

CLACKAMAS COUNTY TRAFFIC SAFETY COMMISSION MINUTES

October 5, 2022

MISSION: To give the citizens of Clackamas County a forum to voice traffic safety concerns, evaluate related issues, provide a liaison with County agencies and promote traffic safety.

COMMISSION MEMBERS

Present	Absent:
Chris Larsen Ronna Keeney Bob Karl Laurie Hedwall (via zoom) William Farley Jeanette DeCastro (via zoom) Michael Wilson	Nathan McCarty James Waddington Rafael Kaup Andrew Labonte
Staff Present	Guest
Christian Snuffin Joseph Marek	Heidi Hughes-Welter Lucien Welter

APPROVAL OF LAST MEETING MINUTES

The minutes from August 3rd, 2022 meeting were approved unanimously.

COMMUNITY CONCERNS: We had a guest Heidi Hughes-Welter and her son, Lucien whose other son, Seth Welford, was in a serious crash at S. Upper Highland and S. Ridge Road. He was traveling east, and a truck trailer was heading north and ran a stop sign. She was interested in what could be done at that intersection and what the history of crashes are in the intersection. Joseph said we can look at the intersection and look at the approach legs.

PRESENTATION ON VISION ZERO SOFTWARE TOOL: Joseph Marek, the county's traffic engineer and Transportation Safety Program Manager reviewed a new technical tool that the county is using to evaluate the safety of county roads. We obtained the software in March 2022.

Joseph went through an example of Beaver Creek Road between Hwy 211 and Hwy 213 from 2014-2020. See attached slide deck. Essentially the software does a very quick analysis of the road segments and intersections and compares crashes to what we would expect from a typical road of this design to identify problem areas for improvement and can analyze potential improvements, as well.

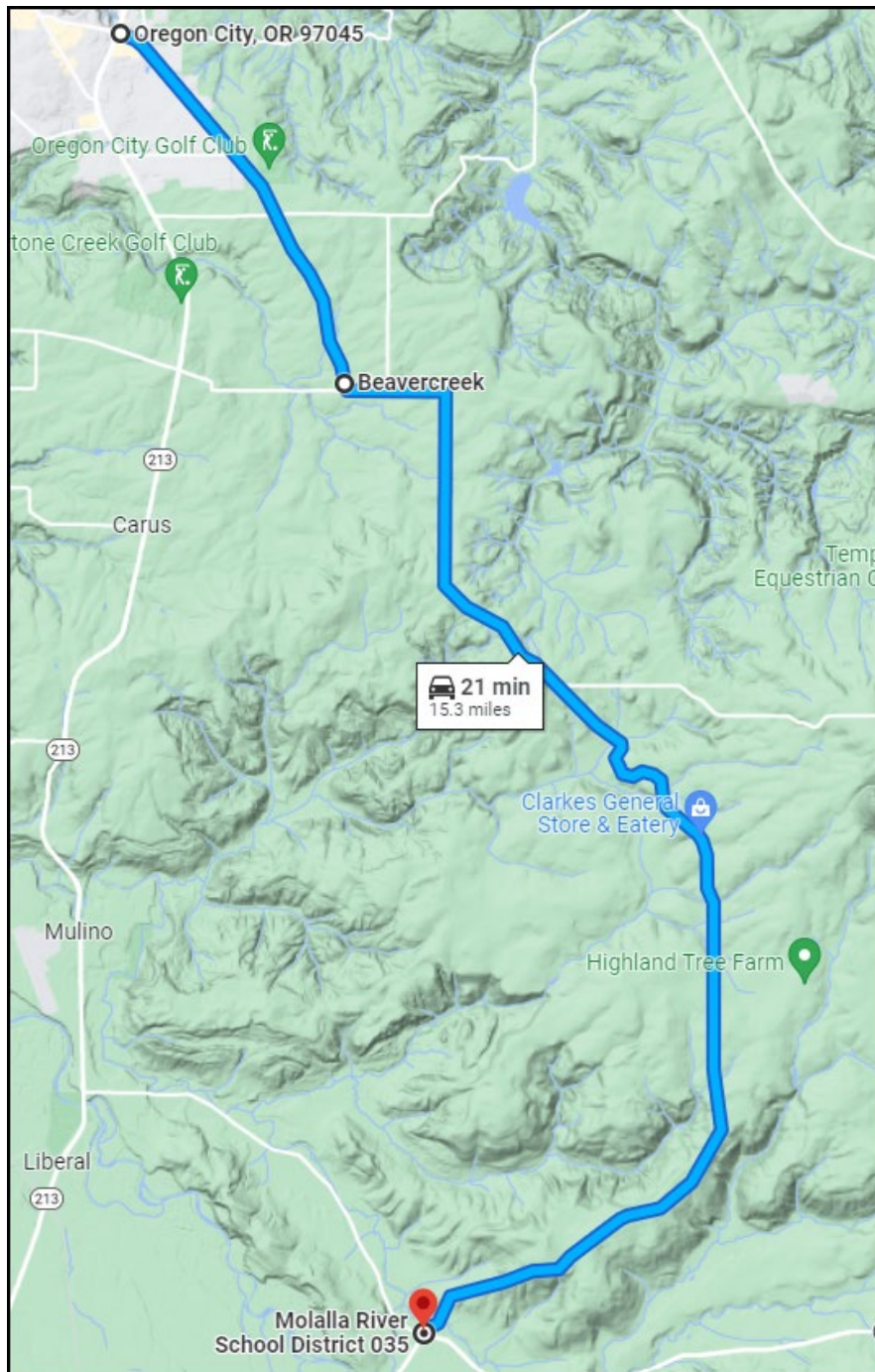
This was followed by a live analysis of Upper Highland and Ridge to show what the software was capable of with the committee. There was some discussion on how Property Damage Only (PDO) crashes are underreported based on Oregon being a self-reporting state. The data is based on ODOT information and is about two years old. For new roads, we will need to wait for the data to do an analysis.

Suggestion to ask the traffic sergeant to attend a future meeting to discuss traffic safety.

ADDITIONAL DISCUSSION ITEMS:

- a. **Monthly/YTD fatal crash update:** There were six fatalities since our last meeting, all on state highways. Through September 26, we are at 20 fatals total, which is lower. Motorcycle and ped are up. All of the ped fatals were on state highways or city roads.
- b. **Driving Under the Influence Campaign:** Christian shared the final draft of our campaign that will launch soon: <https://app.frame.io/reviews/0d386266-e9e9-4890-9e5b-602a90975f4d/98e6a847-7d24-4724-8c1f-4f964c3e06cb>
- c. **Radar Sign Update:** Currently at King/Bell. David will attend in February to discuss its results. Joseph shared that the County would like to get to a one-month rotation pattern.
- d. **Jeanette DeCastro:** Wondered how Safe Routes to School went for the beginning of school year and recommended a reading [Traffic by Tom Vanderbilt](#). Joseph reported that we have heard no complaints regarding traffic and school safety. That is usually a good sign.
- e. **High Friction Treatment:** Christian passed around the sample of our high friction treatment surface.
- f. **Motorized wheelchair:** Michael asked where people can use them. Joseph shared a brochure. The Oregon ORS is here: https://oregon.public.law/statutes/ors_814.550.
- g. **Naloxone:** Bob asked about getting involved in training. Chris suggested that it is not a part of our charter.
- h. **Trivia Night at the next meeting on December 7, 2022.**

Notes taken from recording by Rob Sadowsky.



Beavercreek Road CC# 52033

Segment hot spot crashes

Hwy 211 (MP 0.0) → Hwy 213 (MP 15.33)
2014-2020

SUMMARY DETAIL REPORT – ALL CRASHES



Clackamas County
Department of Transportation and Development
Detailed Summary of Crashes Report

06/16/2022

Job #: 20220616150047

Location: 52033 A Begin: 0.00 End: 13.50 From: 01/01/2014 To: 12/31/2020

Severity	
PDO:	34
INJ:	59
FAT:	1
84 Injured 1 Killed	
Total:	94

Number of Vehicles	
One Vehicle:	54
Two Vehicles:	38
Three or More:	2
Unknown:	0
Total:	94

Location	
On Road:	43
Off Road Left:	20
Off Road Right:	30
Off Road at Tee:	0
Off in Median:	0
Unknown:	1
Total:	94

Lighting Conditions	
Daylight:	55
Dawn or Dusk:	9
Dark - Lighted:	1
Dark - Unlighted:	29
Unknown:	0
Total:	94

Weather Conditions	
None:	59
Rain:	20
Snow/Sleet/Hail:	1
Fog:	6
Dust:	0
Wind:	0
Unknown:	8
Total:	94

Crash Rates	
PDO:	0.29*
INJ:	0.50*
FAT:	0.85**
Total:	0.80*

Crash Type	
Overturning:	10
Other Non Collision:	2
Pedestrians:	0
Broadside:	0
Head On:	4
Rear End:	23
Sideswipe (Same):	2
Sideswipe (Opposite):	7
Approach Turn:	1
Overtaking Turn:	0
Parked Motor Vehicle:	0
Railway Vehicle:	0
Bicycle:	0
Motorized Bicycle:	0
Domestic Animal:	0
Wild Animal:	6
Light/Utility Pole:	7
Traffic Signal Pole:	0
Sign:	0
Bridge Rail:	0
Guard Rail:	0
Cable Rail:	0
Concrete Barrier:	0
Bridge Abutment:	0
Column/Pier:	0
Culvert/Headwall:	1
Embankment:	11
Curb:	0
Delineator Post:	0
Fence:	5
Tree:	9
Large Boulders or Rocks:	0
Barricade:	0
Wall/Building:	1
Crash Cushion:	0
Mailbox:	1
Other Fixed Object:	2
Total Fixed Objects:	37
Rocks in Roadway:	0
Vehicle Cargo/Debris:	0
Road Maintenance Equipment:	0
Involving Other Object:	1
Total Other Objects:	1
Unknown:	1
Total:	94

Mainline/Ramps/Frontage Roads	
Mainline:	94
Crossroad (A):	0
Total:	94

Ramps	
B:	0
C:	0
D:	0
E:	0
F:	0
G:	0
H:	0
I:	0
J:	0
K:	0
L:	0
M:	0
N:	0
O:	0
P:	0
Unknown:	0
Total:	94

Road Description	
At Intersection:	0
At Driveway Access:	7
Intersection Related:	0
Non Intersection:	87
In Alley:	0
Roundabout:	0
Ramp:	0
Parking Lot:	0
Unknown:	0
Total:	94

Road Conditions	
Dry:	49
Wet:	35
Muddy:	0
Snowy:	0
Icy:	6
Slushy:	0
Foreign Material:	0
With Road Treatment:	0
Dry w/icy Road Treatment:	0
Wet w/icy Road Treatment:	0
Snowy w/icy Road Treatment:	0
Icy w/icy Road Treatment:	0
Slushy w/icy Road Treatment:	0
Unknown:	4
Total:	94

ADT: 3,399 Length: 13.55



Clackamas County
Department of Transportation and Development
Detailed Summary of Crashes Report

06/16/2022

Job #: 20220616150047

Location: 52033 A Begin: 0.00 End: 13.50 From: 01/01/2014 To: 12/31/2020

Vehicle Type	Veh 1	Veh 2	Veh 3
Passenger Car/Van:	91	40	2
Passenger Car/Van w/Trl:	0	0	0
Pickup Truck/Utility Van:	0	0	0
Pickup Truck/Utility Van w/Trl:	0	0	0
SUV:	0	0	0
SUV w/Trl:	0	0	0
Truck 10k lbs or Less:	1	0	0
Trucks > 10k lbs/Bus > 15 People:	1	0	0
School Bus < 15 People:	0	0	0
Non School Bus < 15 People:	0	0	0
Motorhome:	0	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	94	40	2

Vehicle Movement	Veh 1	Veh 2	Veh 3
Going Straight:	91	20	0
Slowing:	0	0	0
Stopped in Traffic:	1	19	2
Making Right Turn:	0	0	0
Making Left Turn:	1	1	0
Making U-Turn:	0	0	0
Passing:	0	0	0
Backing:	1	0	0
Enter/Leave Parked Position:	0	0	0
Starting in Traffic:	0	0	0
Parked:	0	0	0
Changing Lanes:	0	0	0
Avoiding Object/Veh in Road:	0	0	0
Weaving:	0	0	0
Wrong Way:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	94	40	2

Contributing Factor	Veh 1	Veh 2	Veh 3
No Apparent Contributing Factor:	90	40	2
Asleep at the Wheel:	0	0	0
Illness:	0	0	0
Distracted by Passenger:	0	0	0
Driver Inexperience:	0	0	0
Driver Fatigue:	0	0	0
Driver Preoccupied:	4	0	0
Driver Unfamiliar with Area:	0	0	0
Driver Emotionally Upset:	0	0	0
Evading Law Enforcement Officer:	0	0	0
Physical Disability:	0	0	0
Unknown:	0	0	0
Total:	94	40	2

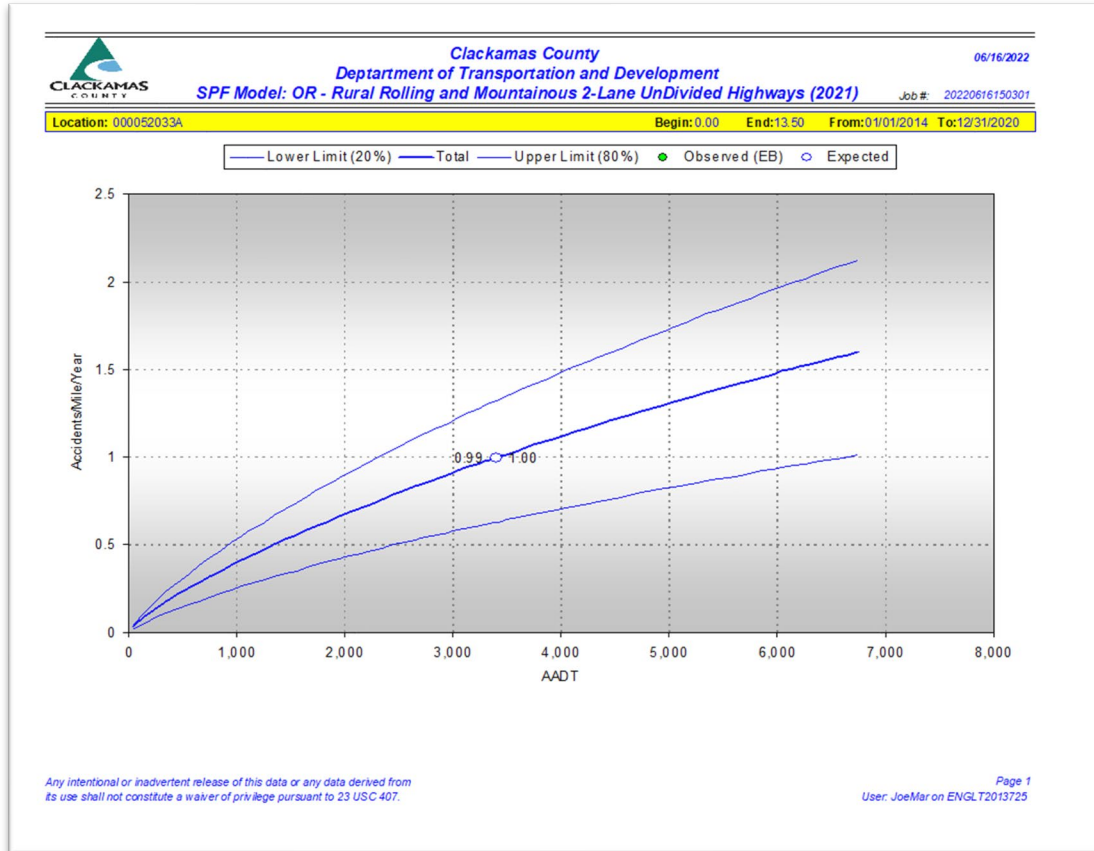
Direction	Veh 1	Veh 2	Veh 3
North:	30	12	1
Northeast:	0	0	0
East:	19	9	1
Southeast:	2	1	0
South:	26	17	0
Southwest:	0	0	0
West:	15	1	0
Northwest:	0	0	0
Unknown:	2	0	0
Total:	94	40	2

