

GALLATIN COUNTY INTERSECTION IMPROVEMENTS

APPENDIX E: Phase 2 Evaluation



ALASKA RD S / CAMERON BRIDGE RD

E-1: Traffic Analysis

E-2: Conceptual Designs

E-3: Cost Estimates



ALASKA RD S / E VALLEY CENTER RD



LOVE LN / DURSTON RD

GALLATIN COUNTY INTERSECTION IMPROVEMENTS

APPENDIX E-1: Traffic Analysis



ALASKA RD S / CAMERON BRIDGE RD



ALASKA RD S / E VALLEY CENTER RD



LOVE LN / DURSTON RD

Gallatin County Intersections

Vistro File:

F:\...\GallatinCountyIntersections_2025Volumes.vistro

Scenario 7 ALT 3 (AM)

Report File: F:\...\Alt 3 (AM) 2025 Volumes.pdf

5/14/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Signalized	HCM 7th Edition	EB Left	0.346	9.3	A
2	Alaska Rd S/Valley Center Rd	Signalized	HCM 7th Edition	SB Left	0.454	12.1	B
3	Love Ln/Durston Rd	Signalized	HCM 7th Edition	WB Left	0.299	12.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	8	235	9	36	258	96	59	28	8	4	25	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.40	55.60	13.90	10.90	4.20	3.40	3.60	37.50	50.00	16.00	14.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	247	9	38	271	101	62	29	8	4	26	44
Peak Hour Factor	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	71	3	11	78	29	18	8	2	1	7	13
Total Analysis Volume [veh/h]	9	283	10	43	310	116	71	33	9	5	30	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	95	0	0	95	0	0	17	0	0	17	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	60.0	0.0	0.0	60.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	57.9	57.9	57.9	57.9	9.1	9.1	9.1	9.1	9.1
g / C, Green / Cycle	0.77	0.77	0.77	0.77	0.12	0.12	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.19	0.05	0.29	0.06	0.03	0.01	0.02	0.04
s, saturation flow rate [veh/h]	879	1574	884	1491	1173	1601	755	1494	1289
c, Capacity [veh/h]	666	1213	704	1150	191	196	153	183	158
d1, Uniform Delay [s]	4.68	2.42	3.86	2.75	33.71	29.67	32.28	29.48	30.05
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.47	0.17	0.92	1.20	0.54	0.09	0.42	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.24	0.06	0.37	0.37	0.21	0.03	0.16	0.32
d, Delay for Lane Group [s/veh]	4.72	2.89	4.02	3.67	34.90	30.21	32.37	29.90	31.20
Lane Group LOS	A	A	A	A	C	C	C	C	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.04	0.50	0.15	0.87	1.28	0.68	0.09	0.49	0.84
50th-Percentile Queue Length [ft/ln]	0.97	12.62	3.87	21.65	31.91	17.12	2.13	12.16	21.01
95th-Percentile Queue Length [veh/ln]	0.07	0.91	0.28	1.56	2.30	1.23	0.15	0.88	1.51
95th-Percentile Queue Length [ft/ln]	1.75	22.71	6.97	38.97	57.45	30.81	3.83	21.88	37.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.72	2.89	2.89	4.02	3.67	3.67	34.90	30.21	30.21	32.37	29.90	31.20
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	2.94			3.70			33.16			30.81		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	9.28											
Intersection LOS	A											
Intersection V/C	0.346											

Emissions

Vehicle Miles Traveled [mph]	0.76	24.67	3.42	33.90	5.62	3.33	0.39	2.32	3.87
Stops [stops/h]	1.86	24.23	7.43	41.57	61.28	32.87	4.08	23.34	40.33
Fuel consumption [US gal/h]	0.06	1.37	0.26	2.09	1.18	0.63	0.08	0.45	0.77
CO [g/h]	4.38	95.79	18.45	146.21	82.44	44.19	5.48	31.21	53.69
NOx [g/h]	0.85	18.64	3.59	28.45	16.04	8.60	1.07	6.07	10.45
VOC [g/h]	1.01	22.20	4.27	33.89	19.11	10.24	1.27	7.23	12.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1493	1493	293	293
d_b, Bicycle Delay [s]	2.41	2.41	27.31	27.31
I_b,int, Bicycle LOS Score for Intersection	2.058	2.333	1.746	1.700
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Alaska Rd S/Valley Center Rd

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.454

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	2	1	1	197	1	82	79	233	1	3	176	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	100.00	6.60	0.00	25.60	17.70	4.30	0.00	100.00	5.10	9.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1	1	207	1	86	83	245	1	3	185	173
Peak Hour Factor	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	58	0	24	23	69	0	1	52	48
Total Analysis Volume [veh/h]	2	1	1	232	1	96	93	274	1	3	207	194
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	32	0	0	32	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	29.0	0.0	0.0	29.0	0.0	0.0	31.0	0.0	0.0	31.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15.7	15.7	15.7	15.7	15.7	36.3	36.3	36.3	36.3
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.26	0.60	0.60	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.19	0.00	0.08	0.12	0.17	0.01	0.27
s, saturation flow rate [veh/h]	1187	1571	1226	1710	1160	774	1651	212	1512
c, Capacity [veh/h]	387	412	395	448	304	456	998	225	914
d1, Uniform Delay [s]	18.05	16.36	22.26	16.35	17.82	10.91	5.62	7.72	6.38
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.00	1.39	0.00	0.59	1.01	0.68	0.11	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.00	0.59	0.00	0.32	0.20	0.28	0.01	0.44
d, Delay for Lane Group [s/veh]	18.06	16.37	23.65	16.36	18.41	11.92	6.31	7.82	7.91
Lane Group LOS	B	B	C	B	B	B	A	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	0.02	2.77	0.01	0.94	0.75	1.19	0.02	2.04
50th-Percentile Queue Length [ft/ln]	0.47	0.44	69.16	0.22	23.51	18.69	29.67	0.54	50.93
95th-Percentile Queue Length [veh/ln]	0.03	0.03	4.98	0.02	1.69	1.35	2.14	0.04	3.67
95th-Percentile Queue Length [ft/ln]	0.85	0.79	124.48	0.39	42.32	33.64	53.40	0.96	91.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.06	16.37	16.37	23.65	16.36	18.41	11.92	6.31	6.31	7.82	7.91	7.91
Movement LOS	B	B	B	C	B	B	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	17.21			22.10			7.73			7.91		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	12.11											
Intersection LOS	B											
Intersection V/C	0.454											

Emissions

Vehicle Miles Traveled [mph]	0.17	0.17	12.96	0.06	5.36	7.30	21.59	0.27	35.52
Stops [stops/h]	1.13	1.05	165.98	0.53	56.43	44.86	71.21	1.29	122.23
Fuel consumption [US gal/h]	0.03	0.03	4.10	0.01	1.41	1.03	1.98	0.03	3.38
CO [g/h]	2.13	2.00	286.49	0.93	98.25	72.26	138.29	2.09	236.44
NOx [g/h]	0.41	0.39	55.74	0.18	19.12	14.06	26.91	0.41	46.00
VOC [g/h]	0.49	0.46	66.40	0.21	22.77	16.75	32.05	0.48	54.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	833	900	900
d_b, Bicycle Delay [s]	10.21	10.21	9.08	9.08
I_b,int, Bicycle LOS Score for Intersection	1.566	2.102	2.167	2.226
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type: Signalized
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 12.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.299

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durstun Rd			Durstun Rd		
Base Volume Input [veh/h]	11	99	31	181	230	14	11	71	12	55	43	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.10	9.70	0.00	1.70	7.10	0.00	1.40	0.00	1.80	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	104	33	190	242	15	12	75	13	58	45	145
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	9	53	68	4	3	21	4	16	13	40
Total Analysis Volume [veh/h]	13	116	37	212	270	17	13	84	15	65	50	162
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	32	0	0	32	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	14.0	0.0	0.0	14.0	0.0	0.0	46.0	0.0	0.0	46.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41.9	41.9	41.9	41.9	10.1	10.1	10.1	10.1	10.1
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.17	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.10	0.19	0.17	0.01	0.06	0.06	0.03	0.11
s, saturation flow rate [veh/h]	927	1561	1128	1670	1069	1647	1168	1710	1454
c, Capacity [veh/h]	658	1089	812	1164	252	279	233	289	246
d1, Uniform Delay [s]	5.34	3.04	5.52	3.32	23.35	22.03	25.91	21.33	23.30
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.27	0.78	0.50	0.08	0.77	0.64	0.28	2.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.14	0.26	0.25	0.05	0.36	0.28	0.17	0.66
d, Delay for Lane Group [s/veh]	5.40	3.31	6.30	3.82	23.43	22.80	26.55	21.61	26.30
Lane Group LOS	A	A	A	A	C	C	C	C	C
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.06	0.33	0.93	0.67	0.15	1.14	0.83	0.55	2.08
50th-Percentile Queue Length [ft/ln]	1.38	8.30	23.15	16.86	3.78	28.57	20.81	13.81	51.99
95th-Percentile Queue Length [veh/ln]	0.10	0.60	1.67	1.21	0.27	2.06	1.50	0.99	3.74
95th-Percentile Queue Length [ft/ln]	2.48	14.93	41.68	30.35	6.81	51.42	37.46	24.85	93.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.40	3.31	3.31	6.30	3.82	3.82	23.43	22.80	22.80	26.55	21.61	26.30
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	3.48			4.87			22.87			25.51		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	11.99											
Intersection LOS	B											
Intersection V/C	0.299											

