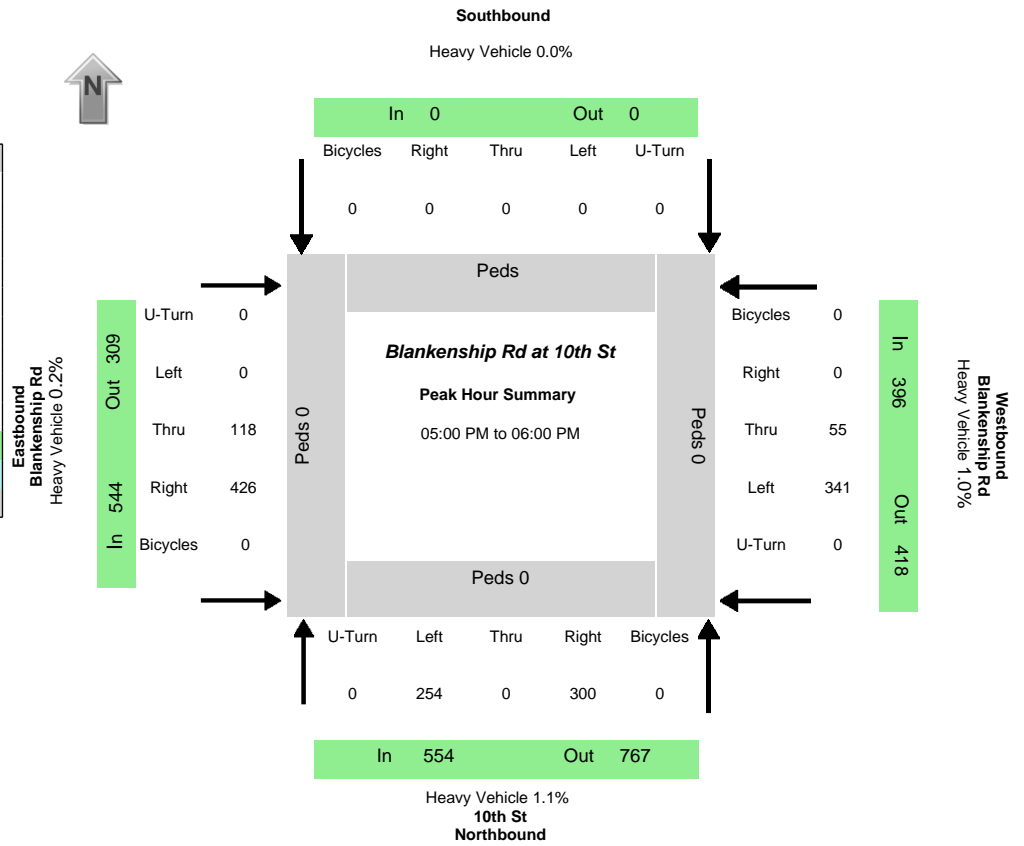


# APPENDIX A. TRAFFIC COUNT DATA

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Data Provided by K-D-N.com 503-594-4224

N/S street	10th St
E/W street	Blankenship Rd
City, State	West Linn OR
Site Notes	
Location	45.348882 - -122.651738
Start Date	Wednesday, February 06, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	05:00:00 PM
Peak 15 Min Start	05:25:00 PM
PHF (15-Min Int)	0.95



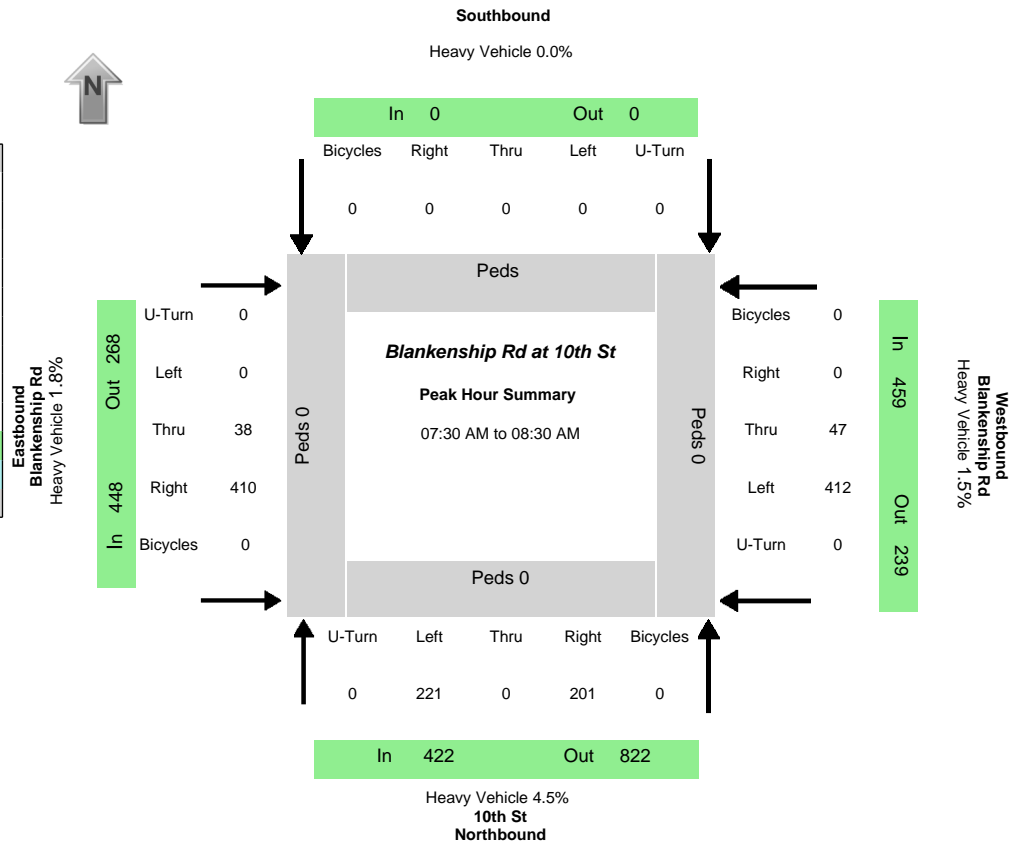
Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
254	0	300	0	0	0	0	0	0	118	426	0	341	55	0	0	554	0	544	396	767	0	309	418
Percent Heavy Vehicles																							
0.8%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	1.2%	0.0%	0.0%	0.0%	1.1%	0.0%	0.2%	1.0%	0.7%	0.0%	0.6%	1.0%

PHV- Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0		0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound 10th St				Southbound				Eastbound Blankenship Rd				Westbound Blankenship Rd				15 Min Sum	1 HR Sum			
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn					
04:00:00 PM	15		18	0					4	42	0	0	33	3		0					
04:05:00 PM	22		24	0					9	28	0	0	30	4		0					
04:10:00 PM	21		36	0					6	31	0	0	28	3		0					357
04:15:00 PM	27		26	0					9	32	0	0	25	7		0					368
04:20:00 PM	23		20	0					6	36	0	0	31	8		0					375
04:25:00 PM	20		26	0					6	36	0	0	26	4		0					368
04:30:00 PM	30		34	0					6	42	0	0	24	5		0					383
04:35:00 PM	14		21	0					5	33	0	0	26	7		0					365
04:40:00 PM	14		20	0					10	31	0	0	37	2		0					361
04:45:00 PM	20		25	0					3	37	0	0	28	5		0					338
04:50:00 PM	31		17	0					2	40	0	0	27	4		0					353
04:55:00 PM	26		20	0					7	27	0	0	24	1		0					344
05:00:00 PM	24		18	0					14	35	0	0	34	10		0					1450
05:05:00 PM	16		30	0					5	46	0	0	18	1		0					1449
05:10:00 PM	16		32	0					14	30	0	0	32	2		0					1450
05:15:00 PM	25		29	0					4	40	0	0	29	7		0					1458
05:20:00 PM	24		22	0					12	34	0	0	25	3		0					1454
05:25:00 PM	19		35	0					8	34	0	0	39	4		0					1475
05:30:00 PM	25		18	0					9	39	0	0	28	8		0					1461
05:35:00 PM	23		23	0					10	40	0	0	28	4		0					1483
05:40:00 PM	17		24	0					9	36	0	0	26	6		0					1487
05:45:00 PM	15		27	0					11	26	0	0	24	5		0					1477
05:50:00 PM	20		21	0					10	32	0	0	32	0		0					1471
05:55:00 PM	30		21	0					12	34	0	0	26	5		0					1494

Data Provided by K-D-N.com 503-594-4224

N/S street	10th St
E/W street	Blankenship Rd
City, State	West Linn OR
Site Notes	
Location	45.348882 - -122.651738
Start Date	Wednesday, February 06, 2019
Start Time	07:00:00 AM
Weather	
Study ID #	
Peak Hour Start	07:30:00 AM
Peak 15 Min Start	07:40:00 AM
PHF (15-Min Int)	0.95



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
221	0	201	0	0	0	0	0	0	38	410	0	412	47	0	0	422	0	448	459	822	0	268	239
Percent Heavy Vehicles																							
1.8%	0.0%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	1.7%	0.0%	1.5%	2.1%	0.0%	0.0%	4.5%	0.0%	1.8%	1.5%	1.6%	0.0%	1.9%	6.7%

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				Sum	in Crosswalk				Sum
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		NB	SB	EB	WB	
0		0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	Northbound 10th St				Southbound				Eastbound Blankenship Rd				Westbound Blankenship Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
07:00:00 AM	5		6	0					0	31	0	0	39	1	0	0		
07:05:00 AM	11		8	0					1	28	0	0	30	2	0	0		
07:10:00 AM	14		5	0					0	28	0	0	35	2	0	0	246	
07:15:00 AM	19		12	0					2	38	0	0	21	6	0	0	262	
07:20:00 AM	15		8	0					1	22	0	0	16	3	0	0	247	
07:25:00 AM	19		18	0					1	20	0	0	34	7	0	0	262	
07:30:00 AM	23		10	0					4	47	0	0	39	6	0	0	293	
07:35:00 AM	14		8	0					1	46	0	0	24	2	0	0	323	
07:40:00 AM	16		21	0					6	35	0	0	42	4	0	0	348	
07:45:00 AM	8		14	0					2	36	0	0	47	3	0	0	329	
07:50:00 AM	25		17	0					6	30	0	0	32	6	0	0	350	
07:55:00 AM	21		21	0					4	30	0	0	37	1	0	0	340	1196
08:00:00 AM	20		22	0					0	29	0	0	32	3	0	0	336	1220
08:05:00 AM	14		16	0					3	38	0	0	36	5	0	0	332	1252
08:10:00 AM	24		21	0					1	36	0	0	24	6	0	0	330	1280
08:15:00 AM	13		15	0					4	33	0	0	33	2	0	0	324	1282
08:20:00 AM	18		18	0					3	30	0	0	35	4	0	0	320	1325
08:25:00 AM	25		18	0					4	20	0	0	31	5	0	0	311	1329
08:30:00 AM	13		16	0					3	25	0	0	29	3	0	0	300	1289
08:35:00 AM	21		20	0					9	22	0	0	26	3	0	0	293	1295
08:40:00 AM	18		16	0					0	23	0	0	31	1	0	0	279	1260
08:45:00 AM	27		13	0					3	23	0	0	32	3	0	0	291	1251
08:50:00 AM	19		14	0					5	21	0	0	30	4	0	0	283	1228
08:55:00 AM	22		16	0					4	21	1	0	35	3	0	0	296	1216