Condition of Driver	Veh 1	Veh 2	Veh 3
No Impairment Suspected:	16	5	2
Alcohol Involved:	6	0	0
RX, Medication, or Drugs Involved:	0	0	0
Illegal Drugs Involved:	1	0	0
Alcohol and Drugs Involved:	0	0	0
Driver/Pedestrian not Observed:	0	0	0
Unknown:	71	35	0
Total:	94	40	2

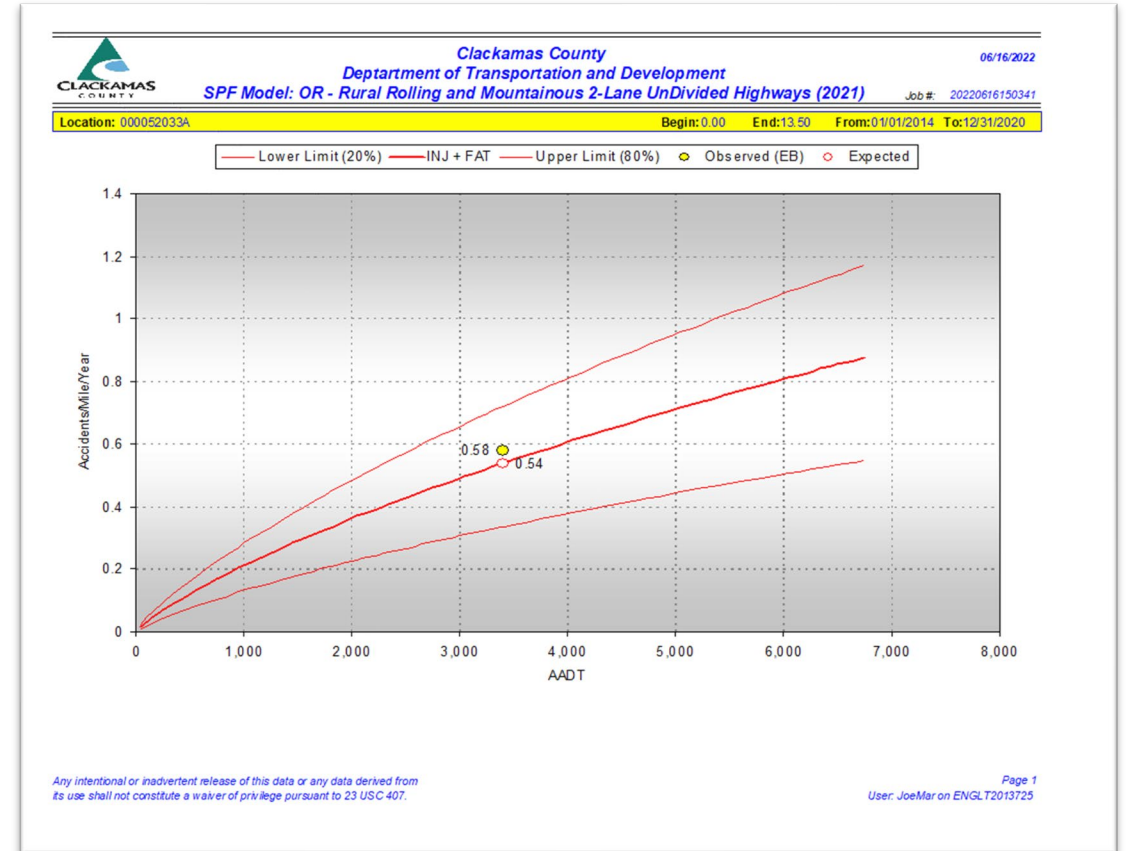
ADT: 3,399 Length: 13.55

SAFETY PERFORMANCE FUNCTION MODELS

ALL CRASHES



TOTAL



SEVERITY

DIRECT DIAGNOSTICS SUMMARY REPORT

Clackamas County Department of Transportation and Development Direct Diagnostics (Spot Location) Analysis		10/04/2022	
Location File: DIRECT_DIAGNOSTICS_FOR_RTE52033A_00000_01531		Job #: 20221004111826 Cutoff: 5 Acc's @ 95%	
Baseline Statistics	Statewide Average	This Location	Probability
CATEGORY	# Crashes %	# Crashes %	%
Property Damage Only (PDO)	15,855 46.66%	109 40.67%	8.72%
Injury (INJ)	17,221 50.68%	157 58.58%	98.63% ■
Fatal (FAT)	904 2.66%	2 0.75%	16.73%
Persons Injured	25,948	234	
Persons Killed	1,042	2	
Single Vehicle Accidents	24,166 71.12%	68 25.37%	0.00%
Two Vehicle Accidents	8,733 25.70%	180 67.10%	100.00% ■
Three or More Vehicle Accidents	1,081 3.18%	20 7.40%	99.88% ■
Unknown Number of Vehicles	0 0.00%	0 0.00%	NIA
On Road	14,682 42.91%	156 58.21%	100.00% ■
Off Road	18,090 53.24%	61 22.76%	0.00%
Off Road Left	11,373 33.47%	27 10.07%	0.00%
Off Road Right	6,707 19.74%	34 12.69%	1.34%
Off Road at Tee	0 0.00%	0 0.00%	NIA
Off Road in Median	10 0.03%	0 0.00%	NIA
Unknown Road Location	1,308 3.85%	51 19.03%	100.00% ■
Overturning	6,073 17.87%	11 4.10%	0.00%
Other Non Collision	756 2.22%	4 1.49%	47.53%
Vehicle Cargo or Debris	0 0.00%	0 0.00%	NIA
Pedestrian	134 0.39%	0 0.00%	NIA
Broadside	54 0.16%	30 11.19%	100.00% ■
Head On	1,248 3.67%	4 1.49%	12.60%
Rear End	4,367 12.85%	95 35.45%	100.00% ■
Sideswipe (Same Direction)	961 2.83%	12 4.48%	94.64%
Sideswipe (Opposite Direction)	1,813 5.34%	8 2.99%	19.30%
Approach Turn	66 0.19%	40 14.93%	100.00% ■
Overtaking Turn	400 1.18%	1 0.37%	40.41%
Parked Motor Vehicle	168 0.46%	0 0.00%	NIA
Railway Vehicle	0 0.00%	0 0.00%	NIA
Bicycle or Pedal Cycle	8 0.02%	1 0.37%	99.92%
Motorized Bicycle	0 0.00%	0 0.00%	NIA
Domestic Animal	749 2.20%	0 0.00%	NIA
Wild Animal	4,059 11.95%	6 2.24%	0.00%
Light or Utility Pole	560 1.65%	11 4.10%	99.24% ■
Bridge Rail	175 0.52%	0 0.00%	NIA
Guard Rail	1,318 3.88%	0 0.00%	NIA
Cable Rail	4 0.01%	0 0.00%	NIA
Concrete Barrier	64 0.19%	0 0.00%	NIA
Bridge Abutment	22 0.06%	0 0.00%	NIA
Culvert or Headwall	66 0.19%	1 0.37%	95.63%
Delineator Post	248 0.73%	0 0.00%	NIA
Large Boulders or Rocks	226 0.67%	0 0.00%	NIA
Rocks in Roadway	36 0.11%	0 0.00%	NIA
Barricade	4 0.01%	0 0.00%	NIA
Wall or Building	232 0.68%	1 0.37%	67.67%
Mailbox	140 0.41%	1 0.37%	84.43%
Other Fixed Object	1,956 5.76%	5 1.87%	3.00%
Road Maintenance Equipment	2 0.01%	0 0.00%	NIA
Unknown Accident Type	72 0.21%	7 2.61%	100.00% ■
Total Fixed Objects	12,680 37.32%	48 17.91%	0.00%

Highway Class: OR - Rural Rolling and Mountainous 2-Lane Undivided Highways - AADT All Totals (2021)

Clackamas County Department of Transportation and Development Direct Diagnostics (Spot Location) Analysis		10/04/2022	
Location File: DIRECT_DIAGNOSTICS_FOR_RTE52033A_00000_01531		Job #: 20221004111826 Cutoff: 5 Acc's @ 95%	
Baseline Statistics	Statewide Average	This Location	Probability
CATEGORY	# Crashes %	# Crashes %	%
Total Other Objects	362 1.12%	1 0.37%	42.91%
Daylight	19,758 58.15%	174 64.93%	97.63% ■
Dawn or Dusk	3,147 9.26%	26 9.70%	68.89%
Dark - Lighted	555 1.63%	29 10.82%	100.00% ■
Dark - Unlighted	10,490 30.87%	39 14.55%	0.00%
Unknown Lighting	30 0.09%	0 0.00%	NIA
No Adverse Weather	25,182 74.11%	187 69.78%	12.88%
Rain	4,442 13.07%	50 18.60%	98.73% ■
Snow or Sleet or Hail	2,553 7.51%	4 1.49%	0.09%
Fog	1,127 3.32%	9 3.36%	66.52%
Dust	20 0.06%	0 0.00%	NIA
Wind	0 0.00%	0 0.00%	NIA
Unknown Weather	656 1.93%	18 6.72%	100.00% ■
Dry Road	20,162 59.33%	176 65.67%	96.63% ■
Wet Road	7,051 20.75%	76 28.36%	99.53% ■
Muddy Road	0 0.00%	0 0.00%	NIA
Snowy Road	1,450 4.27%	2 0.75%	2.24%
Icy Road	4,821 14.19%	9 3.36%	0.00%
Slushy Road	0 0.00%	0 0.00%	NIA
Foreign Material Road	0 0.00%	0 0.00%	NIA
With Road Treatment	0 0.00%	0 0.00%	NIA
Dry with Icy Road Treatment	0 0.00%	0 0.00%	NIA
Wet with Icy Road Treatment	0 0.00%	0 0.00%	NIA
Snowy with Icy Road Treatment	0 0.00%	0 0.00%	NIA
Icy with Icy Road Treatment	0 0.00%	0 0.00%	NIA
Slushy with Icy Road Treatment	0 0.00%	0 0.00%	NIA
Unknown Road Condition	496 1.46%	5 1.87%	89.51%
Driver 1 - No Apparent Contributing Factor	29,139 85.75%	251 93.66%	99.98% ■
Driver 1 - Asleep at the Wheel	2,355 6.93%	2 0.75%	0.05%
Driver 1 - Illness	460 1.35%	3 1.12%	59.51%
Driver 1 - Distracted by Passenger	4 0.01%	0 0.00%	NIA
Driver 1 - Driver Inexperience	0 0.00%	0 0.00%	NIA
Driver 1 - Driver Fatigue	0 0.00%	0 0.00%	NIA
Driver 1 - Driver Preoccupied	1,839 5.41%	12 4.48%	42.52%
Driver 1 - Driver Unfamiliar with Area	0 0.00%	0 0.00%	NIA
Driver 1 - Driver Emotionally Upset	0 0.00%	0 0.00%	NIA
Driver 1 - Evading Law Enforcement Officer	0 0.00%	0 0.00%	NIA
Driver 1 - Physical Disability	0 0.00%	0 0.00%	NIA
Driver 1 - Unknown Contributing Factor	183 0.54%	0 0.00%	NIA
Driver 1 - No Impairment Suspected	7,323 21.55%	40 14.93%	2.59%
Driver 1 - Alcohol Involved	1,850 5.44%	13 4.85%	55.29%
Driver 1 - RX, Medication, or Drugs Involved	0 0.00%	0 0.00%	NIA
Driver 1 - Illegal Drugs Involved	536 1.58%	1 0.37%	24.96%
Driver 1 - Alcohol and Drugs Involved	233 0.69%	1 0.37%	67.49%
Driver 1 - Driver/Pedestrian not Observed	0 0.00%	0 0.00%	NIA
Driver 1 - Unknown Condition of Driver/Pedestrian	24,038 70.74%	213 79.48%	99.77% ■
Total Accidents	33,980	268	
Total Number of Records	2,577	0	NIA

Highway Class: OR - Rural Rolling and Mountainous 2-Lane Undivided Highways - AADT All Totals (2021)

