

Memorandum

To: ODOT Region 4
From: Melissa Webb, PE
Date: August 22, 2022
Subject: Sunset Meadows
Transportation Impact Study Addendum #1



EXPIRATION DATE: 4/30/2024

Introduction

This memorandum is written in response to comments received by Oregon Department of Transportation (ODOT) staff regarding the *Sunset Meadows Transportation Impact Study*, dated June 3rd, 2022, and serves as an addendum to the original report.

ODOT staff have requested additional information in five main areas, each of which are addressed in detail in this addendum:

1. Additional information regarding the proposed mitigation of W Hood Avenue at OR-242.
2. Address OAR 734-051-4020(2)(b) *Channelization Standards*
3. Address OAR 734-051-4020(2)(c) *Sight Distance Standards*
4. Address OAR 734-051-4020(3)(b) *Safety and Operation Concerns b, c, and d*
5. Address OAR 734-051-4020(8) *Access Management Spacing Standards*

Proposed Mitigation: W Hood Avenue at OR-242

The intersection of W Hood Avenue at OR-242 is projected to operate with a v/c ratio in excess of ODOT performance targets during the morning peak hour for the year 2025 background scenario. This is due largely in part to the expected increase in traffic volumes from the in-process development of the proposed Sisters Elementary School. The LOS, delay, and v/c results of the study intersection are shown in Table 1 for the morning and evening peak hours.

Table 1: Capacity Analysis Summary

Intersection & Condition	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
6. W Hood Avenue at OR-242						
2022 Existing Conditions	B	13	0.56	A	8	0.18
2025 Background Conditions	F	64	1.09 (EBL)	A	9	0.24
2025 Buildout Conditions	F	79	1.16 (EBL)	A	9	0.26
2030 Buildout Conditions	F	90	1.20 (EBL)	A	9	0.28

Table Notes: OR-242 is a district highway with a posted speed of 40-55 mph, and has a target maximum allowance v/c ratio of 0.90. **BOLDED** results indicate operation above acceptable jurisdictional standards.

City of Sisters staff have indicated that restriping the northbound and southbound lanes to eliminate the dedicated left-turn lanes on both approaches is preferred given that these intersection legs create a wide pedestrian crossing. Table 2 shows a comparison of the LOS, delay, and v/c ratios for a scenario involving the current dedicated left-turn lanes on the northbound and southbound legs, as well as a scenario where there is one shared lane for all turning movements on the northbound and southbound legs.

Table 2: Capacity Analysis Summary – Lane Configuration Scenarios

Intersection & Condition	AM Peak Hour – With Dedicated Left-Turn Lanes			AM Peak Hour – One Shared Lane for Turning Movements		
	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
6. W Hood Avenue at OR-242						
2022 Existing Conditions	B	13	0.56	B	12	0.55
2025 Background Conditions	F	64	1.09 (EBL)	F	58	1.08 (EBL)
2025 Buildout Conditions	F	79	1.16 (EBL)	F	75	1.15 (EBL)
2030 Buildout Conditions	F	90	1.20 (EBL)	F	89	1.20 (EBL)

Table Notes: **BOLDED** results indicate operation above acceptable jurisdictional standards.

With one shared lane for all turning movements, there is a slight improvement in the delay and v/c ratios; however, the intersection will continue to operate above acceptable jurisdictional standards.

OR-242 is anticipated to see an increase in pedestrian traffic from residential developments near W Hood Avenue, as students and caregivers access the elementary, middle, and high school campuses via a multi-use path that runs along OR-242 from W Hood Avenue to McKinney Butte Road. While restriping the intersection to allow for one shared lane for all turning movements on the northbound and southbound legs will not significantly improve the operation of the intersection, narrowing these approaches would reduce driver confusion and provide a shorter and safer pedestrian crossing with better visibility.

Suggested Mitigation

A review of the operational analysis shows that the primary reason for the intersection of W Hood Avenue at OR-242 experiencing future high delays is that the majority of the traffic occurs during a small portion of the hour. The peak 15-minute time was measured to occur from 8:10 AM to 8:25 AM with a peak hour factor (PHF) of 0.52, which coincides with parents dropping off middle school children. The PHF was not adjusted for intersection with the addition of the in-process projects, including the Sisters Elementary School. As a result,



high delays are expected to be experienced on the northbound and eastbound approaches as vehicles head toward the schools and later return.

