|---|---|---|---|---|---|
| # 1 US 101/ORE 34 | C | 17.3 | 0.447 | C | 17.3 | 0.447 | + 0.000 D/V |
| # 2 US 101/Norwood/Starr | C | 0.6 | 0.000 | C | 0.6 | 0.000 | + 0.000 V/C |
| # 3 US 101/Range | A | 0.4 | 0.000 | A | 0.4 | 0.000 | + 0.000 V/C |
| # 4 Highway 34/Cedar | B | 1.3 | 0.000 | B | 1.3 | 0.000 | + 0.000 V/C |
| # 5 Highway 34/Mill | B | 0.8 | 0.000 | B | 0.8 | 0.000 | + 0.000 V/C |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #1 US 101/ORE 34

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cycle (sec): | 110 | | | Critical Vol./Cap. (X): | | | 0.447 | | | | | |
| Loss Time (sec): | 12 (Y+R = 4 sec) | | | Average Delay (sec/veh): | | | 17.3 | | | | | |
| Optimal Cycle: | 38 | | | Level Of Service: | | | C | | | | | |

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 3 | 10 | 10 | 3 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Volume Module: | | | | | | | | | | | | |
| Base Vol: | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 |
| Growth 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 |
| Initial Bse: | 5 | 195 | 130 | 230 | 305 | 1 | 5 | 30 | 10 | 185 | 10 | 100 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 5 | 214 | 143 | 253 | 335 | 1 | 5 | 33 | 11 | 203 | 11 | 110 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 5 | 214 | 143 | 253 | 335 | 1 | 5 | 33 | 11 | 203 | 11 | 110 |
| PCE 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 |
| MLF Adj: | 1.00 | 1.05 | 1.05 | 1.00 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Final Vol.: | 5 | 225 | 150 | 253 | 352 | 1 | 5 | 33 | 11 | 203 | 11 | 110 |
| Saturation Flow Module: | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 0.90 | 0.90 | 0.90 | 0.92 | 0.97 | 0.97 | 0.84 | 0.84 | 0.84 | 0.78 | 0.78 | 0.83 |
| Lanes: | 1.00 | 1.20 | 0.80 | 1.00 | 1.99 | 0.01 | 0.10 | 0.68 | 0.22 | 0.95 | 0.05 | 1.00 |
| Final Sat.: | 1719 | 2041 | 1361 | 1752 | 3679 | 10 | 162 | 1069 | 356 | 1414 | 77 | 1583 |
| Capacity Analysis Module: | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.11 | 0.11 | 0.14 | 0.10 | 0.10 | 0.03 | 0.03 | 0.03 | 0.14 | 0.14 | 0.07 |
| Crit Moves: | | **** | | **** | | | | | | | **** | |
| Green/Cycle: | 0.03 | 0.25 | 0.25 | 0.32 | 0.54 | 0.54 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| Volume/Cap: | 0.11 | 0.45 | 0.45 | 0.45 | 0.18 | 0.18 | 0.10 | 0.10 | 0.10 | 0.45 | 0.45 | 0.22 |
| Level Of Service Module: | | | | | | | | | | | | |
| Delay/Veh: | 33.8 | 22.9 | 22.9 | 19.4 | 8.2 | 8.2 | 16.9 | 16.9 | 16.9 | 19.6 | 19.6 | 17.6 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 33.8 | 22.9 | 22.9 | 19.4 | 8.2 | 8.2 | 16.9 | 16.9 | 16.9 | 19.6 | 19.6 | 17.6 |
| Queue: | 0 | 6 | 4 | 6 | 5 | 0 | 0 | 1 | 0 | 5 | 0 | 2 |







Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Detailed Computation Report
1994 HCM Operations Method
Base Volume Alternative

Intersection #1 US 101/ORE 34

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| HCM Ops Adjusted Lane Utilization Module: | | | | | | | | | | | | |
| Lanes: | 1 | 0 1 | 1 0 | 1 | 0 1 | 1 0 | 0 | 0 1! | 0 0 | 0 | 1 0 | 0 1 |
| Lane Group: | L | RT | | RT | L | RT | RT | LTR | LTR | LTR | LT | LT | R |
| #LnsInGrps: | 1 | 2 | | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| HCM Ops Input Saturation Adj Module: | | | | | | | | | | | | |
| Lane Width: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| % Hev Veh: | 5 | | | 3 | | | 0 | | | 2 | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| Parking/Hr: | No | | | No | | | No | | | No | | |
| Bus Stp/Hr: | 0 | | | 0 | | | 0 | | | 0 | | |
| Area Type: | < < < < < < < < < < < < < < < Other > > > > > > > > > > > > > > > | | | | | | | | | | | |
| Cnft Ped/Hr: | 0 | | | 0 | | | 0 | | | 0 | | |
| ExclusiveRT: | Include | | | Include | | | Include | | | Include | | |
| % RT Prtct: | 0 | | | 0 | | | 0 | | | 0 | | |
| HCM Ops f(rt) and f(lt) Adj Case Module: | | | | | | | | | | | | |
| f(rt) Case: | xxxx | 5 | 5 | xxxx | 5 | 5 | 7 | 7 | 7 | xxxx | xxxx | 2 |
| f(lt) Case: | 1 | xxxx | xxxx | 1 | xxxx | xxxx | 5 | 5 | 5 | 5 | 5 | xxxx |
| HCM Ops Saturation Adj Module: | | | | | | | | | | | | |
| Ln Wid 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 |
| Hev Veh Adj: | 0.95 | 0.95 | 0.95 | 0.97 | 0.97 | 0.97 | 1.00 | 1.00 | 1.00 | 0.98 | 0.98 | 0.98 |
| Grade 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 |
| Parking Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | xxxx | xxxx | 1.00 |
| Bus Stp Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | xxxx | xxxx | 1.00 |
| Area 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 |
| RT Adj: | xxxx | 0.94 | 0.94 | xxxx | 1.00 | 1.00 | 0.87 | 0.87 | 0.87 | xxxx | xxxx | 0.85 |
| LT Adj: | 0.95 | xxxx | xxxxx | 0.95 | xxxx | xxxxx | 0.96 | 0.96 | 0.96 | 0.80 | 0.80 | xxxxx |
| HCM Sat Adj: | 0.90 | 0.90 | 0.90 | 0.92 | 0.97 | 0.97 | 0.84 | 0.84 | 0.84 | 0.78 | 0.78 | 0.83 |
| Usr Sat 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 |
| MLF Sat 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 |
| Fnl Sat Adj: | 0.90 | 0.90 | 0.90 | 0.92 | 0.97 | 0.97 | 0.84 | 0.84 | 0.84 | 0.78 | 0.78 | 0.83 |
| Delay Adjustment Factor Module: | | | | | | | | | | | | |
| Coordinated: | < < < < < < < < < < < < < < No > > > > > > > > > > > > > > | | | | | | | | | | | |
| Signal Type: | < < < < < < < < < < < < Actuated > > > > > > > > > > > > | | | | | | | | | | | |
| DelAdjFctr: | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Detailed Computation Report (Permitted Left Turn Sat Adj)
1994 HCM Operations Method
Base Volume Alternative