STRAIGHTLINE DIAGRAMS

ALL CRASHES



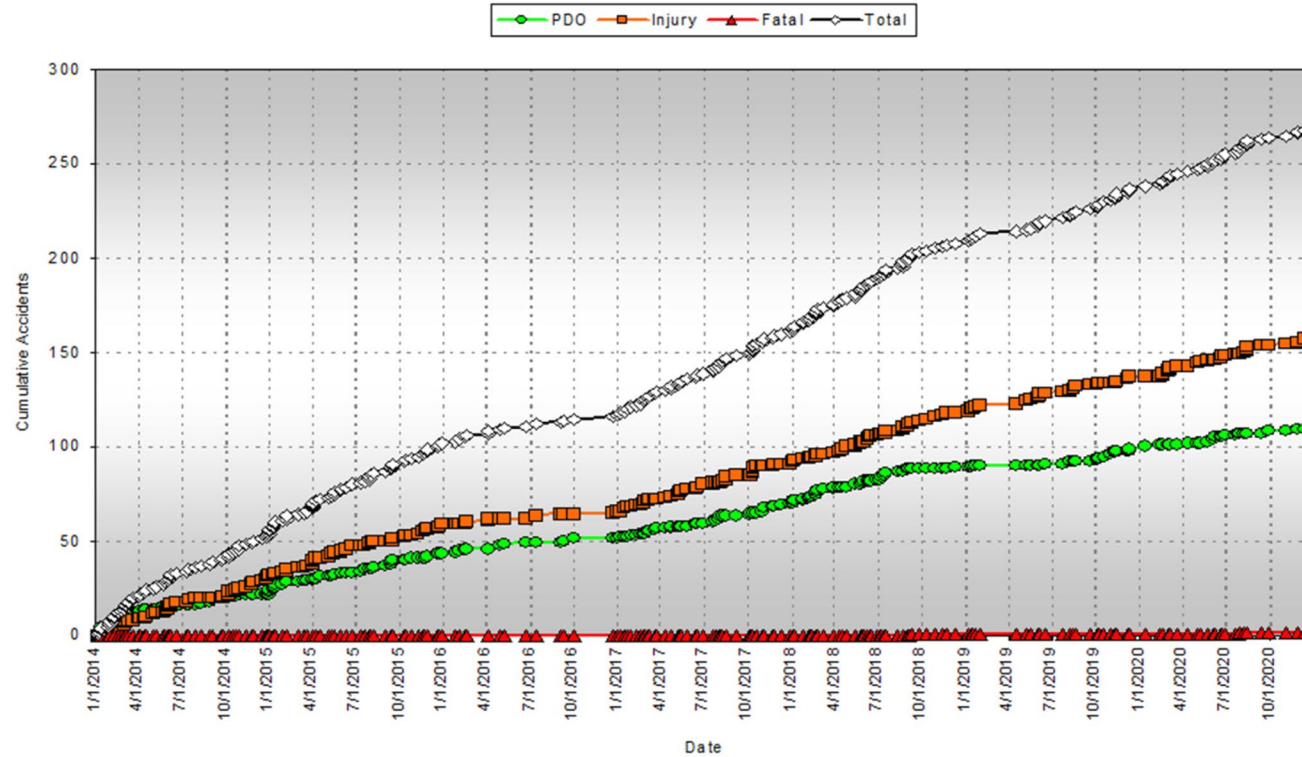
Clackamas County
Department of Transportation and Development
Crash History Graph: Cumulative Graph by Time

06/16/2022

Job #: 20220616144926

Location: 52033 A

Begin: 0.00 End: 15.31 From: 01/01/2014 To: 12/31/2020



STRAIGHTLINE DIAGRAMS

All crashes – no filters applied



Clackamas County
Department of Transportation and Development
Crash History Graph: Straight Line Diagram (SLD)

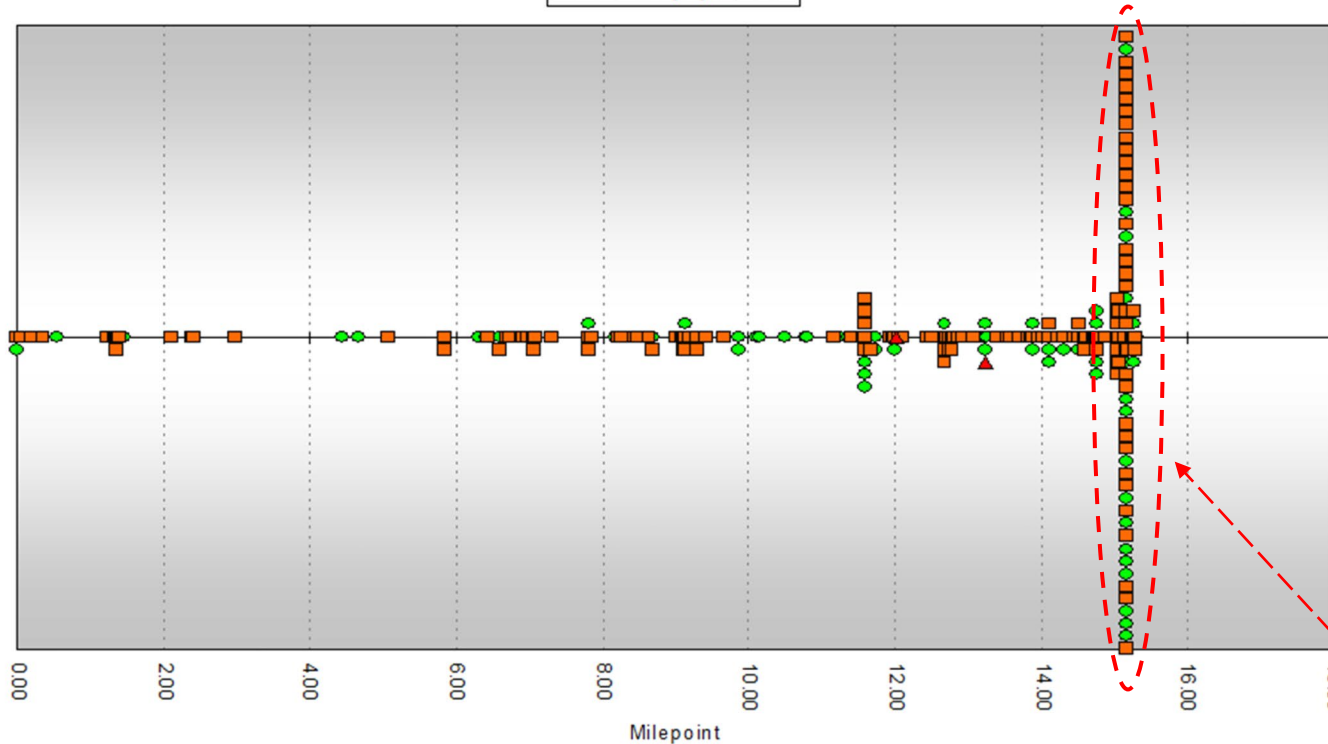
06/16/2022

Job #: 20220616144926

Location: 52033 A

Begin: 0.00 End: 15.31 From: 01/01/2014 To: 12/31/2020

● PDO ■ Injury ▲ Fatal



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Page 1
User: JoeMar on ENGLT2013725

No. 52033

S BEAVERCREEK RD

MAP 144-35L-SE

0.000	LEFT	UNION MILLS RD (42026)
0.000	RIGHT	OSH 211
0.010		BCM
0.160	BRIDGE	#6198 - MEADOWBROOK
0.270	RIGHT	PVT HALLBACKA LN
0.330	LEFT	SALO RD (42016)
0.430	LEFT	ACCESS RD TO SALO RD
1.410	RIGHT	PVT VALLEY VISTA
2.310	RIGHT	NORRY CT (P3170)
3.240	RIGHT	PVT ROCKIE DR S
3.320	LEFT	PVT LOST CANYON RD
3.370	RIGHT	PVT ROCKIE DR S
4.560	LEFT	WINDY CITY RD (43027)
4.560	RIGHT	UNGER RD (43026)
5.580	RIGHT	CEDAR CREEK LN (P3168)
5.850	RIGHT	BUTTE RD (43003)
6.210	LEFT	GARD RD (43008)
6.320	BRIDGE	#TBD2 - BEAVERCREEK ROAD
7.340	LEFT	PVT RED HEREFORD LN
7.410	LEFT	PVT KELLEY CRK LN
7.820	RIGHT	UPPER HIGHLAND RD (44025)
8.240	LEFT	LARKIN RD (42008)
8.700	RIGHT	LOWER HIGHLAND RD (32049)
9.150	LEFT	SPANGLER RD (42028)
9.790	CROSS	CARUS RD (42044)
10.160	LEFT	PVT WHITNEY LN
10.760	RIGHT	YEOMAN RD (32024)
10.770	RIGHT	STEINER RD (32052)
11.070	LEFT	ESSIG LN
11.270	CROSS	FERGUSON RD (32115)
11.620	LEFT	KAMRATH RD (32021)
11.621	LEFT	LELAND RD (32020)
12.020	RIGHT	IVEL RD (32108)
12.490	LEFT	LAMMER RD (32039)
MP	Placement	Description
12.500	RIGHT	CAMELLIA CT (P9281)
12.680	RIGHT	WILSON RD (32038)
12.780	LEFT	TIOGA RD (P2132)
13.250	CROSS	HENRICI RD (32009)
13.340	RIGHT	PVT RD
13.520	RIGHT	PVT OLD ACRES LANE
13.530	LEFT	TIMBERSKY WAY (32096)
13.880	LEFT	CT GLEN OAK RD S
14.130	LEFT	CT MYERS RD
14.320	LEFT	ACCESS TO AND FROM OREGON CITY HIGH SCHOOL
14.490	RIGHT	LODER RD (32005)
14.760	LEFT	ENTRANCE TO CCC
15.040	LEFT	CT MARJORIE RD
15.080	LEFT	ENT TO BERRYHILL
15.160	LEFT	MAIN ENT. TO BERRYHILL
15.160	RIGHT	MAPLELANE RD (32001)
15.310		ECM
15.320	CROSS	OSH 213

Beavercreek @ Maplelane (MP 15.16) - Intersection Crash Summary

Clackamas County
Department of Transportation and Development
Detailed Summary of Crashes Report
06/22/2022
Job #: 20220622122234

Location: 52033 A Begin: 15.15 End: 15.17 From: 01/01/2014 To: 12/31/2020

Severity	Crash Type	
PDO: 17	Overtaking: 0	Bridge Abutment: 0
INU: 33	Other Non Collision: 0	Column/Pier: 0
FAT: 0	Pedestrians: 0	Culvert/Headwall: 0
Total: 50	Broadside: 8	Embankment: 0
	Head On: 0	Curb: 0
	Rear End: 9	Delineator Post: 0
	Sideswipe (Same): 1	Fence: 0
	Sideswipe (Opposite): 0	Tree: 0
	Approach Turn: 31	Large Boulders or Rocks: 0
	Overtaking Turn: 0	Barricade: 0
	Parked Motor Vehicle: 0	Wall/Building: 0
	Railway Vehicle: 0	Crash Cushion: 0
	Bicycle: 1	Mailbox: 0
	Motorized Bicycle: 0	Other Fixed Object: 0
	Domestic Animal: 0	Total Fixed Objects: 0
	Wild Animal: 0	Rocks In Roadway: 0
	Light/Utility Pole: 0	Vehicle Cargo/Debris: 0
	Traffic Signal Pole: 0	Road Maintenance Equipment: 0
	Sign: 0	Involving Other Object: 0
	Bridge Rail: 0	Total Other Objects: 0
	Guard Rail: 0	Unknown: 0
	Cable Rail: 0	Total: 50
	Concrete Barrier: 0	

Number of Vehicles	Location	Lighting Conditions	Weather Conditions
One Vehicle: 1	On Road: 50	Daylight: 35	None: 36
Two Vehicles: 43	Off Road Left: 0	Dawn or Dusk: 3	Rain: 11
Three or More: 6	Off Road Right: 0	Dark - Lighted: 12	Snow/Sleet/Hail: 2
Unknown: 0	Off Road at Tee: 0	Dark - Unlighted: 0	Fog: 0
Total: 50	Off in Median: 0	Unknown: 0	Dust: 0
	Unknown: 0	Total: 50	Wind: 0
			Unknown: 1
			Total: 50

Crash Rates
PDO: 18.27 * * M/MT
INU: 35.47 * ** 100 M/MT
FAT: 0.00 ** Total: 53.74 *

Mainline/Ramps/Frontage Roads	Frontage/Ramp Intersections
Mainline: 50	M: 0 N: 0 O: 0 P: 0
Crossroad (A): 0	
Ramps	Left Frontage Rd (L): 0
B: 0 F: 0 J: 0	Rt Frontage Rd (R): 0
C: 0 G: 0 K: 0	HOV Lanes (V): 0
D: 0 H: 0 T: 0	Unknown: 0
E: 0 I: 0 Z: 0	Total: 50

Road Description	Road Conditions
At Intersection: 40	Dry: 35
At Driveway Access: 10	Wet: 13
Intersection Related: 0	Muddy: 0
Non Intersection: 0	Snowy: 1
In Alley: 0	Icy: 1
Roundabout: 0	Slushy: 0
Ramp: 0	Foreign Material: 0
Parking Lot: 0	With Road Treatment: 0
Unknown: 0	Dry w/icy Road Treatment: 0
Total: 50	Wet w/icy Road Treatment: 0
	Snowy w/icy Road Treatment: 0
	Icy w/icy Road Treatment: 0
	Slushy w/icy Road Treatment: 0
	Unknown: 0
	Total: 50

ADT: 18,193 Length: 0.02

Any intentional or inadvertent release of this data or any data derived from its use shall not constitute a waiver of privilege pursuant to 23 USC 407.

Page 1
User: trojoh on ENGLT2114159

Clackamas County
Department of Transportation and Development
Detailed Summary of Crashes Report
06/22/2022
Job #: 20220622122234

Location: 52033 A Begin: 15.15 End: 15.17 From: 01/01/2014 To: 12/31/2020

Vehicle Type	Veh 1	Veh 2	Veh 3	Vehicle Movement	Veh 1	Veh 2	Veh 3
Passenger Car/Van	48	49	5	Going Straight:	24	31	2
Passenger Car/Van w/Trt	0	0	0	Slowing:	0	0	0
Pickup Truck/Utility Van	0	0	0	Stopped In Traffic:	0	9	4
Pickup Truck/Utility Van w/Trt	0	0	0	Making Right Turn:	1	0	0
SUV	0	0	0	Making Left Turn:	25	9	0
SUV w/Trt	0	0	0	Making U-Turn:	0	0	0
Truck 10k lbs or Less:	0	0	0	Passing:	0	0	0
Trucks > 10k lbs/Bus > 15 People:	0	0	0	Backing:	0	0	0
School Bus < 15 People:	0	0	0	Enter/Leave Parked Position:	0	0	0
Non School Bus < 15 People:	0	0	0	Starting in Traffic:	0	0	0
Motorhome:	0	0	0	Parked:	0	0	0
Motorcycle:	0	0	0	Changing Lanes:	0	0	0
Bicycle:	0	0	0	Avoiding Object/Veh in Road:	0	0	0
Motorized Bicycle:	0	0	0	Weaving:	0	0	0
Farm Equipment:	0	0	0	Wrong Way:	0	0	0
Hill and Run - Unknown:	0	0	0	Other:	0	0	0
Other:	0	0	0	Unknown:	0	0	0
Unknown:	2	0	1	Total: 50	49	6	
Total: 50	49	6					

Contributing Factor	Veh 1	Veh 2	Veh 3	Direction	Veh 1	Veh 2	Veh 3
No Apparent Contributing Factor:	48	49	6	North:	0	0	0
Asleep at the Wheel:	0	0	0	Northeast:	2	3	0
Illness:	0	0	0	East:	0	0	0
Distracted by Passenger:	0	0	0	Southeast:	27	20	1
Driver Inexperience:	0	0	0	South:	0	0	0
Driver Fatigue:	0	0	0	Southwest:	6	7	3
Driver Preoccupied:	2	0	0	West:	0	0	0
Driver Unfamiliar with Area:	0	0	0	Northwest:	15	19	2
Driver Emotionally Upset:	0	0	0	Unknown:	0	0	0
Evading Law Enforcement Officer:	0	0	0	Total: 50	49	6	
Physical Disability:	0	0	0				
Unknown:	0	0	0				
Total: 50	49	6					