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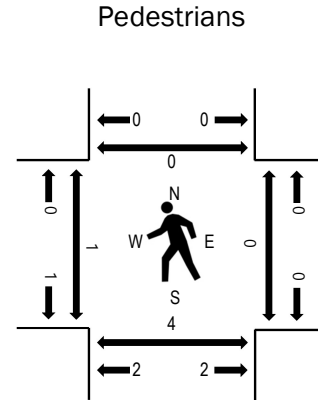
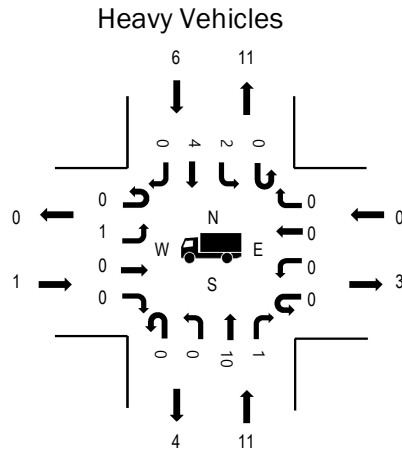
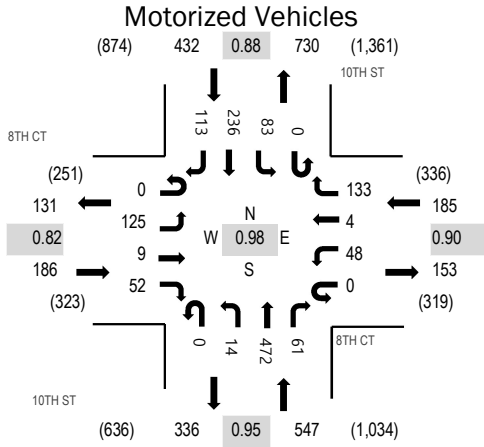
Location: 10TH ST & 8TH CT PM

Date: Tuesday, January 28, 2020

Peak Hour: 04:35 PM - 05:35 PM

Peak 15-Minutes: 04:50 PM - 05:05 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.5%	0.82
WB	0.0%	0.90
NB	2.0%	0.95
SB	1.4%	0.88
All	1.3%	0.98

Traffic Counts - Motorized Vehicles

Interval Start Time	8TH CT Eastbound				8TH CT Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	4	1	2	0	4	0	17	0	1	27	5	0	8	14	10	93	1,280
4:05 PM	0	9	0	1	0	3	0	7	0	0	28	7	0	14	23	13	105	1,303
4:10 PM	0	7	1	1	0	0	0	12	0	1	23	3	0	8	17	16	89	1,311
4:15 PM	0	11	1	3	0	4	1	14	0	4	39	2	0	6	20	9	114	1,338
4:20 PM	0	12	1	3	0	1	0	3	0	3	39	6	0	7	17	7	99	1,340
4:25 PM	0	10	0	5	0	3	1	7	0	1	35	5	0	7	22	8	104	1,336
4:30 PM	0	8	0	2	0	1	0	13	0	2	40	5	0	8	23	3	105	1,347
4:35 PM	0	12	0	4	0	1	1	9	0	1	50	7	0	8	20	13	126	1,350
4:40 PM	0	10	1	2	0	5	0	15	0	1	33	7	0	9	22	9	114	1,330
4:45 PM	0	7	0	5	0	1	0	15	0	2	37	2	0	8	18	6	101	1,318
4:50 PM	0	13	2	7	0	4	1	11	0	2	41	5	0	7	18	8	119	1,308
4:55 PM	0	10	0	1	0	4	0	11	0	0	37	8	0	5	26	9	111	1,292
5:00 PM	0	11	1	3	0	8	1	10	0	1	47	4	0	7	16	7	116	1,287
5:05 PM	0	11	3	9	0	3	0	8	0	0	35	5	0	7	23	9	113	
5:10 PM	0	11	1	7	0	2	0	13	0	1	41	4	0	10	15	11	116	
5:15 PM	0	13	0	4	0	8	0	12	0	0	40	6	0	9	19	5	116	
5:20 PM	0	7	1	5	0	4	0	11	0	3	29	5	0	5	16	9	95	
5:25 PM	0	14	0	5	0	6	1	11	0	2	37	2	0	2	17	18	115	
5:30 PM	0	6	0	0	0	2	0	7	0	1	45	6	0	6	26	9	108	
5:35 PM	0	14	3	7	0	1	1	6	0	1	37	3	0	9	19	5	106	
5:40 PM	0	6	0	0	0	2	1	9	0	0	38	7	0	4	25	10	102	
5:45 PM	0	9	0	0	0	3	1	1	0	0	38	4	0	6	24	5	91	
5:50 PM	0	8	0	0	0	2	1	16	0	1	30	5	0	10	22	8	103	
5:55 PM	0	6	0	2	0	3	1	12	0	2	36	9	0	11	21	3	106	
Count Total	0	229	16	78	0	75	11	250	0	30	882	122	0	181	483	210	2,567	
Peak Hour	0	125	9	52	0	48	4	133	0	14	472	61	0	83	236	113	1,350	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

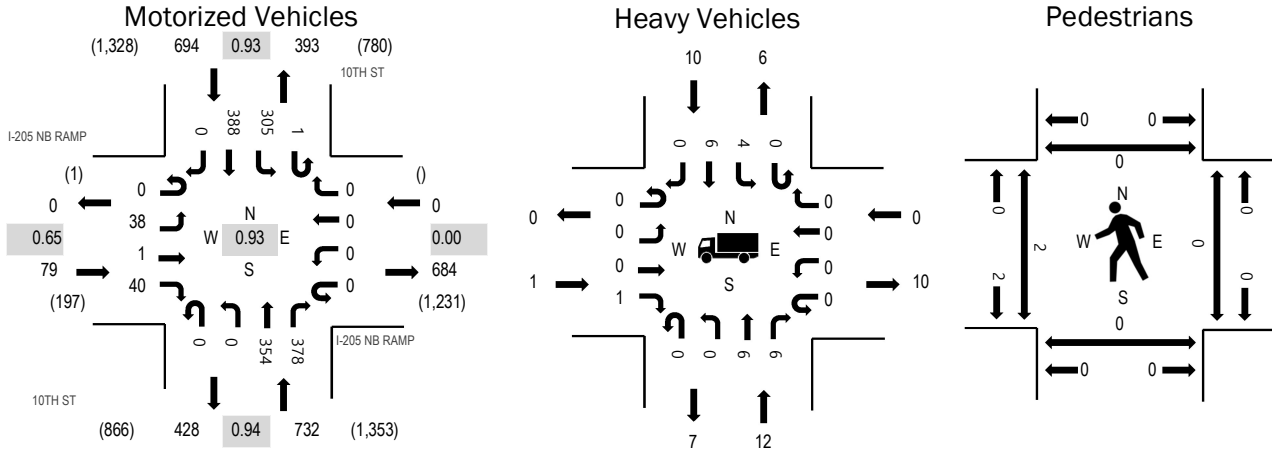
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	1	1	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	1	0	0	0	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	1	2	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	5	0	1	6	4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	0	1
4:20 PM	0	5	0	0	5	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	1	0	0	1	4:25 PM	0	0	0	0	0	4:25 PM	0	1	0	0	1
4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	1	1
4:35 PM	0	1	0	1	2	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	1	0	2	3	4:45 PM	0	0	0	0	0	4:45 PM	1	0	0	0	1
4:50 PM	0	2	0	0	2	4:50 PM	0	0	0	0	0	4:50 PM	1	0	0	0	1
4:55 PM	0	2	0	0	2	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0	5:00 PM	0	1	0	0	1
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0	5:10 PM	0	1	0	0	1
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	1	0	0	1
5:25 PM	1	1	0	1	3	5:25 PM	0	0	0	0	0	5:25 PM	0	1	0	0	1
5:30 PM	0	1	0	0	1	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	1	0	2	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	2	24	2	11	39	Count Total	0	0	0	0	0	Count Total	2	6	0	1	9
Peak Hour	1	11	0	6	18	Peak Hour	0	0	0	0	0	Peak Hour	2	4	0	0	6



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Location: 10TH ST & I-205 NB RAMP PM  
Date: Tuesday, January 28, 2020  
Peak Hour: 04:35 PM - 05:35 PM  
Peak 15-Minutes: 04:35 PM - 04:50 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.3%	0.65
WB	0.0%	0.00
NB	1.6%	0.94
SB	1.4%	0.93
All	1.5%	0.93

**Traffic Counts - Motorized Vehicles**

Interval Start Time	I-205 NB RAMP Eastbound				I-205 NB RAMP Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	11	0	5	0	0	0	0	0	0	27	19	0	20	28	0	110	1,468
4:05 PM	0	6	0	6	0	0	0	0	0	0	26	15	0	21	43	0	117	1,480
4:10 PM	0	2	1	9	0	0	0	0	0	0	27	19	0	24	32	0	114	1,482
4:15 PM	0	7	0	4	0	0	0	0	0	0	33	28	0	20	31	0	123	1,493
4:20 PM	0	2	0	2	0	0	0	0	0	0	22	32	0	27	29	0	114	1,496
4:25 PM	0	2	0	5	0	0	0	0	0	0	29	28	0	26	33	0	123	1,498
4:30 PM	0	5	0	0	0	0	0	0	0	0	28	24	0	23	33	0	113	1,495
4:35 PM	0	4	0	5	0	0	0	0	0	0	35	41	0	31	36	0	152	1,505
4:40 PM	0	4	1	2	0	0	0	0	0	0	35	23	0	19	38	0	122	1,473
4:45 PM	0	3	0	4	0	0	0	0	0	0	29	31	0	34	29	0	130	1,465
4:50 PM	0	2	0	4	0	0	0	0	0	0	26	36	0	20	29	0	117	1,438
4:55 PM	0	5	0	3	0	0	0	0	0	0	25	35	0	28	37	0	133	1,429
5:00 PM	0	2	0	2	0	0	0	0	0	0	24	44	0	21	29	0	122	1,410
5:05 PM	0	1	0	3	0	0	0	0	0	0	24	29	0	26	36	0	119	
5:10 PM	0	4	0	6	0	0	0	0	0	0	31	30	1	23	30	0	125	
5:15 PM	0	5	0	3	0	0	0	0	0	0	34	31	0	23	30	0	126	
5:20 PM	0	2	0	3	0	0	0	0	0	0	27	23	0	35	26	0	116	
5:25 PM	0	4	0	3	0	0	0	0	0	0	30	30	0	21	32	0	120	
5:30 PM	0	2	0	2	0	0	0	0	0	0	34	25	0	24	36	0	123	
5:35 PM	0	5	0	4	0	0	0	0	0	0	30	26	0	25	30	0	120	
5:40 PM	0	4	0	5	0	0	0	0	0	0	27	24	0	21	32	1	114	
5:45 PM	0	1	0	4	0	0	0	0	0	0	26	23	0	19	30	0	103	
5:50 PM	0	6	0	11	0	0	0	0	0	0	29	23	0	11	28	0	108	
5:55 PM	0	3	0	8	0	0	0	0	0	0	29	27	0	21	26	0	114	
Count Total	0	92	2	103	0	0	0	0	0	0	687	666	1	563	763	1	2,878	
Peak Hour	0	38	1	40	0	0	0	0	0	0	354	378	1	305	388	0	1,505	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	2	2	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	0	1
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	2	0	0	0	2
4:10 PM	1	3	0	1	5	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	5	0	1	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	4	0	1	5	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	1	0	2	3	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	1	0	1	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	1	2	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	1	1	0	3	5	4:45 PM	0	0	0	0	0	4:45 PM	1	0	0	0	1
4:50 PM	0	5	0	1	6	4:50 PM	0	0	0	0	0	4:50 PM	1	0	0	0	1
4:55 PM	0	2	0	1	3	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	2	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	1	0	0	0	1
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	0	1	5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0	5:45 PM	1	0	0	0	1
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	1	0	0	0	1
Count Total	2	27	0	19	48	Count Total	0	0	0	0	0	Count Total	9	0	0	0	9
Peak Hour	1	12	0	10	23	Peak Hour	0	0	0	0	0	Peak Hour	3	0	0	0	3