**********

Intersection #1 US 101/ORE 34

**********

| Approach: | North | South | East | West |
|---|---|---|---|---|
| Cycle Length, C: | xxxxxx | xxxxxx | 110 | 110 |
| Actual Green Time Per Lane Group, G: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Effective Green Time Per Lane Group, g: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Opposing Effective Green Time, go: | xxxxxx | xxxxxx | 35.42 | 35.42 |
| Number Of Opposing Lanes, No: | xxxxxx | xxxxxx | 1 | 1 |
| Number Of Lanes In Lane Group, N: | xxxxxx | xxxxxx | 1 | 1 |
| Adjusted Left-Turn Flow Rate, Vlt: | xxxxxx | xxxxxx | 5 | 203 |
| Proportion of Left Turns in Lane Group, Plt: | xxxxxx | xxxxxx | 0.10 | 0.95 |
| Proportion of Left Turns in Opp Flow, Plto: | xxxxxx | xxxxxx | xxxxxx | 0.10 |
| Left Turns Per Cycle, LTC: | xxxxxx | xxxxxx | 0.15 | 6.20 |
| Adjusted Opposing Flow Rate, Vo: | xxxxxx | xxxxxx | 214 | 49 |
| Opposing Flow Per Lane Per Cycle, Volc: | xxxxxx | xxxxxx | 6.54 | 1.50 |
| Opposing Platoon Ratio, Rpo: | xxxxxx | xxxxxx | 1.00 | 1.00 |
| Lost Time Per Phase, tl: | xxxxxx | xxxxxx | 4.00 | 4.00 |
| Eff grn until arrival of left-turn car, gf: | xxxxxx | xxxxxx | 23.20 | 0.00 |
| Opposing Queue Ratio, qro: | xxxxxx | xxxxxx | 0.68 | 0.68 |
| Eff grn blocked by opposing queue, gq: | xxxxxx | xxxxxx | 6.06 | 0.45 |
| Eff grn while left turns filter thru, gu: | xxxxxx | xxxxxx | 12.21 | 34.96 |
| Max opposing cars arriving during gq-gf, n: | xxxxxx | xxxxxx | xxxxxx | 0.23 |
| Proportion of Opposing Thru & RT cars, ptho: | xxxxxx | xxxxxx | xxxxxx | 0.90 |
| Left-turn Saturation Factor, fs: | xxxxxx | xxxxxx | 0.74 | xxxxxx |
| Proportion of Left Turns in Shared Lane, pl: | xxxxxx | xxxxxx | 0.10 | 0.95 |
| Through-car Equivalents, el1: | xxxxxx | xxxxxx | 2.36 | 1.33 |
| Single Lane Through-car Equivalents, el2: | xxxxxx | xxxxxx | xxxxxx | 0.24 |
| Minimum Left Turn Adjustment Factor, fmin: | xxxxxx | xxxxxx | 0.06 | 0.11 |
| Single Lane Left Turn Adjustment Factor, fm: | xxxxxx | xxxxxx | 0.96 | 0.80 |
| Left Turn Adjustment Factor, flt: | xxxxxx | xxxxxx | 0.96 | 0.80 |

**********





Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**********

Intersection #2 US 101/Norwood/Starr

**********

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: C

**********

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 | 0 0 | 1 0 | 0 | 1 0 | 0 0 | 0 | 0 0 | 0 0 | 0 | 0 1! | 0 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 |
| Growth 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 |
| Initial Bse: | 0 | 285 | 25 | 15 | 475 | 0 | 0 | 0 | 0 | 40 | 0 | 20 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 44 | 0 | 22 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 44 | 0 | 22 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | | 0% | | | 0% | | | 0% | | | -4% | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.92 | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.06 | 0.02 | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.30 | 0.80 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.00 | 1.20 | |
| Adj Vol.: | 0 | 317 | 28 | 17 | 528 | 0 | 0 | 0 | 0 | 36 | 0 | 18 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 344 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 875 | xxxx | 331 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 330 | xxxx | 942 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.98 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1175 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 323 | xxxx | 942 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 12.9 | xxxx | 3.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT | LT | LTR | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 413 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.4 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | C | * |
| ApproachDel: | | 0.0 | | | 0.1 | | | 0.0 | | | 9.9 | |

**********

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #3 US 101/Range**

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: A

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 0 1 0 | | | 0 1 0 0 0 | | | 0 0 0 0 0 | | | 0 0 1! 0 0 | | |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| Growth 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 |
| Initial Bse: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 311 | 11 | 50 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 33 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 311 | 11 | 50 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 33 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | xxxx | xxxx | | 0.00 | 0.99 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | xxxx | xxxx | | 0.01 | 0.00 | |
| PCE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| Adj Vol.: | 0 | 311 | 11 | 51 | 383 | 0 | 0 | 0 | 0 | 6 | 0 | 34 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | xxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| Critical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | xxxx | xxxx | xxxxx | 322 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 750 | xxxx | 317 |
| Potent Cap.: | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 390 | xxxx | 957 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.95 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1204 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 368 | xxxx | 957 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 9.9 | xxxx | 3.9 |
| LOS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 779 | xxxxx |
| Shrd StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 4.9 | xxxxx |
| Shared LOS: | * | * | * | * | * | * | * | * | * | * | A | * |
| ApproachDel: | | 0.0 | | | 0.4 | | | 0.0 | | | 4.8 | |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

**Intersection #4 Highway 34/Cedar**

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 1 0 0 1 0 | | | 1 0 0 1 0 | | |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 |
| Growth 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 |
| Initial Bse: | 20 | 5 | 85 | 1 | 5 | 20 | 15 | 330 | 40 | 50 | 240 | 1 |
| User 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 |
| PHF Adj: | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| PHF Volume: | 24 | 6 | 104 | 1 | 6 | 24 | 18 | 402 | 49 | 61 | 293 | 1 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 24 | 6 | 104 | 1 | 6 | 24 | 18 | 402 | 49 | 61 | 293 | 1 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.01 | 0.00 | | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 25 | 6 | 104 | 1 | 6 | 25 | 18 | 402 | 49 | 62 | 293 | 1 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 815 | 800 | 427 | 854 | 824 | 293 | 294 | xxxx | xxxxx | 451 | xxxx | xxxxx |
| Potent Cap.: | 357 | 415 | 842 | 339 | 403 | 983 | 1242 | xxxx | xxxxx | 1045 | xxxx | xxxxx |
| Adj Cap: | 0.91 | 0.93 | 1.00 | 0.82 | 0.93 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 325 | 385 | 842 | 277 | 374 | 983 | 1242 | xxxx | xxxxx | 1045 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 12.0 | 9.5 | 4.9 | 13.1 | 9.8 | 3.8 | 2.9 | xxxx | xxxxx | 3.7 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 627 | xxxxx | xxxx | 697 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 7.3 | xxxxx | xxxxx | 5.4 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | B | * | * | * | * | * | * | * |
| ApproachDel: | | 6.4 | | | 5.3 | | | 0.1 | | | 0.6 | |

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Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
1998 Existing Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 Highway 34/Mill

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Stop Sign | | | Stop Sign | | | Uncontrolled | | | Uncontrolled | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Lanes: | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 0 0 1! 0 0 | | | 1 0 0 1 0 | | |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 |
| Growth 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 |
| Initial Bse: | 15 | 1 | 15 | 10 | 5 | 25 | 15 | 240 | 15 | 10 | 125 | 2 |
| User 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 |
| PHF Adj: | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| PHF Volume: | 16 | 1 | 16 | 11 | 5 | 27 | 16 | 264 | 16 | 11 | 137 | 2 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 16 | 1 | 16 | 11 | 5 | 27 | 16 | 264 | 16 | 11 | 137 | 2 |
| **Adjusted Volume Module:** | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.97 | | 0.00 | 0.99 | | 0.00 | 0.98 | | 0.00 | 0.98 | |
| % Truck/Comb: | 0.03 | 0.00 | | 0.01 | 0.00 | | 0.02 | 0.00 | | 0.02 | 0.00 | |
| PCE Adj: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | | 1.50 | 2.00 | |
| Adj Vol.: | 17 | 1 | 17 | 11 | 6 | 28 | 17 | 264 | 16 | 11 | 137 | 2 |
| **Critical Gap Module:** | | | | | | | | | | | | |
| MoveUp Time: | 3.4 | 3.3 | 2.6 | 3.4 | 3.3 | 2.6 | 2.1 | xxxx | xxxxx | 2.1 | xxxx | xxxxx |
| Critical Gp: | 6.5 | 6.0 | 5.5 | 6.5 | 6.0 | 5.5 | 5.0 | xxxx | xxxxx | 5.0 | xxxx | xxxxx |
| **Capacity Module:** | | | | | | | | | | | | |
| Cnflict Vol: | 454 | 439 | 272 | 447 | 446 | 138 | 140 | xxxx | xxxxx | 280 | xxxx | xxxxx |
| Potent Cap.: | 578 | 642 | 1008 | 584 | 636 | 1178 | 1471 | xxxx | xxxxx | 1261 | xxxx | xxxxx |
| Adj Cap: | 0.95 | 0.98 | 1.00 | 0.97 | 0.98 | 1.00 | 1.00 | xxxx | xxxxx | 1.00 | xxxx | xxxxx |
| Move Cap.: | 551 | 628 | 1008 | 563 | 622 | 1178 | 1471 | xxxx | xxxxx | 1261 | xxxx | xxxxx |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Stopped Del: | 6.7 | 5.7 | 3.6 | 6.5 | 5.8 | 3.1 | 2.5 | xxxx | xxxxx | 2.9 | xxxx | xxxxx |
| LOS by Move: | * | * | * | * | * | * | A | * | * | A | * | * |
| Movement: | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT | LT - | LTR - | RT |
| Shared Cap.: | xxxx | 709 | xxxxx | xxxx | 851 | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx |
| Shrd StpDel: | xxxxx | 5.3 | xxxxx | xxxxx | 4.5 | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx |
| Shared LOS: | * | B | * | * | A | * | * | * | * | * | * | * |
| ApproachDel: | | 5.2 | | | 4.3 | | | 0.1 | | | 0.2 | |