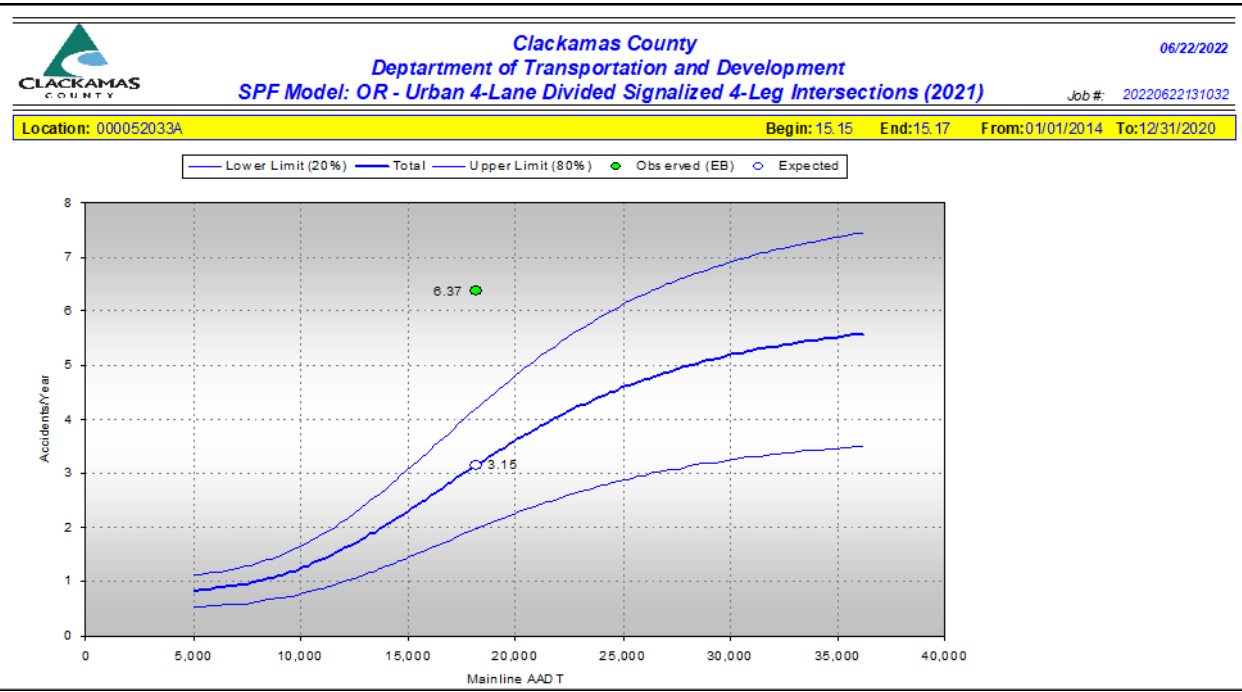
Condition of Driver	Veh 1	Veh 2	Veh 3
No Impairment Suspected:	9	6	0
Alcohol Involved:	0	0	0
RX, Medication, or Drugs Involved:	0	0	0
Illegal Drugs Involved:	0	0	0
Alcohol and Drugs Involved:	0	0	0
Driver/Pedestrian not Observed:	0	0	0
Unknown:	41	43	6
Total: 50	49	6	

ADT: 18,193 Length: 0.02

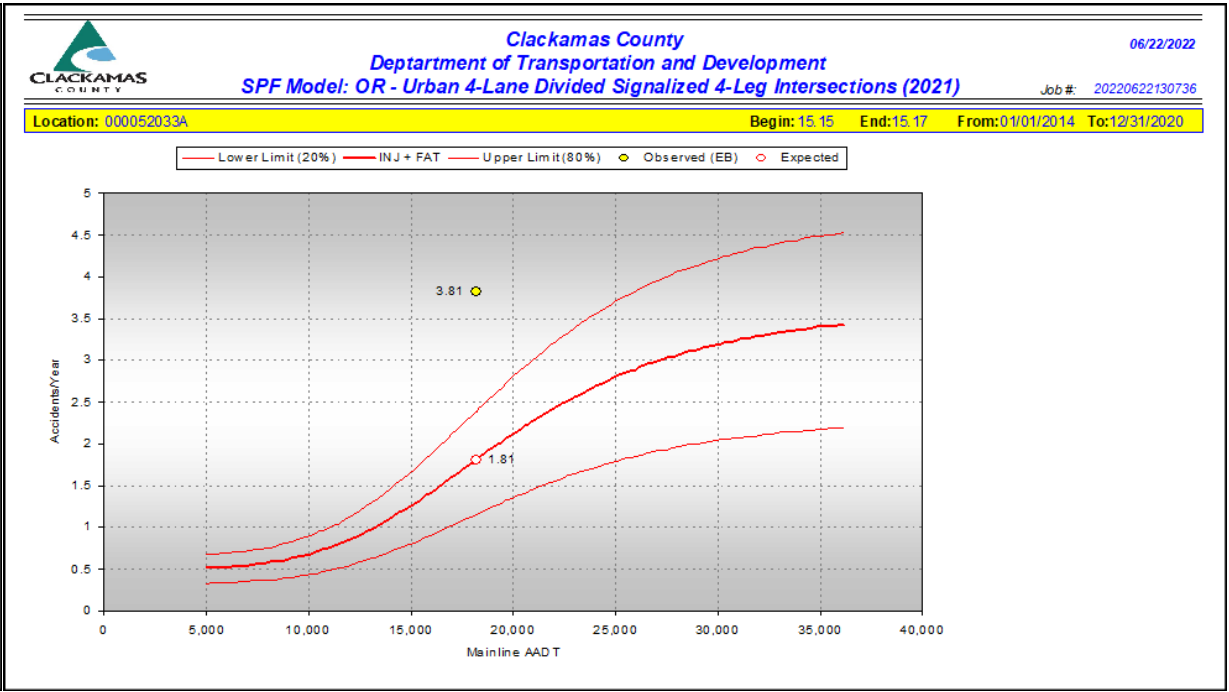
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Page 2
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BEAVERCREEK @ MAPLELANE SAFETY PERFORMANCE FUNCTION MODELS



TOTAL



SEVERITY

BEAVERCREEK @ MAPLELANE



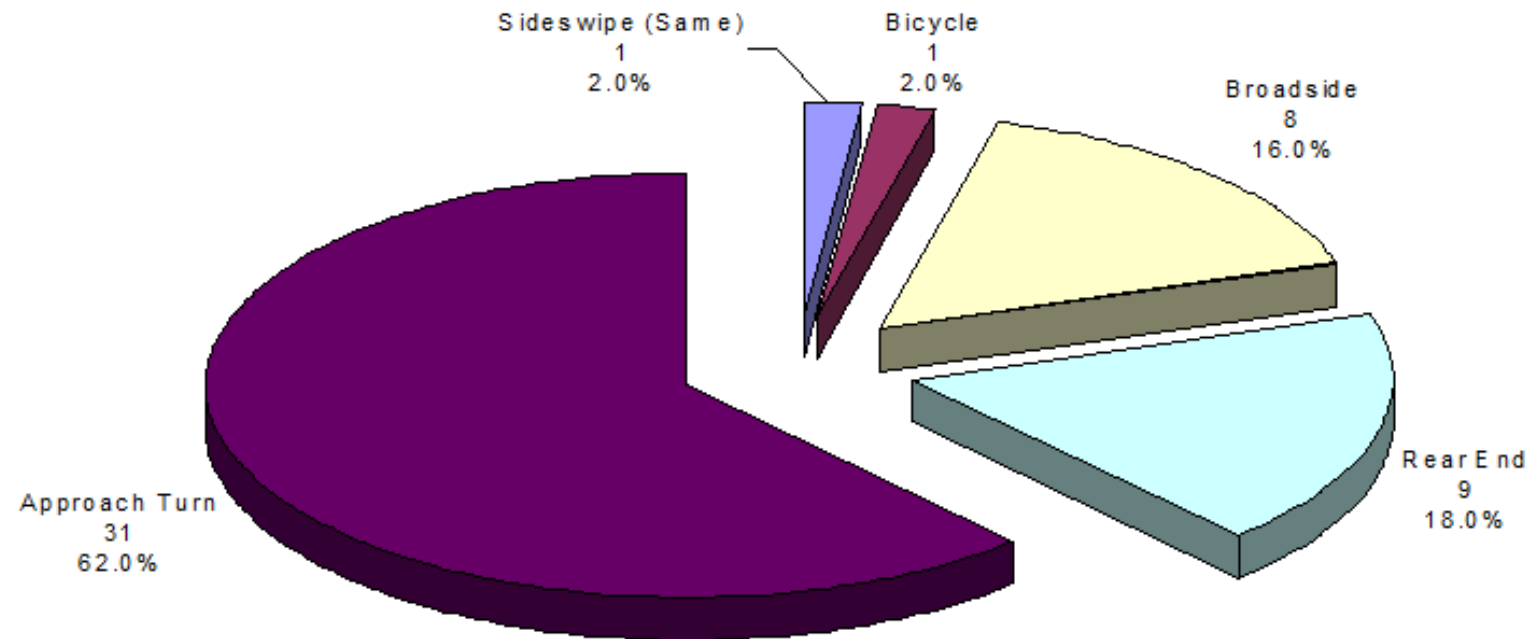
Clackamas County Department of Transportation and Development Crash Distribution Pie Chart Report

06/22/2022

Job #: 20220622122234

Location: 52033 A

Begin: 15.15 End: 15.17 From:01/01/2014 To:12/31/2020



BEAVERCREEK @ MAPLELANE

TIME OF DAY



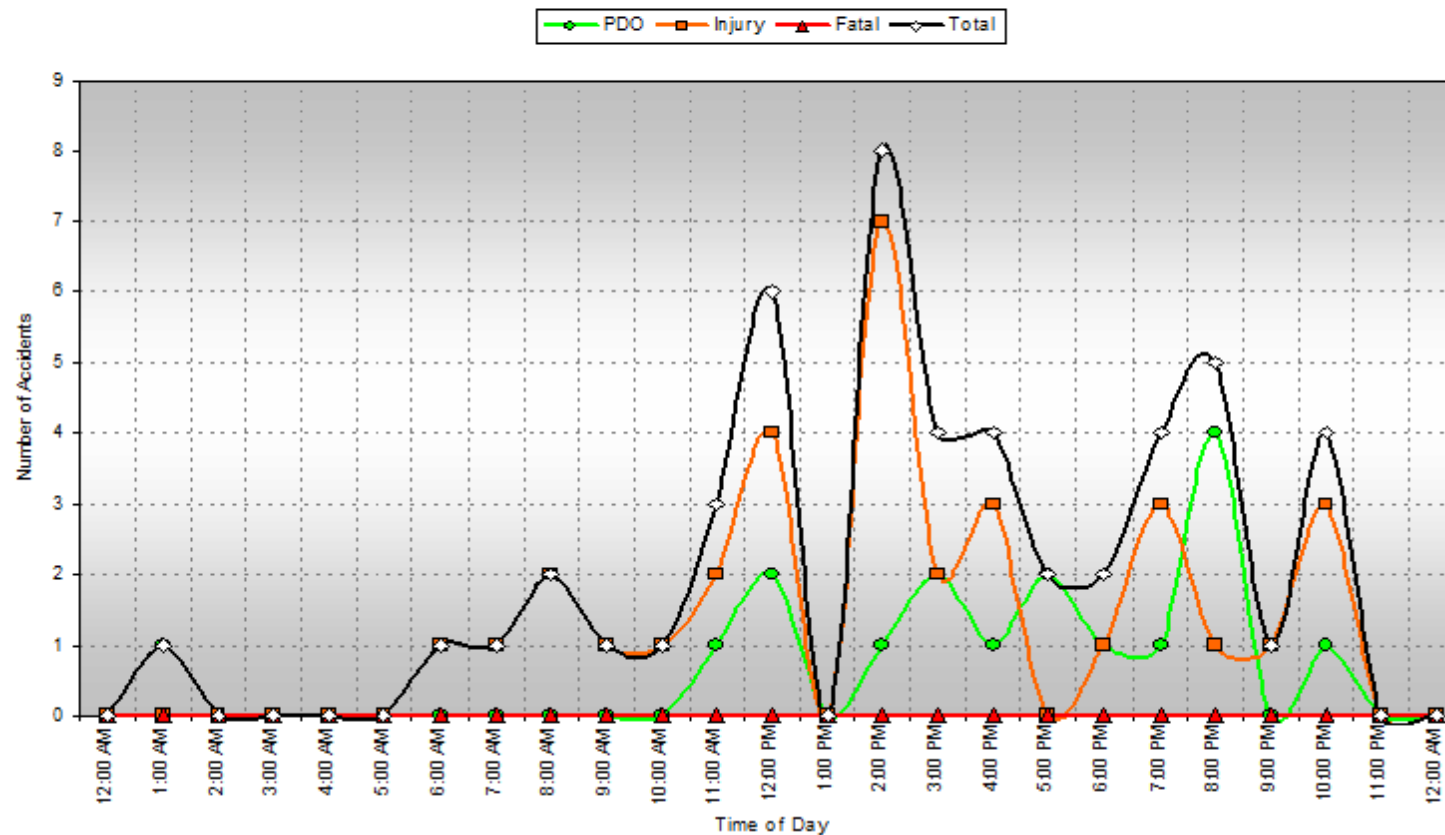
Clackamas County
Department of Transportation and Development
Crash History Graph: Time of Day Graph