Emissions

Vehicle Miles Traveled [mph]	0.80	9.38	8.32	11.27	0.56	4.28	3.18	2.45	7.93
Stops [stops/h]	3.31	19.91	55.57	40.46	9.08	68.56	49.94	33.13	124.77
Fuel consumption [US gal/h]	0.08	0.67	1.25	1.11	0.19	1.46	1.08	0.72	2.69
CO [g/h]	5.78	46.99	87.23	77.76	13.57	101.95	75.58	50.04	188.05
NOx [g/h]	1.12	9.14	16.97	15.13	2.64	19.83	14.71	9.74	36.59
VOC [g/h]	1.34	10.89	20.22	18.02	3.14	23.63	17.52	11.60	43.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1400	1400
d_b, Bicycle Delay [s]	20.83	20.83	2.70	2.70
I_b,int, Bicycle LOS Score for Intersection	1.834	2.383	1.744	2.017
Bicycle LOS	A	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Gallatin County Intersections

Vistro File:

F:\...\GallatinCountyIntersections_2025Volumes.vistro

Scenario 9 ALT 4 (AM)

Report File: F:\...\Gallatin_2025_Alt4_AM.pdf

11/6/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Roundabout	HCM 7th Edition	SB Thru		6.4	A
2	Alaska Rd S/Valley Center Rd	Roundabout	HCM 7th Edition	EB Thru		7.1	A
3	Love Ln/Durston Rd	Roundabout	HCM 7th Edition	SB Thru		6.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

6.4
A

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	8	235	9	36	258	96	59	28	8	4	25	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.40	55.60	13.90	10.90	4.20	3.40	3.60	37.50	50.00	16.00	14.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	247	9	38	271	101	62	29	8	4	26	44
Peak Hour Factor	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	71	3	11	78	29	18	8	2	1	7	13
Total Analysis Volume [veh/h]	9	283	10	43	310	116	71	33	9	5	30	50
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	157			51			400			392		
Exiting Flow Rate [veh/h]	364			440			165			99		
Demand Flow Rate [veh/h]	8	247	9	38	271	101	62	29	8	4	26	44
Adjusted Demand Flow Rate [veh/h]	9	283	10	43	310	116	71	33	9	5	30	50

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.91			0.91			0.95			0.86		
Entry Flow Rate [veh/h]	333			514			120			99		
Capacity of Entry and Bypass Lanes [veh/h]	1177			1310			918			926		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1068			1197			869			795		
X, volume / capacity	0.28			0.39			0.13			0.11		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.17	1.89	0.45	0.36
95th-Percentile Queue Length [ft]	29.23	47.35	11.16	8.94
Approach Delay [s/veh]	6.11	6.89	5.41	5.61
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	6.36			
Intersection LOS	A			

Intersection Level Of Service Report

Intersection 2: Alaska Rd S/Valley Center Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 7.1
 Level Of Service: A

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	2	1	1	197	1	82	79	233	1	3	176	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	100.00	6.60	0.00	25.60	17.70	4.30	0.00	100.00	5.10	9.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1	1	207	1	86	83	245	1	3	185	173
Peak Hour Factor	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	58	0	24	23	69	0	1	52	48
Total Analysis Volume [veh/h]	2	1	1	232	1	96	93	274	1	3	207	194
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	643			226			254			112		
Exiting Flow Rate [veh/h]	8			323			340			535		
Demand Flow Rate [veh/h]	2	1	1	207	1	86	83	245	1	3	185	173
Adjusted Demand Flow Rate [veh/h]	2	1	1	232	1	96	93	274	1	3	207	194

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.88			0.90			0.93			0.93		
Entry Flow Rate [veh/h]	5			367			396			436		
Capacity of Entry and Bypass Lanes [veh/h]	717			1097			1065			1231		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	627			984			992			1143		
X, volume / capacity	0.01			0.33			0.37			0.35		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.02	1.48	1.73	1.61
95th-Percentile Queue Length [ft]	0.48	37.05	43.30	40.32
Approach Delay [s/veh]	5.81	7.16	7.61	6.63
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.11			
Intersection LOS	A			

Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 6.3
 Level Of Service: A

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Base Volume Input [veh/h]	11	99	31	181	230	14	11	71	12	55	43	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.10	9.70	0.00	1.70	7.10	0.00	1.40	0.00	1.80	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	104	33	190	242	15	12	75	13	58	45	145
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	9	53	68	4	3	21	4	16	13	40
Total Analysis Volume [veh/h]	13	116	37	212	270	17	13	84	15	65	50	162
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	310			130			553			150		
Exiting Flow Rate [veh/h]	356			298			82			338		
Demand Flow Rate [veh/h]	12	104	33	190	242	15	12	75	13	58	45	145
Adjusted Demand Flow Rate [veh/h]	13	116	37	212	270	17	13	84	15	65	50	162

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.93			0.99			0.99			1.00		
Entry Flow Rate [veh/h]	178			505			114			279		
Capacity of Entry and Bypass Lanes [veh/h]	1006			1209			786			1184		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	939			1195			778			1180		
X, volume / capacity	0.18			0.42			0.14			0.23		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.64	2.10	0.50	0.91
95th-Percentile Queue Length [ft]	16.00	52.54	12.55	22.85
Approach Delay [s/veh]	5.54	7.25	6.13	5.16
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	6.31			
Intersection LOS	A			

Gallatin County Intersections

Vistro File:

Scenario 8 ALT 3 (PM)

F:\...\GallatinCountyIntersections_2025Volumes.vistro

Report File: F:\...\Alt 3 (PM) 2025 Volumes.pdf

5/14/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Signalized	HCM 7th Edition	EB Left	0.357	8.7	A
2	Alaska Rd S/Valley Center Rd	Signalized	HCM 7th Edition	SB Left	0.501	10.1	B
3	Love Ln/Durston Rd	Signalized	HCM 7th Edition	WB Right	0.376	12.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.357

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	14	434	10	47	180	110	54	16	11	8	15	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.50	0.00	4.30	3.90	1.80	1.90	0.00	0.00	12.50	6.70	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	456	11	49	189	116	57	17	12	8	16	44
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	124	3	13	51	31	15	5	3	2	4	12
Total Analysis Volume [veh/h]	16	494	12	53	205	126	62	18	13	9	17	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	72	0	0	72	0	0	10	0	0	10	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	71.0	0.0	0.0	71.0	0.0	0.0	19.0	0.0	0.0	19.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72.9	72.9	72.9	72.9	9.1	9.1	9.1	9.1	9.1
g / C, Green / Cycle	0.81	0.81	0.81	0.81	0.10	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.02	0.31	0.07	0.21	0.05	0.02	0.01	0.01	0.03
s, saturation flow rate [veh/h]	959	1656	789	1553	1204	1592	1136	1619	1454
c, Capacity [veh/h]	778	1339	626	1256	171	163	157	166	149
d1, Uniform Delay [s]	3.40	2.37	4.56	2.09	40.52	36.98	39.42	36.65	37.50
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.81	0.27	0.51	1.28	0.56	0.15	0.27	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.38	0.08	0.26	0.36	0.19	0.06	0.10	0.32
d, Delay for Lane Group [s/veh]	3.45	3.18	4.82	2.60	41.80	37.54	39.57	36.91	38.74
Lane Group LOS	A	A	A	A	D	D	D	D	D
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.06	1.00	0.27	0.58	1.37	0.64	0.19	0.34	1.01
50th-Percentile Queue Length [ft/ln]	1.48	25.09	6.64	14.58	34.24	15.93	4.75	8.62	25.30
95th-Percentile Queue Length [veh/ln]	0.11	1.81	0.48	1.05	2.47	1.15	0.34	0.62	1.82
95th-Percentile Queue Length [ft/ln]	2.67	45.15	11.96	26.24	61.63	28.68	8.55	15.52	45.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.45	3.18	3.18	4.82	2.60	2.60	41.80	37.54	37.54	39.57	36.91	38.74
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.19			2.91			40.38			38.42		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.74											
Intersection LOS	A											
Intersection V/C	0.357											

Emissions

Vehicle Miles Traveled [mph]	1.35	42.61	4.22	26.34	4.91	2.46	0.70	1.31	3.71
Stops [stops/h]	2.37	40.14	10.63	23.32	54.78	25.49	7.60	13.80	40.49
Fuel consumption [US gal/h]	0.09	2.37	0.36	1.42	1.13	0.52	0.16	0.28	0.82
CO [g/h]	6.48	165.73	24.91	98.94	78.74	36.50	10.92	19.68	57.62
NOx [g/h]	1.26	32.24	4.85	19.25	15.32	7.10	2.12	3.83	11.21
VOC [g/h]	1.50	38.41	5.77	22.93	18.25	8.46	2.53	4.56	13.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1489			1489			333			333		
d_b, Bicycle Delay [s]	2.94			2.94			31.25			31.25		
I_b,int, Bicycle LOS Score for Intersection	2.421			2.193			1.713			1.682		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Alaska Rd S/Valley Center Rd

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	1	0	2	126	0	56	178	259	1	0	256	281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	100.00	0.00	0.00	3.20	0.00	12.50	7.30	4.70	0.00	0.00	3.90	1.40
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	132	0	59	187	272	1	0	269	295
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	35	0	16	49	72	0	0	71	78
Total Analysis Volume [veh/h]	1	0	2	139	0	62	197	286	1	0	283	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	13	0	0	13	0	0	39	0	0	39	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	20.0	0.0	0.0	20.0	0.0	0.0	40.0	0.0	0.0	40.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9.9	9.9	9.9	9.9	9.9	42.1	42.1	42.1	42.1
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.70	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.11	0.00	0.05	0.28	0.17	0.00	0.39
s, saturation flow rate [veh/h]	257	1454	1261	1710	1310	710	1645	999	1517
c, Capacity [veh/h]	156	239	294	281	215	448	1156	714	1066
d1, Uniform Delay [s]	22.32	20.99	25.06	0.00	22.00	12.01	3.22	0.00	4.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.01	1.18	0.00	0.73	3.11	0.51	0.00	2.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.01	0.47	0.00	0.29	0.44	0.25	0.00	0.56
d, Delay for Lane Group [s/veh]	22.34	21.00	26.24	0.00	22.73	15.12	3.73	0.00	6.45
Lane Group LOS	C	C	C	A	C	B	A	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	0.02	1.75	0.00	0.70	1.86	0.65	0.00	1.98
50th-Percentile Queue Length [ft/ln]	0.28	0.53	43.70	0.00	17.58	46.51	16.25	0.00	49.46
95th-Percentile Queue Length [veh/ln]	0.02	0.04	3.15	0.00	1.27	3.35	1.17	0.00	3.56
95th-Percentile Queue Length [ft/ln]	0.51	0.95	78.66	0.00	31.65	83.71	29.24	0.00	89.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.34	21.00	21.00	26.24	0.00	22.73	15.12	3.73	3.73	0.00	6.45	6.45
Movement LOS	C	C	C	C	A	C	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	21.45			25.16			8.37			6.45		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	10.15											
Intersection LOS	B											
Intersection V/C	0.501											