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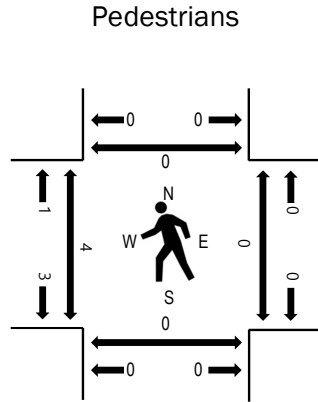
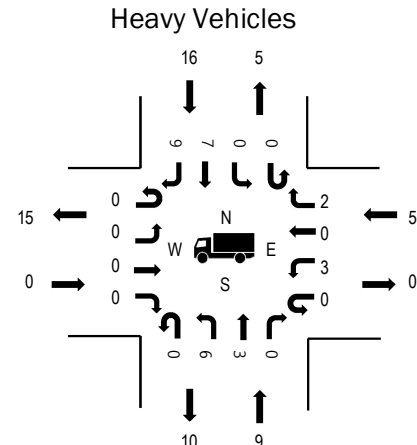
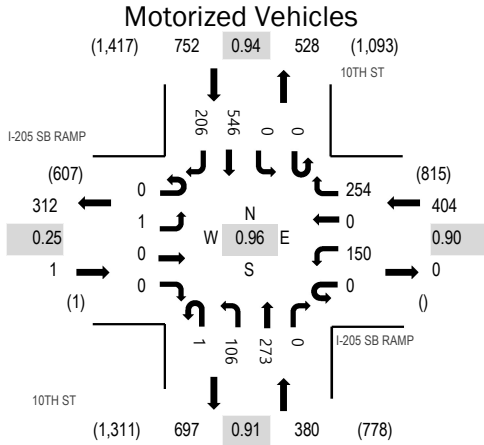
Location: 10TH ST & I-205 SB RAMP PM

Date: Tuesday, January 28, 2020

Peak Hour: 04:05 PM - 05:05 PM

Peak 15-Minutes: 04:05 PM - 04:20 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	1.2%	0.90
NB	2.4%	0.91
SB	2.1%	0.94
All	2.0%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	I-205 SB RAMP Eastbound				I-205 SB RAMP Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	14	0	19	0	10	30	0	0	0	38	21	132	1,535
4:05 PM	0	0	0	0	0	8	0	28	0	12	25	0	0	0	42	24	139	1,537
4:10 PM	0	0	0	0	0	15	0	19	0	6	19	0	0	0	46	19	124	1,525
4:15 PM	0	0	0	0	0	21	0	28	0	16	19	0	0	0	35	18	137	1,527
4:20 PM	0	0	0	0	0	9	0	24	0	9	24	0	0	0	49	9	124	1,515
4:25 PM	0	0	0	0	0	11	0	21	0	6	19	0	0	0	47	18	122	1,519
4:30 PM	0	0	0	0	0	12	0	11	1	7	30	0	0	0	44	23	128	1,522
4:35 PM	0	0	0	0	0	17	0	24	0	8	20	0	0	0	53	18	140	1,529
4:40 PM	0	0	0	0	0	14	0	12	0	15	29	0	0	0	38	9	117	1,520
4:45 PM	0	0	0	0	0	12	0	20	0	10	21	0	0	0	49	17	129	1,520
4:50 PM	0	0	0	0	0	7	0	20	0	8	27	0	0	0	44	14	120	1,497
4:55 PM	0	1	0	0	0	13	0	17	0	5	24	0	0	0	50	13	123	1,493
5:00 PM	0	0	0	0	0	11	0	30	0	4	16	0	0	0	49	24	134	1,476
5:05 PM	0	0	0	0	0	12	0	22	0	8	20	0	0	0	41	24	127	
5:10 PM	0	0	0	0	0	12	0	17	0	4	35	0	0	0	40	18	126	
5:15 PM	0	0	0	0	0	10	0	18	0	14	25	0	0	0	43	15	125	
5:20 PM	0	0	0	0	0	10	0	19	0	9	18	0	0	0	54	18	128	
5:25 PM	0	0	0	0	0	16	0	20	0	12	23	0	0	0	33	21	125	
5:30 PM	0	0	0	0	0	18	0	31	0	2	32	0	0	0	39	13	135	
5:35 PM	0	0	0	0	0	12	0	15	0	8	30	0	0	0	44	22	131	
5:40 PM	0	0	0	0	0	9	0	20	0	7	27	0	0	0	41	13	117	
5:45 PM	0	0	0	0	0	14	0	24	0	4	15	0	0	0	29	20	106	
5:50 PM	0	0	0	0	0	14	0	26	0	7	29	0	0	0	31	9	116	
5:55 PM	0	0	0	0	0	13	0	26	0	5	24	0	0	0	27	11	106	
Count Total	0	1	0	0	0	304	0	511	1	196	581	0	0	0	1,006	411	3,011	
Peak Hour	0	1	0	0	0	150	0	254	1	106	273	0	0	0	546	206	1,537	



### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

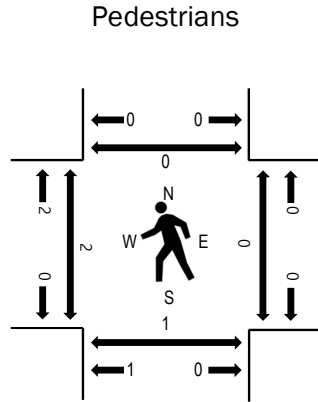
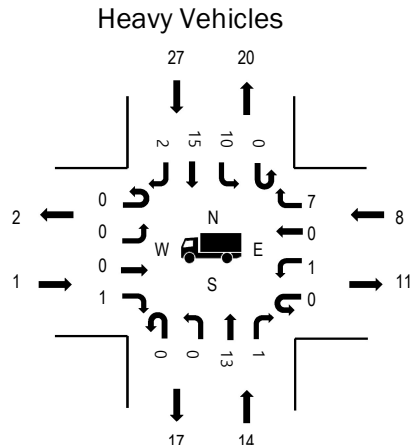
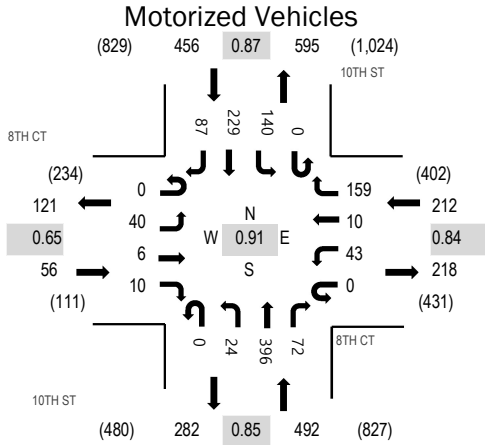
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	2	2	4:00 PM	0	0	0	0	0	4:00 PM	2	0	0	0	2
4:05 PM	0	1	1	3	5	4:05 PM	0	0	0	0	0	4:05 PM	2	0	0	0	2
4:10 PM	0	1	0	1	2	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	3	1	2	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	2	4	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	1	0	3	4	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	1	1	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	1	1	4:45 PM	0	0	0	0	0	4:45 PM	2	0	0	0	2
4:50 PM	0	1	0	2	3	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	1	0	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	1	1	2	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	1	2	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	2	1	0	3	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	1	0	0	0	1
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	1	0	0	0	1
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	1	0	0	0	1
Count Total	0	14	6	21	41	Count Total	0	0	0	0	0	Count Total	10	0	0	0	10
Peak Hour	0	9	5	16	30	Peak Hour	0	0	0	0	0	Peak Hour	4	0	0	0	4



Location: 10TH ST & 8TH CT AM  
 Date: Tuesday, January 28, 2020  
 Peak Hour: 07:30 AM - 08:30 AM  
 Peak 15-Minutes: 07:45 AM - 08:00 AM

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**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.8%	0.65
WB	3.8%	0.84
NB	2.8%	0.85
SB	5.9%	0.87
All	4.1%	0.91

**Traffic Counts - Motorized Vehicles**

Interval Start Time	8TH CT Eastbound				8TH CT Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	2	0	0	0	3	2	4	0	1	19	6	0	7	11	4	59	1,048
7:05 AM	0	1	0	1	0	4	1	10	0	0	15	4	0	5	11	6	58	1,086
7:10 AM	0	2	0	0	0	0	1	9	0	2	23	6	0	10	14	9	76	1,137
7:15 AM	0	4	0	0	0	2	0	13	0	0	12	1	0	8	17	5	62	1,168
7:20 AM	0	1	0	0	0	0	1	6	0	5	23	8	0	11	15	8	78	1,198
7:25 AM	0	1	0	1	0	3	0	15	0	1	24	9	0	13	19	10	96	1,209
7:30 AM	0	1	1	0	0	2	0	13	0	0	30	4	0	6	25	3	85	1,216
7:35 AM	0	4	1	1	0	1	1	8	0	0	36	7	0	9	17	4	89	1,208
7:40 AM	0	2	0	1	0	6	2	10	0	3	34	3	0	15	26	9	111	1,209
7:45 AM	0	6	0	0	0	4	0	10	0	2	38	3	0	10	30	10	113	1,187
7:50 AM	0	2	1	1	0	3	0	12	0	3	39	8	0	8	21	5	103	1,167
7:55 AM	0	3	0	1	0	6	1	14	0	3	40	8	0	20	14	8	118	1,144
8:00 AM	0	2	0	0	0	5	1	12	0	2	33	6	0	12	14	10	97	1,121
8:05 AM	0	1	1	3	0	2	2	23	0	2	22	9	0	17	22	5	109	
8:10 AM	0	6	1	1	0	5	1	16	0	1	32	6	0	15	17	6	107	
8:15 AM	0	6	1	0	0	2	0	19	0	3	26	5	0	10	15	5	92	
8:20 AM	0	5	0	0	0	2	0	12	0	4	27	2	0	8	17	12	89	
8:25 AM	0	2	0	2	0	5	2	10	0	1	39	11	0	10	11	10	103	
8:30 AM	0	2	0	0	0	3	1	13	0	2	20	10	0	12	8	6	77	
8:35 AM	0	3	2	1	0	2	1	20	0	0	21	8	0	18	9	5	90	
8:40 AM	0	4	1	1	0	2	3	17	0	1	18	12	0	14	13	3	89	
8:45 AM	0	8	2	0	0	6	0	12	0	4	22	4	0	6	23	6	93	
8:50 AM	0	7	1	0	0	1	0	12	0	1	21	3	0	13	14	7	80	
8:55 AM	0	8	0	2	0	1	4	18	0	3	19	7	0	12	11	10	95	
Count Total	0	83	12	16	0	70	24	308	0	44	633	150	0	269	394	166	2,169	
Peak Hour	0	40	6	10	0	43	10	159	0	24	396	72	0	140	229	87	1,216	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	1	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	1	1	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	0	0	1	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	2	2	7:15 AM	0	0	0	0	0	7:15 AM	0	1	0	0	1
7:20 AM	0	0	0	1	1	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	1	1	7:25 AM	0	0	0	0	0	7:25 AM	0	2	0	0	2
7:30 AM	0	0	0	2	2	7:30 AM	0	0	0	0	0	7:30 AM	2	0	0	0	2
7:35 AM	0	3	0	1	4	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	1	0	2	3	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	3	0	1	4	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	2	1	7	10	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	1	1	3	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	1	0	4	8	13	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	1	5	7	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	1	0	0	1
8:20 AM	0	1	0	0	1	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	2	1	0	3	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	1	0	0	1
8:35 AM	0	1	0	0	1	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0	8:40 AM	1	0	0	0	1
8:45 AM	1	0	0	0	1	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	1	0	0	1
8:55 AM	1	0	0	0	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	3	16	9	33	61	Count Total	0	0	0	0	0	Count Total	3	6	0	0	9
Peak Hour	1	14	8	27	50	Peak Hour	0	0	0	0	0	Peak Hour	2	1	0	0	3