The current school hours (2021-2022 school year) within the Sisters School District are as follows:

Sisters Elementary School (existing school located on E Cascade Avenue)

8:35 AM – 3:05 PM

Sisters Middle School

8:30 AM – 3:14 PM M-Th

8:30 AM – 1:15 PM Friday

Sisters High School

7:30 AM – 3:20 PM M-Th

7:30 AM – 1:20 PM Friday

This schedule is currently planned to remain the same when the new elementary school is constructed but will be dependent on the school bus schedule. The school district has indicated that they have the ability to stagger start times by no more than 10-15 minutes given the district population, number of busses, and staffing of bus drivers.

The current schedule has a 5-minute offset between the start times of the elementary school (8:35 AM) and the middle school (8:30 AM). If the school district can increase the start time offset to 10-15 minutes, the peaking characteristics of the school traffic will be spread across a wider portion of the peak hour. This in turn will cause the PHF to increase. An increase in the PHF from 0.52 to 0.62 (a 19% increase) would bring the intersection into compliance with ODOT's maximum v/c ratio of 0.90 for the year 2025 buildout scenario, even during the most congested portion of the peak hour.

Widening the roadway to add a dedicated right-turn lane on the eastbound leg is not recommended as it would be unnecessary all other times outside of this 15-minute peak window on school days. In addition, City of Sisters staff have recommended that in lieu of capacity improvements at the intersection, mitigation strategies should instead focus on safety and providing a clear and safe school route.

Suggested mitigation for improving safety at this intersection includes:

- Restriping to eliminate northbound and southbound left turn lanes, as well as the sweeping southbound right-turn, resulting in one shared lane for all turning movements at each approach leg. Narrowing these approaches will provide a shorter pedestrian crossing with better visibility and yielding, as well as reduce driver confusion related to which vehicle may have stopped first.
- Adding crosswalk striping across the northern and eastern approaches.

ORAR 734-051-4020(2)(b) *Channelization Standards*

An application meets the channelization standards of this rule if none of the conditions below exist:

- (A) *Average daily trips for the existing or proposed development exceed four hundred (400) for an application on a two-lane highway with annual average daily traffic (AADT) of five thousand (5,000) or more motor vehicles, or*



- (B) Average daily trips for the existing or proposed development exceed four hundred (400) for an application on a four-lane highway with annual average daily traffic of ten thousand (10,000) or more motor vehicles, or
- (C) Average daily trips for the existing or proposed development multiplied by the annual average daily traffic on the highway is equal to or greater than the products listed in the Table 1-Channelization Standards.

Conditions (A) and (B) are not met as OR-242, a two-lane highway, has an annual average daily traffic of 1,628 vehicles (reported in 2020 at milepoint 91.29, approximately 0.02 miles east of Edgington Road).

Condition (C): The trip generation shown in Table 3 of the original TIS shows a total of 1,390 average daily trips estimated for the proposed development. The product of the average daily trips and the AADT of the abutting highway is 2.3 million, which is less than the criteria shown in Figure 1 for a two-lane highway with a posted speed of 30 mph. Therefore, Condition (C) is not met.

734-051-4020 Standards and Criteria for Approval of Private Approaches				
Table 1 - Channelization Standards				
Product of Property Average daily trips Multiplied by the Abutting Highway Annual Average Daily Traffic (Millions)				
Number of Highway Lanes	Posted Speed 25 mph or lower	Posted Speed 30-35 mph	Posted Speed 40-45 mph	Posted Speed 50 mph or higher
2 lanes	5.1	3.9	1.8	1.3
4 lanes	10.2	7.8	3.6	2.6

Figure 1: Table 1 (Channelization Standards), OAR 745-051-4020(2)(b)(C)

As the application meets the channelization standards, OAR 734-051-3050(7) *Approval of Requests for Deviations from Channelization Standards* is not applicable, and a deviation will not be pursued as part of this project.

OAR 734-051-4020(2)(c) *Sight Distance Standards*

Based on a posted speed of 40 mph along OR-242, as well as verification of the posted speed by ODOT’s Region Traffic Operations Engineer, the minimum recommended intersection sight distance is 445 feet¹. At the proposed access location, sight distances to the east and west were measured to exceed 450 feet.

Adequate sight distances are available at the proposed site access intersection to ensure safe operation along OR-242. No sight distance mitigation is necessary or recommended. In addition, OAR 734-051-3050(8) *Approval of Requests for Deviations from Sight Distance Standards* is not applicable, and a deviation will not be pursued as part of this project.

A copy of the ODOT Speed Zone Order indicating the posted speed along OR-242 is included in the appendix.