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# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 25-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\LT-ST |


**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169


| | |
|---|---|
| Intersection: | US 101/Starr-Norwood |
| Conditions (yr, alt., etc.): | Existing PM Peak |
| Storage Length/Vehicle: | 25 feet |

| INPUTS & WARRANTS: | NB | SB |
|---|---|---|
| Advancing Volume | 310 | 490 |
| Opposing Volume | 475 | 310 |
| Left-Turn Volume | 0 | 15 |
| %Left Turns (L) | 0.0% | 3.1% |
| Speed (mph) | 60 | 60 |
| Storage Probability | 0.00000100 | 0.00000100 |
| Warrant Utilization (3-veh) | 0.0100 | 0.0100 |
| 4-vehicle | 0.0316 | 0.0316 |
| 5-vehicle | 0.0631 | 0.0631 |
| 6-vehicle | 0.1000 | 0.1000 |
| 7-vehicle | 0.1389 | 0.1389 |
| 8-vehicle | 0.1778 | 0.1778 |
| 9-vehicle | 0.2154 | 0.2154 |
| 10-vehicle | 0.2512 | 0.2512 |
| 11-vehicle | 0.2848 | 0.2848 |
| 12-vehicle | 0.3162 | 0.3162 |

| CALCULATIONS: | SB |
|---|---|
| Critical Gap (Gc) | 5.0 |
| Exit Time (Te) | 1.9 |
| Wait Time (Tw) | 1.25 |
| Manuever Time (T1) | 3.0 |
| Usable Gaps | 132 |
| Blocked Time/hr | 718.3 |
| Mean Headway (Ta) | 7.35 |
| Mean Arrival Rate | 9.3 |
| Mean Service Rate | 960.6 |

**RESULTS:**

| | |
|---|---|
| Utilization Factor | 0.0097 |
| LT Lane Warranted? | NO |
| Storage Length (ft) | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 25-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-STA

**KITTELSON & ASSOCIATES, INC.**
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Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** US 101/Starr-Norwood
**Conditions (yr, alt., etc.):** Existing PM Peak

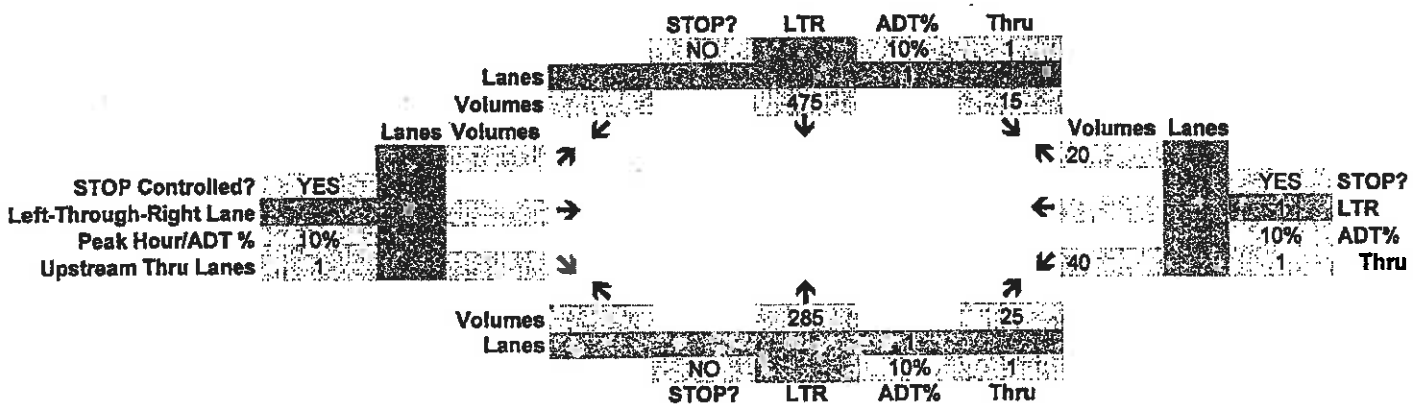
**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 800 vph |
| Highest minor approach: | 60 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | YES |
| Warrant Factor | 70% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 350 | 105 | 800 | 60 | 640 | 36 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 525 | 52.5 | 800 | 60 | 640 | 36 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 800 | 115 | 800 | 60 | 800 | 60 | NO |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | US 101/Starr-Norwood |
| Project Number: | 2890 | Conditions (year, alt.): | Existing PM Peak |
| Analyst: | JAG | Major Street Direction: | NS (NS or EW) |
| Date: | 25-Apr-99 | Major Street Speed: | 55 mph |
| Filename: | H:\PROJFILE\2890\QPRO\LT-STARR.W | Population<10,000? | NO (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 80% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 25-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-CE |


**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169


| | |
|---|---|
| **Intersection:** | ORE 34/Cedar |
| **Conditions (yr, alt., etc.):** | Existing PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 385 | 292 |
| **Opposing Volume** | 242 | 370 |
| **Left-Turn Volume** | 15 | 50 |
| **%Left Turns (L)** | 3.9% | 17.1% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 0.94 | 1.54 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 121 | 145 |
| **Blocked Time/hr** | 565.7 | 851.4 |
| **Mean Headway (Ta)** | 9.35 | 12.33 |
| **Mean Arrival Rate** | 6.6 | 17.3 |
| **Mean Service Rate** | 1011.4 | 916.2 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0065 | 0.0189 |
| **LT Lane Warranted?** | NO | NO |
| **Storage Length (ft)** | | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 25-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-CED

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Cedar
**Conditions (yr, alt., etc.):** Existing PM Peak

**GENERAL INPUT PARAMETERS:**

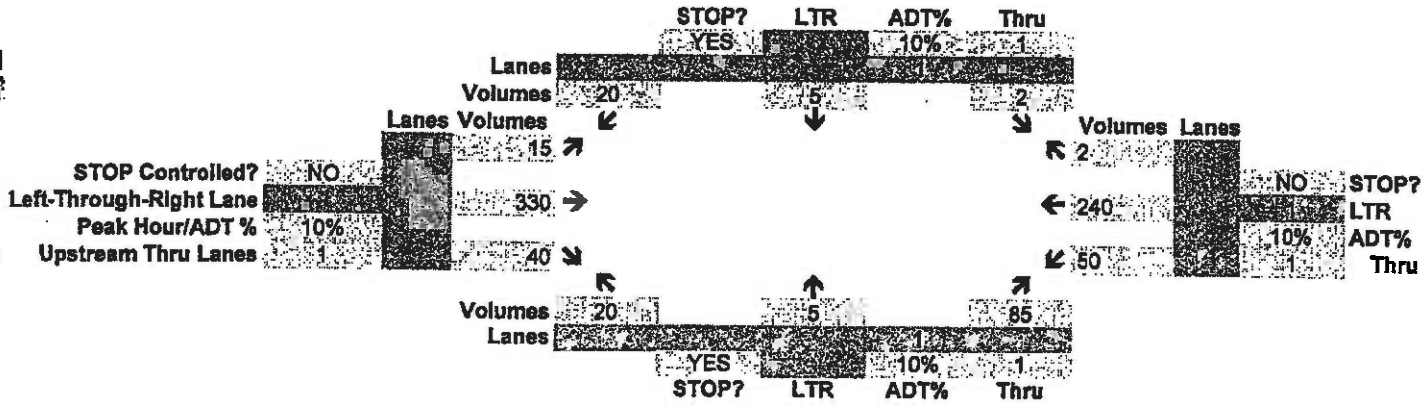
| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 677 vph |
| Highest minor approach: | 110 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | 677 | 110 | 541.6 | 66 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | 677 | 110 | 541.6 | 66 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 677 | 340 | 677 | 110 | 677 | 110 | NO |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 25-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\LT-CEDAR. |

| | | |
|---|---|---|
| Intersection: | ORE 34/Cedar | |
| Conditions (year, alt.): | Existing PM Peak | |
| Major Street Direction: | EW | (NS or EW) |
| Major Street Speed: | 40 | mph |
| Population<10,000? | NO | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 80% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-MILL