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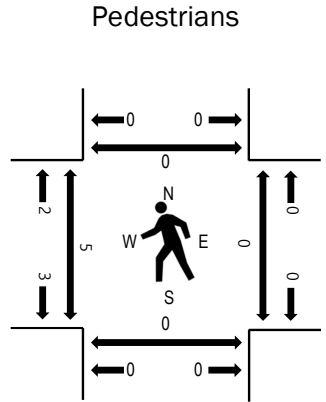
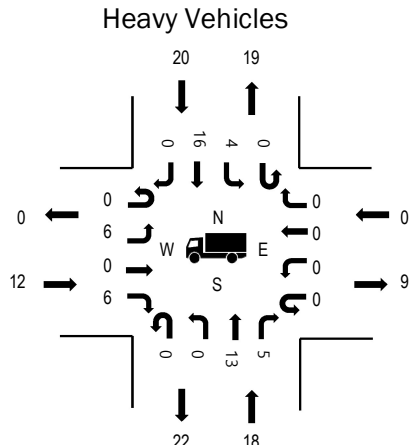
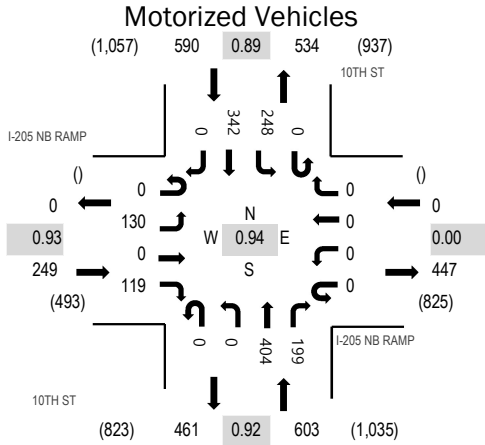
Location: 10TH ST & I-205 NB RAMP AM

Date: Tuesday, January 28, 2020

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:40 AM - 07:55 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.8%	0.93
WB	0.0%	0.00
NB	3.0%	0.92
SB	3.4%	0.89
All	3.5%	0.94

**Traffic Counts - Motorized Vehicles**

Interval Start Time	I-205 NB RAMP Eastbound				I-205 NB RAMP Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	12	0	6	0	0	0	0	0	0	12	15	0	17	16	0	78	1,261
7:05 AM	0	8	0	8	0	0	0	0	0	0	14	8	0	16	16	0	70	1,294
7:10 AM	0	7	0	11	0	0	0	0	0	0	25	10	0	24	17	0	94	1,350
7:15 AM	0	12	0	13	0	0	0	0	0	0	16	15	0	31	13	0	100	1,384
7:20 AM	0	6	0	10	0	0	0	0	0	0	20	11	0	21	22	0	90	1,399
7:25 AM	0	9	0	10	0	0	0	0	0	0	24	14	0	14	32	0	103	1,431
7:30 AM	0	8	0	6	0	0	0	0	0	0	29	17	0	21	31	0	112	1,442
7:35 AM	0	8	0	8	0	0	0	0	0	0	27	15	0	22	22	0	102	1,416
7:40 AM	0	16	0	12	0	0	0	0	0	0	38	12	0	27	39	0	144	1,422
7:45 AM	0	9	0	13	0	0	0	0	0	0	32	21	0	20	37	0	132	1,374
7:50 AM	0	6	0	8	0	0	0	0	0	0	40	13	0	16	25	0	108	1,348
7:55 AM	0	11	0	13	0	0	0	0	0	0	43	15	0	18	28	0	128	1,341
8:00 AM	0	12	0	9	0	0	0	0	0	0	29	16	0	18	27	0	111	1,324
8:05 AM	0	10	0	16	0	0	0	0	0	0	27	24	0	20	29	0	126	
8:10 AM	0	14	0	8	0	0	0	0	0	0	40	15	0	22	29	0	128	
8:15 AM	0	9	0	9	0	0	0	0	0	0	29	21	0	24	23	0	115	
8:20 AM	0	15	0	10	0	0	0	0	0	0	29	16	0	23	29	0	122	
8:25 AM	0	12	0	7	0	0	0	0	0	0	41	14	0	17	23	0	114	
8:30 AM	0	13	0	10	0	0	0	0	0	0	23	13	0	12	15	0	86	
8:35 AM	0	11	0	11	0	0	0	0	0	0	32	14	0	20	20	0	108	
8:40 AM	0	12	0	7	0	0	0	0	0	0	20	16	0	16	25	0	96	
8:45 AM	0	12	0	13	0	0	0	0	0	0	30	15	0	15	21	0	106	
8:50 AM	0	12	0	9	0	0	0	0	0	0	28	11	0	16	25	0	101	
8:55 AM	0	13	0	9	0	0	0	0	0	0	32	14	0	20	23	0	111	
Count Total	0	257	0	236	0	0	0	0	0	0	680	355	0	470	587	0	2,585	
Peak Hour	0	130	0	119	0	0	0	0	0	0	404	199	0	248	342	0	1,442	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	3	0	0	0	3	7:00 AM	0	0	0	0	0	7:00 AM	1	0	0	0	1
7:05 AM	3	0	0	0	3	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	2	1	0	0	3	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	3	1	0	0	4	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	2	0	0	2	4	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	2	2	7:30 AM	0	0	0	0	0	7:30 AM	2	0	0	0	2
7:35 AM	0	3	0	1	4	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	1	0	0	2	3	7:40 AM	0	0	0	0	0	7:40 AM	1	0	0	0	1
7:45 AM	0	1	0	1	2	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	2	0	1	3	7:50 AM	0	0	0	0	0	7:50 AM	1	0	0	0	1
7:55 AM	1	2	0	4	7	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	1	2	0	0	3	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	3	3	0	5	11	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	4	1	0	3	8	8:10 AM	0	0	0	0	0	8:10 AM	1	0	0	0	1
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	1	0	0	1	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	2	3	0	1	6	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	1	0	0	0	1
8:35 AM	1	1	0	0	2	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	1	0	0	0	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	0	1	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	1	0	0	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	1	0	0	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	28	23	0	22	73	Count Total	0	0	0	0	0	Count Total	7	0	0	0	7
Peak Hour	12	18	0	20	50	Peak Hour	0	0	0	0	0	Peak Hour	5	0	0	0	5



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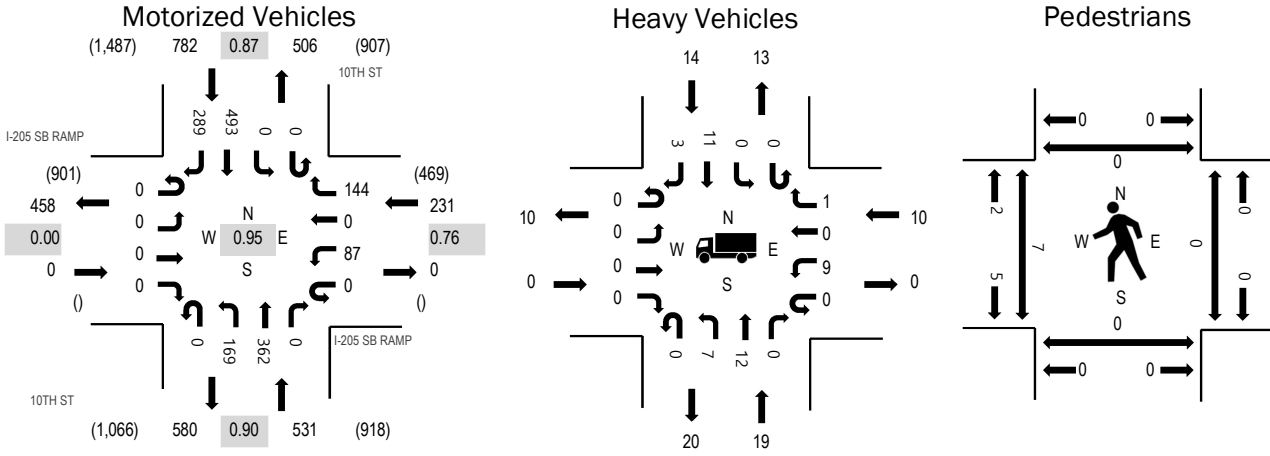
Location: 10TH ST & I-205 SB RAMP AM

Date: Tuesday, January 28, 2020

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:35 AM - 07:50 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	4.3%	0.76
NB	3.6%	0.90
SB	1.8%	0.87
All	2.8%	0.95

**Traffic Counts - Motorized Vehicles**

Interval Start Time	I-205 SB RAMP Eastbound				I-205 SB RAMP Westbound				10TH ST Northbound				10TH ST Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	7	1	12	0	5	18	0	0	0	33	22	98	1,392
7:05 AM	0	0	0	0	0	5	0	6	0	13	11	0	0	0	28	27	90	1,420
7:10 AM	0	0	0	0	0	3	0	3	0	18	15	0	0	0	35	26	100	1,442
7:15 AM	0	0	0	0	0	8	0	10	0	6	16	0	0	0	39	27	106	1,487
7:20 AM	0	0	0	0	0	7	0	9	0	9	20	0	0	0	34	26	105	1,512
7:25 AM	0	0	0	0	0	11	0	11	0	8	26	0	0	0	37	25	118	1,529
7:30 AM	0	0	0	0	0	4	0	13	0	11	22	0	0	0	51	26	127	1,544
7:35 AM	0	0	0	0	0	2	0	7	0	13	23	0	0	0	48	27	120	1,512
7:40 AM	0	0	0	0	0	10	0	6	0	21	39	0	0	0	46	28	150	1,517
7:45 AM	0	0	0	0	0	7	0	15	0	15	26	0	0	0	47	27	137	1,478
7:50 AM	0	0	0	0	0	13	0	10	0	11	35	0	0	0	33	15	117	1,466
7:55 AM	0	0	0	0	0	7	0	16	0	14	34	0	0	0	30	23	124	1,476
8:00 AM	0	0	0	0	0	6	0	12	0	19	31	0	0	0	35	23	126	1,482
8:05 AM	0	0	0	0	0	12	0	8	0	7	18	0	0	0	48	19	112	
8:10 AM	0	0	0	0	0	5	0	15	0	23	41	0	0	0	39	22	145	
8:15 AM	0	0	0	0	0	8	0	15	0	3	24	0	0	0	49	32	131	
8:20 AM	0	0	0	0	0	11	0	18	0	14	30	0	0	0	31	18	122	
8:25 AM	0	0	0	0	0	2	0	9	0	18	39	0	0	0	36	29	133	
8:30 AM	0	0	0	0	0	9	0	14	0	10	19	0	0	0	21	22	95	
8:35 AM	0	0	0	0	0	6	0	12	0	12	27	0	0	0	35	33	125	
8:40 AM	0	0	0	0	0	7	0	10	0	11	24	0	0	0	31	28	111	
8:45 AM	0	0	0	0	0	13	0	19	0	11	29	0	0	0	31	22	125	
8:50 AM	0	0	0	0	0	3	0	18	0	11	26	0	0	0	34	35	127	
8:55 AM	0	0	0	0	0	19	0	15	0	11	31	0	0	0	30	24	130	
Count Total	0	0	0	0	0	185	1	283	0	294	624	0	0	0	881	606	2,874	
Peak Hour	0	0	0	0	0	87	0	144	0	169	362	0	0	0	493	289	1,544	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	2	0	0	2	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	3	0	0	3	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	3	0	0	3	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	2	0	0	2	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	1	1	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	2	1	0	3	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	2	2	7:30 AM	0	0	0	0	0	7:30 AM	2	0	0	0	2
7:35 AM	0	3	1	2	6	7:35 AM	0	0	0	0	0	7:35 AM	1	0	0	0	1
7:40 AM	0	1	1	0	2	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	1	1	1	3	7:45 AM	0	0	0	0	0	7:45 AM	1	0	0	0	1
7:50 AM	0	2	3	0	5	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	2	1	0	3	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	0	1	2	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	3	5	9	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	3	0	1	4	8:10 AM	0	0	0	0	0	8:10 AM	2	0	0	0	2
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	1	0	0	1	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	4	0	2	6	8:25 AM	0	0	0	0	0	8:25 AM	1	0	0	0	1
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	2	1	0	3	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0	8:40 AM	1	0	0	0	1
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	1	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	3	0	3	8:55 AM	0	0	0	0	0	8:55 AM	1	0	0	0	1
Count Total	0	33	16	16	65	Count Total	0	0	0	0	0	Count Total	9	0	0	0	9
Peak Hour	0	19	10	14	43	Peak Hour	0	0	0	0	0	Peak Hour	7	0	0	0	7