06/22/2022

Job #: 20220622131032

Location: 52033 A

Begin: 15.15 End: 15.17 From: 01/01/2014 To: 12/31/2020



BEAVERCREEK @ MAPLELANE

CUMULATIVE BY TIME



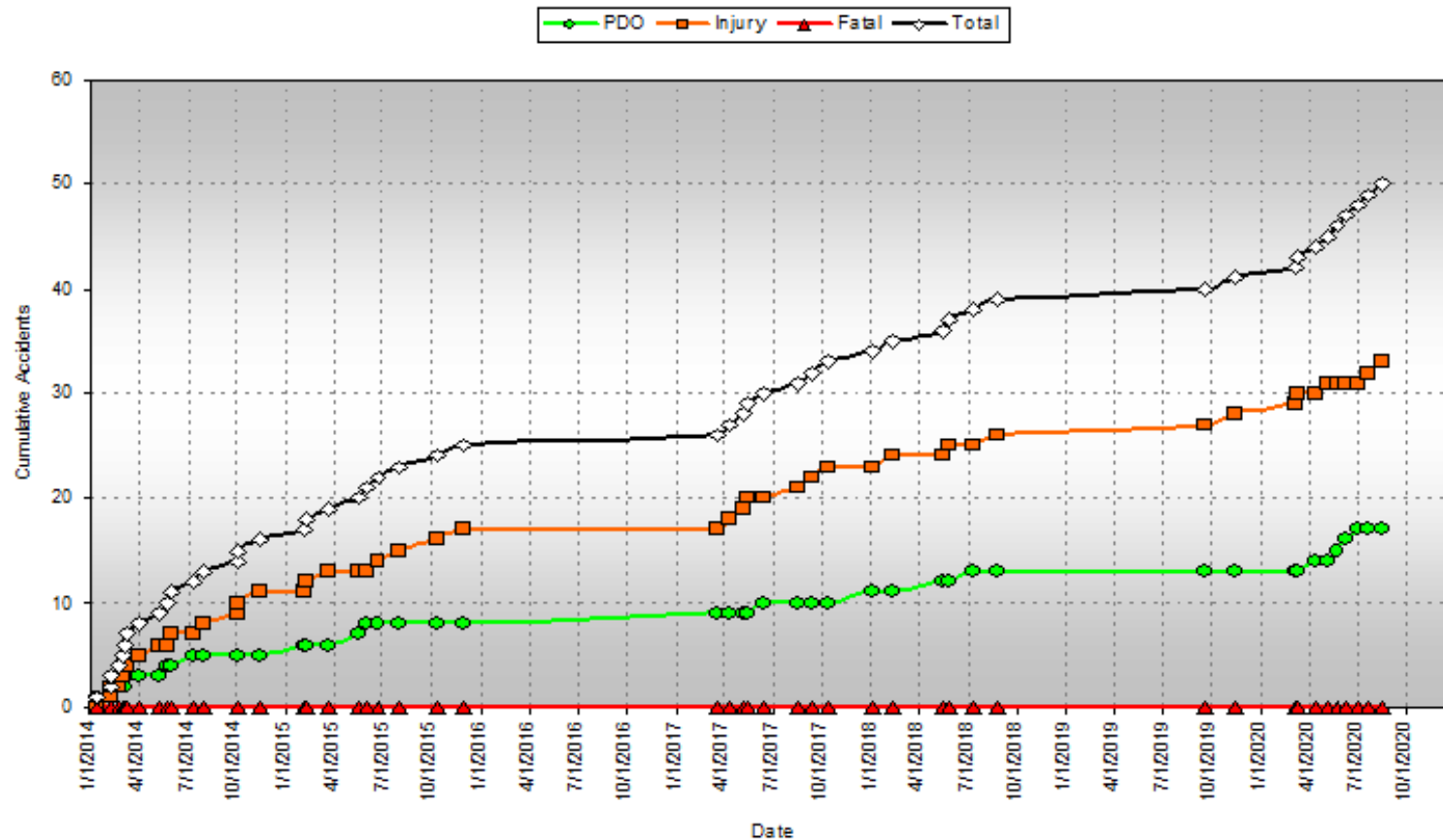
Clackamas County
Department of Transportation and Development
Crash History Graph: Cumulative Graph by Time

06/22/2022

Job #: 20220622131032

Location: 52033 A

Begin: 15.15 End: 15.17 From:01/01/2014 To:12/31/2020



BEAVERCREEK @ MAPLELANE

DAY OF WEEK



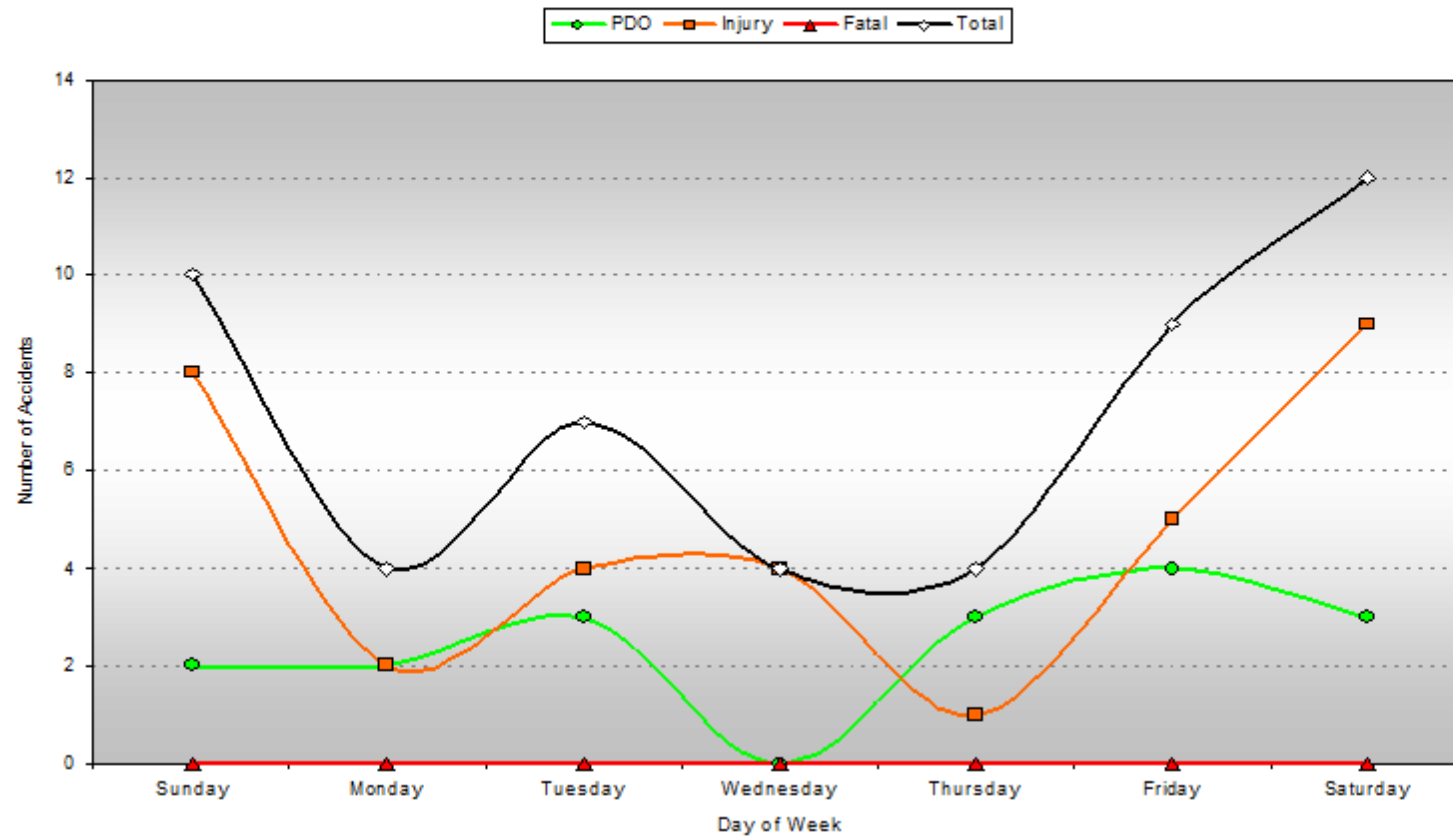
Clackamas County
Department of Transportation and Development
Crash History Graph: Day of Week Graph

06/22/2022

Job #: 20220622131032

Location: 52033 A

Begin: 15.15 End: 15.17 From:01/01/2014 To:12/31/2020




CRASH PATTERNS / POSSIBLE ISSUES & TREATMENTS

- Beaver creek / Maplelane (Broadside, Approach Turn crashes – crash patterns heavy with opposing SEB left to Maplelane and NWB left to shopping center.
 - **Flashing yellow arrow** - has been turned off permanently.
 - **Intersection is skewed slightly** – this can limit the sight distance if cars are queued in the left turn pockets on Beaver creek.

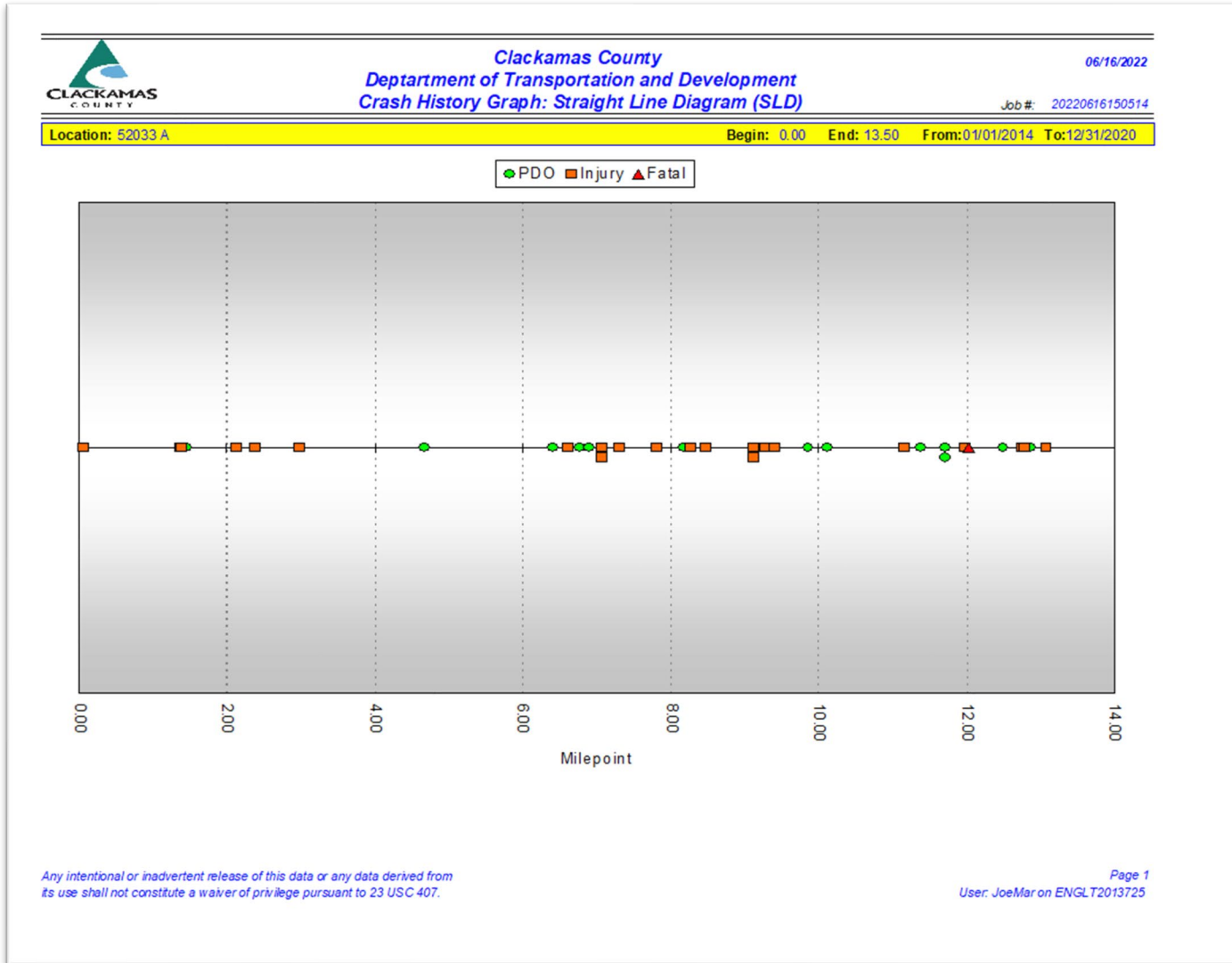
POTENTIAL PROJECTS BENEFIT/COST

1. Replace signal with roundabout at Beaver creek / Maplelane

	 CLACKAMAS COUNTY	Clackamas County Department of Transportation and Development Economic Analysis Report	06/22/2022
		Job #: 20220622131032	
Location: 52033 A		Begin: 15.15 End: 15.17 From: 01/01/2014 To: 12/31/2020	
<u>Benefit Cost Ratio Calculations</u>			
	<u>Crashes</u>	<u>Projected Crashes and Reduction Factors</u>	<u>Other Information</u>
PDO:	17	Weighted PDO: 2.98 19% :CRF for PDO	Cost of PDO: \$ 11,100
INJ:	33 55 :Injured	Weighted INJ: 9.65 71% :CRF for INJ	Cost of INJ: \$ 101,800
FAT:	0 0 :Killed	Weighted FAT: 0.00 71% :CRF for FAT	Cost of FAT: \$ 1,820,600
		B/C Weighted Year Factor: 7.00 53% :Weighted CRF	Interest Rate: 5%
			AADT Growth Factor: 2.0%
	Cost: \$ 6,000,000		Service Life: 20
	From: 01/01/2014		Capital Recovery Factor: 0.080
	To: 12/31/2020	Days: 2557	Annual Maintenance/Delay Cost: \$ 0
	Benefit Cost Ratio: 1.46	(B/C Based on Injury Numbers : PDO/Injured/Killed)	
Type of Improvement: Conversion of Signalized Intersection to Roundabout (Multi Lane)			
Special Notes: Intersection Related Crashes			