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Mill-Crestline
**Conditions (yr, alt., etc.):** Existing PM Peak

**GENERAL INPUT PARAMETERS:**

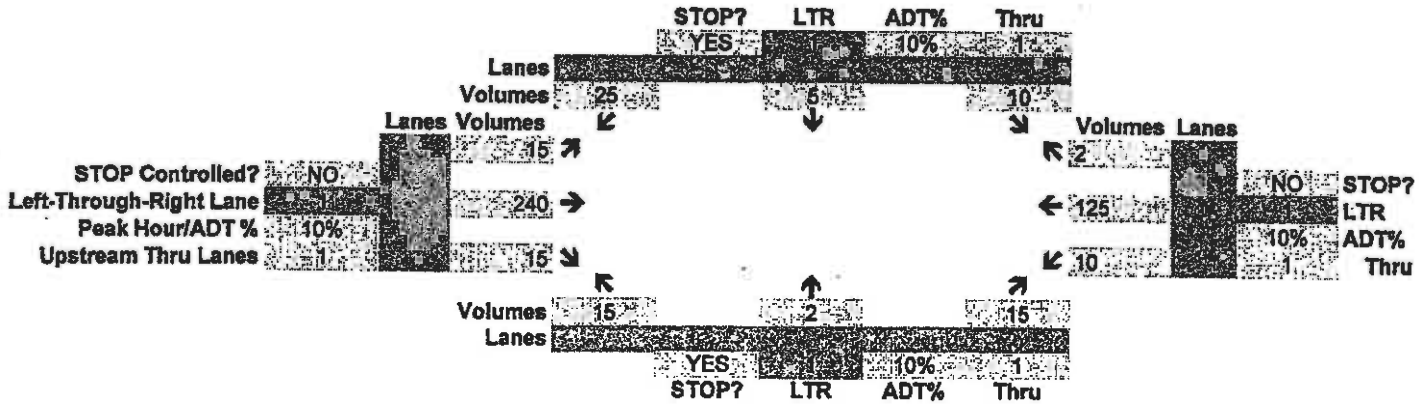
| | | |
|---|---|---|
| Number of lanes for moving traffic: | | |
| Major approach: | 1 | |
| Minor approach: | 1 | |
| Peak Hour Approach Volumes*: | | |
| Sum of major approaches: | 407 | vph |
| Highest minor approach: | 40 | vph |
| Factor Peak Hour --> 8th Highest Hour | | |
| Major approach: | 80% | (60-80% acceptable) |
| Minor approach: | 60% | (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO | |
| Warrant Factor | 100% | |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | 407 | 40 | 325.6 | 24 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | 407 | 40 | 325.6 | 24 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 407 | NA | 407 | 40 | 407 | 40 | NO |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

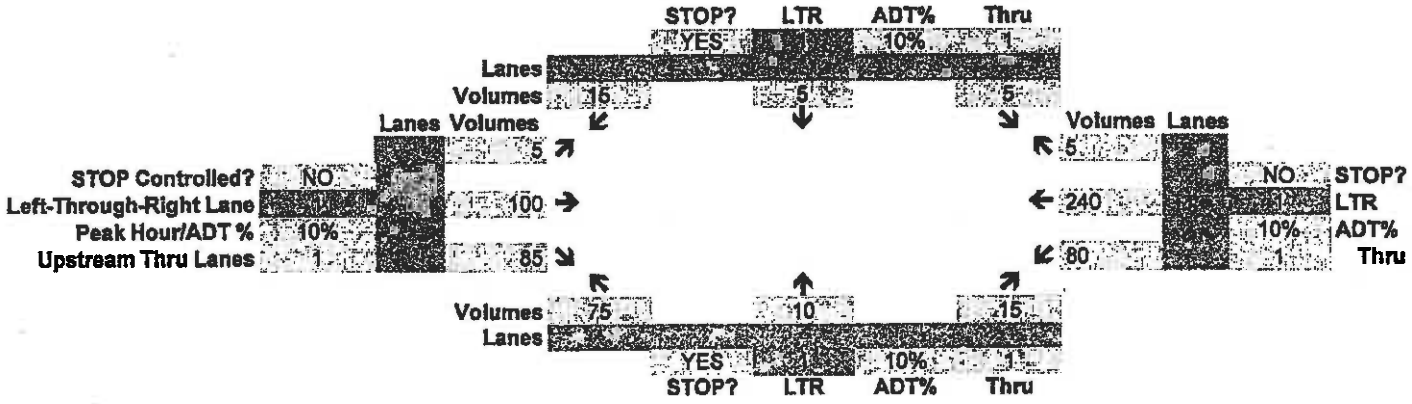
| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 26-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\LT-MILL.WB |

| | | |
|---|---|---|
| Intersection: | ORE 34/Mill-Crestline | |
| Conditions (year, alt.): | Existing PM Peak | |
| Major Street Direction: | EW | (NS or EW) |
| Major Street Speed: | 40 | mph |
| Population<10,000? | NO | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 80% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | ORE 34/Mill-Crestline |
| Project Number: | 2890 | Conditions (year, alt.): | Existing PM Peak A-M |
| Analyst: | JAG | Major Street Direction: | EW (NS or EW) |
| Date: | 27-Apr-99 | Major Street Speed: | 40 mph |
| Filename: | H:\PROJFILE\2890\QPRO\MILL-AM.WB | Population<10,000? | YES (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 80% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 27-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\MILL-A |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | ORE 34/Mill-Crestline |
| **Conditions (yr, alt., etc.):** | Existing ~~PM~~ Peak AM |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 190 | 325 |
| **Opposing Volume** | 245 | 185 |
| **Left-Turn Volume** | 5 | 80 |
| **%Left Turns (L)** | 2.6% | 24.6% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 0.96 | 0.70 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 123 | 104 |
| **Blocked Time/hr** | 572.7 | 439.3 |
| **Mean Headway (Ta)** | 18.95 | 11.08 |
| **Mean Arrival Rate** | 1.1 | 21.2 |
| **Mean Service Rate** | 1009.1 | 1053.6 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0011 | 0.0202 |
| **LT Lane Warranted?** | NO | YES |
| **Storage Length (ft)** | | 75 |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Unsignalized Method (Future Volume Alternative)