¹ OAR 734-051-4020(2)(c), Table 2



ORAR 734-051-4020(3) *Safety and Operation Concerns*

(b) Overlapping left turn movements or competing use of a center turn lane from a connection located on the opposite side of the highway

OR-242 is a two-lane highway with no center turn lane and left-turn lane warrants are not met for the proposed access onto OR-242. Therefore, the issues of overlapping left turn movements and competing use of a center turn lane does not apply to this project.

To determine the expected queuing which may form at the OR-242 site access location, a queuing analysis was conducted based on the results of a Synchro/SimTraffic simulation, with the reported values representing 95th percentile queue lengths. The 95th percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field. In order to provide an analysis for a worst-case scenario, the analysis is based on the peak 15-minute periods of the morning peak hour. Five trial runs of the simulation were conducted.

All reported queue lengths were rounded to the nearest 25 feet, and all values less than 25 feet were rounded up to 25 feet, or the approximate length of one vehicle.

A private driveway which serves two taxlots is located west of the project site on the south side of OR-242. There is an available storage length of approximately 150 feet before queues waiting to turn left into the proposed development begin to block the private driveway access. Based on the queuing analysis, the maximum queue length at the site access intersection along OR-242 is 25 feet, which is within the available storage length.

(c) Location of the proposed approach within a highway segment with a crash rate that is twenty (20) percent or higher than the statewide average for similar highways

The proposed approach is located on OR-242 between Brooks Camp Road and W Hood Avenue. Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2016 through December 2020) was performed along the roadway segment. There were no reported crashes at the intersections of Brooks Camp Road at OR-242 and W Hood Avenue at OR-242 during the analysis period. In addition, there were no reported crashes along the roadway segment between Brooks Camp Road and W Hood Avenue during the analysis period.

(d) Location of the proposed approach within a highway segment listed in the top five percent of locations identified by the Safety Priority Index System (SPIS) developed by the department

The highway segment of OR-242 between Brooks Camp Road and US-20 is not listed in the Region 4 2020 On-State, Top 15% SPIS report².

² https://www.oregon.gov/odot/Engineering/DocSPIS/Top15SPISgroupsByHwy_4_2020.pdf



OAR 734-051-4020(8) *Access Management Spacing Standards*

Based on a posted speed of 40 mph along OR-242, the minimum access spacing standard is 360 feet³. The proposed access location along OR-242 is located approximately 490 feet west from the intersection of W Hood Avenue at OR-242.

The most recent site plan shows that the proposed new site access location along OR-242 complies with the access spacing standards described in OAR 734-051-4020(8) and shown in the Oregon Highway Plan. In addition, OAR 734-051-3050(5) *Approval of Requests for Deviations from Approach Spacing Standards* is not applicable, and a deviation will not be pursued as part of this project.

Conclusions

The following key findings relate to transportation:

- Suggested mitigation for improving safety at this intersection includes:
 - Restriping to eliminate northbound and southbound left turn lanes, as well as the sweeping southbound right-turn, resulting in one shared lane for all turning movements at each approach leg. Narrowing these approaches will provide a shorter pedestrian crossing with better visibility and yielding, as well as reduce driver confusion related to which vehicle may have stopped first.
 - Adding crosswalk striping across the northern and eastern approaches.
- The OARs listed below were addressed, and no mitigation or deviations will be pursued as part of this project:
 - OAR 734-051-4020(2)(b) *Channelization Standards*
 - OAR 734-051-4020(2)(c) *Sight Distance Standards*
 - OAR 734-051-4020(3)(b) *Safety and Operation Concerns b, c, and d*
 - OAR 734-051-4020(8) *Access Management Spacing Standards*

³ Oregon Department of Transportation, 1999 Oregon Highway Plan (Including Amendments November 1999 Through May 2015), May 2015, Table 13



Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	158	52	1	1	1	112	18	1	3	1	72
Future Vol, veh/h	5	158	52	1	1	1	112	18	1	3	1	72
Peak Hour Factor	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	5	5	5
Mvmt Flow	10	304	100	2	2	2	215	35	2	6	2	138
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.5	8.5	11.7	9.1
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	85%	2%	33%	4%
Vol Thru, %	14%	73%	33%	1%
Vol Right, %	1%	24%	33%	95%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	131	215	3	76
LT Vol	112	5	1	3
Through Vol	18	158	1	1
RT Vol	1	52	1	72
Lane Flow Rate	252	413	6	146
Geometry Grp	1	1	1	1
Degree of Util (X)	0.374	0.547	0.009	0.199
Departure Headway (Hd)	5.339	4.759	5.459	4.908
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	665	748	658	735
Service Time	3.439	2.84	3.468	2.908
HCM Lane V/C Ratio	0.379	0.552	0.009	0.199
HCM Control Delay	11.7	13.5	8.5	9.1
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.7	3.4	0	0.7