Emissions

Vehicle Miles Traveled [mph]	0.09	0.17	7.77	0.00	3.46	15.47	22.53	0.00	52.52
Stops [stops/h]	0.68	1.27	104.88	0.00	42.20	111.61	38.99	0.00	118.70
Fuel consumption [US gal/h]	0.02	0.03	2.61	0.00	1.05	2.52	1.47	0.00	4.06
CO [g/h]	1.25	2.37	182.60	0.00	73.44	176.45	103.10	0.00	283.45
NOx [g/h]	0.24	0.46	35.53	0.00	14.29	34.33	20.06	0.00	55.15
VOC [g/h]	0.29	0.55	42.32	0.00	17.02	40.89	23.89	0.00	65.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	533	1200	1200
d_b, Bicycle Delay [s]	16.13	16.13	4.80	4.80
I_b,int, Bicycle LOS Score for Intersection	1.565	1.891	2.358	2.538
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.376

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durstun Rd			Durstun Rd		
Base Volume Input [veh/h]	21	311	44	132	139	16	20	47	24	32	35	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.80	1.40	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	327	46	139	146	17	21	49	25	34	37	169
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	89	13	38	40	5	6	13	7	9	10	46
Total Analysis Volume [veh/h]	24	356	50	151	159	18	23	53	27	37	40	184
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	45.0	0.0	0.0	45.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42.1	42.1	42.1	42.1	9.9	9.9	9.9	9.9	9.9
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.17	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.17	0.11	0.02	0.05	0.03	0.02	0.13
s, saturation flow rate [veh/h]	1104	1652	890	1661	1058	1614	1206	1710	1411
c, Capacity [veh/h]	812	1156	622	1163	244	269	235	285	235
d1, Uniform Delay [s]	4.28	3.58	6.87	3.03	23.90	21.91	25.35	21.32	23.95
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.19
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.84	0.93	0.28	0.17	0.61	0.31	0.22	9.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.35	0.24	0.15	0.09	0.30	0.16	0.14	0.78
d, Delay for Lane Group [s/veh]	4.34	4.42	7.79	3.30	24.06	22.52	25.66	21.54	33.32
Lane Group LOS	A	A	A	A	C	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	1.03	0.83	0.37	0.27	0.92	0.46	0.44	2.80
50th-Percentile Queue Length [ft/ln]	2.00	25.83	20.73	9.27	6.84	22.90	11.52	11.03	70.03
95th-Percentile Queue Length [veh/ln]	0.14	1.86	1.49	0.67	0.49	1.65	0.83	0.79	5.04
95th-Percentile Queue Length [ft/ln]	3.60	46.50	37.32	16.69	12.32	41.22	20.73	19.85	126.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.34	4.42	4.42	7.79	3.30	3.30	24.06	22.52	22.52	25.66	21.54	33.32
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	4.42			5.37			22.86			30.43		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	12.44											
Intersection LOS	B											
Intersection V/C	0.376											

Emissions

Vehicle Miles Traveled [mph]	1.47	24.89	5.93	6.95	0.99	3.46	1.81	1.96	9.01
Stops [stops/h]	4.80	62.00	49.76	22.25	16.43	54.95	27.64	26.47	168.08
Fuel consumption [US gal/h]	0.13	1.99	1.06	0.63	0.35	1.17	0.60	0.57	3.65
CO [g/h]	9.18	139.07	74.19	44.30	24.53	81.68	41.87	39.95	254.89
NOx [g/h]	1.79	27.06	14.43	8.62	4.77	15.89	8.15	7.77	49.59
VOC [g/h]	2.13	32.23	17.19	10.27	5.69	18.93	9.70	9.26	59.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1367	1367	367	367
d_b, Bicycle Delay [s]	3.01	3.01	20.01	20.01
I_b,int, Bicycle LOS Score for Intersection	2.269	2.101	1.730	1.990
Bicycle LOS	B	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Gallatin County Intersections

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Scenario 10 ALT 4 (PM)

Report File: F:\...\Gallatin_2025_Alt4_PM.pdf

11/6/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Roundabout	HCM 7th Edition	NB Thru		6.6	A
2	Alaska Rd S/Valley Center Rd	Roundabout	HCM 7th Edition	WB Right		8.5	A
3	Love Ln/Durston Rd	Roundabout	HCM 7th Edition	NB Thru		6.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

6.6
A

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	14	434	10	47	180	110	54	16	11	8	15	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.50	0.00	4.30	3.90	1.80	1.90	0.00	0.00	12.50	6.70	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	456	11	49	189	116	57	17	12	8	16	44
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	124	3	13	51	31	15	5	3	2	4	12
Total Analysis Volume [veh/h]	16	494	12	53	205	126	62	18	13	9	17	48
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	136			44			278			590		
Exiting Flow Rate [veh/h]	236			622			162			85		
Demand Flow Rate [veh/h]	15	456	11	49	189	116	57	17	12	8	16	44
Adjusted Demand Flow Rate [veh/h]	16	494	12	53	205	126	62	18	13	9	17	48

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.97			0.97			0.99			0.97		
Entry Flow Rate [veh/h]	540			397			95			77		
Capacity of Entry and Bypass Lanes [veh/h]	1201			1320			1039			756		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1163			1278			1027			735		
X, volume / capacity	0.45			0.30			0.09			0.10		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	2.38	1.27	0.30	0.33
95th-Percentile Queue Length [ft]	59.38	31.87	7.46	8.37
Approach Delay [s/veh]	7.84	5.53	4.31	5.95
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	6.58			
Intersection LOS	A			

Intersection Level Of Service Report

Intersection 2: Alaska Rd S/Valley Center Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 8.5
 Level Of Service: A

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	1	0	2	126	0	56	178	259	1	0	256	281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	100.00	0.00	0.00	3.20	0.00	12.50	7.30	4.70	0.00	0.00	3.90	1.40
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	132	0	59	187	272	1	0	269	295
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	35	0	16	49	72	0	0	71	78
Total Analysis Volume [veh/h]	1	0	2	139	0	62	197	286	1	0	283	310
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	654			296			143			213		
Exiting Flow Rate [veh/h]	1			526			366			445		
Demand Flow Rate [veh/h]	1	0	2	132	0	59	187	272	1	0	269	295
Adjusted Demand Flow Rate [veh/h]	1	0	2	139	0	62	197	286	1	0	283	310

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.83			0.94			0.95			0.97		
Entry Flow Rate [veh/h]	4			213			512			609		
Capacity of Entry and Bypass Lanes [veh/h]	709			1021			1193			1111		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	591			964			1128			1083		
X, volume / capacity	0.01			0.21			0.43			0.55		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	B
95th-Percentile Queue Length [veh]	0.02	0.78	2.20	3.44
95th-Percentile Queue Length [ft]	0.38	19.61	54.91	86.07
Approach Delay [s/veh]	6.16	5.76	7.72	10.02
Approach LOS	A	A	A	B
Intersection Delay [s/veh]	8.47			
Intersection LOS	A			

Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 6.5
 Level Of Service: A

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Base Volume Input [veh/h]	21	311	44	132	139	16	20	47	24	32	35	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.80	1.40	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506	1.0506
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	327	46	139	146	17	21	49	25	34	37	169
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	89	13	38	40	5	6	13	7	9	10	46
Total Analysis Volume [veh/h]	24	356	50	151	159	18	23	53	27	37	40	184
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	228			101			350			409		
Exiting Flow Rate [veh/h]	225			576			82			255		
Demand Flow Rate [veh/h]	22	327	46	139	146	17	21	49	25	34	37	169
Adjusted Demand Flow Rate [veh/h]	24	356	50	151	159	18	23	53	27	37	40	184

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.99			0.99			1.00			0.97		
Entry Flow Rate [veh/h]	436			332			103			268		
Capacity of Entry and Bypass Lanes [veh/h]	1094			1245			966			910		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1080			1233			966			887		
X, volume / capacity	0.40			0.27			0.11			0.29		

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.94	1.08	0.36	1.23
95th-Percentile Queue Length [ft]	48.52	26.95	8.93	30.80
Approach Delay [s/veh]	7.52	5.31	4.71	7.22
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	6.55			
Intersection LOS	A			

Gallatin County Intersections

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Scenario 7 ALT 3 (AM)