**********

ntersection #3 US 101/Range

**********

verage Delay (sec/veh): 1.8 Worst Case Level Of Service: C

**********

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| ontrol: | Uncontrolled | | | Uncontrolled | | | Stop Sign | | | Stop Sign | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| anes: | 0 0 | 0 | 1 0 | 1 0 | 1 | 0 0 | 0 0 | 0 | 0 0 0 | 0 0 | 1! | 0 0 |
| Volume Module: | | | | | | | | | | | | |
| ase Vol: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| rowth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| nitial Bse: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 8 | 23 | 74 | 5 | 0 | 0 | 0 | 0 | 33 | 0 | 117 |
| asserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| nitial Fut: | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 |
| User 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 |
| PF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Volume: | 0 | 382 | 39 | 142 | 466 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Final Vol.: | 0 | 382 | 39 | 142 | 466 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| djusted Volume Module: | | | | | | | | | | | | |
| Grade: | 0% | | | 0% | | | 0% | | | 0% | | |
| % Cycle/Cars: | 0.00 | 0.99 | | 0.00 | 0.98 | | xxxx | xxxx | | 0.00 | 0.99 | |
| Truck/Comb: | 0.01 | 0.00 | | 0.02 | 0.00 | | xxxx | xxxx | | 0.01 | 0.00 | |
| CE Adj: | xxxx | 1.00 | 1.00 | xxxx | 1.00 | 1.00 | 1.10 | 1.10 | 1.10 | xxxx | xxxx | xxxxx |
| Cycl/Car PCE: | 0.50 | 1.00 | | 0.50 | 1.00 | | xxxx | xxxx | | 0.50 | 1.00 | |
| Trck/Cmb PCE: | 1.50 | 2.00 | | 1.50 | 2.00 | | xxxx | xxxx | | 1.50 | 2.00 | |
| dj Vol.: | 0 | 382 | 39 | 144 | 466 | 0 | 0 | 0 | 0 | 44 | 0 | 171 |
| Critical Gap Module: | | | | | | | | | | | | |
| MoveUp Time: | xxxxx | xxxx | xxxxx | 2.1 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 3.4 | xxxx | 2.6 |
| ritical Gp: | xxxxx | xxxx | xxxxx | 5.0 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 6.5 | xxxx | 5.5 |
| Capacity Module: | | | | | | | | | | | | |
| nflict Vol: | xxxx | xxxx | xxxxx | 421 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 1009 | xxxx | 402 |
| otent Cap.: | xxxx | xxxx | xxxxx | 1080 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 276 | xxxx | 867 |
| Adj Cap: | xxxx | xxxx | xxxxx | 1.00 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 0.87 | xxxx | 1.00 |
| Move Cap.: | xxxx | xxxx | xxxxx | 1080 | xxxx | xxxxx | xxxx | xxxx | xxxxx | 239 | xxxx | 867 |
| Level Of Service Module: | | | | | | | | | | | | |
| Stopped Del: | xxxxx | xxxx | xxxxx | 3.8 | xxxx | xxxxx | xxxxx | xxxx | xxxxx | 18.4 | xxxx | 5.2 |
| OS by Move: | * | * | * | A | * | * | * | * | * | * | * | * |
| ovement: | LT | - LTR | - RT | LT | - LTR | - RT | LT | - LTR | - RT | LT | - LTR | - RT |
| ed Cap.: | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | xxxx | xxxxx | xxxx | 565 | xxxxx |
| d StpDel: | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | xxxx | xxxxx | xxxxx | 10.2 | xxxxx |
| hared LOS: | * | * | * | * | * | * | * | * | * | * | C | * |
| ApproachDel: | | 0.0 | | | 0.9 | | | 0.0 | | | 7.8 | |

Kittelson & Associates, Inc. -- Project 2890
City of Waldport TSP
2020 Forecast Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
1994 HCM Operations Method (Future Volume Alternative)

**********

Intersection #3 US 101/Range

**********

| | | | |
|---|---|---|---|
| ycle (sec): | 60 | Critical Vol./Cap. (X): | 0.453 |
| oss Time (sec): | 6 (Y+R = 4 sec) | Average Delay (sec/veh): | 7.3 |
| Optimal Cycle: | 24 | Level Of Service: | B |

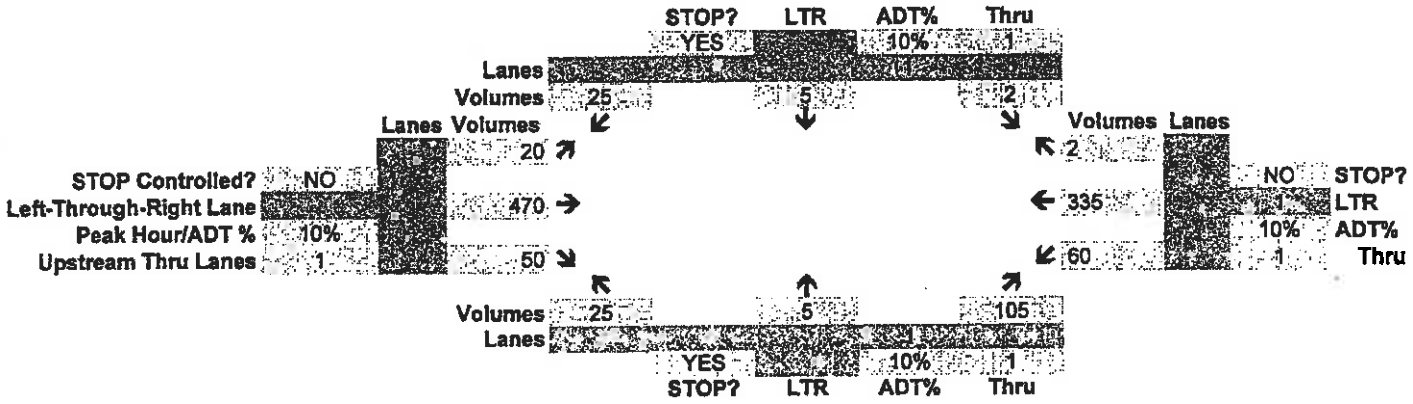
**********

| Approach: | North Bound | | | South Bound | | | East Bound | | | West Bound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement: | L | T | R | L | T | R | L | T | R | L | T | R |
| Control: | Protected | | | Protected | | | Permitted | | | Permitted | | |
| Rights: | Include | | | Include | | | Include | | | Include | | |
| Min. Green: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lanes: | 1 | 0 0 | 1 0 | 1 | 0 0 | 1 0 | 0 | 0 1 | 0 0 | 1 | 0 0 | 1 0 |
| **Volume Module:** | | | | | | | | | | | | |
| Base Vol: | 0 | 280 | 10 | 45 | 345 | 0 | 0 | 0 | 0 | 5 | 0 | 30 |
| Growth Adj: | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 |
| Initial Bse: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Added Vol: | 0 | 8 | 23 | 74 | 5 | 0 | 0 | 0 | 0 | 33 | 0 | 117 |
| PasserByVol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Initial Fut: | 0 | 344 | 35 | 128 | 419 | 0 | 0 | 0 | 0 | 39 | 0 | 153 |
| User 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 |
| PHF Adj: | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| PHF Volume: | 0 | 382 | 39 | 142 | 466 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| Reduct Vol: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced Vol: | 0 | 382 | 39 | 142 | 466 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| PCE 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 |
| MLF 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 |
| Final Vol.: | 0 | 382 | 39 | 142 | 466 | 0 | 0 | 0 | 0 | 43 | 0 | 170 |
| **Saturation Flow Module:** | | | | | | | | | | | | |
| Sat/Lane: | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Adjustment: | 1.00 | 0.99 | 0.99 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 0.85 |
| Lanes: | 1.00 | 0.91 | 0.09 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Final Sat.: | 1900 | 1707 | 174 | 1805 | 1900 | 0 | 0 | 1900 | 0 | 1843 | 0 | 1615 |
| **Capacity Analysis Module:** | | | | | | | | | | | | |
| Vol/Sat: | 0.00 | 0.22 | 0.22 | 0.08 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.11 |
| Crit Moves: | | **** | | **** | | | | | | | | **** |
| Green/Cycle: | 0.00 | 0.49 | 0.49 | 0.17 | 0.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.23 |
| Volume/Cap: | 0.00 | 0.45 | 0.45 | 0.45 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.45 |
| **Level Of Service Module:** | | | | | | | | | | | | |
| Delay/Veh: | 0.0 | 6.6 | 6.6 | 15.1 | 2.9 | 0.0 | 0.0 | 0.0 | 0.0 | 11.7 | 0.0 | 13.4 |
| User DelAdj: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| AdjDel/Veh: | 0.0 | 6.6 | 6.6 | 15.1 | 2.9 | 0.0 | 0.0 | 0.0 | 0.0 | 11.7 | 0.0 | 13.4 |
| Queue: | 0 | 4 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 3 |

**********

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | ORE 34/Cedar |
| Project Number: | 2890 | Conditions (year, alt.): | 20-Year Forecast PM Peak |
| Analyst: | JAG | Major Street Direction: | EW (NS or EW) |
| Date: | 26-Apr-99 | Major Street Speed: | 40 mph |
| Filename: | H:\PROJFILE\2890\QPRO\LT-CED-F.W | Population<10,000? | NO (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 80% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-CED

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Cedar
**Conditions (yr, alt., etc.):** 20-Year Forecast PM Peak

**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 937 vph |
| Highest minor approach: | 135 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | 937 | 135 | 749.6 | 81 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | 937 | 135 | 749.6 | 81 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 937 | 230 | 937 | 135 | 937 | 135 | NO |

# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 26-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-CE |