Intersection	
Intersection Delay, s/veh	58.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	198	139	1	1	1	240	23	1	3	6	98
Future Vol, veh/h	5	198	139	1	1	1	240	23	1	3	6	98
Peak Hour Factor	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	5	5	5
Mvmt Flow	10	381	267	2	2	2	462	44	2	6	12	188
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	81.8	11	46.6	13.6
HCM LOS	F	B	E	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	1%	33%	3%
Vol Thru, %	9%	58%	33%	6%
Vol Right, %	0%	41%	33%	92%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	264	342	3	107
LT Vol	240	5	1	3
Through Vol	23	198	1	6
RT Vol	1	139	1	98
Lane Flow Rate	508	658	6	206
Geometry Grp	1	1	1	1
Degree of Util (X)	0.914	1.074	0.012	0.367
Departure Headway (Hd)	6.758	5.877	7.881	6.752
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	538	612	457	537
Service Time	4.758	3.954	5.881	4.752
HCM Lane V/C Ratio	0.944	1.075	0.013	0.384
HCM Control Delay	46.6	81.8	11	13.6
HCM Lane LOS	E	F	B	B
HCM 95th-tile Q	10.9	18.7	0	1.7

Intersection	
Intersection Delay, s/veh	74.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	211	146	1	1	1	242	26	1	3	12	98
Future Vol, veh/h	5	211	146	1	1	1	242	26	1	3	12	98
Peak Hour Factor	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	5	5	5
Mvmt Flow	10	406	281	2	2	2	465	50	2	6	23	188
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	110.9	11.3	51.6	14.5
HCM LOS	F	B	F	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	1%	33%	3%
Vol Thru, %	10%	58%	33%	11%
Vol Right, %	0%	40%	33%	87%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	269	362	3	113
LT Vol	242	5	1	3
Through Vol	26	211	1	12
RT Vol	1	146	1	98
Lane Flow Rate	517	696	6	217
Geometry Grp	1	1	1	1
Degree of Util (X)	0.936	1.158	0.012	0.393
Departure Headway (Hd)	6.969	5.987	8.156	7.009
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	522	606	441	517
Service Time	4.969	4.028	6.156	5.009
HCM Lane V/C Ratio	0.99	1.149	0.014	0.42
HCM Control Delay	51.6	110.9	11.3	14.5
HCM Lane LOS	F	F	B	B
HCM 95th-tile Q	11.6	23	0	1.9

Intersection	
Intersection Delay, s/veh	89.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	213	152	1	1	1	254	28	1	4	12	106
Future Vol, veh/h	6	213	152	1	1	1	254	28	1	4	12	106
Peak Hour Factor	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	5	5	5
Mvmt Flow	12	410	292	2	2	2	488	54	2	8	23	204
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	134.2	11.6	63.4	15.5
HCM LOS	F	B	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	2%	33%	3%
Vol Thru, %	10%	57%	33%	10%
Vol Right, %	0%	41%	33%	87%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	283	371	3	122
LT Vol	254	6	1	4
Through Vol	28	213	1	12
RT Vol	1	152	1	106
Lane Flow Rate	544	713	6	235
Geometry Grp	1	1	1	1
Degree of Util (X)	0.986	1.218	0.013	0.429
Departure Headway (Hd)	7.149	6.146	8.502	7.223
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	512	592	424	502
Service Time	5.149	4.157	6.502	5.223
HCM Lane V/C Ratio	1.063	1.204	0.014	0.468
HCM Control Delay	63.4	134.2	11.6	15.5
HCM Lane LOS	F	F	B	C
HCM 95th-tile Q	13.2	26.1	0	2.1

734-051-4020

Standards and Criteria for Approval of Private Approaches

Table 1 - Channelization Standards				
Product of Property Average daily trips Multiplied by the Abutting Highway Annual Average Daily Traffic (Millions)				
Number of Highway Lanes	Posted Speed 25 mph or lower	Posted Speed 30-35 mph	Posted Speed 40-45 mph	Posted Speed 50 mph or higher
2 lanes	5.1	3.9	1.8	1.3
4 lanes	10.2	7.8	3.6	2.6