## **APPENDIX B. EXISTING (YEAR 2020) HCM AND QUEUING REPORTS**

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# HCM 6th Signalized Intersection Summary

## 2: 10th St & Blankenship Rd/Salamo Rd

09/11/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Volume (veh/h)	40	395	395	45	300	270
Future Volume (veh/h)	40	395	395	45	300	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1945	1870	1870	1870	1781
Adj Flow Rate, veh/h	42	376	416	47	316	250
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	2	2	2	2	8
Cap, veh/h	161	1045	479	734	994	1232
Arrive On Green	0.09	0.08	0.27	0.39	0.21	0.56
Sat Flow, veh/h	1856	1648	1781	1870	1781	1510
Grp Volume(v), veh/h	42	376	416	47	316	250
Grp Sat Flow(s),veh/h/ln	1856	1648	1781	1870	1781	1510
Q Serve(g_s), s	2.9	10.5	30.7	2.2	20.8	5.0
Cycle Q Clear(g_c), s	2.9	10.5	30.7	2.2	20.8	5.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	161	1045	479	734	994	1232
V/C Ratio(X)	0.26	0.36	0.87	0.06	0.32	0.20
Avail Cap(c_a), veh/h	161	1045	479	734	994	1232
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.37	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.65	0.65
Uniform Delay (d), s/veh	58.9	12.0	48.1	26.1	32.5	2.8
Incr Delay (d2), s/veh	0.8	0.2	15.5	0.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.3	15.5	1.0	10.1	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.7	12.2	63.6	26.2	33.0	3.0
LnGrp LOS	E	B	E	C	C	A
Approach Vol, veh/h	418			463	566	
Approach Delay, s/veh	17.0			59.8	19.8	
Approach LOS	B			E	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		82.5	41.1	17.0		58.1
Change Period (Y+Rc), s		5.5	5.5	* 6.5		6.5
Max Green Setting (Gmax), s		77.0	34.5	* 11		25.5
Max Q Clear Time (g_c+I1), s		22.8	32.7	12.5		4.2
Green Ext Time (p_c), s		2.0	0.3	0.0		0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			31.7			
HCM 6th LOS			C			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↑		↕	↕	
Traffic Volume (veh/h)	0	0	0	150	0	255	115	315	0	0	575	215
Future Volume (veh/h)	0	0	0	150	0	255	115	315	0	0	575	215
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No		No		No		No		No
Adj Sat Flow, veh/h/ln				1900	1976	1884	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				156	0	39	120	328	0	0	599	198
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	6	0	0	0	0	0	0
Cap, veh/h				205	0	174	146	389	0	936	1709	564
Arrive On Green				0.10	0.00	0.11	0.08	0.20	0.00	0.00	0.43	0.43
Sat Flow, veh/h				1882	0	1596	1810	1900	0	1810	2666	879
Grp Volume(v), veh/h				156	0	39	120	328	0	0	405	392
Grp Sat Flow(s),veh/h/ln				1882	0	1596	1810	1900	0	1810	1805	1740
Q Serve(g_s), s				11.1	0.0	3.1	9.0	22.9	0.0	0.0	20.8	20.9
Cycle Q Clear(g_c), s				11.1	0.0	3.1	9.0	22.9	0.0	0.0	20.8	20.9
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.51
Lane Grp Cap(c), veh/h				205	0	174	146	389	0	936	1158	1116
V/C Ratio(X)				0.76	0.00	0.22	0.82	0.84	0.00	0.00	0.35	0.35
Avail Cap(c_a), veh/h				286	0	243	223	620	0	936	1158	1116
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.73	0.73
Uniform Delay (d), s/veh				60.5	0.0	56.1	62.5	52.8	0.0	0.0	20.0	20.1
Incr Delay (d2), s/veh				7.4	0.0	0.6	13.4	6.1	0.0	0.0	0.6	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.7	0.0	2.9	4.7	11.6	0.0	0.0	9.7	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				67.9	0.0	56.8	75.9	58.8	0.0	0.0	20.7	20.7
LnGrp LOS				E	A	E	E	E	A	A	C	C
Approach Vol, veh/h					195			448			797	
Approach Delay, s/veh					65.7			63.4			20.7	
Approach LOS					E			E			C	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	5.1	92.5		19.1	75.4	32.2						
Change Period (Y+Rc), s	4.0	4.0		5.5	4.0	5.5						
Max Green Setting (Gmax), s	88.5			19.5	52.0	43.5						
Max Q Clear Time (g_c+M), s	22.9			13.1	0.0	24.9						
Green Ext Time (p_c), s	0.1	6.2		0.4	0.0	1.8						

### Intersection Summary

HCM 6th Ctrl Delay	40.1
HCM 6th LOS	D

# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕	↗	↖	↕	
Traffic Volume (veh/h)	80	0	80	0	0	0	0	350	370	315	410	0
Future Volume (veh/h)	80	0	80	0	0	0	0	350	370	315	410	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1900	1900	1870	1900	0
Adj Flow Rate, veh/h	86	0	86				0	376	398	339	441	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	2	0	0
Cap, veh/h	240	0	214				0	905	767	667	1357	0
Arrive On Green	0.11	0.00	0.13				0.00	0.48	0.48	0.16	0.71	0.00
Sat Flow, veh/h	1882	0	1675				0	1900	1610	1781	1900	0
Grp Volume(v), veh/h	86	0	86				0	376	398	339	441	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1900	1610	1781	1900	0
Q Serve(g_s), s	2.1	0.0	2.4				0.0	6.5	8.7	3.9	4.4	0.0
Cycle Q Clear(g_c), s	2.1	0.0	2.4				0.0	6.5	8.7	3.9	4.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	240	0	214				0	905	767	667	1357	0
V/C Ratio(X)	0.36	0.00	0.40				0.00	0.42	0.52	0.51	0.33	0.00
Avail Cap(c_a), veh/h	781	0	695				0	1164	986	1299	1357	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.6	0.0	20.3				0.0	8.7	9.2	4.7	2.7	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.7				0.0	1.4	2.5	0.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.8				0.0	2.5	2.9	0.8	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	21.0				0.0	10.1	11.7	5.1	3.3	0.0
LnGrp LOS	C	A	C				A	B	B	A	A	A
Approach Vol, veh/h		172						774			780	
Approach Delay, s/veh		21.1						10.9			4.1	
Approach LOS		C						B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		40.1			12.0	28.1		10.5				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		30.0			25.0	30.0		20.0				
Max Q Clear Time (g_c+I1), s		6.4			5.9	10.7		4.4				
Green Ext Time (p_c), s		10.0			1.2	12.4		0.2				

### Intersection Summary

HCM 6th Ctrl Delay	8.8
HCM 6th LOS	A

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
5: 10th St & 8th Ave

09/11/2020

Intersection												
Int Delay, s/veh	17.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	10	50	50	5	135	15	460	60	85	290	115
Future Vol, veh/h	125	10	50	50	5	135	15	460	60	85	290	115
Conflicting Peds, #/hr	1	0	4	4	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	200	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	128	10	51	51	5	138	15	469	61	87	296	117

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1132	1090	360	1093	1118	501	414	0	0	530	0	0
Stage 1	530	530	-	530	530	-	-	-	-	-	-	-
Stage 2	602	560	-	563	588	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	182	217	689	193	209	574	1156	-	-	1048	-	-
Stage 1	536	530	-	536	530	-	-	-	-	-	-	-
Stage 2	490	514	-	514	499	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 125	195	686	158	188	574	1155	-	-	1048	-	-
Mov Cap-2 Maneuver	~ 125	195	-	158	188	-	-	-	-	-	-	-
Stage 1	525	485	-	526	520	-	-	-	-	-	-	-
Stage 2	361	504	-	426	457	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	108.1	20.7	0.2	1.5
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1155	-	-	125	483	160	574	1048	-	-
HCM Lane V/C Ratio	0.013	-	-	1.02	0.127	0.351	0.24	0.083	-	-
HCM Control Delay (s)	8.2	0	-	153.5	13.5	39.2	13.2	8.7	-	-
HCM Lane LOS	A	A	-	F	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	7.1	0.4	1.5	0.9	0.3	-	-

Notes  
 -: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	31.3
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Vol, veh/h	425	490	140	110	140	250
Future Vol, veh/h	425	490	140	110	140	250
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	452	521	149	117	149	266
Number of Lanes	1	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	42.4	15.2	15.4
HCM LOS	E	C	C

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	56%	0%	0%
Vol Right, %	0%	0%	44%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	425	490	250	140	250
LT Vol	425	0	0	140	0
Through Vol	0	490	140	0	0
RT Vol	0	0	110	0	250
Lane Flow Rate	452	521	266	149	266
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.861	0.919	0.474	0.328	0.494
Departure Headway (Hd)	6.856	6.348	6.419	7.918	6.693
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	529	568	561	454	537
Service Time	4.61	4.101	4.464	5.672	4.447
HCM Lane V/C Ratio	0.854	0.917	0.474	0.328	0.495
HCM Control Delay	38.8	45.5	15.2	14.5	15.9
HCM Lane LOS	E	E	C	B	C
HCM 95th-tile Q	9.2	11.4	2.5	1.4	2.7

**Intersection: 2: 10th St & Blankenship Rd/Salamo Rd**

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	106	126	320	766	170	163
Average Queue (ft)	42	11	296	390	84	14
95th Queue (ft)	90	63	376	810	163	88
Link Distance (ft)	246	246		966	165	
Upstream Blk Time (%)				0	1	0
Queuing Penalty (veh)				0	5	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			51	0	3	0
Queuing Penalty (veh)			23	0	9	0

**Intersection: 3: 10th St & I-205 SB ramp**

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	246	202	263	311	80	172	229
Average Queue (ft)	133	86	125	202	6	71	104
95th Queue (ft)	223	162	230	314	41	152	190
Link Distance (ft)	1070			269	198	165	165
Upstream Blk Time (%)			0	3		0	2
Queuing Penalty (veh)			0	14		0	6
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)	0	0	0	3			
Queuing Penalty (veh)	1	0	0	4			

**Intersection: 4: 10th St & I-205 NB ramp**

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	124	79	226	170	190	228	97	48
Average Queue (ft)	50	30	102	83	112	72	9	3
95th Queue (ft)	100	58	188	156	175	175	50	24
Link Distance (ft)	708		245			198	269	269
Upstream Blk Time (%)			0		0	0		
Queuing Penalty (veh)			1		0	3		
Storage Bay Dist (ft)		300		150	180			
Storage Blk Time (%)			2	1	1	0		
Queuing Penalty (veh)			6	2	3	2		