Report File: F:\...\ALT 3 (AM) 2045 Volumes.pdf

5/14/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Signalized	HCM 7th Edition	EB Left	0.572	13.8	B
2	Alaska Rd S/Valley Center Rd	Signalized	HCM 7th Edition	EB Left	0.583	15.8	B
3	Love Ln/Durston Rd	Signalized	HCM 7th Edition	WB Right	0.520	14.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	8	235	9	36	258	96	59	28	8	4	25	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.40	55.60	13.90	10.90	4.20	3.40	3.60	37.50	50.00	16.00	14.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	405	15	62	444	165	102	48	14	7	43	72
Peak Hour Factor	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	116	4	18	127	47	29	14	4	2	12	21
Total Analysis Volume [veh/h]	16	463	17	71	508	189	117	55	16	8	49	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	95	0	0	95	0	0	17	0	0	17	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	60.0	0.0	0.0	60.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56.0	56.0	56.0	56.0	11.0	11.0	11.0	11.0
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.31	0.10	0.47	0.10	0.04	0.01	0.10
s, saturation flow rate [veh/h]	684	1573	745	1491	1120	1598	735	1345
c, Capacity [veh/h]	446	1175	549	1114	135	234	154	197
d1, Uniform Delay [s]	9.14	3.46	6.34	4.52	37.07	28.58	32.14	30.25
k, delay calibration	0.50	0.50	0.50	0.50	0.19	0.11	0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	1.05	0.49	2.66	23.67	0.72	0.14	5.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.41	0.13	0.63	0.87	0.30	0.05	0.66
d, Delay for Lane Group [s/veh]	9.29	4.52	6.83	7.18	60.74	29.30	32.28	35.70
Lane Group LOS	A	A	A	A	E	C	C	D
Critical Lane Group	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.12	1.37	0.42	2.77	2.97	1.14	0.14	2.43
50th-Percentile Queue Length [ft/ln]	3.07	34.25	10.40	69.17	74.15	28.42	3.40	60.68
95th-Percentile Queue Length [veh/ln]	0.22	2.47	0.75	4.98	5.34	2.05	0.24	4.37
95th-Percentile Queue Length [ft/ln]	5.53	61.65	18.72	124.50	133.48	51.15	6.11	109.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.29	4.52	4.52	6.83	7.18	7.18	60.74	29.30	29.30	32.28	35.70	35.70
Movement LOS	A	A	A	A	A	A	E	C	C	C	D	D
d_A, Approach Delay [s/veh]	4.67			7.15			48.86			35.50		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.78											
Intersection LOS	B											
Intersection V/C	0.572											

Emissions

Vehicle Miles Traveled [mph]	1.35	40.42	5.65	55.47	9.27	5.62	0.62	10.13
Stops [stops/h]	5.90	65.76	19.97	132.80	142.37	54.56	6.52	116.50
Fuel consumption [US gal/h]	0.17	2.80	0.59	4.91	2.87	1.05	0.13	2.21
CO [g/h]	11.60	196.03	41.55	343.53	200.61	73.25	8.75	154.75
NOx [g/h]	2.26	38.14	8.08	66.84	39.03	14.25	1.70	30.11
VOC [g/h]	2.69	45.43	9.63	79.62	46.49	16.98	2.03	35.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1493	1493	293	293
d_b, Bicycle Delay [s]	2.41	2.41	27.31	27.31
I_b,int, Bicycle LOS Score for Intersection	2.378	2.827	1.870	1.789
Bicycle LOS	B	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Alaska Rd S/Valley Center Rd

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.583

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	2	1	1	197	1	82	79	233	1	3	176	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	100.00	6.60	0.00	25.60	17.70	4.30	0.00	100.00	5.10	9.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	2	2	339	2	141	136	401	2	5	303	284
Peak Hour Factor	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	95	1	39	38	112	1	1	85	79
Total Analysis Volume [veh/h]	3	2	2	379	2	158	152	449	2	6	339	318
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	32	0	0	32	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22.7	22.7	22.7	22.7	22.7	29.3	29.3	29.3	29.3	29.3
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.38	0.49	0.49	0.49	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.31	0.00	0.14	0.25	0.27	0.03	0.21	0.24
s, saturation flow rate [veh/h]	1121	1571	1224	1710	1160	611	1651	180	1641	1342
c, Capacity [veh/h]	500	592	534	644	437	321	809	169	804	657
d1, Uniform Delay [s]	13.13	11.68	19.02	11.67	13.49	17.99	10.74	16.54	9.84	10.23
k, delay calibration	0.11	0.11	0.24	0.11	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	3.78	0.00	0.50	4.95	2.77	0.39	1.62	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.01	0.71	0.00	0.36	0.47	0.56	0.04	0.42	0.48
d, Delay for Lane Group [s/veh]	13.13	11.69	22.79	11.67	13.99	22.94	13.51	16.93	11.46	12.77
Lane Group LOS	B	B	C	B	B	C	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.02	0.03	4.52	0.01	1.26	1.99	3.70	0.07	2.48	2.53
50th-Percentile Queue Length [ft/ln]	0.56	0.68	112.93	0.34	31.57	49.71	92.53	1.80	62.06	63.28
95th-Percentile Queue Length [veh/ln]	0.04	0.05	8.00	0.02	2.27	3.58	6.66	0.13	4.47	4.56
95th-Percentile Queue Length [ft/ln]	1.00	1.22	200.08	0.61	56.82	89.48	166.55	3.24	111.71	113.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.13	11.69	11.69	22.79	11.67	13.99	22.94	13.51	13.51	16.93	11.46	12.77
Movement LOS	B	B	B	C	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.31			20.17			15.89			12.14		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	15.78											
Intersection LOS	B											
Intersection V/C	0.583											

Emissions

Vehicle Miles Traveled [mph]	0.26	0.34	21.18	0.11	8.83	11.93	35.41	0.53	30.03	28.17
Stops [stops/h]	1.34	1.62	271.04	0.81	75.76	119.31	222.07	4.32	148.94	151.87
Fuel consumption [US gal/h]	0.04	0.05	6.63	0.02	1.91	2.60	5.21	0.09	3.67	3.68
CO [g/h]	2.60	3.22	463.30	1.46	133.42	181.89	364.51	6.47	256.66	257.23
NOx [g/h]	0.51	0.63	90.14	0.28	25.96	35.39	70.92	1.26	49.94	50.05
VOC [g/h]	0.60	0.75	107.37	0.34	30.92	42.15	84.48	1.50	59.48	59.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			867			867			867		
d_b, Bicycle Delay [s]	9.63			9.63			9.63			9.63		
I_b,int, Bicycle LOS Score for Intersection	1.571			2.449			2.555			2.654		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Love Ln/Durston Rd

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 14.4
Level Of Service: B
Volume to Capacity (v/c): 0.520

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durstun Rd			Durstun Rd		
Base Volume Input [veh/h]	11	99	31	181	230	14	11	71	12	55	43	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.10	9.70	0.00	1.70	7.10	0.00	1.40	0.00	1.80	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	170	53	312	396	24	19	122	21	95	74	238
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	47	15	87	110	7	5	34	6	27	21	66
Total Analysis Volume [veh/h]	21	190	59	348	442	27	21	136	23	106	83	266
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	32	0	0	32	0	0	20	0	0	20	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	14.0	0.0	0.0	14.0	0.0	0.0	46.0	0.0	0.0	46.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38.2	38.2	38.2	38.2	13.8	13.8	13.8	13.8	13.8
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.23	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.34	0.28	0.02	0.10	0.10	0.05	0.18
s, saturation flow rate [veh/h]	784	1562	1034	1670	943	1649	1106	1710	1454
c, Capacity [veh/h]	446	992	628	1060	293	382	283	396	337
d1, Uniform Delay [s]	10.54	4.75	11.71	5.56	20.44	19.60	24.12	18.61	21.68
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.61	3.50	1.34	0.10	0.72	0.82	0.26	4.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.25	0.55	0.44	0.07	0.42	0.37	0.21	0.79
d, Delay for Lane Group [s/veh]	10.74	5.36	15.21	6.90	20.54	20.32	24.94	18.87	25.84
Lane Group LOS	B	A	B	A	C	C	C	B	C
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	0.91	3.18	2.02	0.22	1.71	1.32	0.84	3.41
50th-Percentile Queue Length [ft/ln]	3.94	22.63	79.38	50.47	5.61	42.69	32.89	20.93	85.16
95th-Percentile Queue Length [veh/ln]	0.28	1.63	5.72	3.63	0.40	3.07	2.37	1.51	6.13
95th-Percentile Queue Length [ft/ln]	7.09	40.73	142.88	90.85	10.10	76.84	59.20	37.67	153.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.74	5.36	5.36	15.21	6.90	6.90	20.54	20.32	20.32	24.94	18.87	25.84
Movement LOS	B	A	A	B	A	A	C	C	C	C	B	C
d_A, Approach Delay [s/veh]	5.78			10.44			20.35			24.36		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	14.42											
Intersection LOS	B											
Intersection V/C	0.520											

Emissions

Vehicle Miles Traveled [mph]	1.29	15.26	13.66	18.41	0.91	6.88	5.19	4.06	13.03
Stops [stops/h]	9.45	54.31	190.51	121.14	13.47	102.45	78.93	50.22	204.39
Fuel consumption [US gal/h]	0.21	1.47	3.91	2.80	0.29	2.17	1.70	1.08	4.39
CO [g/h]	14.51	102.77	273.62	195.41	20.02	151.49	118.64	75.67	306.61
NOx [g/h]	2.82	19.99	53.24	38.02	3.90	29.47	23.08	14.72	59.65
VOC [g/h]	3.36	23.82	63.41	45.29	4.64	35.11	27.50	17.54	71.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1400	1400
d_b, Bicycle Delay [s]	20.83	20.83	2.70	2.70
I_b,int, Bicycle LOS Score for Intersection	2.005	2.908	1.857	2.310
Bicycle LOS	B	C	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Gallatin County Intersections

Vistro File:
F:\...\GallatinCountyIntersections_2045Volumes.vistro
Report File: F:\...\Gallatin_2045_Alt4_AM.pdf

Scenario 9 ALT 4 (AM)

11/6/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Roundabout	HCM 7th Edition	SB Thru		11.0	B
2	Alaska Rd S/Valley Center Rd	Roundabout	HCM 7th Edition	EB Thru		14.7	B
3	Love Ln/Durston Rd	Roundabout	HCM 7th Edition	SB Thru		12.3	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