Table 2: Intersection Sight Distance Standards (ISD)¹

Posted Speed (mph)	Assumed Design Speed ² (mph)	Two-Way Highway -- Number of Lanes Crossed by Vehicle Making Left Turn from Approach ³			One-Way Highway ⁴
		1 Lane	2 Lanes	3 Lanes	
		ISD (ft)			
20	25	280	295	315	240
25	30	335	355	375	290
30	35	390	415	440	335
35	40	445	475	500	385
40	45	500	530	565	430
45	55	610	650	690	530
50	65	720	765	815	625
55	70	775	825	875	670
60	70	775	825	875	670
65	70	775	825	875	670

¹ Standards in Table 2 are based on the methodology for sight distance calculations for passenger vehicles in the 2011 AASHTO Policy on Geometric Design of Highways and Streets.

² Assumed design speed is shown for purpose of correlating generally accepted highway design speeds with posted speeds. If the department establishes a higher design speed for a highway segment, the higher design speed, rather than the assumed design speed, shall be used to determine Intersection Sight Distance (ISD) in accordance with the methodology for sight distance calculations in the 2011 AASHTO Policy on Geometric Design of Highways and Streets.

³ Left turn made from approach to nearest lane in direction of travel. Number of lanes includes right and left turn lanes and traversable medians. Calculation of ISD in this table is based on the methodology for sight distance calculations in the 2011 AASHTO Policy on Geometric Design of Highways and Streets for left turn from stop-controlled minor road. Four or more lanes require calculation of ISD in accordance with AASHTO procedure.

⁴ Left or right turn made to nearest lane in direction of travel. Calculation of ISD in this table is based on 2011 AASHTO Policy on Geometric Design of Highways and Streets methodology for the right turn from stop-controlled minor road. Standards also apply to sections of highway where turning movements are restricted to right turns only by a non-traversable median and to approaches that prohibit left turns from the approach across opposing traffic.

TABLE 3				
Access Management Spacing Standards for Highway Segments with Annual Average Daily Traffic \leq 5,000				
	Regional, District & Unclassified Highways	Statewide Highways	Statewide Highways	Statewide Highways
	Rural and Urban Areas	Rural Areas	Urban Areas	Unincorporated Communities in Rural Areas
Speed (mph)	Spacing (ft)			
55 or higher	650	1,320	1,320	1,320
50	425	1,100	1,100	1,100
40 & 45	360	990	360	750
30 & 35	250	770	250	425
25 & lower	150	550	150	350

TABLE 4				
Access Management Spacing Standards for Statewide Highways with Annual Average Daily Traffic $>$ 5,000				
	Expressway	Expressway		
	Rural Areas	Urban Areas	Rural Areas	Urban Areas
Speed (mph)	Spacing (ft)			
55 or higher	5,280	2,640	1,320	1,320
50	5,280	2,640	1,100	1,100
40 & 45	5,280	2,640	990	800
30 & 35	-	-	770	500
25 & lower	-	-	550	350

Intersection: 7: OR-242 & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	12	53
Average Queue (ft)	0	17
95th Queue (ft)	6	46
Link Distance (ft)	870	307
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: OR-242 & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	22	31
Average Queue (ft)	1	14
95th Queue (ft)	11	39
Link Distance (ft)	870	307
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Whereas, pursuant to ORS 810.180, the Oregon Department of Transportation has been requested to establish designated speed(s) for the below described section(s) of state, county, city or federal agency highway as defined by ORS 801.305; and



Speed Zone Order

Whereas, the State Traffic Engineer has been authorized to act on behalf of the Oregon Transportation Commission; and

Date **April 23, 2012** Order No. **J8533**

Whereas, pursuant to ORS 810.180, an engineering and traffic investigation has been made; the data, facts, and information obtained in connection with said engineering and traffic investigation are on file in the office of the State Traffic Engineer at the Oregon Department of Transportation in Salem, Oregon; and

Jurisdiction(s)
Deschutes Co. (OTC) | Sisters

Whereas, based upon said engineering and traffic investigation, the State Traffic Engineer has found that the speed designated in ORS 811.105 or ORS 811.111 is greater than is reasonable under the conditions found to exist upon the section(s) of highway for which a lesser speed is herein designated or that the speed designated in said statute is less than is reasonable under the conditions found to exist upon the section(s) of highway for which a greater speed is herein designated; and

Whereas, the provisions of ORS 810.180 respecting notice and hearing have been complied with:

It is **Therefore Ordered** that the designated speed for the following section(s) of highway be as follows:

Name McKenzie Hwy (OR 242/OR 126)