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Portland, Oregon 97205
(503) 228-5230
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| | |
|---|---|
| **Intersection:** | ORE 34/Cedar |
| **Conditions (yr, alt., etc.):** | 20-Year Forecast PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **EB** | **WB** |
|---|---|---|
| **Advancing Volume** | 540 | 397 |
| **Opposing Volume** | 337 | 520 |
| **Left-Turn Volume** | 20 | 60 |
| **%Left Turns (L)** | 3.7% | 15.1% |
| **Speed (mph)** | 40 | 40 |
| **Storage Probability** | 0.00000800 | 0.00000800 |
| **Warrant Utilization (3-veh)** | 0.0200 | 0.0200 |
| **4-vehicle** | 0.0532 | 0.0532 |
| **5-vehicle** | 0.0956 | 0.0956 |
| **6-vehicle** | 0.1414 | 0.1414 |
| **7-vehicle** | 0.1870 | 0.1870 |
| **8-vehicle** | 0.2306 | 0.2306 |
| **9-vehicle** | 0.2714 | 0.2714 |
| **10-vehicle** | 0.3092 | 0.3092 |
| **11-vehicle** | 0.3441 | 0.3441 |
| **12-vehicle** | 0.3761 | 0.3761 |

| **CALCULATIONS:** | **EB** | **WB** |
|---|---|---|
| **Critical Gap (Gc)** | 5.0 | 5.0 |
| **Exit Time (Te)** | 1.9 | 1.9 |
| **Wait Time (Tw)** | 1.38 | 2.33 |
| **Manuever Time (T1)** | 3.0 | 3.0 |
| **Usable Gaps** | 137 | 168 |
| **Blocked Time/hr** | 777.8 | 1178.3 |
| **Mean Headway (Ta)** | 6.67 | 9.07 |
| **Mean Arrival Rate** | 14.2 | 35.7 |
| **Mean Service Rate** | 940.7 | 807.2 |

**RESULTS:**

| | | |
|---|---|---|
| **Utilization Factor** | 0.0151 | 0.0442 |
| **LT Lane Warranted?** | NO | YES |
| **Storage Length (ft)** | | 75 |

Source: M.D. Harnelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-CED

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Cedar
**Conditions (yr, alt., etc.):** 20-Year Forecast PM Peak

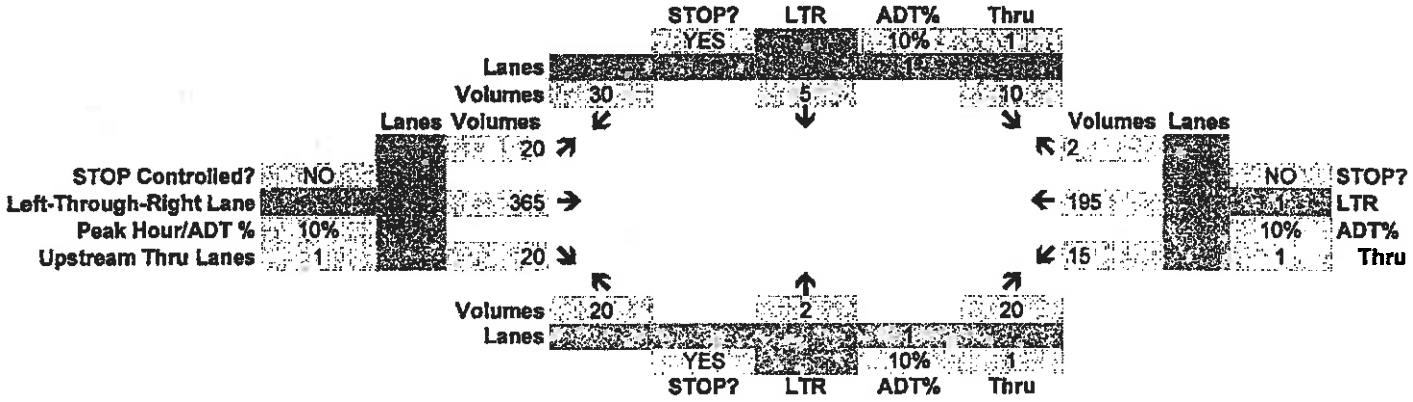
**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 937 vph |
| Highest minor approach: | 135 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | 937 | 135 | 749.6 | 81 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | 937 | 135 | 749.6 | 81 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 937 | 230 | 937 | 135 | 937 | 135 | NO |

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | | | |
|---|---|---|---|
| Project Name: | Waldport TSP | Intersection: | ORE 34/Mill-Crestline |
| Project Number: | 2890 | Conditions (year, alt.): | 20-Year Forecast PM Peak |
| Analyst: | JAG | Major Street Direction: | EW (NS or EW) |
| Date: | 26-Apr-99 | Major Street Speed: | 40 mph |
| Filename: | H:\PROJFILE\2890\QPRO\LT-MIL-F.WB | Population<10,000? | NO (YES or NO) |
| | | Factor Peak Hour -> 8th-Highest Hour: | |
| | | Major Street: | 80% |
| | | Minor Street: | 60% |
| | | Peak Hour Factor: | 90% |



# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-MIL-

**KITTELSON & ASSOCIATES, INC.**
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Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Mill-Crestline
**Conditions (yr, alt., etc.):** 20-Year Forecast PM Peak

**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 617 vph |
| Highest minor approach: | 45 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | NO |
| Warrant Factor | 100% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 500 | 150 | 617 | 45 | 493.6 | 27 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 750 | 75 | 617 | 45 | 493.6 | 27 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 617 | 375 | 617 | 45 | 617 | 45 | NO |

# *LEFT-TURN LANE WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-MIL

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** ORE 34/Mill-Crestline
**Conditions (yr, alt., etc.):** 20-Year Forecast PM Peak
**Storage Length/Vehicle:** 25 feet

| INPUTS & WARRANTS: | EB | WB |
|---|---|---|
| Advancing Volume | 405 | 212 |
| Opposing Volume | 197 | 385 |
| Left-Turn Volume | 20 | 15 |
| %Left Turns (L) | 4.9% | 7.1% |
| Speed (mph) | 40 | 40 |
| Storage Probability | 0.00000800 | 0.00000800 |
| Warrant Utilization (3-veh) | 0.0200 | 0.0200 |
| 4-vehicle | 0.0532 | 0.0532 |
| 5-vehicle | 0.0956 | 0.0956 |
| 6-vehicle | 0.1414 | 0.1414 |
| 7-vehicle | 0.1870 | 0.1870 |
| 8-vehicle | 0.2306 | 0.2306 |
| 9-vehicle | 0.2714 | 0.2714 |
| 10-vehicle | 0.3092 | 0.3092 |
| 11-vehicle | 0.3441 | 0.3441 |
| 12-vehicle | 0.3761 | 0.3761 |

| CALCULATIONS: | EB | WB |
|---|---|---|
| Critical Gap (Gc) | 5.0 | 5.0 |
| Exit Time (Te) | 1.9 | 1.9 |
| Wait Time (Tw) | 0.75 | 1.61 |
| Manuever Time (T1) | 3.0 | 3.0 |
| Usable Gaps | 111 | 144 |
| Blocked Time/hr | 467.8 | 884.5 |
| Mean Headway (Ta) | 8.89 | 16.98 |
| Mean Arrival Rate | 8.5 | 4.3 |
| Mean Service Rate | 1044.1 | 905.2 |

**RESULTS:**

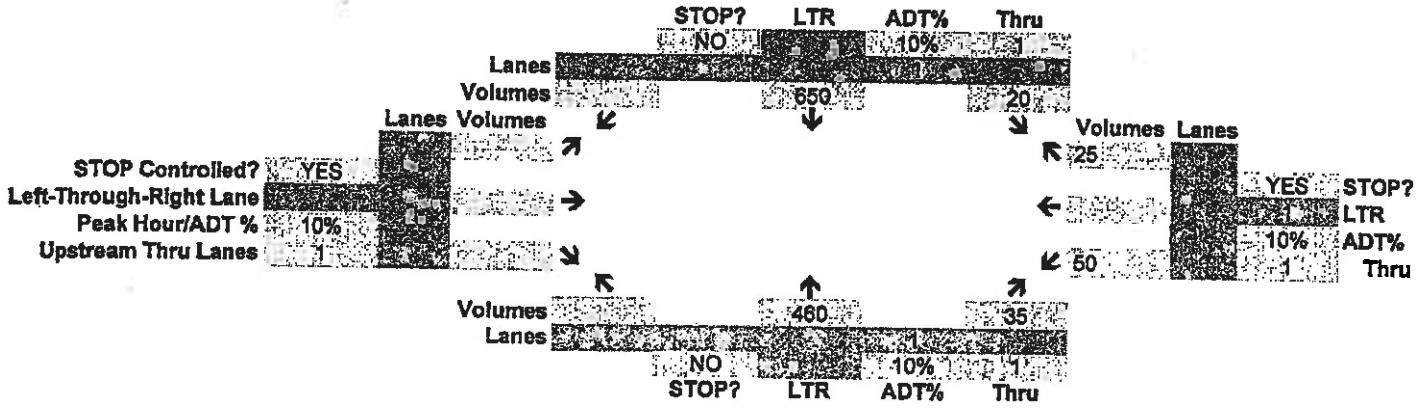
| | | |
|---|---|---|
| Utilization Factor | 0.0081 | 0.0048 |
| LT Lane Warranted? | NO | NO |
| Storage Length (ft) | | |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 26-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\LT-STA-F.W |

| | | |
|---|---|---|
| Intersection: | US 101/Starr-Norwood | |
| Conditions (year, alt.): | 20-Year Forecast PM Peak | |
| Major Street Direction: | NS | (NS or EW) |
| Major Street Speed: | 45 | mph |
| Population<10,000? | NO | (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | | |
| Major Street: | 60% | |
| Minor Street: | 60% | |
| Peak Hour Factor: | 90% | |



# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 26-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\LT-STA

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** US 101/Starr-Norwood
**Conditions (yr, alt., etc.):** 20-Year Forecast PM Peak

**GENERAL INPUT PARAMETERS:**

| | |
|---|---|
| Number of lanes for moving traffic: | |
| Major approach: | 1 |
| Minor approach: | 1 |
| Peak Hour Approach Volumes*: | |
| Sum of major approaches: | 1165 vph |
| Highest minor approach: | 75 vph |
| Factor Peak Hour --> 8th Highest Hour | |
| Major approach: | 80% (60-80% acceptable) |
| Minor approach: | 60% (60-80% acceptable) |
| Is the population < 10,000 or speed > 40 | YES |
| Warrant Factor | 70% |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 350 | 105 | 1165 | 75 | 932 | 45 | NO |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 525 | 52.5 | 1165 | 75 | 932 | 45 | NO |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 1165 | 75 | 1165 | 75 | 1185 | 75 | NO |

# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 26-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\LT-ST |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | US 101/Starr-Norwood |
| **Conditions (yr, alt., etc.):** | 20-Year Forecast PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **NB** | **SB** |
|---|---|---|
| **Advancing Volume** | 495 | 670 |
| **Opposing Volume** | 650 | 495 |
| **Left-Turn Volume** | 0 | 20 |
| **%Left Turns (L)** | 0.0% | 3.0% |
| **Speed (mph)** | 50 | 50 |
| **Storage Probability** | 0.00000338 | 0.00000338 |
| **Warrant Utilization (3-veh)** | 0.0150 | 0.0150 |
| **4-vehicle** | 0.0429 | 0.0429 |
| **5-vehicle** | 0.0805 | 0.0805 |
| **6-vehicle** | 0.1225 | 0.1225 |
| **7-vehicle** | 0.1653 | 0.1653 |
| **8-vehicle** | 0.2070 | 0.2070 |
| **9-vehicle** | 0.2466 | 0.2466 |
| **10-vehicle** | 0.2837 | 0.2837 |
| **11-vehicle** | 0.3181 | 0.3181 |
| **12-vehicle** | 0.3500 | 0.3500 |

| **CALCULATIONS:** | **SB** |
|---|---|
| **Critical Gap (Gc)** | 5.0 |
| **Exit Time (Te)** | 1.9 |
| **Wait Time (Tw)** | 2.19 |
| **Manuever Time (T1)** | 3.0 |
| **Usable Gaps** | 164 |
| **Blocked Time/hr** | 1122.9 |
| **Mean Headway (Ta)** | 5.37 |
| **Mean Arrival Rate** | 22.2 |
| **Mean Service Rate** | 825.7 |

**RESULTS:**

| | |
|---|---|
| **Utilization Factor** | 0.0268 |
| **LT Lane Warranted?** | YES |
| **Storage Length (ft)** | 75 |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *SIGNAL WARRANT ANALYSIS*

**Project Name:** Waldport TSP
**Project Number:** 2890
**Analyst:** JAG
**Date:** 23-Apr-99
**Filename:** H:\PROJFILE\2890\QPRO\UNSIG.

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

**Intersection:** US 101/Range Road
**Conditions (yr, alt., etc.):** 20-year Forecast PM Peak

55 mph

**GENERAL INPUT PARAMETERS:**

| | | |
|---|---|---|
| Number of lanes for moving traffic: | | |
| Major approach: | 1 | |
| Minor approach: | 1 | |
| Peak Hour Approach Volumes*: | | |
| Sum of major approaches: | 926 | vph |
| Highest minor approach: | 192 | vph |
| Factor Peak Hour --> 8th Highest Hour | | |
| Major approach: | 80% | (60-80% acceptable) |
| Minor approach: | 60% | (60-80% acceptable) |
| *s the population < 10,000 or speed > 40 | YES | |
| Warrant Factor | 70% | |

| | REQUIRED | | | | ACTUAL VOLUMES | | 8TH HIGHEST HOUR | | |
|---|---|---|---|---|---|---|---|---|---|
| | # LANES MAJOR STREET | # LANES MINOR STREET | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | MAJOR VOLUME BOTH APP | MINOR VOLUME HIGH APP | WARRANT MET ? |
| WARRANT 1 Minimum Vehicular Volume | 1 | 1 | 350 | 105 | 926 | 192 | 740.8 | 115.2 | YES |
| WARRANT 2 Interruption of Continuous Traffi | 1 | 1 | 525 | 52.5 | 926 | 192 | 740.8 | 115.2 | YES |
| WARRANT 11 Peak Hour Volume | 1 | 1 | 926 | 85 | 926 | 192 | 926 | 192 | YES |

# *LEFT-TURN LANE WARRANT ANALYSIS*

| | |
|---|---|
| **Project Name:** | Waldport TSP |
| **Project Number:** | 2890 |
| **Analyst:** | JAG |
| **Date:** | 23-Apr-99 |
| **Filename:** | H:\PROJFILE\2890\QPRO\UNSIG |

**KITTELSON & ASSOCIATES, INC.**
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

| | |
|---|---|
| **Intersection:** | US 101/Range Road |
| **Conditions (yr, alt., etc.):** | 20-year Forecast PM Peak |
| **Storage Length/Vehicle:** | 25 feet |

| **INPUTS & WARRANTS:** | **NB** | **SB** |
|---|---|---|
| **Advancing Volume** | 379 | 547 |
| **Opposing Volume** | 419 | 379 |
| **Left-Turn Volume** | 0 | 128 |
| **%Left Turns (L)** | 0.0% | 23.4% |
| **Speed (mph)** | 60 | 60 |
| **Storage Probability** | 0.00000100 | 0.00000100 |
| **Warrant Utilization (3-veh)** | 0.0100 | 0.0100 |
| **4-vehicle** | 0.0316 | 0.0316 |
| **5-vehicle** | 0.0631 | 0.0631 |
| **6-vehicle** | 0.1000 | 0.1000 |
| **7-vehicle** | 0.1389 | 0.1389 |
| **8-vehicle** | 0.1778 | 0.1778 |
| **9-vehicle** | 0.2154 | 0.2154 |
| **10-vehicle** | 0.2512 | 0.2512 |
| **11-vehicle** | 0.2848 | 0.2848 |
| **12-vehicle** | 0.3162 | 0.3162 |

| **CALCULATIONS:** | **SB** |
|---|---|
| **Critical Gap (Gc)** | 5.0 |
| **Exit Time (Te)** | 1.9 |
| **Wait Time (Tw)** | 1.58 |
| **Manuever Time (T1)** | 3.0 |
| **Usable Gaps** | 142 |
| **Blocked Time/hr** | 870.8 |
| **Mean Headway (Ta)** | 6.58 |
| **Mean Arrival Rate** | 77.8 |
| **Mean Service Rate** | 909.7 |