11.0
B

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	8	235	9	36	258	96	59	28	8	4	25	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.40	55.60	13.90	10.90	4.20	3.40	3.60	37.50	50.00	16.00	14.30
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	405	15	62	444	165	102	48	14	7	43	72
Peak Hour Factor	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	116	4	18	127	47	29	14	4	2	12	21
Total Analysis Volume [veh/h]	16	463	17	71	508	189	117	55	16	8	49	82
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	259			85			656			644		
Exiting Flow Rate [veh/h]	597			721			270			164		
Demand Flow Rate [veh/h]	14	405	15	62	444	165	102	48	14	7	43	72
Adjusted Demand Flow Rate [veh/h]	16	463	17	71	508	189	117	55	16	8	49	82

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.91			0.91			0.95			0.86		
Entry Flow Rate [veh/h]	547			841			199			162		
Capacity of Entry and Bypass Lanes [veh/h]	1060			1266			707			716		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	962			1157			669			615		
X, volume / capacity	0.52			0.66			0.28			0.23		

Movement, Approach, & Intersection Results

Lane LOS	B	B	A	A
95th-Percentile Queue Length [veh]	3.04	5.34	1.15	0.86
95th-Percentile Queue Length [ft]	75.91	133.57	28.79	21.61
Approach Delay [s/veh]	10.24	12.36	8.88	8.69
Approach LOS	B	B	A	A
Intersection Delay [s/veh]	10.97			
Intersection LOS	B			

Intersection Level Of Service Report

Intersection 2: Alaska Rd S/Valley Center Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.7
 Level Of Service: B

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	2	1	1	197	1	82	79	233	1	3	176	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	100.00	6.60	0.00	25.60	17.70	4.30	0.00	100.00	5.10	9.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	2	2	339	2	141	136	401	2	5	303	284
Peak Hour Factor	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	95	1	39	38	112	1	1	85	79
Total Analysis Volume [veh/h]	3	2	2	379	2	158	152	449	2	6	339	318
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1051			371			418			184		
Exiting Flow Rate [veh/h]	16			530			558			876		
Demand Flow Rate [veh/h]	3	2	2	339	2	141	136	401	2	5	303	284
Adjusted Demand Flow Rate [veh/h]	3	2	2	379	2	158	152	449	2	6	339	318

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.86			0.90			0.93			0.93		
Entry Flow Rate [veh/h]	9			602			648			715		
Capacity of Entry and Bypass Lanes [veh/h]	473			945			901			1144		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	405			848			840			1063		
X, volume / capacity	0.02			0.64			0.72			0.62		

Movement, Approach, & Intersection Results

Lane LOS	A	B	C	B
95th-Percentile Queue Length [veh]	0.05	4.68	6.31	4.56
95th-Percentile Queue Length [ft]	1.32	116.88	157.78	114.12
Approach Delay [s/veh]	9.14	14.54	18.03	11.96
Approach LOS	A	B	C	B
Intersection Delay [s/veh]	14.74			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 3: Love Ln/Durston Rd

Control Type: Roundabout
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 12.3
Level Of Service: B

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Base Volume Input [veh/h]	11	99	31	181	230	14	11	71	12	55	43	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.10	6.10	9.70	0.00	1.70	7.10	0.00	1.40	0.00	1.80	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	170	53	312	396	24	19	122	21	95	74	238
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	47	15	87	110	7	5	34	6	27	21	66
Total Analysis Volume [veh/h]	21	190	59	348	442	27	21	136	23	106	83	266
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	507			214			905			246		
Exiting Flow Rate [veh/h]	580			489			135			551		
Demand Flow Rate [veh/h]	19	170	53	312	396	24	19	122	21	95	74	238
Adjusted Demand Flow Rate [veh/h]	21	190	59	348	442	27	21	136	23	106	83	266

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.93			0.99			0.99			1.00		
Entry Flow Rate [veh/h]	290			827			182			457		
Capacity of Entry and Bypass Lanes [veh/h]	823			1110			549			1075		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	769			1098			543			1070		
X, volume / capacity	0.35			0.74			0.33			0.43		

Movement, Approach, & Intersection Results

Lane LOS	A	C	B	A
95th-Percentile Queue Length [veh]	1.59	7.25	1.44	2.16
95th-Percentile Queue Length [ft]	39.63	181.22	36.11	53.98
Approach Delay [s/veh]	8.96	15.89	11.56	7.96
Approach LOS	A	C	B	A
Intersection Delay [s/veh]	12.25			
Intersection LOS	B			

Gallatin County Intersections

Vistro File:

Scenario 8 ALT 3 (PM)

F:\...\GallatinCountyIntersections_2045Volumes.vistro

Report File: F:\...\Alt 3 (PM) 2045 Volumes.pdf

5/14/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Signalized	HCM 7th Edition	EB Left	0.586	14.1	B
2	Alaska Rd S/Valley Center Rd	Signalized	HCM 7th Edition	SB Left	0.828	14.7	B
3	Love Ln/Durston Rd	Signalized	HCM 7th Edition	SB Left	0.616	17.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	14	434	10	47	180	110	54	16	11	8	15	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.50	0.00	4.30	3.90	1.80	1.90	0.00	0.00	12.50	6.70	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	747	17	81	310	189	93	28	19	14	26	72
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	202	5	22	84	51	25	8	5	4	7	20
Total Analysis Volume [veh/h]	26	809	18	88	336	205	101	30	21	15	28	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	72	0	0	72	0	0	10	0	0	10	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	76.0	0.0	0.0	76.0	0.0	0.0	14.0	0.0	0.0	14.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72.0	72.0	72.0	72.0	10.0	10.0	10.0	10.0
g / C, Green / Cycle	0.80	0.80	0.80	0.80	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.03	0.50	0.15	0.35	0.09	0.03	0.01	0.07
s, saturation flow rate [veh/h]	791	1656	585	1553	1160	1594	1115	1433
c, Capacity [veh/h]	616	1325	419	1243	106	177	148	159
d1, Uniform Delay [s]	4.82	3.59	9.37	2.76	44.75	36.73	40.22	38.39
k, delay calibration	0.50	0.50	0.50	0.50	0.23	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	2.23	1.14	1.11	49.01	0.89	0.30	6.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.62	0.21	0.44	0.96	0.29	0.10	0.67
d, Delay for Lane Group [s/veh]	4.95	5.82	10.51	3.87	93.76	37.62	40.52	44.90
Lane Group LOS	A	A	B	A	F	D	D	D
Critical Lane Group	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.14	2.81	0.83	1.39	3.68	1.05	0.32	2.48
50th-Percentile Queue Length [ft/ln]	3.41	70.33	20.73	34.65	92.03	26.26	8.05	61.88
95th-Percentile Queue Length [veh/ln]	0.25	5.06	1.49	2.49	6.63	1.89	0.58	4.46
95th-Percentile Queue Length [ft/ln]	6.14	126.60	37.31	62.36	165.65	47.27	14.48	111.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.95	5.82	5.82	10.51	3.87	3.87	93.76	37.62	37.62	40.52	44.90	44.90
Movement LOS	A	A	A	B	A	A	F	D	D	D	D	D
d_A, Approach Delay [s/veh]	5.79			4.80			74.92			44.36		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	14.08											
Intersection LOS	B											
Intersection V/C	0.586											

Emissions

Vehicle Miles Traveled [mph]	2.19	69.64	7.00	43.05	8.00	4.04	1.16	8.20
Stops [stops/h]	5.45	112.53	33.16	55.43	147.25	42.02	12.87	99.02
Fuel consumption [US gal/h]	0.18	5.04	0.93	2.72	3.34	0.86	0.26	2.03
CO [g/h]	12.81	352.25	65.14	190.07	233.40	60.14	18.50	141.59
NOx [g/h]	2.49	68.53	12.67	36.98	45.41	11.70	3.60	27.55
VOC [g/h]	2.97	81.64	15.10	44.05	54.09	13.94	4.29	32.81

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1600	1600	222	222
d_b, Bicycle Delay [s]	1.80	1.80	35.56	35.56
I_b,int, Bicycle LOS Score for Intersection	2.967	2.597	1.810	1.759
Bicycle LOS	C	B	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Alaska Rd S/Valley Center Rd

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.828

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	1	0	2	126	0	56	178	259	1	0	256	281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	100.00	0.00	0.00	3.20	0.00	12.50	7.30	4.70	0.00	0.00	3.90	1.40
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	3	217	0	96	306	446	2	0	441	484
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	57	0	25	80	117	1	0	116	127
Total Analysis Volume [veh/h]	2	0	3	228	0	101	322	469	2	0	464	509
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	13	0	0	13	0	0	39	0	0	39	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	14.0	0.0	0.0	14.0	0.0	0.0	46.0	0.0	0.0	46.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10.0	10.0	10.0	10.0	10.0	42.0	42.0	42.0	42.0	42.0
g / C, Green / Cycle	0.17	0.17	0.17	0.17	0.17	0.70	0.70	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.18	0.00	0.08	0.65	0.29	0.00	0.28	0.35
s, saturation flow rate [veh/h]	248	1454	1260	1710	1310	498	1645	843	1657	1437
c, Capacity [veh/h]	153	242	286	285	218	394	1152	581	1160	1006
d1, Uniform Delay [s]	22.72	20.88	27.13	0.00	22.57	16.00	3.78	0.00	3.75	4.18
k, delay calibration	0.11	0.11	0.43	0.11	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.02	17.68	0.00	1.52	17.04	1.08	0.00	1.03	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.01	0.80	0.00	0.46	0.82	0.41	0.00	0.40	0.51
d, Delay for Lane Group [s/veh]	22.75	20.90	44.80	0.00	24.10	33.04	4.86	0.00	4.78	6.00
Lane Group LOS	C	C	D	A	C	C	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.02	0.03	4.38	0.00	1.20	5.46	1.29	0.00	1.26	1.64
50th-Percentile Queue Length [ft/ln]	0.57	0.79	109.42	0.00	29.93	136.46	32.29	0.00	31.42	40.96
95th-Percentile Queue Length [veh/ln]	0.04	0.06	7.81	0.00	2.16	9.29	2.32	0.00	2.26	2.95
95th-Percentile Queue Length [ft/ln]	1.03	1.43	195.19	0.00	53.88	232.25	58.12	0.00	56.55	73.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.75	20.90	20.90	44.80	0.00	24.10	33.04	4.86	4.86	0.00	4.78	6.00
Movement LOS	C	C	C	D	A	C	C	A	A	A	A	A
d_A, Approach Delay [s/veh]	21.64			38.45			16.30			5.42		
Approach LOS	C			D			B			A		
d_I, Intersection Delay [s/veh]	14.74											
Intersection LOS	B											
Intersection V/C	0.828											