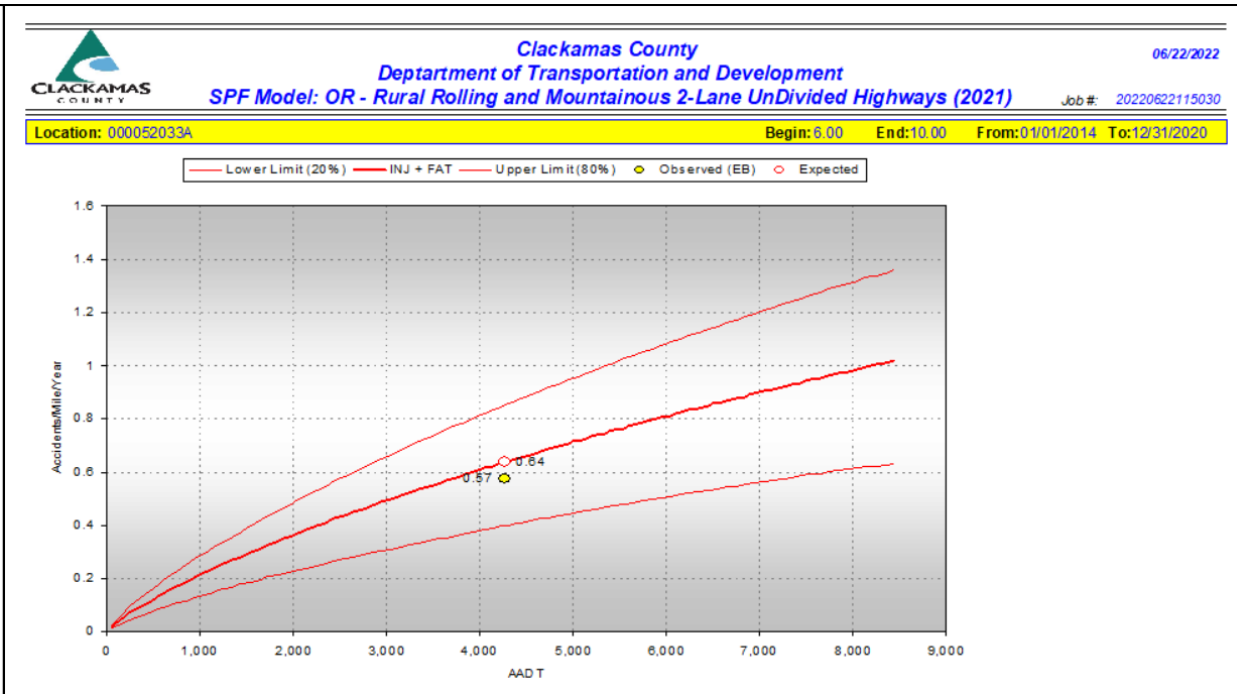
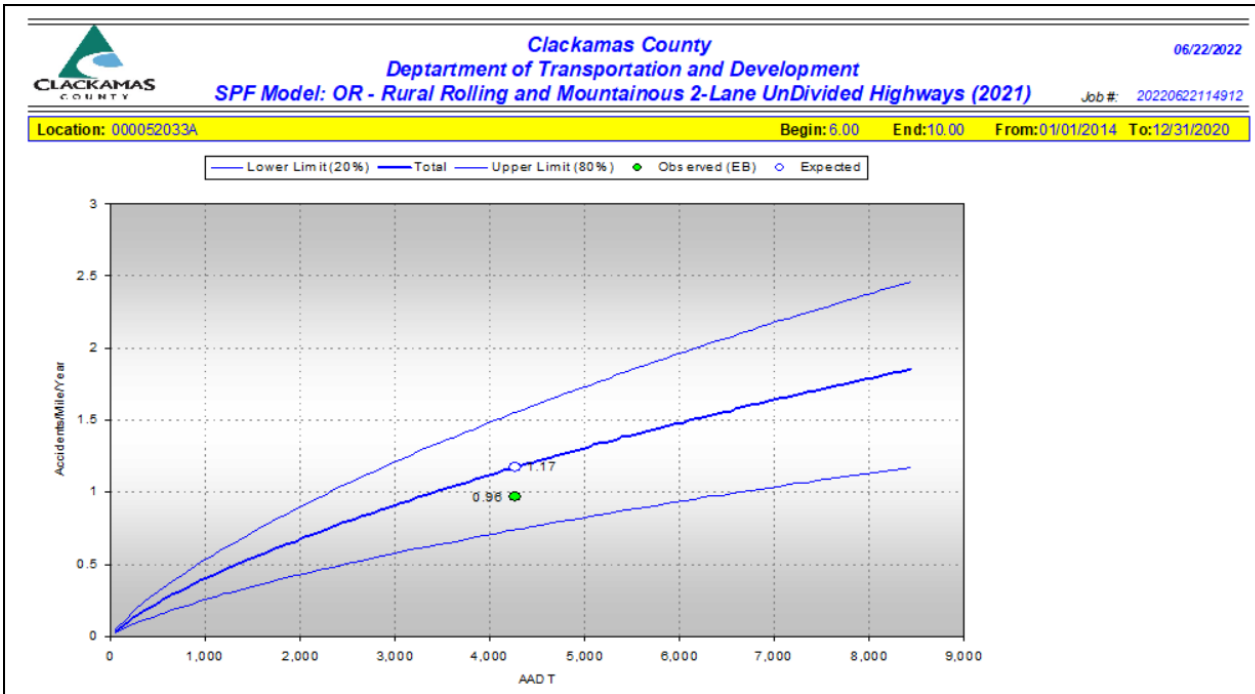
Fixed object crashes - ALL

No. 52033		S BEAVERCREEK RD
MAP 144-35L-SE		
0.000	LEFT	UNION MILLS RD (42026)
0.000	RIGHT	OSH 211
0.010		BCM
0.160	BRIDGE	#6198 - MEADOWBROOK
0.270	RIGHT	PVT HALLBACKA LN
0.330	LEFT	SALO RD (42016)
0.430	LEFT	ACCESS RD TO SALO RD
1.410	RIGHT	PVT VALLEY VISTA
2.310	RIGHT	NORRY CT (P3170)
3.240	RIGHT	PVT ROCKIE DR S
3.320	LEFT	PVT LOST CANYON RD
3.370	RIGHT	PVT ROCKIE DR S
4.560	LEFT	WINDY CITY RD (43027)
4.560	RIGHT	UNGER RD (43026)
5.580	RIGHT	CEDAR CREEK LN (P3168)
5.850	RIGHT	BUTTE RD (43003)
6.210	LEFT	GARD RD (43008)
6.320	BRIDGE	#TBD2 - BEAVERCREEK ROAD
7.340	LEFT	PVT RED HEREFORD LN
7.410	LEFT	PVT KELLEY CRK LN
7.820	RIGHT	UPPER HIGHLAND RD (44025)
8.240	LEFT	LARKIN RD (42008)
8.700	RIGHT	LOWER HIGHLAND RD (32049)
9.150	LEFT	SPANGLER RD (42028)
9.790	CROSS	CARUS RD (42044)
10.160	LEFT	PVT WHITNEY LN
10.760	RIGHT	YEOMAN RD (32024)
10.770	RIGHT	STEINER RD (32052)
11.070	LEFT	ESSIG LN
11.270	CROSS	FERGUSON RD (32115)
11.620	LEFT	KAMRATH RD (32021)
11.621	LEFT	LELAND RD (32020)
12.020	RIGHT	IVEL RD (32108)
12.490	LEFT	LAMMER RD (32039)
MP	Placement	Description
12.500	RIGHT	CAMELLIA CT (P9281)
12.680	RIGHT	WILSON RD (32038)
12.780	LEFT	TIOGA RD (P2132)
13.250	CROSS	HENRICI RD (32009)
13.340	RIGHT	PVT RD
13.520	RIGHT	PVT OLD ACRES LANE
13.530	LEFT	TIMBERSKY WAY (32096)
13.880	LEFT	CT GLEN OAK RD S
14.130	LEFT	CT MYERS RD
14.320	LEFT	ACCESS TO AND FROM OREGON CITY HIGH SCHOOL
14.490	RIGHT	LODER RD (32005)
14.760	LEFT	ENTRANCE TO CCC
15.040	LEFT	CT MARJORIE RD
15.080	LEFT	ENT TO BERRYHILL
15.160	LEFT	MAIN ENT. TO BERRYHILL
15.160	RIGHT	MAPLELANE RD (32001)
15.310		ECM
15.320	CROSS	OSH 213



Fixed object crashes - segment hot spot

Butte Rd to Carus Rd(MP 6-10)



Fixed object crashes - segment hot spot

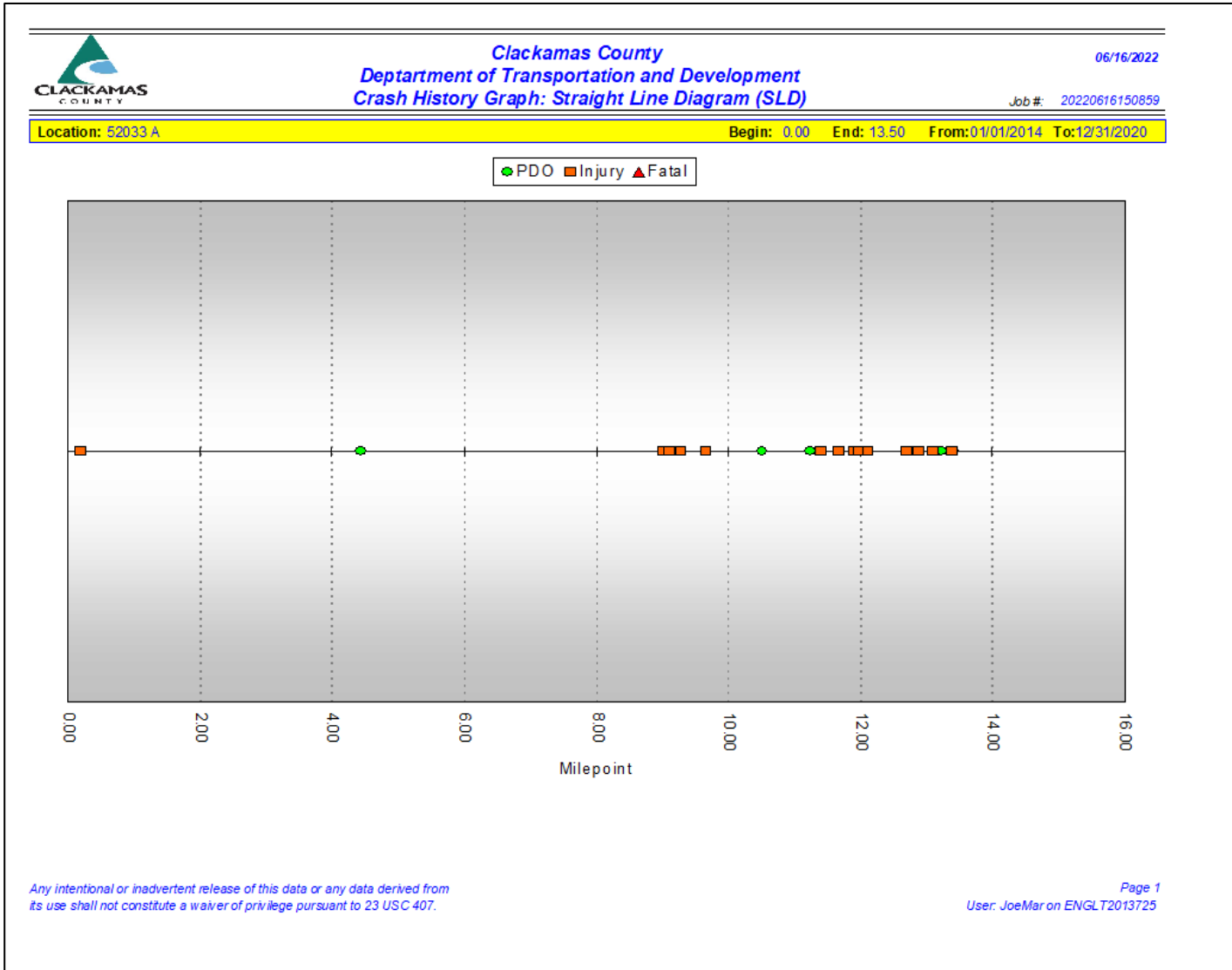
Butte Rd to Carus Rd(MP 6-10)

Clackamas County Department of Transportation and Development Detailed Summary of Crashes Report		06/22/2022	
Location: 52033 A		Begin: 8:00	End: 10:00
From: 01/01/2014		To: 12/31/2020	
Severity			
PDO:	9		
INJ:	14	16 Injured	
FAT:	0	0 Killed	
Total:	23		
Number of Vehicles			
One Vehicle:	21		
Two Vehicles:	2		
Three or More:	0		
Unknown:	0		
Total:	23		
Location			
On Road:	2		
Off Road Left:	10		
Off Road Right:	11		
Off Road at Tee:	0		
Off in Median:	0		
Unknown:	0		
Total:	23		
Lighting Conditions			
Daylight:	14		
Dawn or Dusk:	1		
Dark - Lighted:	0		
Dark - Unlighted:	8		
Unknown:	0		
Total:	23		
Weather Conditions			
None:	15		
Rain:	3		
Snow/Sleet/Hail:	0		
Fog:	3		
Dust:	0		
Wind:	0		
Unknown:	2		
Total:	23		
Crash Rates			
PDO:	0.21*	* MVMt	
INJ:	0.32*	** 100 MVMt	
FAT:	0.00**		
Total:	0.53*		
Crash Type			
Overturning:	0	Bridge Abutment:	0
Other Non Collision:	0	Column/Pier:	0
Pedestrians:	0	Culvert/Headwall:	1
Broadside:	0	Embankment:	7
Head On:	0	Curb:	0
Rear End:	0	Delineator Post:	0
Sideswipe (Same):	0	Fence:	3
Sideswipe (Opposite):	0	Tree:	5
Approach Turn:	0	Large Boulders or Rocks:	0
Overtaking Turn:	0	Barricade:	0
Parked Motor Vehicle:	0	Wall/Building:	1
Railway Vehicle:	0	Crash Cushion:	0
Bicycle:	0	Mailbox:	0
Motorized Bicycle:	0	Other Fixed Object:	2
Domestic Animal:	0	Total Fixed Objects:	22
Wild Animal:	0	Rocks In Roadway:	0
Light/Utility Pole:	3	Vehicle Cargo/Debris:	0
Traffic Signal Pole:	0	Road Maintenance Equipment:	0
Sign:	0	Involving Other Object:	0
Bridge Rail:	0	Total Other Objects:	0
Guard Rail:	0	Unknown:	1
Cable Rail:	0	Total:	23
Concrete Barrier:	0		
Mainline/Ramps/Frontage Roads			
Mainline:	23	Frontage/Ramp Intersections	
Crossroad (A):	0	M: 0 N: 0 O: 0 P: 0	
Ramps			
B: 0 F: 0 J: 0	Left Frontage Rd (L):	0	
C: 0 G: 0 K: 0	Rt Frontage Rd (R):	0	
D: 0 H: 0 T: 0	HOV Lanes (V):	0	
E: 0 I: 0 Z: 0	Unknown:	0	Total: 23
Road Description			
At Intersection:	4	Dry:	13
At Driveway Access:	1	Wet:	9
Intersection Related:	0	Muddy:	0
Non Intersection:	18	Snowy:	0
In Alley:	0	Icy:	1
Roundabout:	0	Slushy:	0
Ramp:	0	Foreign Material:	0
Parking Lot:	0	With Road Treatment:	0
Unknown:	0	Dry w/icy Road Treatment:	0
		Wet w/icy Road Treatment:	0
		Snowy w/icy Road Treatment:	0
		Icy w/icy Road Treatment:	0
		Slushy w/icy Road Treatment:	0
		Unknown:	0
		Total:	23
Road Conditions			
ADT: 4,270 Length: 4.00			