**Intersection: 5: 10th St & 8th Ave**

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	LT	R	LTR	L	TR
Maximum Queue (ft)	188	68	86	119	102	71	61
Average Queue (ft)	76	35	33	43	16	28	4
95th Queue (ft)	153	61	68	87	66	58	27
Link Distance (ft)		990	486		208		245
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	300			200		150	
Storage Blk Time (%)	0			0			
Queuing Penalty (veh)	0			0			

**Intersection: 18: Willamette Falls Dr & 10th St**

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	291	303	155	98	111
Average Queue (ft)	128	132	77	43	50
95th Queue (ft)	230	234	124	76	90
Link Distance (ft)		1030	622		208
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300			150	
Storage Blk Time (%)	0	0		0	0
Queuing Penalty (veh)	1	1		0	0

**Zone Summary**

Zone wide Queuing Penalty: 81
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# HCM 6th Signalized Intersection Summary

## 2: 10th St & Blankenship Rd/Salamo Rd

09/11/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↗
Traffic Volume (veh/h)	120	440	350	55	235	270
Future Volume (veh/h)	120	440	350	55	235	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1976	1885	1900	1885	1885
Adj Flow Rate, veh/h	126	411	368	58	247	265
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	1	1
Cap, veh/h	165	1062	449	709	1002	1273
Arrive On Green	0.09	0.08	0.25	0.37	0.13	0.56
Sat Flow, veh/h	1900	1675	1795	1900	1795	1598
Grp Volume(v), veh/h	126	411	368	58	247	265
Grp Sat Flow(s),veh/h/ln	1900	1675	1795	1900	1795	1598
Q Serve(g_s), s	8.9	10.5	26.7	2.7	17.0	5.6
Cycle Q Clear(g_c), s	8.9	10.5	26.7	2.7	17.0	5.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	165	1062	449	709	1002	1273
V/C Ratio(X)	0.76	0.39	0.82	0.08	0.25	0.21
Avail Cap(c_a), veh/h	165	1062	468	709	1002	1273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.24	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.62	0.62
Uniform Delay (d), s/veh	61.6	12.2	48.8	28.0	33.8	3.4
Incr Delay (d2), s/veh	18.7	0.2	10.7	0.0	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	5.9	13.1	1.2	8.4	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	80.3	12.5	59.5	28.0	34.1	3.6
LnGrp LOS	F	B	E	C	C	A
Approach Vol, veh/h	537			426	512	
Approach Delay, s/veh	28.4			55.2	18.4	
Approach LOS	C			E	B	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		82.5	38.5	17.0		55.5
Change Period (Y+Rc), s		5.5	5.5	* 6.5		6.5
Max Green Setting (Gmax), s		77.0	34.5	* 11		25.5
Max Q Clear Time (g_c+I1), s		19.0	28.7	12.5		4.7
Green Ext Time (p_c), s		1.8	0.6	0.0		0.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			32.7			
HCM 6th LOS			C			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						



# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↔	↔	↕		↔	↕↔	
Traffic Volume (veh/h)	0	0	0	85	0	145	160	360	0	0	500	290
Future Volume (veh/h)	0	0	0	85	0	145	160	360	0	0	500	290
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1900	1976	1914	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				89	0	27	168	379	0	0	526	247
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	4	0	0	0	0	0	0
Cap, veh/h				137	0	118	193	440	0	935	1528	715
Arrive On Green				0.06	0.00	0.07	0.11	0.23	0.00	0.00	0.81	0.81
Sat Flow, veh/h				1882	0	1622	1810	1900	0	1810	2382	1115
Grp Volume(v), veh/h				89	0	27	168	379	0	0	398	375
Grp Sat Flow(s),veh/h/ln				1882	0	1622	1810	1900	0	1810	1805	1692
Q Serve(g_s), s				6.4	0.0	2.2	12.6	26.4	0.0	0.0	8.1	8.1
Cycle Q Clear(g_c), s				6.4	0.0	2.2	12.6	26.4	0.0	0.0	8.1	8.1
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.66
Lane Grp Cap(c), veh/h				137	0	118	193	440	0	935	1158	1085
V/C Ratio(X)				0.65	0.00	0.23	0.87	0.86	0.00	0.00	0.34	0.35
Avail Cap(c_a), veh/h				286	0	247	223	620	0	935	1158	1085
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.26	1.26	1.26
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.78	0.78
Uniform Delay (d), s/veh				63.0	0.0	60.3	60.7	50.9	0.0	0.0	5.5	5.5
Incr Delay (d2), s/veh				5.0	0.0	1.0	26.5	8.8	0.0	0.0	0.6	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.2	0.0	2.0	7.2	13.7	0.0	0.0	2.8	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				68.0	0.0	61.3	87.2	59.7	0.0	0.0	6.2	6.2
LnGrp LOS				E	A	E	F	E	A	A	A	A
Approach Vol, veh/h				116			547			773		
Approach Delay, s/veh				66.5			68.1			6.2		
Approach LOS				E			E			A		
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	88.7	92.5		14.1	75.3	35.9						
Change Period (Y+Rc), s	4.0	4.0		5.5	4.0	5.5						
Max Green Setting (Gmax), s	88.5			19.5	52.0	43.5						
Max Q Clear Time (g_c+M), s	10.1			8.4	0.0	28.4						
Green Ext Time (p_c), s	0.1	6.1		0.3	0.0	2.0						

### Intersection Summary

HCM 6th Ctrl Delay	34.7
HCM 6th LOS	C

# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕	↗	↖	↕	
Traffic Volume (veh/h)	130	0	120	0	0	0	0	390	195	250	335	0
Future Volume (veh/h)	130	0	120	0	0	0	0	390	195	250	335	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No					No		No			No
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1826	1900	1826	1900	0
Adj Flow Rate, veh/h	138	0	128				0	415	207	266	356	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0				0	5	0	5	0	0
Cap, veh/h	271	0	241				0	839	740	637	1306	0
Arrive On Green	0.12	0.00	0.14				0.00	0.46	0.46	0.14	0.69	0.00
Sat Flow, veh/h	1882	0	1675				0	1826	1610	1739	1900	0
Grp Volume(v), veh/h	138	0	128				0	415	207	266	356	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1826	1610	1739	1900	0
Q Serve(g_s), s	3.3	0.0	3.4				0.0	7.5	3.8	3.0	3.4	0.0
Cycle Q Clear(g_c), s	3.3	0.0	3.4				0.0	7.5	3.8	3.0	3.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	271	0	241				0	839	740	637	1306	0
V/C Ratio(X)	0.51	0.00	0.53				0.00	0.49	0.28	0.42	0.27	0.00
Avail Cap(c_a), veh/h	834	0	742				0	1194	1053	1341	1306	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	0.0	18.8				0.0	9.0	7.9	5.0	2.9	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1				0.0	2.1	0.9	0.3	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.1				0.0	2.8	1.2	0.6	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	19.9				0.0	11.0	8.9	5.2	3.4	0.0
LnGrp LOS	C	A	B				A	B	A	A	A	A
Approach Vol, veh/h		266						622			622	
Approach Delay, s/veh		20.0						10.3			4.2	
Approach LOS		C						B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		36.6			10.8	25.8		10.8				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		30.0			25.0	30.0		20.0				
Max Q Clear Time (g_c+1), s		5.4			5.0	9.5		5.4				
Green Ext Time (p_c), s		8.1			0.9	11.3		0.4				

### Intersection Summary

HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
5: 10th St & 8th Ave

09/11/2020

Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	5	10	45	10	160	25	385	70	140	230	85
Future Vol, veh/h	40	5	10	45	10	160	25	385	70	140	230	85
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	200	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	4	0	0	0	0	0	0	10	0	0
Mvmt Flow	44	5	11	49	11	176	27	423	77	154	253	93

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	1219	1164	303	1133	1172	462	348	0	0	500	0	0
Stage 1	610	610	-	516	516	-	-	-	-	-	-	-
Stage 2	609	554	-	617	656	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.24	7.1	6.5	6.2	4.1	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.336	3.5	4	3.3	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	157	196	732	182	194	604	1222	-	-	1024	-	-
Stage 1	482	488	-	546	538	-	-	-	-	-	-	-
Stage 2	482	517	-	481	465	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	161	730	151	159	604	1220	-	-	1024	-	-
Mov Cap-2 Maneuver	91	161	-	151	159	-	-	-	-	-	-	-
Stage 1	466	414	-	529	521	-	-	-	-	-	-	-
Stage 2	324	501	-	397	394	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB			
HCM Control Delay, s	60.4		21.1			0.4		2.8			
HCM LOS	F		C								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1220	-	-	91	335	152	604	1024	-	-
HCM Lane V/C Ratio	0.023	-	-	0.483	0.049	0.398	0.291	0.15	-	-
HCM Control Delay (s)	8	0	-	77	16.3	43.5	13.4	9.1	-	-
HCM Lane LOS	A	A	-	F	C	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.1	0.2	1.7	1.2	0.5	-	-

Intersection	
Intersection Delay, s/veh	21.8
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Vol, veh/h	310	190	290	170	60	225
Future Vol, veh/h	310	190	290	170	60	225
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	341	209	319	187	66	247
Number of Lanes	1	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	17.8	31.1	13.9
HCM LOS	C	D	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	63%	0%	0%
Vol Right, %	0%	0%	37%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	310	190	460	60	225
LT Vol	310	0	0	60	0
Through Vol	0	190	290	0	0
RT Vol	0	0	170	0	225
Lane Flow Rate	341	209	505	66	247
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.642	0.364	0.827	0.141	0.446
Departure Headway (Hd)	6.78	6.271	5.891	7.724	6.496
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	531	572	612	463	551
Service Time	4.545	4.036	3.947	5.495	4.266
HCM Lane V/C Ratio	0.642	0.365	0.825	0.143	0.448
HCM Control Delay	21	12.6	31.1	11.8	14.4
HCM Lane LOS	C	B	D	B	B
HCM 95th-tile Q	4.5	1.7	8.6	0.5	2.3

**Intersection: 2: 10th St & Blankenship Rd/Salamo Rd**

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	242	132	374	624	143	29
Average Queue (ft)	149	16	287	170	45	1
95th Queue (ft)	259	81	413	530	107	21
Link Distance (ft)	246	246		2396	164	
Upstream Blk Time (%)	5	0			0	0
Queuing Penalty (veh)	14	0			0	0
Storage Bay Dist (ft)			225			125
Storage Blk Time (%)			29	0	0	0
Queuing Penalty (veh)			16	0	1	0

**Intersection: 3: 10th St & I-205 SB ramp**

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	159	132	265	331	219	174	244
Average Queue (ft)	75	54	184	248	40	75	125
95th Queue (ft)	142	105	290	352	156	164	224
Link Distance (ft)	1071			265	202	164	164
Upstream Blk Time (%)			0	9	1	0	4
Queuing Penalty (veh)			0	49	5	1	15
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)			0	9			
Queuing Penalty (veh)			1	15			

**Intersection: 4: 10th St & I-205 NB ramp**

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	133	76	245	175	172	169	48	38
Average Queue (ft)	64	33	120	61	92	64	4	2
95th Queue (ft)	111	59	212	144	156	138	25	18
Link Distance (ft)	708		245			202	265	265
Upstream Blk Time (%)			0		0	0		
Queuing Penalty (veh)			1		0	0		
Storage Bay Dist (ft)		300		150	180			
Storage Blk Time (%)			3	0	0	0		
Queuing Penalty (veh)			6	0	0	0		

**Intersection: 5: 10th St & 8th Ave**

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	LT	R	LTR	L	TR
Maximum Queue (ft)	86	38	85	94	110	127	28
Average Queue (ft)	31	15	31	40	16	46	2
95th Queue (ft)	68	43	63	74	64	95	17
Link Distance (ft)		523	485		208		245
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	300			200		150	
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