LOCATION OF TERMINI

From	MP	To	MP	Designated Speed (Miles Per Hour)
500 feet west of McKinney Butte Road	90.99	150 feet west of Edgington Road	91.24	50 ²
150 feet west of Edgington Road	91.24	50 feet east of Edgington Road	91.28	40 ²
50 feet east of Edgington Road	91.28	100 feet east of Edgington Road	91.29	40 ^{2 4}
100 feet east of Edgington Road	91.29	Hood Street/Cascade Avenue	92.05	40 ^{1 3 4}
Hood Street/Cascade Avenue	Z91.85	Santiam Hwy (US 20)	Z92.03	30 ^{3 4}
Santiam Hwy (US 20)	Z92.03	150 feet west of Cascade Avenue	92.20	35 ^{3 4 5}
0.12 mile southeast of Locust Street	92.95	265 feet east of McKenzie-Bend Hwy (US 20)	93.14	35 ^{4 5}
265 feet east of McKenzie-Bend Hwy (US 20)	93.14	0.31 mile east of McKenzie-Bend Hwy (US 20)	93.38	45 ⁴
<i>1 Except that in the following section(s), the designated speed shall be 20 mph as per provisions of ORS 811.111 Subsection 1(e) and ORS 810.200;</i>				
200 feet east of Edgington Road	91.31	450 feet west of Trinity Way	91.61	
² ODOT ³ MP Equation: MP 92.05BK - MP Z91.85AH, MP Z92.05BK = MP 92.05AH ⁴ City of Sisters - Interested Jurisdiction ⁵ Statutory 20 mph speed exists between MP 92.20 and MP 92.95				
This rescinds Joint Order J8165 of 9/16/2008				

Be it further ordered that the roadway authority or authorities responsible for the above section(s) of highway install appropriate signs giving notice of the designated speed(s) therefore as per ORS 810.180, Subsection 4(c) and/or Subsection 5(e).

Be it further ordered that signs installed pursuant to this order comply with the provisions of ORS 810.210 and 810.220.

Be it further ordered that any previous order made by the Department with respect to the designated speed for the above section(s) of highway which is in conflict with the provisions of this order is hereby rescinded.

Be it further ordered that this order will remain in effect until and unless rescinded by the State Traffic Engineer of the Oregon Department of Transportation.

Bob Pappe, PE, PLS, State Traffic and Roadway Engineer



2020 - On-State, Top 15% SPIS Groups - By Hwy, MP

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	City	County	Connection	Percent	SPIS
004 The Dalles-California															
US-26	1	92.18	92.27	0.09	10,722	4	0	2	0	2	Madras	Jefferson	A ST.	90	48.21
US-97	1	98.28	98.46	0.18	10,600	8	0	2	3	3		Jefferson	SE DOVER LN.	95	60.58
US-97	1	105.65	105.82	0.17	11,200	6	1	0	2	3		Jefferson	LEG (TO HWY. 361)	85	39.75
US-97	1	117.41	117.58	0.17	17,900	3	1	1	0	1		Deschutes	NW GALLOWAY AVE.	85	43.62
US-97	1	121.35	121.54	0.19	28,300	9	0	1	2	6	Redmond	Deschutes	LEG (TO HWY. 015 DECREASING RDWY)	85	44.55
US-97	1	121.89	122.07	0.18	29,200	22	0	0	5	17	Redmond	Deschutes	SW VETERANS WAY	90	56.58
US-97	1	122.17	122.35	0.18	29,200	22	1	2	4	15	Redmond	Deschutes	SW PUMICE AVE.	95	68.99
US-97	1	122.28	122.39	0.11	29,200	13	0	1	3	9	Redmond	Deschutes		90	51.61
US-97	1	122.78	122.88	0.10	29,111	14	0	0	0	14	Redmond	Deschutes	ODEM MEDO RD.	85	41.21
US-97	1	123.27	123.45	0.18	29,000	4	0	2	1	1	Redmond	Deschutes	ROAD (YEW AVE.)	90	46.11
US-97	1	128.49	128.67	0.18	40,300	7	1	1	1	4		Deschutes	61ST ST.	90	53.80
US-97	1	133.99	134.18	0.19	35,633	21	0	1	6	14	Bend	Deschutes	COOLEY RD.	95	67.23
US-97	1	134.54	134.66	0.12	38,766	15	0	0	4	11	Bend	Deschutes	ROBAL RD.	85	40.32
US-97	1	139.89	140.05	0.16	29,900	13	1	0	1	11	Bend	Deschutes		90	54.43
US-97	1	161.66	161.81	0.15	10,733	2	1	1	0	0		Deschutes	PRAIRIE DR.	85	40.74
US-97	1	196.94	197.09	0.15	5,100	3	1	1	1	0		Klamath		90	47.08
US-97	1	290.91	291.09	0.18	4,200	2	0	2	0	0		Klamath		85	43.15
005 John Day															
OR-19	1	59.81	59.99	0.18	450	2	1	0	0	1		Wheeler		85	43.30
007 Central Oregon															
US-20	1	0.85	1.03	0.18	26,200	16	0	2	4	10	Bend	Deschutes	NE 7TH ST.	95	68.32
US-20	1	2.08	2.26	0.18	26,200	13	0	2	1	10	Bend	Deschutes	NE DEAN SWIFT RD.	95	67.64
US-20	1	2.45	2.63	0.18	18,700	14	0	0	5	9	Bend	Deschutes	27TH ST.	85	43.21