Emissions

Vehicle Miles Traveled [mph]	0.17	0.26	12.74	0.00	5.64	25.28	36.98	0.00	41.10	45.08
Stops [stops/h]	1.37	1.90	262.61	0.00	71.84	327.51	77.49	0.00	75.40	98.31
Fuel consumption [US gal/h]	0.04	0.05	6.54	0.00	1.79	7.10	2.70	0.00	2.80	3.39
CO [g/h]	2.53	3.54	456.91	0.00	124.92	496.55	188.51	0.00	195.56	236.89
NOx [g/h]	0.49	0.69	88.90	0.00	24.30	96.61	36.68	0.00	38.05	46.09
VOC [g/h]	0.59	0.82	105.89	0.00	28.95	115.08	43.69	0.00	45.32	54.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	333			333			1400			1400		
d_b, Bicycle Delay [s]	20.83			20.83			2.70			2.70		
I_b,int, Bicycle LOS Score for Intersection	1.568			2.102			2.868			3.165		
Bicycle LOS	A			B			C			C		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type: Signalized
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 17.6
 Level Of Service: B
 Volume to Capacity (v/c): 0.616

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durstun Rd			Durstun Rd		
Base Volume Input [veh/h]	21	311	44	132	139	16	20	47	24	32	35	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.80	1.40	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	535	76	227	239	28	34	81	41	55	60	277
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	146	21	62	65	8	9	22	11	15	16	75
Total Analysis Volume [veh/h]	39	582	83	247	260	30	37	88	45	60	65	301
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Flashing Yellow Arrow	No			No			No			No		
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	0	0	27	0	0	25	0	0	25	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Pedestrian Clearance [s]	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0.0	14.0	0.0	0.0	14.0	0.0	0.0	46.0	0.0	0.0	46.0	0.0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C	R
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36.7	36.7	36.7	36.7	15.3	15.3	15.3	15.3	15.3
g / C, Green / Cycle	0.61	0.61	0.61	0.61	0.25	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.04	0.40	0.35	0.17	0.04	0.08	0.05	0.04	0.21
s, saturation flow rate [veh/h]	996	1652	700	1661	929	1614	1149	1710	1411
c, Capacity [veh/h]	594	1010	326	1015	309	412	314	437	360
d1, Uniform Delay [s]	8.58	7.59	22.62	5.49	19.81	18.13	21.85	17.29	21.14
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	3.36	15.10	0.71	0.17	0.45	0.29	0.16	5.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.66	0.76	0.29	0.12	0.32	0.19	0.15	0.84
d, Delay for Lane Group [s/veh]	8.79	10.95	37.72	6.20	19.98	18.58	22.14	17.45	26.26
Lane Group LOS	A	B	D	A	B	B	C	B	C
Critical Lane Group	No	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.24	4.17	4.49	1.22	0.39	1.34	0.68	0.62	3.90
50th-Percentile Queue Length [ft/ln]	6.11	104.34	112.24	30.48	9.73	33.38	16.93	15.43	97.53
95th-Percentile Queue Length [veh/ln]	0.44	7.51	7.96	2.19	0.70	2.40	1.22	1.11	7.02
95th-Percentile Queue Length [ft/ln]	11.01	187.81	199.12	54.86	17.51	60.08	30.47	27.78	175.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.79	10.95	10.95	37.72	6.20	6.20	19.98	18.58	18.58	22.14	17.45	26.26
Movement LOS	A	B	B	D	A	A	B	B	B	C	B	C
d_A, Approach Delay [s/veh]	10.83			20.70			18.88			24.33		
Approach LOS	B			C			B			C		
d_I, Intersection Delay [s/veh]	17.59											
Intersection LOS	B											
Intersection V/C	0.616											

Emissions

Vehicle Miles Traveled [mph]	2.39	40.76	9.70	11.38	1.60	5.75	2.94	3.18	14.74
Stops [stops/h]	14.68	250.41	269.38	73.14	23.35	80.11	40.63	37.04	234.06
Fuel consumption [US gal/h]	0.33	5.99	5.58	1.67	0.50	1.70	0.88	0.80	5.02
CO [g/h]	23.36	418.92	389.87	116.43	34.64	118.55	61.25	55.95	351.18
NOx [g/h]	4.55	81.51	75.85	22.65	6.74	23.07	11.92	10.89	68.33
VOC [g/h]	5.41	97.09	90.36	26.98	8.03	27.47	14.19	12.97	81.39

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1400	1400
d_b, Bicycle Delay [s]	20.83	20.83	2.70	2.70
I_b,int, Bicycle LOS Score for Intersection	2.721	2.446	1.840	2.263
Bicycle LOS	B	B	A	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Gallatin County Intersections

Vistro File:

Scenario 10 ALT 4 (PM)

F:\...\GallatinCountyIntersections_2045Volumes.vistro

Report File: F:\...\Gallatin_2045_Alt4_PM.pdf

11/6/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Alaska Rd S/Cameron Bridge Rd	Roundabout	HCM 7th Edition	NB Thru		13.8	B
2	Alaska Rd S/Valley Center Rd	Roundabout	HCM 7th Edition	WB Right		35.8	E
3	Love Ln/Durston Rd	Roundabout	HCM 7th Edition	NB Thru		14.1	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Alaska Rd S/Cameron Bridge Rd

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

13.8
B

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Cameron Bridge Rd			Cameron Bridge Rd		
Base Volume Input [veh/h]	14	434	10	47	180	110	54	16	11	8	15	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.50	0.00	4.30	3.90	1.80	1.90	0.00	0.00	12.50	6.70	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	747	17	81	310	189	93	28	19	14	26	72
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	202	5	22	84	51	25	8	5	4	7	20
Total Analysis Volume [veh/h]	26	809	18	88	336	205	101	30	21	15	28	78
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	225			73			458			966		
Exiting Flow Rate [veh/h]	387			1018			265			140		
Demand Flow Rate [veh/h]	24	747	17	81	310	189	93	28	19	14	26	72
Adjusted Demand Flow Rate [veh/h]	26	809	18	88	336	205	101	30	21	15	28	78

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.97			0.97			0.99			0.97		
Entry Flow Rate [veh/h]	882			650			154			125		
Capacity of Entry and Bypass Lanes [veh/h]	1098			1282			866			516		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1063			1241			855			501		
X, volume / capacity	0.80			0.51			0.18			0.24		

Movement, Approach, & Intersection Results

Lane LOS	C	A	A	B
95th-Percentile Queue Length [veh]	9.08	2.97	0.64	0.94
95th-Percentile Queue Length [ft]	227.02	74.22	16.11	23.46
Approach Delay [s/veh]	19.56	8.38	6.01	10.68
Approach LOS	C	A	A	B
Intersection Delay [s/veh]	13.77			
Intersection LOS	B			

Intersection Level Of Service Report

Intersection 2: Alaska Rd S/Valley Center Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 35.8
 Level Of Service: E

Intersection Setup

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00			50.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Alaska Rd S			Alaska Rd S			Valley Center Rd			Valley Center Rd		
Base Volume Input [veh/h]	1	0	2	126	0	56	178	259	1	0	256	281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	100.00	0.00	0.00	3.20	0.00	12.50	7.30	4.70	0.00	0.00	3.90	1.40
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	3	217	0	96	306	446	2	0	441	484
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	57	0	25	80	117	1	0	116	127
Total Analysis Volume [veh/h]	2	0	3	228	0	101	322	469	2	0	464	509
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	1072			486			235			350		
Exiting Flow Rate [veh/h]	2			862			600			729		
Demand Flow Rate [veh/h]	2	0	3	217	0	96	306	446	2	0	441	484
Adjusted Demand Flow Rate [veh/h]	2	0	3	228	0	101	322	469	2	0	464	509

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.80			0.94			0.95			0.97		
Entry Flow Rate [veh/h]	7			349			839			999		
Capacity of Entry and Bypass Lanes [veh/h]	463			841			1086			967		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	370			794			1027			942		
X, volume / capacity	0.01			0.41			0.77			1.03		

Movement, Approach, & Intersection Results

Lane LOS	A	A	C	F
95th-Percentile Queue Length [veh]	0.04	2.05	7.99	21.14
95th-Percentile Queue Length [ft]	1.03	51.28	199.79	528.60
Approach Delay [s/veh]	9.93	9.78	18.13	59.05
Approach LOS	A	A	C	F
Intersection Delay [s/veh]	35.76			
Intersection LOS	E			

Intersection Level Of Service Report

Intersection 3: Love Ln/Durston Rd

Control Type: Roundabout
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.1
 Level Of Service: B