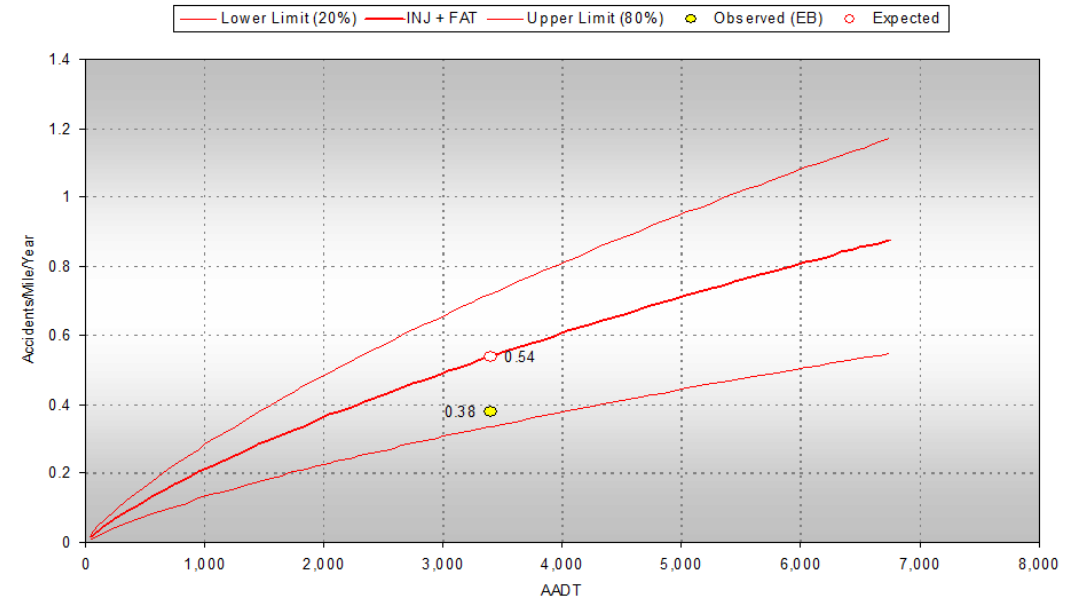
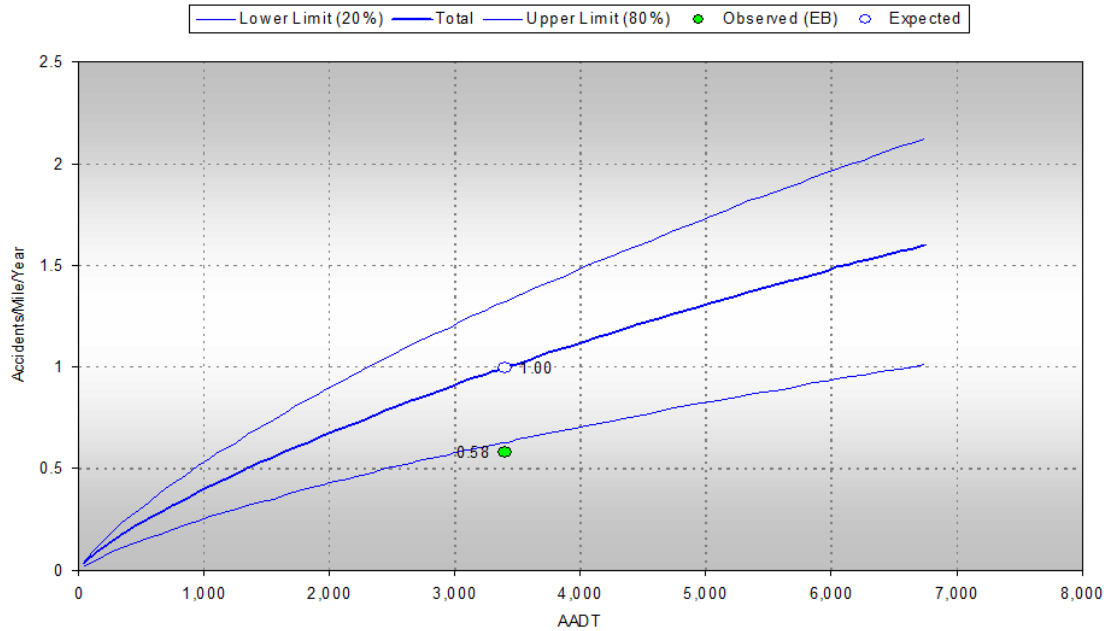
Clackamas County Department of Transportation and Development Detailed Summary of Crashes Report		06/22/2022	
Location: 52033 A		Begin: 8:00	End: 10:00
From: 01/01/2014		To: 12/31/2020	
Vehicle Type			
Passenger Car/Van:	22	2	0
Passenger Car/Van w/Trt:	0	0	0
Pickup Truck/Utility Van:	0	0	0
Pickup Truck/Utility Van w/Trt:	0	0	0
SUV:	0	0	0
SUV w/Trt:	0	0	0
Truck 10k lbs or Less:	0	0	0
Trucks > 10k lbs or Bus > 15 People:	0	0	0
School Bus < 15 People:	0	0	0
Non School Bus < 15 People:	0	0	0
Motorhome:	0	0	0
Motorcycle:	1	0	0
Bicycle:	0	0	0
Motorized Bicycle:	0	0	0
Farm Equipment:	0	0	0
Hit and Run - Unknown:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	23	2	0
Vehicle Movement			
Going Straight:	22	0	0
Slowing:	0	0	0
Stopped in Traffic:	0	1	0
Making Right Turn:	1	0	0
Making Left Turn:	0	1	0
Making U-Turn:	0	0	0
Passing:	0	0	0
Backing:	0	0	0
Enter/Leave Parked Position:	0	0	0
Starting in Traffic:	0	0	0
Parked:	0	0	0
Changing Lanes:	0	0	0
Avoiding Object/Veh in Road:	0	0	0
Weaving:	0	0	0
Wrong Way:	0	0	0
Other:	0	0	0
Unknown:	0	0	0
Total:	23	2	0
Contributing Factor			
No Apparent Contributing Factor:	23	2	0
Asleep at the Wheel:	0	0	0
Illness:	0	0	0
Distracted by Passenger:	0	0	0
Driver Inexperience:	0	0	0
Driver Fatigue:	0	0	0
Driver Preoccupied:	0	0	0
Driver Unfamiliar with Area:	0	0	0
Driver Emotionally Upset:	0	0	0
Evading Law Enforcement Officer:	0	0	0
Physical Disability:	0	0	0
Unknown:	0	0	0
Total:	23	2	0
Direction			
North:	6	1	0
Northeast:	0	0	0
East:	5	1	0
Southeast:	0	0	0
South:	7	0	0
Southwest:	0	0	0
West:	4	0	0
Northwest:	0	0	0
Unknown:	1	0	0
Total:	23	2	0
Condition of Driver			
No Impairment Suspected:	5	0	0
Alcohol Involved:	3	0	0
RX, Medication, or Drugs Involved:	0	0	0
Illegal Drugs Involved:	1	0	0
Alcohol and Drugs Involved:	0	0	0
Driver/Pedestrian not Observed:	0	0	0
Unknown:	14	2	0
Total:	23	2	0
ADT: 4,270 Length: 4.00			

Rear end crashes

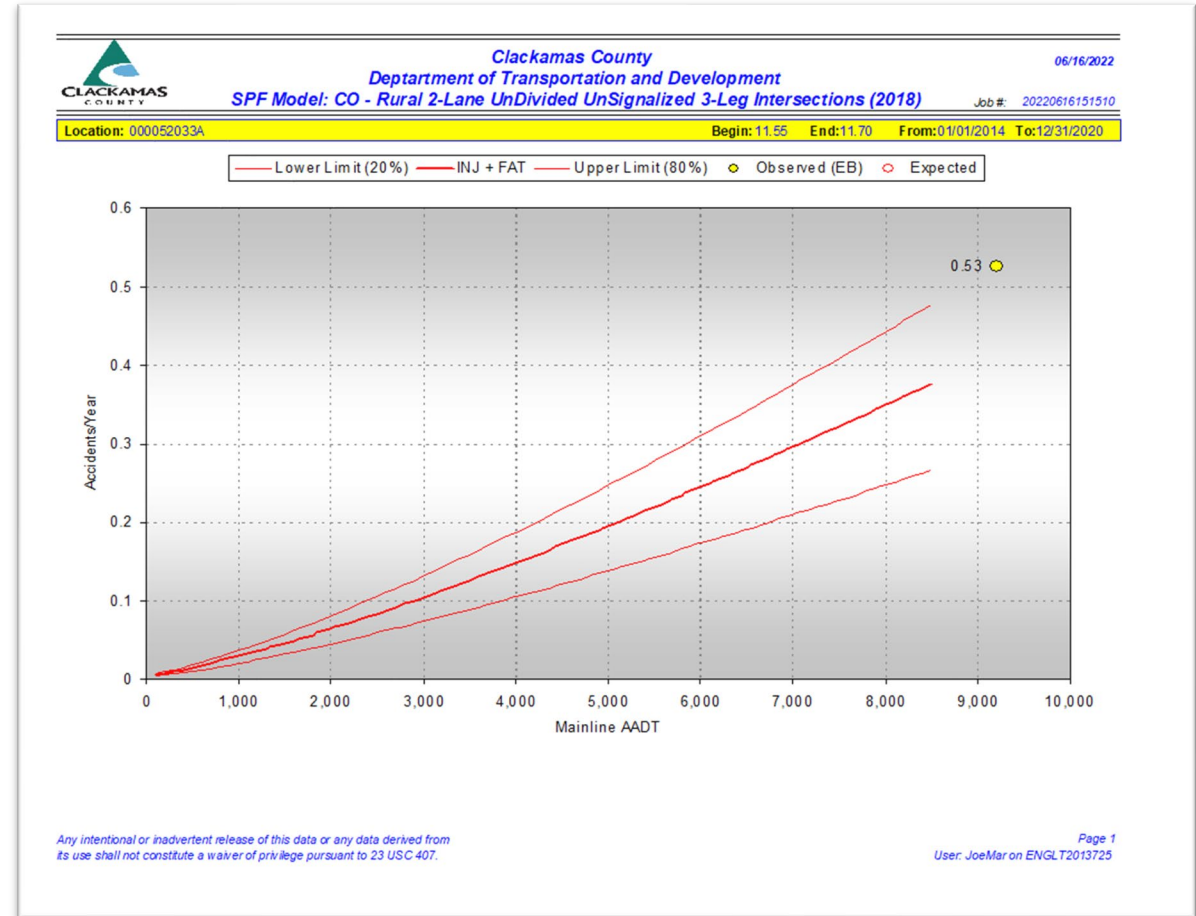
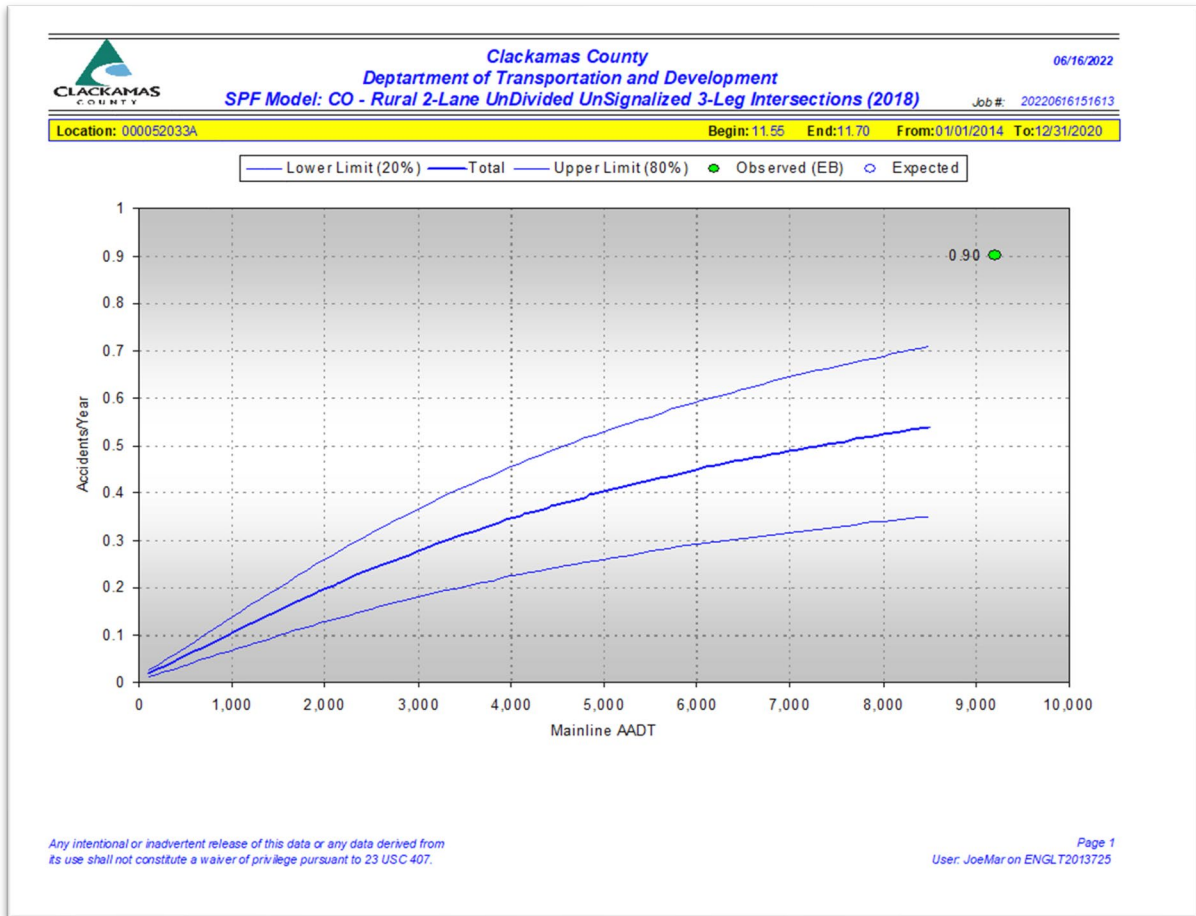
No. 52033		S BEAVERCREEK RD
MAP 144-35L-SE		
0.000	LEFT	UNION MILLS RD (42026)
0.000	RIGHT	OSH 211
0.010		BCM
0.160	BRIDGE	#6198 - MEADOWBROOK
0.270	RIGHT	PVT HALLBACKA LN
0.330	LEFT	SALO RD (42016)
0.430	LEFT	ACCESS RD TO SALO RD
1.410	RIGHT	PVT VALLEY VISTA
2.310	RIGHT	NORRY CT (P3170)
3.240	RIGHT	PVT ROCKIE DR S
3.320	LEFT	PVT LOST CANYON RD
3.370	RIGHT	PVT ROCKIE DR S
4.560	LEFT	WINDY CITY RD (43027)
4.560	RIGHT	UNGER RD (43026)
5.580	RIGHT	CEDAR CREEK LN (P3168)
5.850	RIGHT	BUTTE RD (43003)
6.210	LEFT	GARD RD (43008)
6.320	BRIDGE	#TBD2 - BEAVERCREEK ROAD
7.340	LEFT	PVT RED HEREFORD LN
7.410	LEFT	PVT KELLEY CRK LN
7.820	RIGHT	UPPER HIGHLAND RD (44025)
8.240	LEFT	LARKIN RD (42008)
8.700	RIGHT	LOWER HIGHLAND RD (32049)
9.150	LEFT	SPANGLER RD (42028)
9.790	CROSS	CARUS RD (42044)
10.160	LEFT	PVT WHITNEY LN
10.760	RIGHT	YEOMAN RD (32024)
10.770	RIGHT	STEINER RD (32052)
11.070	LEFT	ESSIG LN
11.270	CROSS	FERGUSON RD (32115)
11.620	LEFT	KAMRATH RD (32021)
11.621	LEFT	LELAND RD (32020)
12.020	RIGHT	IVEL RD (32108)
12.490	LEFT	LAMMER RD (32039)
MP	Placement	Description
12.500	RIGHT	CAMELLIA CT (P9281)
12.680	RIGHT	WILSON RD (32038)
12.780	LEFT	TIOGA RD (P2132)
13.250	CROSS	HENRICI RD (32009)
13.340	RIGHT	PVT RD
13.520	RIGHT	PVT OLD ACRES LANE
13.530	LEFT	TIMBERSKY WAY (32096)
13.880	LEFT	CT GLEN OAK RD S
14.130	LEFT	CT MYERS RD
14.320	LEFT	ACCESS TO AND FROM OREGON CITY HIGH SCHOOL
14.490	RIGHT	LODER RD (32005)
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15.160	LEFT	MAIN ENT. TO BERRYHILL
15.160	RIGHT	MAPLELANE RD (32001)
15.310		ECM
15.320	CROSS	OSH 213