**RESULTS:**

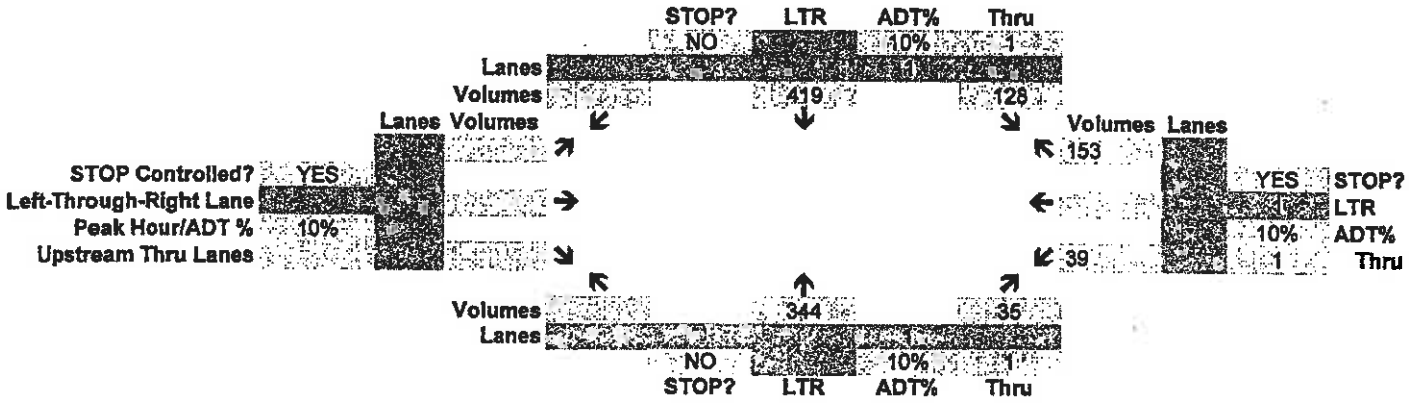
| | |
|---|---|
| **Utilization Factor** | 0.0855 |
| **LT Lane Warranted?** | YES |
| **Storage Length (ft)** | 125 |

Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage at Unsignalized Grade Intersections", Highway Research Record 211.

# *UNSIGNALIZED INTERSECTION ANALYSIS*

| | |
|---|---|
| Project Name: | Waldport TSP |
| Project Number: | 2890 |
| Analyst: | JAG |
| Date: | 23-Apr-99 |
| Filename: | H:\PROJFILE\2890\QPRO\UNSIG.WB2 |

| | |
|---|---|
| Intersection: | US 101/Range Road |
| Conditions (year, alt.): | 20-year Forecast PM Peak |
| Major Street Direction: | NS (NS or EW) |
| Major Street Speed: | 55 mph |
| Population<10,000? | NO (YES or NO) |
| Factor Peak Hour -> 8th-Highest Hour: | |
| Major Street: | 80% |
| Minor Street: | 60% |
| Peak Hour Factor: | 90% |



LEGEND

- PROPERTY LINE
- MEDIUM SCALE STREET TREE
- COLUMNAR STREET TREE
- SHRUB PLANTING AREA
- TREE GRATE
- BENCH
- TRASH RECEPTACLE
- BOLLARD




HIGHWAY 101 & HIGHWAY 34




HIGHWAY 34 & NW JOHN STREET

NORTH

SCALE: 1" = 20'

MACDONALD

Landscape Architecture
Site Planning
Recreational Planning

REGISTERED
LANDSCAPE ARCHITECT
OREGON

HIGHWAY 101 & 34
WALDPORT, OREGON

CONCEPTUAL INTERSECTION LAYOUTS

L1

H:\PROJECT\97038\Drawings\9921.L1.dwg Wed Jun 30 15:05:01 1999 AFB

**Additional Comments**

Thank you for your time and opinion!

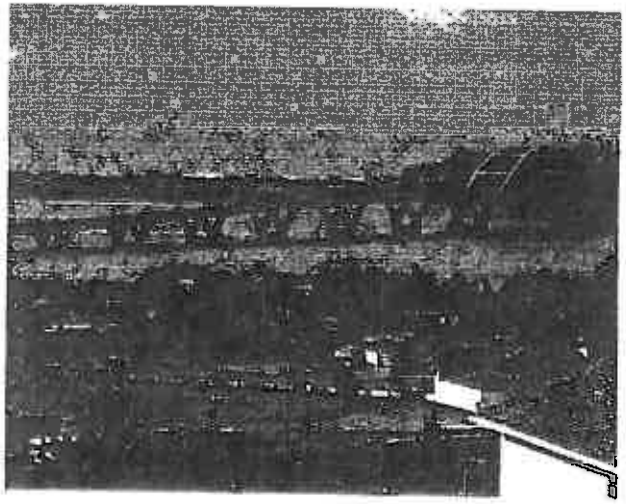
**Name**_____
(Optional)

Please fold, seal, stamp and mail by April 2, 1999 to:

TriLand Design Group
10260 SW Nimbus Avenue, M4
Tigard, OR 97223

Place Stamp Here

TriLand Design Group
10260 SW Nimbus Avenue, M4
Tigard, OR 97223



# Waldport
# Transportation System Plan

## QUESTIONNAIRE

**An important opportunity for citizens and visitors to provide input regarding future transportation improvements in Waldport.**

## Introduction

The Transportation and Growth Management Program* is funding a plan that will identify automobile, pedestrian, bicycle, and other transportation improvements in Waldport over the next 20-years.

The purpose of this questionnaire is to solicit input from citizens and visitors. We would appreciate your opinion regarding transportation concerns and ideas for improving the Waldport transportation system.

Please duplicate this questionnaire if you need extra copies for your household or friends.

## Next Steps

The results of this questionnaire, along with results of interviews and initial input received at a transportation advisory group meeting, will be used to develop alternative transportation system diagrams. The alternative diagrams will identify:

- Improvements to existing streets;
- Potential new streets;
- Bicycle and pedestrian systems;
- Needed intersection improvements;
- Public parking improvements;
- Access management on major streets;
- Streetscape improvements;
- Gateway improvements;
- Other transportation-related issues and ideas that you have identified in this questionnaire.

Citizens and visitors will be invited to review and provide input on the alternative transportation system diagrams at a **Community Open House** scheduled June 3, 1999 from 4:30 – 5:30 p.m.

* jointly funded by the Oregon Dept. of Transportation and Dept. of Land Conservation & Development

**1. Are you a:**

_____ Resident of Waldport?
_____ Resident of Surrounding Area?
_____ Visitor?

**2. What are your transportation needs and desires?**

| Transportation Mode/Facility | Do you currently use? | Would you use if facilities were provided or improved? | Should facilities be added or expanded? |
|---|---|---|---|
| Automobile (streets) | | | |
| Walk/Run (sidewalk/path) | | | |
| Bicycle (bike lane, path) | | | |
| Transit (bus service) | | | |
| Other _____ | | | |

Other could be skateboarding, rollerblading, electric cart, etc.

**3. How important are these potential transportation improvements?**
Please circle one number. 1=Most Important, 2=More Important, 3=Important, 4=Minimally Important, 5=Not Important

| Potential Improvement | Importance |
|---|---|
| Safe and connected community-wide bicycle/pedestrian system | 1 2 3 4 5 |
| Safe pedestrian/bicycle crossings on Hwy. 101 and Hwy. 34 | 1 2 3 4 5 |
| Improve access to local businesses (parking, walking, driveways) | 1 2 3 4 5 |
| Additional public parking | 1 2 3 4 5 |
| Improve the Hwy. 101/Hwy. 34 intersection | 1 2 3 4 5 |
| Improve the Hwy. 34/Cedar Street intersection | 1 2 3 4 5 |
| Improve the Hwy. 34/Crestline Drive (High School Rd.) intersection | 1 2 3 4 5 |
| Improve the Hwy. 101/Starr St. intersection | 1 2 3 4 5 |
| Improve the Hwy. 101/Range Dr. intersection | 1 2 3 4 5 |
| Traffic speed enforcement | 1 2 3 4 5 |
| Safe pedestrian/bicycle facilities on Crestline Drive | 1 2 3 4 5 |
| Safe pedestrian/bicycle facilities on Range Drive | 1 2 3 4 5 |
| Bicycle/pedestrian connections between downtown and Crestline Dr. | 1 2 3 4 5 |
| Additional or improved public transportation (i.e. bus service) | 1 2 3 4 5 |
| Other_____ | 1 2 3 4 5 |
| Other_____ | 1 2 3 4 5 |

**4a. What is the single most important transportation improvement needed?**

_____

_____

**4b. What is the 2nd most important transportation improvement needed?**

_____

_____

**5. What other transportation-related improvements would you like that will make Waldport a better place to live in and visit?**

_____

_____