Intersection Setup

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Love Ln			Love Ln			Durston Rd			Durston Rd		
Base Volume Input [veh/h]	21	311	44	132	139	16	20	47	24	32	35	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.80	1.40	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Proportion of CAVs [%]	0.00											
Growth Factor	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216	1.7216
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	535	76	227	239	28	34	81	41	55	60	277
Peak Hour Factor	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190	0.9190
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	146	21	62	65	8	9	22	11	15	16	75
Total Analysis Volume [veh/h]	39	582	83	247	260	30	37	88	45	60	65	301
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	374			164			573			667		
Exiting Flow Rate [veh/h]	369			940			134			420		
Demand Flow Rate [veh/h]	36	535	76	227	239	28	34	81	41	55	60	277
Adjusted Demand Flow Rate [veh/h]	39	582	83	247	260	30	37	88	45	60	65	301

Lanes

Override Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Override Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.99			0.99			1.00			0.97		
Entry Flow Rate [veh/h]	714			543			170			438		
Capacity of Entry and Bypass Lanes [veh/h]	943			1168			770			699		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	931			1156			770			682		
X, volume / capacity	0.76			0.46			0.22			0.63		

Movement, Approach, & Intersection Results

Lane LOS	C	A	A	C
95th-Percentile Queue Length [veh]	7.40	2.52	0.84	4.40
95th-Percentile Queue Length [ft]	185.06	63.07	21.03	110.07
Approach Delay [s/veh]	18.61	8.12	7.10	16.82
Approach LOS	C	A	A	C
Intersection Delay [s/veh]	14.06			
Intersection LOS	B			

GALLATIN COUNTY INTERSECTION IMPROVEMENTS

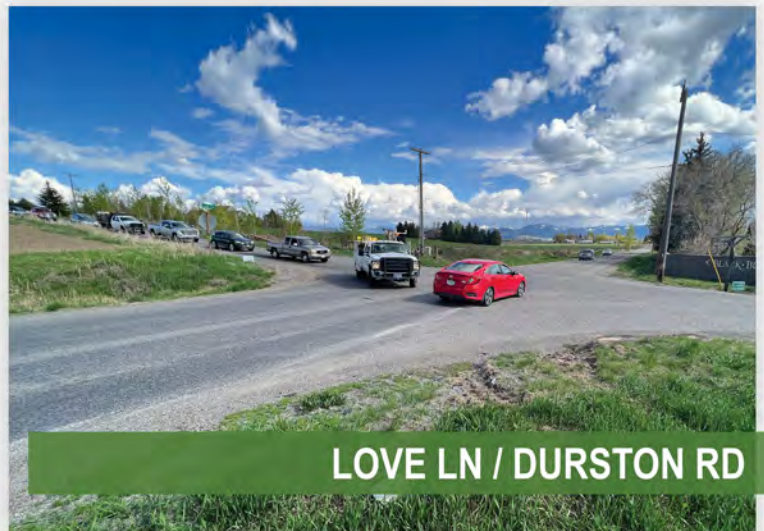
APPENDIX E-2: Conceptual Designs



ALASKA RD S / CAMERON BRIDGE RD



ALASKA RD S / E VALLEY CENTER RD



LOVE LN / DURSTON RD



-  Existing Cadastral
-  Misc. Electrical
-  Farm Fencing
-  New Irrigation Ditch
-  New Irrigation Structure
-  New Right-of-way
-  Sidewalks
-  Shared Use Path

Alaska Road

Cameron Bridge Road



- Existing Cadastral
- New Irrigation Ditch
- New Irrigation Structure
- New Right-of-way
- Sidewalks
- Shared Use Path



- Existing Cadastral
- Misc. Electrical
- Farm Fencing
- New Irrigation Ditch
- New Irrigation Structure
- New Right-of-way
- Sidewalks
- Shared Use Path

Alaska Road

Valley Center Road



- Existing Cadastral
- New Irrigation Ditch
- New Irrigation Structure
- New Right-of-way
- Sidewalks
- Shared Use Path

EX. 10' SPAN X 4' HIGH X 168' RCB
REMOVE 5' SLOPED END
REMOVE 4 CY CONCRETE
EXTEND LT. NEW 10' X 4' X 138' RCB
4 CY CONC. EDGE PROT. & CUT OFF WALL
?? CY BEDDING MATERIAL
?? CY FOUNDATION MATERIAL
?? SY GEOTEXTILE



DURSTON ROAD

LOVE LANE

NEW SHARED
USE PATHS

IMPACTS TO
BLACK BULL
ENTRANCE
DISPLAY

ACCESSIBLE
CURB RAMPS AT
PATH CROSSINGS

MODIFY ALIGNMENT TO
FLATTEN APPROACH GRADE

EXISTING RIGHT-OF-WAY LINE

MAINTAIN EXISTING
FENCE LINE

MAINTAIN EXISTING
ACCESS WITH SOME
DRIVEWAY MODIFICATIONS



LOVE LANE

DURSTON ROAD

NEW SHARED
USE PATHS

MINIMIZE IMPACTS TO
BLACK BULL ENTRANCE
DISPLAY

ACCESSIBLE
CURB RAMPS AT
PATH CROSSINGS

FLATTEN APPROACH GRADE

MAINTAIN EXISTING
FENCE LINE

EXISTING RIGHT-OF-WAY LINE

MAINTAIN EXISTING
ACCESS WITH SOME
DRIVEWAY MODIFICATIONS

GALLATIN COUNTY INTERSECTION IMPROVEMENTS

APPENDIX E-3: Cost Estimates



ALASKA RD S / CAMERON BRIDGE RD



ALASKA RD S / E VALLEY CENTER RD



LOVE LN / DURSTON RD

Alaska Road South / Cameron Bridge Road

Signal

\$ 6,600,000 TOT

LENGTH (FT)	3890
NEW WIDTH (FT)	48
EXISTING WIDTH (FT)	22
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	15560.0	\$ 24.45	\$ 380,476.23
SPECIAL BORROW	CUYD	7491.9	\$ 23.30	\$ 174,549.66
CRUSHED AGGREGATE COURSE	CUYD	1873.0	\$ 67.20	\$ 125,857.87
COVER - TYPE 2	SQYD	11237.8	\$ 1.15	\$ 12,963.90
COMMERCIAL MIX PG 70-28	TON	6664.9	\$ 147.70	\$ 984,414.14
EMULSIFIED ASPHALT CHFRS-2P	TON	37.0	\$ 900.00	\$ 33,329.52
COLD MILLING	SQYD	9508.9	\$ 2.86	\$ 27,227.75
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	328.9	\$ 60.10	\$ 19,766.22
CURB AND GUTTER-CONC	LNFT	3480.0	\$ 85.00	\$ 295,800.00
SHARED USE PATH	MILE	0.3	\$ 225,000.00	\$ 66,264.20
TRAFFIC SIGNALS	LS	1.0	\$ 450,000.00	\$ 450,000.00
SIGNS - URBAN	MILE	0.7	\$ 55,000.00	\$ 40,520.83
LIGHTING	MILE	0.4	\$ 200,000.00	\$ 77,840.91
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	0.7	\$ 42,500.00	\$ 31,311.55
DRAINAGE PIPE - URBAN	MILE	0.7	\$ 265,000.00	\$ 195,236.74
MISCELLANEOUS ITEMS			25%	\$ 728,890
Subtotal 1				\$ 3,644,449
TRAFFIC CONTROL - URBAN			10%	\$ 364,445
MOBILIZATION			10%	\$ 364,445
Subtotal 2				\$ 4,373,339
CONTINGENCY			20%	\$ 874,668
Subtotal 3				\$ 5,248,007
CONSTRUCTION ENGINEERING (CE)			12%	\$ 629,761
PRELIMINARY ENGINEERING (PE)			12%	\$ 629,761
TOTAL				\$ 6,507,529

Alaska Road South / Cameron Bridge Road

Roundabout

\$ 6,400,000 TOT

LENGTH (FT)	3600
NEW WIDTH (FT)	40
EXISTING WIDTH (FT)	22
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	11200.0	\$ 24.45	\$ 273,864.64
SPECIAL BORROW	CUYD	4800.0	\$ 23.30	\$ 111,833.28
CRUSHED AGGREGATE COURSE	CUYD	1200.0	\$ 67.20	\$ 80,636.64
COVER - TYPE 2	SQYD	7200.0	\$ 1.15	\$ 8,305.92
COMMERCIAL MIX PG 70-28	TON	5140.0	\$ 147.70	\$ 759,188.28
EMULSIFIED ASPHALT CHFRS-2P	TON	28.6	\$ 900.00	\$ 25,704.00
COLD MILLING	SQYD	10266.7	\$ 2.86	\$ 29,397.57
CURB AND GUTTER-CONC	LNFT	4200.0	\$ 85.00	\$ 357,000.00
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	666.7	\$ 60.10	\$ 40,066.66
SHARED USE PATH	MILE	0.2	\$ 225,000.00	\$ 37,713.07
CONCRETE ROUNDABOUTS - ONE LANE	EACH	1.0	\$ 625,000.00	\$ 625,000.00
SIGNS - URBAN	MILE	0.7	\$ 55,000.00	\$ 37,500.00
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	0.7	\$ 42,500.00	\$ 28,977.27
STORM DRAIN - ROUNDABOUT - ONE LANE	LS	1.0	\$ 150,000.00	\$ 150,000.00
DRAINAGE PIPE - URBAN	MILE	0.7	\$ 265,000.00	\$ 180,681.82
LIGHTING - ROUNDABOUT	LS	1.0	\$ 100,000.00	\$ 100,000.00
MISCELLANEOUS ITEMS			25%	\$ 711,467
	Subtotal 1			\$ 3,557,336
TRAFFIC CONTROL - URBAN			10%	\$ 355,734
MOBILIZATION			10%	\$ 355,734
	Subtotal 2			\$ 4,268,804
CONTINGENCY			20%	\$ 853,761
	Subtotal 3			\$ 5,122,564
CONSTRUCTION ENGINEERING (CE)			12%	\$ 614,708
PRELIMINARY ENGINEERING (PE)			12%	\$ 614,708
TOTAL			\$	6,351,980