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2020 - On-State, Top 15% SPIS Groups - By Hwy, MP

Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	City	County	Connection	Percent	SPIS
US-20	1	3.47	3.65	0.18	14,055	18	2	2	7	7		Deschutes	LEG (TO WARD RD.)	95	76.59
US-20	1	4.48	4.66	0.18	9,700	6	0	1	1	4		Deschutes	TORKELSON RD.	85	40.22

014 Crooked River

OR-27	1	25.91	26.09	0.18	19	1	1	0	0	0		Crook		90	45.12
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015 McKenzie

OR-126	1	98.35	98.50	0.15	4,800	4	0	2	1	1		Deschutes	FRYREAR RD.	90	51.49
OR-126	1	109.56	109.74	0.18	10,900	6	0	2	3	1		Deschutes	SW HELMHOLTZ WAY	90	54.60
OR-126	1	110.96	111.14	0.18	19,700	11	0	1	2	8	Redmond	Deschutes	RIMROCK WAY	90	45.77
OR-126	1	111.73	111.83	0.10	7,100	7	0	1	3	3	Redmond	Deschutes	SW 9TH ST. (SW NINTH ST.)	85	44.75
OR-126	1	111.81	111.98	0.17	7,100	20	0	0	6	14	Redmond	Deschutes	SW 7TH ST. (SW SEVENTH ST.)	90	56.67
OR-126	2	111.82	112.00	0.18	6,200	16	0	1	1	14	Redmond	Deschutes	7TH ST.	95	67.83

017 McKenzie-Bend

US-20	1	14.62	14.81	0.19	14,600	16	0	2	3	11		Deschutes	BAILEY RD.	95	72.19
US-20	1	16.65	16.83	0.18	22,100	9	0	2	5	2		Deschutes	OLD REDMOND-BEND HWY.	95	61.84
US-20	1	19.57	19.74	0.17	24,400	9	0	2	3	4	Bend	Deschutes	MT. WASHINGTON DR.	95	57.56
US-20	1	20.32	20.50	0.18	17,733	12	0	2	1	9	Bend	Deschutes	NE THURSTON AVE.	95	61.12

018 Willamette

OR-58	1	72.81	73.00	0.19	2,500	6	0	1	2	3		Klamath	CRESCENT CUTOFF RD.	90	52.02
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019 Fremont

US-395	1	141.41	141.59	0.18	1,900	2	0	2	0	0		Lake		90	46.90
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020 Klamath Falls-Lakeview

OR-39	1	3.13	3.36	0.23	27,100	40	1	2	9	28		Klamath	DERBY ST.	95	77.84
OR-39	1	3.34	3.47	0.13	27,100	14	1	0	4	9		Klamath	FARGO ST.	90	51.86
OR-39	1	3.40	3.53	0.13	27,100	12	1	0	3	8		Klamath	GARY ST.	90	51.86

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Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	City	County	Connection	Percent	SPIS
OR-39	1	3.53	3.70	0.17	26,688	12	0	1	3	8		Klamath	HOPE ST.	90	49.83
OR-39	1	3.77	3.87	0.10	22,600	7	0	1	0	6		Klamath	KANE ST.	85	40.02
OR-39	1	3.80	3.94	0.14	22,600	9	0	1	1	7		Klamath	KANE ST.	90	45.21
OR-39	1	3.91	4.09	0.18	22,600	17	0	1	7	9		Klamath	HOMEDALE RD.	95	62.97
OR-39	1	4.42	4.59	0.17	17,500	12	0	1	8	3		Klamath	SIMMERS AVE.	90	53.63
OR-140	1	52.80	52.95	0.15	1,200	3	1	0	0	2		Klamath		85	41.20