**Intersection: 18: Willamette Falls Dr & 10th St**

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	170	99	354	63	135
Average Queue (ft)	88	55	155	27	50
95th Queue (ft)	142	87	294	53	92
Link Distance (ft)		1006	664		208
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	300			150	
Storage Blk Time (%)					0
Queuing Penalty (veh)					0

**Zone Summary**

Zone wide Queuing Penalty: 128
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## **APPENDIX C. FUTURE NO BUILD (YEAR 2042) HCM AND QUEUING REPORTS**

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# HCM 6th Signalized Intersection Summary

## 2: 10th St & Blankenship Rd/Salamo Rd

09/15/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	60	500	395	65	380	270
Future Volume (veh/h)	60	500	395	65	380	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1945	1870	1870	1870	1781
Adj Flow Rate, veh/h	63	461	416	68	400	245
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	2	2	2	2	8
Cap, veh/h	188	968	529	813	884	1182
Arrive On Green	0.10	0.09	0.30	0.43	0.21	0.50
Sat Flow, veh/h	1856	1648	1781	1870	1781	1510
Grp Volume(v), veh/h	63	461	416	68	400	245
Grp Sat Flow(s),veh/h/ln	1856	1648	1781	1870	1781	1510
Q Serve(g_s), s	4.4	12.5	29.6	2.9	27.1	5.8
Cycle Q Clear(g_c), s	4.4	12.5	29.6	2.9	27.1	5.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	188	968	529	813	884	1182
V/C Ratio(X)	0.33	0.48	0.79	0.08	0.45	0.21
Avail Cap(c_a), veh/h	188	968	549	820	884	1182
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.42	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.61	0.61
Uniform Delay (d), s/veh	57.7	16.3	44.5	22.9	38.2	3.9
Incr Delay (d2), s/veh	1.0	0.4	7.2	0.0	1.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	8.1	13.9	1.3	13.2	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.7	16.7	51.7	22.9	39.2	4.1
LnGrp LOS	E	B	D	C	D	A
Approach Vol, veh/h	524			484	645	
Approach Delay, s/veh	21.8			47.7	25.9	
Approach LOS	C			D	C	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		74.0	45.0	19.0		64.0
Change Period (Y+Rc), s		5.5	5.5	* 6.5		6.5
Max Green Setting (Gmax), s		68.5	41.0	* 13		58.0
Max Q Clear Time (g_c+I1), s		29.1	31.6	14.5		4.9
Green Ext Time (p_c), s		2.3	0.9	0.0		0.3
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			31.0			
HCM 6th LOS			C			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						



# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

09/15/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕		↕	↕↔	
Traffic Volume (veh/h)	0	0	0	190	0	345	105	305	0	0	675	220
Future Volume (veh/h)	0	0	0	190	0	345	105	305	0	0	675	220
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No		No		No		No		No
Adj Sat Flow, veh/h/ln				1900	1976	1884	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				198	0	70	109	318	0	0	703	204
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	6	0	0	0	0	0	0
Cap, veh/h				246	0	208	135	374	0	940	1769	513
Arrive On Green				0.12	0.00	0.13	0.07	0.20	0.00	0.00	0.51	0.51
Sat Flow, veh/h				1882	0	1596	1810	1900	0	1810	2759	800
Grp Volume(v), veh/h				198	0	70	109	318	0	0	460	447
Grp Sat Flow(s),veh/h/ln				1882	0	1596	1810	1900	0	1810	1805	1754
Q Serve(g_s), s				14.1	0.0	5.5	8.2	22.3	0.0	0.0	21.7	21.7
Cycle Q Clear(g_c), s				14.1	0.0	5.5	8.2	22.3	0.0	0.0	21.7	21.7
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.46
Lane Grp Cap(c), veh/h				246	0	208	135	374	0	940	1158	1125
V/C Ratio(X)				0.81	0.00	0.34	0.81	0.85	0.00	0.00	0.40	0.40
Avail Cap(c_a), veh/h				286	0	243	223	509	0	940	1158	1125
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.73	0.73
Uniform Delay (d), s/veh				59.0	0.0	54.5	62.9	53.5	0.0	0.0	17.6	17.6
Incr Delay (d2), s/veh				13.6	0.0	0.9	10.7	9.8	0.0	0.0	0.7	0.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.6	0.0	5.1	4.2	11.7	0.0	0.0	9.8	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				72.6	0.0	55.5	73.5	63.3	0.0	0.0	18.3	18.3
LnGrp LOS				E	A	E	E	E	A	A	B	B
Approach Vol, veh/h				268			427			907		
Approach Delay, s/veh				68.1			65.9			18.3		
Approach LOS				E			E			B		
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	34.3	92.5		22.0	75.6	31.2						
Change Period (Y+Rc), s	4.0	4.0		5.5	4.0	5.5						
Max Green Setting (Gmax), s	88.5			19.5	68.5	35.5						
Max Q Clear Time (g_c+M), s	23.7			16.1	0.0	24.3						
Green Ext Time (p_c), s	0.1	7.4		0.4	0.0	1.4						

### Intersection Summary

HCM 6th Ctrl Delay	39.3
HCM 6th LOS	D

# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

09/15/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕	↗	↖	↕	
Traffic Volume (veh/h)	80	0	120	0	0	0	0	330	480	380	485	0
Future Volume (veh/h)	80	0	120	0	0	0	0	330	480	380	485	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No					No		No		No	
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1900	1900	1870	1900	0
Adj Flow Rate, veh/h	86	0	129				0	355	516	409	522	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	2	0	0
Cap, veh/h	228	0	203				0	1011	857	661	1427	0
Arrive On Green	0.11	0.00	0.12				0.00	0.53	0.53	0.15	0.75	0.00
Sat Flow, veh/h	1882	0	1675				0	1900	1610	1781	1900	0
Grp Volume(v), veh/h	86	0	129				0	355	516	409	522	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1900	1610	1781	1900	0
Q Serve(g_s), s	2.7	0.0	4.6				0.0	6.7	13.8	5.2	5.9	0.0
Cycle Q Clear(g_c), s	2.7	0.0	4.6				0.0	6.7	13.8	5.2	5.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	228	0	203				0	1011	857	661	1427	0
V/C Ratio(X)	0.38	0.00	0.64				0.00	0.35	0.60	0.62	0.37	0.00
Avail Cap(c_a), veh/h	361	0	321				0	1275	1081	1068	2125	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.8	0.0	26.2				0.0	8.4	10.1	4.9	2.7	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.0				0.0	1.0	3.1	0.6	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.8				0.0	2.6	4.7	1.1	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	0.0	28.2				0.0	9.4	13.2	5.5	3.4	0.0
LnGrp LOS	C	A	C				A	A	B	A	A	A
Approach Vol, veh/h		215						871			931	
Approach Delay, s/veh		27.5						11.6			4.3	
Approach LOS		C						B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		51.0			13.7	37.3		11.6				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		69.0			23.0	41.0		11.0				
Max Q Clear Time (g_c+I1), s		7.9			7.2	15.8		6.6				
Green Ext Time (p_c), s		19.5			1.5	16.5		0.2				

### Intersection Summary

HCM 6th Ctrl Delay	10.0
HCM 6th LOS	A

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
5: 10th St & 8th Ave

09/15/2020

Intersection												
Int Delay, s/veh	37.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗		↔		↖	↗	
Traffic Vol, veh/h	130	10	65	55	5	135	25	545	65	85	370	150
Future Vol, veh/h	130	10	65	55	5	135	25	545	65	85	370	150
Conflicting Peds, #/hr	1	0	4	4	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	200	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	133	10	66	56	5	138	26	556	66	87	378	153

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1344	1304	460	1312	1347	590	532	0	0	622	0	0
Stage 1	630	630	-	641	641	-	-	-	-	-	-	-
Stage 2	714	674	-	671	706	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 130	162	605	137	152	511	1046	-	-	969	-	-
Stage 1	473	478	-	466	473	-	-	-	-	-	-	-
Stage 2	425	457	-	449	442	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 83	142	602	104	133	511	1045	-	-	969	-	-
Mov Cap-2 Maneuver	~ 83	142	-	104	133	-	-	-	-	-	-	-
Stage 1	455	435	-	448	455	-	-	-	-	-	-	-
Stage 2	295	440	-	354	402	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	262.5	34	0.3	1.3
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1045	-	-	83	420	106	511	969	-	-
HCM Lane V/C Ratio	0.024	-	-	1.598	0.182	0.578	0.27	0.09	-	-
HCM Control Delay (s)	8.5	0	-	\$ 405	15.5	77.6	14.6	9.1	-	-
HCM Lane LOS	A	A	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	10.8	0.7	2.8	1.1	0.3	-	-

Notes  
 -: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th AWSC  
18: Willamette Falls Dr & 10th St

09/15/2020

Intersection	
Intersection Delay, s/veh	54.4
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Vol, veh/h	545	410	145	90	140	350
Future Vol, veh/h	545	410	145	90	140	350
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	580	436	154	96	149	372
Number of Lanes	1	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	81.3	15.5	20.7
HCM LOS	F	C	C

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	62%	0%	0%
Vol Right, %	0%	0%	38%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	545	410	235	140	350
LT Vol	545	0	0	140	0
Through Vol	0	410	145	0	0
RT Vol	0	0	90	0	350
Lane Flow Rate	580	436	250	149	372
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.163	0.813	0.459	0.324	0.684
Departure Headway (Hd)	7.219	6.71	6.855	8.109	6.884
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	510	545	530	447	529
Service Time	4.919	4.41	4.855	5.809	4.584
HCM Lane V/C Ratio	1.137	0.8	0.472	0.333	0.703
HCM Control Delay	118.2	32.3	15.5	14.6	23.2
HCM Lane LOS	F	D	C	B	C
HCM 95th-tile Q	20.7	8	2.4	1.4	5.2

Queuing and Blocking Report  
No Build

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	123	157	320	712	178	164
Average Queue (ft)	55	23	288	308	132	32
95th Queue (ft)	103	93	371	694	202	137
Link Distance (ft)	246	246		966	165	
Upstream Blk Time (%)					6	0
Queuing Penalty (veh)					41	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			39	0	13	0
Queuing Penalty (veh)			25	0	35	0

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	457	358	268	312	178	158	247
Average Queue (ft)	210	155	136	225	20	85	123
95th Queue (ft)	383	311	259	337	104	160	224
Link Distance (ft)	1070			269	198	165	165
Upstream Blk Time (%)			0	7	0	0	4
Queuing Penalty (veh)			0	30	1	1	16
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)	5	3	0	7			
Queuing Penalty (veh)	19	5	1	8			

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	138	94	266	175	197	242	286	206
Average Queue (ft)	54	40	124	124	150	128	60	30
95th Queue (ft)	106	75	229	197	211	276	201	120
Link Distance (ft)	708		245			198	269	269
Upstream Blk Time (%)			1		2	5	1	0
Queuing Penalty (veh)			4		0	45	3	0
Storage Bay Dist (ft)		300		150	180			
Storage Blk Time (%)			2	3	6	4		
Queuing Penalty (veh)			9	11	29	16		

Queuing and Blocking Report  
No Build

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	LT	R	LTR	L	TR
Maximum Queue (ft)	289	365	105	144	160	73	70
Average Queue (ft)	157	102	40	55	34	31	6
95th Queue (ft)	312	381	84	112	111	60	36
Link Distance (ft)		990	486		208		245
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)	300			200		150	
Storage Blk Time (%)	12	0		0			0
Queuing Penalty (veh)	9	0		0			0

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	275	1455	142	146	190
Average Queue (ft)	226	530	73	44	75
95th Queue (ft)	333	1465	119	88	141
Link Distance (ft)		2465	622		208
Upstream Blk Time (%)		1			0
Queuing Penalty (veh)		0			0
Storage Bay Dist (ft)	250			150	
Storage Blk Time (%)	35	1		0	1
Queuing Penalty (veh)	143	6		0	2