Alaska Road South / East Valley Center Road

Signal

\$ 8,000,000 TOT

LENGTH (FT)	6165
NEW WIDTH (FT)	46
EXISTING WIDTH (FT)	34
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	15070.0	\$ 24.45	\$ 368,494.65
SPECIAL BORROW	CUYD	5480.0	\$ 23.30	\$ 127,676.33
CRUSHED AGGREGATE COURSE	CUYD	1370.0	\$ 67.20	\$ 92,060.16
COVER - TYPE 2	SQYD	8220.0	\$ 1.15	\$ 9,482.59
COMMERCIAL MIX PG 70-28	TON	10122.6	\$ 147.70	\$ 1,495,126.42
EMULSIFIED ASPHALT CHFRS-2P	TON	56.2	\$ 900.00	\$ 50,620.82
COLD MILLING	SQYD	23290.0	\$ 2.86	\$ 66,688.59
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	355.6	\$ 60.10	\$ 21,368.88
CURB AND GUTTER-CONC	LNFT	3600.0	\$ 85.00	\$ 306,000.00
SHARED USE PATH	MILE	0.3	\$ 225,000.00	\$ 72,443.18
TRAFFIC SIGNALS	LS	1.0	\$ 450,000.00	\$ 450,000.00
SIGNS - URBAN	MILE	1.2	\$ 55,000.00	\$ 64,218.75
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	1.2	\$ 42,500.00	\$ 49,623.58
LIGHTING	MILE	0.4	\$ 200,000.00	\$ 82,765.15
DRAINAGE PIPE - URBAN	MILE	1.2	\$ 265,000.00	\$ 309,417.61
MISCELLANEOUS ITEMS			25%	\$ 891,497
Subtotal 1				\$ 4,457,483
TRAFFIC CONTROL - URBAN			10%	\$ 445,748
MOBILIZATION			10%	\$ 445,748
Subtotal 2				\$ 5,348,980
CONTINGENCY			20%	\$ 1,069,796
Subtotal 3				\$ 6,418,776
CONSTRUCTION ENGINEERING (CE)			12%	\$ 770,253
PRELIMINARY ENGINEERING (PE)			12%	\$ 770,253
TOTAL			\$	7,959,282

Alaska Road South / East Valley Center Road

Roundabout

\$ 5,500,000 TOT

LENGTH (FT)	2900
NEW WIDTH (FT)	40
EXISTING WIDTH (FT)	22
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	6550.0	\$ 24.45	\$ 160,161.91
SPECIAL BORROW	CUYD	2200.0	\$ 23.30	\$ 51,256.92
CRUSHED AGGREGATE COURSE	CUYD	550.0	\$ 67.20	\$ 36,958.46
COVER - TYPE 2	SQYD	13566.7	\$ 1.15	\$ 15,650.51
COMMERCIAL MIX PG 70-28	TON	4358.3	\$ 147.70	\$ 643,728.40
EMULSIFIED ASPHALT CHFRS-2P	TON	24.2	\$ 900.00	\$ 21,794.85
COLD MILLING	SQYD	12888.9	\$ 2.86	\$ 36,906.04
CURB AND GUTTER-CONC	LNFT	3255.0	\$ 85.00	\$ 276,675.00
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	862.2	\$ 60.10	\$ 51,819.54
SHARED USE PATH	MILE	0.3	\$ 225,000.00	\$ 58,806.82
CONCRETE ROUNDABOUTS - ONE LANE	EACH	1.0	\$ 625,000.00	\$ 625,000.00
SIGNS - URBAN	MILE	0.5	\$ 55,000.00	\$ 30,208.33
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	0.5	\$ 42,500.00	\$ 23,342.80
STORM DRAIN - ROUNDABOUT - ONE LANE	LS	1.0	\$ 150,000.00	\$ 150,000.00
DRAINAGE PIPE - URBAN	MILE	0.5	\$ 265,000.00	\$ 145,549.24
LIGHTING - ROUNDABOUT	LS	1.0	\$ 100,000.00	\$ 100,000.00
MISCELLANEOUS ITEMS			25%	\$ 606,965
	Subtotal 1			\$ 3,034,824
TRAFFIC CONTROL - URBAN			10%	\$ 303,482
MOBILIZATION			10%	\$ 303,482
	Subtotal 2			\$ 3,641,788
CONTINGENCY			20%	\$ 728,358
	Subtotal 3			\$ 4,370,146
CONSTRUCTION ENGINEERING (CE)			12%	\$ 524,418
PRELIMINARY ENGINEERING (PE)			12%	\$ 524,418
TOTAL			\$	5,418,981

Love Lane / Durston Road

Signal

\$ 7,100,000 TOT

LENGTH (FT)	4670
NEW WIDTH (FT)	52
EXISTING WIDTH (FT)	22
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	16444.4	\$ 24.45	\$ 402,102.84
SPECIAL BORROW	CUYD	8222.2	\$ 23.30	\$ 191,566.27
CRUSHED AGGREGATE COURSE	CUYD	2055.6	\$ 67.20	\$ 138,127.58
COVER - TYPE 2	SQYD	15566.7	\$ 1.15	\$ 17,957.71
COMMERCIAL MIX PG 70-28	TON	8668.0	\$ 147.70	\$ 1,280,286.68
EMULSIFIED ASPHALT CHFRS-2P	TON	48.2	\$ 900.00	\$ 43,346.94
COLD MILLING	SQYD	11415.6	\$ 2.86	\$ 32,687.30
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	257.8	\$ 60.10	\$ 15,492.44
CURB AND GUTTER-CONC	LNFT	430.0	\$ 85.00	\$ 36,550.00
FARM FENCE-TYPE F3M-32 IN WW	LNFT	7400.0	\$ 6.08	\$ 44,992.00
SHARED USE PATH	MILE	0.8	\$ 225,000.00	\$ 181,534.09
TRAFFIC SIGNALS	LS	1.0	\$ 450,000.00	\$ 450,000.00
SIGNS - URBAN	MILE	0.9	\$ 55,000.00	\$ 48,645.83
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	0.9	\$ 42,500.00	\$ 37,589.96
LIGHTING	MILE	0.1	\$ 200,000.00	\$ 18,939.39
DRAINAGE PIPE - URBAN	MILE	0.9	\$ 265,000.00	\$ 234,384.47
MISCELLANEOUS ITEMS			25%	\$ 793,551
Subtotal 1				\$ 3,967,754
TRAFFIC CONTROL - URBAN			10%	\$ 396,775
MOBILIZATION			10%	\$ 396,775
Subtotal 2				\$ 4,761,305
CONTINGENCY			20%	\$ 952,261
Subtotal 3				\$ 5,713,566
CONSTRUCTION ENGINEERING (CE)			12%	\$ 685,628
PRELIMINARY ENGINEERING (PE)			12%	\$ 685,628
TOTAL				\$ 7,084,822

Love Lane / Durston Road

Roundabout

\$ 5,900,000 TOT

LENGTH (FT)	3067
NEW WIDTH (FT)	40
EXISTING WIDTH (FT)	22
SURFACING (IN)	6
AGGREGATE (IN)	6
SUBBASE (IN)	24

TYPE	UNITS	QUANTITY	UNIT PRICE	COST
EXCAVATION-UNCLASSIFIED	CUYD	9541.8	\$ 24.45	\$ 233,317.46
SPECIAL BORROW	CUYD	4089.3	\$ 23.30	\$ 95,275.74
CRUSHED AGGREGATE COURSE	CUYD	1022.3	\$ 67.20	\$ 68,697.94
COVER - TYPE 2	SQYD	6134.0	\$ 1.15	\$ 7,076.18
COMMERCIAL MIX PG 70-28	TON	4379.0	\$ 147.70	\$ 646,786.24
EMULSIFIED ASPHALT CHFRS-2P	TON	24.3	\$ 900.00	\$ 21,898.38
COLD MILLING	SQYD	7497.1	\$ 2.86	\$ 21,467.23
CURB AND GUTTER-CONC	LNFT	3100.0	\$ 85.00	\$ 263,500.00
CONCRETE SIDEWALK (6" THICK W/ 3" BASE)	SQYD	1632.0	\$ 60.10	\$ 98,083.18
SHARED USE PATH	MILE	0.2	\$ 225,000.00	\$ 49,857.95
FARM FENCE-TYPE F3M-32 IN WW	LNFT	5854.0	\$ 6.08	\$ 35,592.32
CONCRETE ROUNDABOUTS - ONE LANE	EACH	1.0	\$ 625,000.00	\$ 625,000.00
SIGNS - URBAN	MILE	0.6	\$ 55,000.00	\$ 31,947.92
STRIPING & PAVEMENT MARKINGS - URBAN	MILE	0.6	\$ 42,500.00	\$ 24,687.03
STORM DRAIN - ROUNDABOUT - ONE LANE	LS	1.0	\$ 150,000.00	\$ 150,000.00
DRAINAGE PIPE - URBAN	MILE	0.6	\$ 265,000.00	\$ 153,930.87
LIGHTING - ROUNDABOUT	LS	1.0	\$ 100,000.00	\$ 100,000.00
MISCELLANEOUS ITEMS			25%	\$ 656,780
	Subtotal 1			\$ 3,283,898
TRAFFIC CONTROL - URBAN			10%	\$ 328,390
MOBILIZATION			10%	\$ 328,390
	Subtotal 2			\$ 3,940,678
CONTINGENCY			20%	\$ 788,136
	Subtotal 3			\$ 4,728,813
CONSTRUCTION ENGINEERING (CE)			12%	\$ 567,458
PRELIMINARY ENGINEERING (PE)			12%	\$ 567,458
	TOTAL			\$ 5,863,728