Rear end crashes



Beavercreek/Kamrath/Leland Safety Performance Functions



Beavercreek/Kamrath/Leland Crashes

Clackamas County Department of Transportation and Development Detailed Summary of Crashes Report		06/16/2022	
Location: 52033 A		Begin: 11.55 End: 11.70 From: 01/01/2014 To: 12/31/2020	
Severity PDO: 4 INJ: 6 10 Injured FAT: 0 0 Killed Total: 10		Crash Type Overturning: 0 Other Non Collision: 0 Pedestrians: 0 Broadside: 8 Head On: 0 Rear End: 1 Sideswipe (Same): 0 Sideswipe (Opposite): 0 Approach Turn: 0 Overtaking Turn: 0 Parked Motor Vehicle: 0 Railway Vehicle: 0 Bicycle: 0 Motorized Bicycle: 0 Domestic Animal: 0 Wild Animal: 0 Light/Utility Pole: 0 Traffic Signal Pole: 0 Sign: 0 Bridge Rail: 0 Guard Rail: 0 Cable Rail: 0 Concrete Barrier: 0 Bridge Abutment: 0 Column/Pier: 0 Culvert/Headwall: 0 Embankment: 0 Curb: 0 Delineator Post: 0 Fence: 0 Tree: 0 Large Boulders or Rocks: 0 Barricade: 0 Wall/Building: 0 Crash Cushion: 0 Mailbox: 0 Other Fixed Object: 0 Total Fixed Objects: 0 Rocks in Roadway: 0 Vehicle Cargo/Debris: 0 Road Maintenance Equipment: 0 Involving Other Object: 0 Total Other Objects: 0 Unknown: 1 Total: 10	
Number of Vehicles One Vehicle: 0 Two Vehicles: 9 Three or More: 1 Unknown: 0 Total: 10		Mainline/Ramps/Frontage Roads Mainline: 10 Crossroad (A): 0 Ramps B: 0 F: 0 J: 0 C: 0 G: 0 K: 0 D: 0 H: 0 T: 0 E: 0 I: 0 Z: 0 Road Description At Intersection: 8 At Driveway Access: 0 Intersection Related: 2 Non Intersection: 0 In Alley: 0 Roundabout: 0 Ramp: 0 Parking Lot: 0 Unknown: 0 Total: 10	
Location On Road: 10 Off Road Left: 0 Off Road Right: 0 Off Road at Tee: 0 Off in Median: 0 Unknown: 0 Total: 10		Frontage/Ramp Intersections M: 0 N: 0 O: 0 P: 0 Road Conditions Dry: 7 Wet: 3 Muddy: 0 Snowy: 0 Icy: 0 Slushy: 0 Foreign Material: 0 With Road Treatment: 0 Dry w/icy Road Treatment: 0 Wet w/icy Road Treatment: 0 Snowy w/icy Road Treatment: 0 Icy w/icy Road Treatment: 0 Slushy w/icy Road Treatment: 0 Unknown: 0 Total: 10	
Lighting Conditions Daylight: 7 Dawn or Dusk: 1 Dark - Lighted: 2 Dark - Unlighted: 0 Unknown: 0 Total: 10		Weather Conditions None: 7 Rain: 3 Snow/Sleet/Hail: 0 Fog: 0 Dust: 0 Wind: 0 Unknown: 0 Total: 10	
Crash Rates PDO: 0.85+ * M/MT INJ: 1.27+ ** 100 M/MT FAT: 0.00+ Total: 2.12+		ADT: 9,208 Length: 0.20 Page 1 Any intentional or inadvertent release of this data or any data derived from its use shall not constitute a waiver of privilege pursuant to 23 USC 407. User: JoeMar on ENGLT2013725	

Clackamas County Department of Transportation and Development Detailed Summary of Crashes Report		06/16/2022	
Location: 52033 A		Begin: 11.55 End: 11.70 From: 01/01/2014 To: 12/31/2020	
Vehicle Type Passenger Car/Van: 10 10 1 Passenger Car/Van w/Trl: 0 0 0 Pickup Truck/Utility Van: 0 0 0 Pickup Truck/Utility Van w/Trl: 0 0 0 SUV: 0 0 0 SUV w/Trl: 0 0 0 Truck 10k lbs or Less: 0 0 0 Trucks > 10k lbs/Bus > 15 People: 0 0 0 School Bus < 15 People: 0 0 0 Non School Bus < 15 People: 0 0 0 Motorhome: 0 0 0 Motorcycle: 0 0 0 Bicycle: 0 0 0 Motorized Bicycle: 0 0 0 Farm Equipment: 0 0 0 Hit and Run - Unknown: 0 0 0 Other: 0 0 0 Unknown: 0 0 0 Total: 10 10 1		Vehicle Movement Going Straight: 6 7 0 Slowing: 0 0 0 Stopped in Traffic: 0 2 1 Making Right Turn: 0 0 0 Making Left Turn: 4 1 0 Making U-Turn: 0 0 0 Passing: 0 0 0 Backing: 0 0 0 Enter/Leave Parked Position: 0 0 0 Starting in Traffic: 0 0 0 Parked: 0 0 0 Changing Lanes: 0 0 0 Avoiding Object/Veh in Road: 0 0 0 Weaving: 0 0 0 Wrong Way: 0 0 0 Other: 0 0 0 Unknown: 0 0 0 Total: 10 10 1	
Contributing Factor No Apparent Contributing Factor: 10 10 1 Asleep at the Wheel: 0 0 0 Illness: 0 0 0 Distracted by Passenger: 0 0 0 Driver Inexperience: 0 0 0 Driver Fatigue: 0 0 0 Driver Preoccupied: 0 0 0 Driver Unfamiliar with Area: 0 0 0 Driver Emotionally Upset: 0 0 0 Evading Law Enforcement Officer: 0 0 0 Physical Disability: 0 0 0 Unknown: 0 0 0 Total: 10 10 1		Direction North: 1 1 1 Northeast: 0 0 0 East: 1 1 0 Southeast: 0 0 0 South: 2 5 0 Southwest: 0 0 0 West: 6 3 0 Northwest: 0 0 0 Unknown: 0 0 0 Total: 10 10 1	
Condition of Driver No Impairment Suspected: 2 1 0 Alcohol Involved: 0 0 0 RX, Medication, or Drugs Involved: 0 0 0 Illegal Drugs Involved: 0 0 0 Alcohol and Drugs Involved: 0 0 0 Driver/Pedestrian not Observed: 0 0 0 Unknown: 8 9 1 Total: 10 10 1		ADT: 9,208 Length: 0.20 Page 2 Any intentional or inadvertent release of this data or any data derived from its use shall not constitute a waiver of privilege pursuant to 23 USC 407. User: JoeMar on ENGLT2013725	


CRASH PATTERNS / POSSIBLE ISSUES & TREATMENTS


- Beaver Creek / Maple Lane (Broadside, Approach Turn crashes). **Slide #6**
 - Crash patterns heavy with opposing SEB left to Maple Lane and NWB left to shopping center.
 - Flashing yellow arrow has been turned off during the peak hour but may need additional restrictions to cut crashes.
 - Intersection is skewed slightly – this can limit the sight distance if cars are queued in the left turn pockets on Beaver Creek.
- Butte Rd (MP 5.85) → Carus Rd (MP 9.79) Fixed Object crashes hot spot. **Slide #17**
 - 4 of 23 crash cause of drugs or alcohol
 - Off road left and right equal
 - 50% injury crashes
 - **Add paved shoulders**
 - **6" edgeline?**
 - **Carus to 211 – upsize chevrons and further signing enhancements**
- Beaver Creek / Kamrath / Leland Intsx
 - 8 of 10 crashes = WB→SB, broadside
 - Dashed line no ROW/At fault vehicle
 - **Ideas here?**
 - **Traffic from right does not stop?**
 - **Feasibility study for this intersection to rebuild.**
 - **Roundabout issues?, right of way, \$7 million**
 - **Stop bar has been moved west ~ 20 feet (picture old position)**



POTENTIAL PROJECTS BENEFIT/COST MAJOR PROJECT LIST

1. Roundabout at Beaver creek / Kamrath
2. Add paved shoulders from Butte to Carus (4 miles/ \$1 million/per mile)

		<i>Clackamas County</i>		06/16/2022		
CLACKAMAS COUNTY		Department of Transportation and Development		Job #: 20220616151613		
Economic Analysis Report						
Location: 52033 A		Begin: 11.55	End: 11.70	From: 01/01/2014	To: 12/31/2020	
Benefit Cost Ratio Calculations						
Crashes		Projected Crashes and Reduction Factors		Other Information		
PDO:	4	Weighted PDO:	0.70	35% :CRF for PDO	Cost of PDO: \$ 11,100	
INJ:	6	10 :Injured	Weighted INJ:	1.75	76% :CRF for INJ	Cost of INJ: \$ 101,800
FAT:	0	0 :Killed	Weighted FAT:	0.00	76% :CRF for FAT	Cost of FAT: \$ 1,820,600
		B/C Weighted Year Factor:	7.00	59% :Weighted CRF	Interest Rate: 5%	
				AADT Growth Factor:	2.0%	
				Service Life:	20	
				Capital Recovery Factor:	0.080	
				Annual Maintenance/Delay Cost:	\$ 0	
Cost: \$ 5,000,000						
From: 01/01/2014						
To: 12/31/2020		Days: 2557				
Benefit Cost Ratio: 0.35		(B/C Based on Injury Numbers : PDO/Injured/Killed)				
Type of Improvement: Replace with Roundabout						
Special Notes: Intersection Related Crashes						


		<i>Clackamas County</i>		06/22/2022		
CLACKAMAS COUNTY		Department of Transportation and Development		Job #: 20220622115030		
Economic Analysis Report						
Location: 52033 A		Begin: 6.00	End: 10.00	From: 01/01/2014	To: 12/31/2020	
Benefit Cost Ratio Calculations						
Crashes		Projected Crashes and Reduction Factors		Other Information		
PDO:	9	Weighted PDO:	1.58	35% :CRF for PDO	Cost of PDO: \$ 11,100	
INJ:	14	16 :Injured	Weighted INJ:	2.81	35% :CRF for INJ	Cost of INJ: \$ 101,800
FAT:	0	0 :Killed	Weighted FAT:	0.00	35% :CRF for FAT	Cost of FAT: \$ 1,820,600
		B/C Weighted Year Factor:	7.00	35% :Weighted CRF	Interest Rate: 5%	
				AADT Growth Factor:	2.0%	
				Service Life:	20	
				Capital Recovery Factor:	0.080	
				Annual Maintenance/Delay Cost:	\$ 0	
Cost: \$ 4,000,000						
From: 01/01/2014						
To: 12/31/2020		Days: 2557				
Benefit Cost Ratio: 0.33		(B/C Based on Injury Numbers : PDO/Injured/Killed)				
Type of Improvement: Shoulder Widening						
Special Notes: Related Crashes Only						

POTENTIAL PROJECTS BENEFIT/COST

MINOR PROJECT LIST


Butte to Yoeman MP 6-10 (\$500K)

- Signing / striping / flashers
- Curve warning system
- Center rumbles

		<i>Clackamas County</i> <i>Department of Transportation and Development</i> <i>Economic Analysis Report</i>			10/28/2022		
					Job #: 20221028114508		
Location: 52033 A		Begin: 6.00	End: 10.00	From: 01/01/2014 To: 12/31/2020			
<u>Benefit Cost Ratio Calculations</u>							
<u>Crashes</u>		<u>Projected Crashes and Reduction Factors</u>			<u>Other Information</u>		
PDO:	16	Weighted PDO:	2.38	36%:CRF for PDO	Cost of PDO:	\$ 11,100	
INJ:	34	44:Injured	Weighted INJ:	6.54	36%:CRF for INJ	Cost of INJ:	\$ 101,800
FAT:	0	0:Killed	Weighted FAT:	0.00	36%:CRF for FAT	Cost of FAT:	\$ 1,820,600
		B/C Weighted Year Factor:	7.00	36%:Weighted CRF	Interest Rate:	5%	
					AADT Growth Factor:	2.0%	
					Service Life:	5	
					Capital Recovery Factor:	0.230	
		Cost: \$ 500,000			Annual Maintenance/Delay Cost:	\$ 0	
		From: 01/01/2014					
		To: 12/31/2020	Days: 2557				
Benefit Cost Ratio: 2.16 (B/C Based on Injury Numbers : PDO/Injured/Killed)							
Type of Improvement: signs, flahers, markings, center rumbles							
Special Notes: (Composite ARF)							

Carus to Henrici MPs 10.75-13.25 (\$600K)

- Shoulders
- Cener/edgeline rumbles
- Update signage

		<i>Clackamas County</i> <i>Department of Transportation and Development</i> <i>Economic Analysis Report</i>			10/28/2022		
					Job #: 20221028115002		
Location: 52033 A		Begin: 10.75	End: 13.25	From: 01/01/2014 To: 12/31/2020			
<u>Benefit Cost Ratio Calculations</u>							
<u>Crashes</u>		<u>Projected Crashes and Reduction Factors</u>			<u>Other Information</u>		
PDO:	27	Weighted PDO:	4.02	66%:CRF for PDO	Cost of PDO:	\$ 0	
INJ:	29	49:Injured	Weighted INJ:	7.29	66%:CRF for INJ	Cost of INJ:	\$ 101,800
FAT:	2	2:Killed	Weighted FAT:	0.30	66%:CRF for FAT	Cost of FAT:	\$ 1,820,600
		B/C Weighted Year Factor:	7.00	66%:Weighted CRF	Interest Rate:	5%	
					AADT Growth Factor:	2.0%	
					Service Life:	5	
					Capital Recovery Factor:	0.230	
		Cost: \$ 6,000,000			Annual Maintenance/Delay Cost:	\$ 0	
		From: 01/01/2014					
		To: 12/31/2020	Days: 2557				
Benefit Cost Ratio: 0.61 (B/C Based on Injury Numbers : PDO/Injured/Killed)							
Type of Improvement: shoulder widening, center and edge rumbles, signs							
Special Notes: (Composite ARF)							