021 Green Springs

OR-66	1	52.90	53.09	0.19	2,900	6	0	1	4	1		Klamath		85	43.63
OR-66	1	58.91	59.05	0.14	8,000	9	0	1	2	6	Klamath Falls	Klamath	DELAP RD.	90	49.97

022 Crater Lake

OR-62	1	91.29	91.41	0.12	1,200	3	0	1	2	0		Klamath	SUN MOUNTAIN RD.	85	41.67
OR-62	1	98.46	98.64	0.18	1,200	8	0	1	2	5		Klamath		95	62.83
OR-62	1	102.38	102.56	0.18	1,500	3	0	1	0	2		Klamath	SOUTH CHILOQUIN RD.	85	41.20

041 Ochoco

OR-126	1	9.00	9.11	0.11	11,800	2	0	2	0	0		Crook		85	40.54
US-26	1	18.52	18.61	0.09	12,933	6	0	1	2	3	Prineville	Crook	NW DEER ST.	85	38.95
US-26	1	81.59	81.77	0.18	530	3	0	2	1	0		Wheeler		95	63.78
US-26	1	83.95	84.12	0.17	530	2	1	0	0	1		Wheeler		85	41.75

042 Sherman

US-97	1	30.07	30.22	0.15	2,300	5	1	0	1	3		Sherman	EARLS LN. (EARLS RD.)	90	45.41
US-97	1	43.11	43.29	0.18	2,200	3	0	3	0	0		Sherman		95	66.63

044 Wapinitia

OR-216	1	3.62	3.75	0.13	260	2	0	1	1	0		Wasco	KEEPS MILL RD.	90	48.81
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Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	City	County	Connection	Percent	SPIS
050 Klamath Falls-Malin															
OR-39	1	-2.98	-2.80	0.18	14,600	16	0	2	6	8		Klamath	ROAD	95	71.77
OR-39	1	1.69	1.84	0.15	7,400	6	0	1	3	2		Klamath		85	41.36
	1	25.71	25.86	0.15	226	1	1	0	0	0		Klamath	STASTNY RD.	85	40.28
053 Warm Springs															
US-26	1	73.49	73.59	0.10	4,300	2	0	2	0	0		Wasco		85	43.07
US-26	1	116.31	116.49	0.18	11,100	2	2	0	0	0	Madras	Jefferson	HARRIS ST.	85	41.01
270 Lake Of The Woods															
OR-140	1	56.91	57.09	0.18	2,900	2	0	2	0	0		Klamath		85	44.68
OR-140	1	57.91	58.09	0.18	2,900	4	1	0	2	1		Klamath		85	39.49
290 Sherars Bridge															
OR-216	1	7.54	7.72	0.18	170	1	0	1	0	0		Wasco	WAYSIDE	85	42.39
OR-216	1	11.52	11.70	0.18	140	1	0	1	0	0		Sherman		85	44.38
291 Shaniko-Fossil															
OR-218	1	11.90	12.08	0.18	180	2	1	0	0	1		Wasco		90	48.81
OR-218	1	15.07	15.25	0.18	180	1	0	1	0	0		Wasco		85	41.81
OR-218	1	27.95	28.14	0.19	140	1	0	1	0	0		Wheeler		85	44.38
321 Heppner-Spray															
OR-207	1	27.47	27.65	0.18	100	1	1	0	0	0		Wheeler		90	45.12
380 Paulina															
OR-380	1	22.97	23.10	0.13	270	2	1	0	0	1		Crook		90	48.45
OR-380	1	33.36	33.54	0.18	240	1	0	1	0	0		Crook	ROAD (ODOT STOCKPILE SITE)	85	38.99
390 Service Creek-Mitchell															
OR-207	1	18.18	18.36	0.18	190	1	1	0	0	0		Wheeler		85	41.27

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Rte	Rdwy	BMP	EMP	Length	ADT	Crash	Fatal	A	B	C	City	County	Connection	Percent	SPIS
OR-207	1	18.82	19.00	0.18	190	3	1	0	1	1		Wheeler		90	51.91

424 South Klamath Falls

OR-140	1	0.77	0.93	0.16	9,400	4	0	2	1	1	Klamath Falls	Klamath		90	48.64
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431 Warner

OR-140	1	38.88	39.06	0.18	220	1	1	0	0	0		Lake		85	39.83
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OR-140	1	48.57	48.75	0.18	220	1	0	1	0	0		Lake		85	39.83
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