Zone Summary

Zone wide Queuing Penalty: 459

## HCM 6th Signalized Intersection Summary

### 2: 10th St & Blankenship Rd/Salamo Rd

09/11/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↗	↖
Traffic Volume (veh/h)	120	550	380	60	300	280
Future Volume (veh/h)	120	550	380	60	300	280
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1976	1885	1900	1885	1885
Adj Flow Rate, veh/h	126	536	400	63	316	275
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	1	1
Cap, veh/h	165	1062	449	709	1002	1273
Arrive On Green	0.09	0.08	0.25	0.37	0.13	0.56
Sat Flow, veh/h	1900	1675	1795	1900	1795	1598
Grp Volume(v), veh/h	126	536	400	63	316	275
Grp Sat Flow(s),veh/h/ln	1900	1675	1795	1900	1795	1598
Q Serve(g_s), s	8.9	10.5	29.7	3.0	22.1	5.8
Cycle Q Clear(g_c), s	8.9	10.5	29.7	3.0	22.1	5.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	165	1062	449	709	1002	1273
V/C Ratio(X)	0.76	0.50	0.89	0.09	0.32	0.22
Avail Cap(c_a), veh/h	165	1062	468	709	1002	1273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.23	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.59	0.59
Uniform Delay (d), s/veh	61.6	13.6	49.9	28.0	36.2	3.4
Incr Delay (d2), s/veh	18.7	0.4	18.4	0.1	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	8.5	15.4	1.4	10.9	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	80.3	14.0	68.3	28.1	36.7	3.7
LnGrp LOS	F	B	E	C	D	A
Approach Vol, veh/h	662			463	591	
Approach Delay, s/veh	26.6			62.9	21.3	
Approach LOS	C			E	C	
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		82.5	38.5	17.0		55.5
Change Period (Y+Rc), s		5.5	5.5	* 6.5		6.5
Max Green Setting (Gmax), s		77.0	34.5	* 11		25.5
Max Q Clear Time (g_c+I1), s		24.1	31.7	12.5		5.0
Green Ext Time (p_c), s		2.1	0.4	0.0		0.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			34.6			
HCM 6th LOS			C			
<b>Notes</b>						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↑		↕	↕	
Traffic Volume (veh/h)	0	0	0	85	0	170	140	410	0	0	585	345
Future Volume (veh/h)	0	0	0	85	0	170	140	410	0	0	585	345
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No		No		No		No		
Adj Sat Flow, veh/h/ln				1900	1976	1914	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				89	0	-113	147	432	0	0	616	338
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	4	0	0	0	0	0	0
Cap, veh/h				1	0	1	173	491	0	865	1439	790
Arrive On Green				0.00	0.00	0.00	0.10	0.26	0.00	0.00	0.62	0.62
Sat Flow, veh/h				1882	0	1622	1810	1900	0	1810	2244	1231
Grp Volume(v), veh/h				89	0	-113	147	432	0	0	495	459
Grp Sat Flow(s),veh/h/ln				1882	0	1622	1810	1900	0	1810	1805	1670
Q Serve(g_s), s				0.1	0.0	0.0	11.0	30.1	0.0	0.0	19.5	19.5
Cycle Q Clear(g_c), s				0.1	0.0	0.0	11.0	30.1	0.0	0.0	19.5	19.5
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.74
Lane Grp Cap(c), veh/h				1	0	1	173	491	0	865	1158	1071
V/C Ratio(X)				65.26	0.00	-96.11	0.85	0.88	0.00	0.00	0.43	0.43
Avail Cap(c_a), veh/h				286	0	247	223	620	0	865	1158	1071
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
Upstream Filter(I)				1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.71	0.71
Uniform Delay (d), s/veh				69.0	0.0	0.0	61.5	49.1	0.0	0.0	13.0	13.0
Incr Delay (d2), s/veh				29203.3	0.0	0.0	21.2	11.6	0.0	0.0	0.8	0.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				11.1	0.0	0.0	6.1	15.9	0.0	0.0	8.2	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29272.3	0.0	0.0	82.6	60.7	0.0	0.0	13.9	13.9
LnGrp LOS				F	A	A	F	E	A	A	B	B
Approach Vol, veh/h					-24			579			954	
Approach Delay, s/veh					0.0			66.3			13.9	
Approach LOS					A			E			B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	7.2	92.5		0.0	70.0	39.7						
Change Period (Y+Rc), s	4.0	4.0		5.5	4.0	5.5						
Max Green Setting (Gmax), s	88.5			19.5	52.0	43.5						
Max Q Clear Time (g_c+M3), s	21.5			2.1	0.0	32.1						
Green Ext Time (p_c), s	0.1	8.2		0.3	0.0	2.0						

### Intersection Summary

HCM 6th Ctrl Delay	34.2
HCM 6th LOS	C



# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

09/11/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕	↗	↖	↕	
Traffic Volume (veh/h)	130	0	125	0	0	0	0	420	235	310	360	0
Future Volume (veh/h)	130	0	125	0	0	0	0	420	235	310	360	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1826	1900	1826	1900	0
Adj Flow Rate, veh/h	138	0	133				0	447	250	330	383	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0				0	5	0	5	0	0
Cap, veh/h	249	0	222				0	927	818	635	1376	0
Arrive On Green	0.11	0.00	0.13				0.00	0.51	0.51	0.14	0.72	0.00
Sat Flow, veh/h	1882	0	1675				0	1826	1610	1739	1900	0
Grp Volume(v), veh/h	138	0	133				0	447	250	330	383	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1826	1610	1739	1900	0
Q Serve(g_s), s	3.9	0.0	4.2				0.0	8.9	5.0	4.1	3.9	0.0
Cycle Q Clear(g_c), s	3.9	0.0	4.2				0.0	8.9	5.0	4.1	3.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	249	0	222				0	927	818	635	1376	0
V/C Ratio(X)	0.55	0.00	0.60				0.00	0.48	0.31	0.52	0.28	0.00
Avail Cap(c_a), veh/h	506	0	450				0	1408	1242	1007	2283	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.1	0.0	22.8				0.0	8.9	8.0	5.3	2.7	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.6				0.0	1.8	1.0	0.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6	0.0	1.5				0.0	3.3	1.6	0.9	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	0.0	24.4				0.0	10.7	9.0	5.7	3.2	0.0
LnGrp LOS	C	A	C				A	B	A	A	A	A
Approach Vol, veh/h		271						697			713	
Approach Delay, s/veh		24.4						10.1			4.3	
Approach LOS		C						B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		44.4			12.1	32.3		11.4				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		66.0			19.0	42.0		14.0				
Max Q Clear Time (g_c+I1), s		5.9			6.1	10.9		6.2				
Green Ext Time (p_c), s		12.8			1.0	16.4		0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC  
5: 10th St & 8th Ave

09/11/2020

Intersection												
Int Delay, s/veh	12.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	5	15	45	10	160	30	440	75	140	250	95
Future Vol, veh/h	55	5	15	45	10	160	30	440	75	140	250	95
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	200	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	4	0	0	0	0	0	0	10	0	0
Mvmt Flow	60	5	16	49	11	176	33	484	82	154	275	104

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1322	1269	330	1238	1280	525	381	0	0	566	0	0
Stage 1	637	637	-	591	591	-	-	-	-	-	-	-
Stage 2	685	632	-	647	689	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.5	6.24	7.1	6.5	6.2	4.1	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4	3.336	3.5	4	3.3	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	133	170	707	154	167	556	1189	-	-	967	-	-
Stage 1	465	475	-	497	498	-	-	-	-	-	-	-
Stage 2	438	477	-	463	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	73	137	705	124	134	556	1187	-	-	967	-	-
Mov Cap-2 Maneuver	73	137	-	124	134	-	-	-	-	-	-	-
Stage 1	445	399	-	477	478	-	-	-	-	-	-	-
Stage 2	281	457	-	375	378	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	119.1		25.4		0.4			2.7		
HCM LOS	F		D							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1187	-	-	73	346	126	556	967	-	-
HCM Lane V/C Ratio	0.028	-	-	0.828	0.064	0.48	0.316	0.159	-	-
HCM Control Delay (s)	8.1	0	-	156.6	16.1	57.5	14.4	9.4	-	-
HCM Lane LOS	A	A	-	F	C	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4	0.2	2.2	1.3	0.6	-	-

HCM 6th AWSC  
18: Willamette Falls Dr & 10th St

09/11/2020

Intersection	
Intersection Delay, s/veh	22.2
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	375	240	235	170	75	235
Future Vol, veh/h	375	240	235	170	75	235
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	412	264	258	187	82	258
Number of Lanes	1	1	1	0	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	24	25.3	14.5
HCM LOS	C	D	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	58%	0%	0%
Vol Right, %	0%	0%	42%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	375	240	405	75	235
LT Vol	375	0	0	75	0
Through Vol	0	240	235	0	0
RT Vol	0	0	170	0	235
Lane Flow Rate	412	264	445	82	258
Geometry Grp	7	7	4	7	7
Degree of Util (X)	0.782	0.463	0.751	0.179	0.474
Departure Headway (Hd)	6.828	6.319	6.078	7.832	6.604
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	527	567	592	457	542
Service Time	4.596	4.086	4.139	5.603	4.373
HCM Lane V/C Ratio	0.782	0.466	0.752	0.179	0.476
HCM Control Delay	30.1	14.5	25.3	12.3	15.2
HCM Lane LOS	D	B	D	B	C
HCM 95th-tile Q	7.2	2.4	6.6	0.6	2.5

Queuing and Blocking Report  
No Build

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	260	195	320	720	163	79
Average Queue (ft)	144	36	291	333	65	3
95th Queue (ft)	246	135	363	766	134	40
Link Distance (ft)	246	246		966	165	
Upstream Blk Time (%)	4	0		0	0	0
Queuing Penalty (veh)	11	0		0	2	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			45	0	2	
Queuing Penalty (veh)			27	0	5	

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	177	156	268	336	272	175	246
Average Queue (ft)	80	64	185	279	93	103	160
95th Queue (ft)	152	123	302	369	253	184	261
Link Distance (ft)	1070			269	198	165	165
Upstream Blk Time (%)			0	19	3	0	7
Queuing Penalty (veh)			0	104	18	1	34
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)			0	19			
Queuing Penalty (veh)			2	26			

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	180	86	263	174	193	240	134	81
Average Queue (ft)	77	37	149	83	121	84	14	6
95th Queue (ft)	146	68	254	179	186	198	81	44
Link Distance (ft)	708		245			198	269	269
Upstream Blk Time (%)			2		1	1	0	
Queuing Penalty (veh)			11		0	9	0	
Storage Bay Dist (ft)		300		150	180			
Storage Blk Time (%)			7	0	1	1		
Queuing Penalty (veh)			16	1	5	4		

Queuing and Blocking Report  
No Build

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	LT	R	LTR	L	TR
Maximum Queue (ft)	93	62	107	134	140	130	32
Average Queue (ft)	40	19	36	55	30	47	2
95th Queue (ft)	80	53	81	115	102	95	15
Link Distance (ft)		990	486		208		245
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					1		
Storage Bay Dist (ft)	300			200		150	
Storage Blk Time (%)				1		0	
Queuing Penalty (veh)				0		1	

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	272	400	344	85	121
Average Queue (ft)	134	92	151	30	49
95th Queue (ft)	246	285	296	60	95
Link Distance (ft)		1030	622		208
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)	250			150	
Storage Blk Time (%)	6	0			0
Queuing Penalty (veh)	14	0			0

Zone Summary

Zone wide Queuing Penalty: 295
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## **APPENDIX D. CORRIDOR CONCEPT DRAWINGS**

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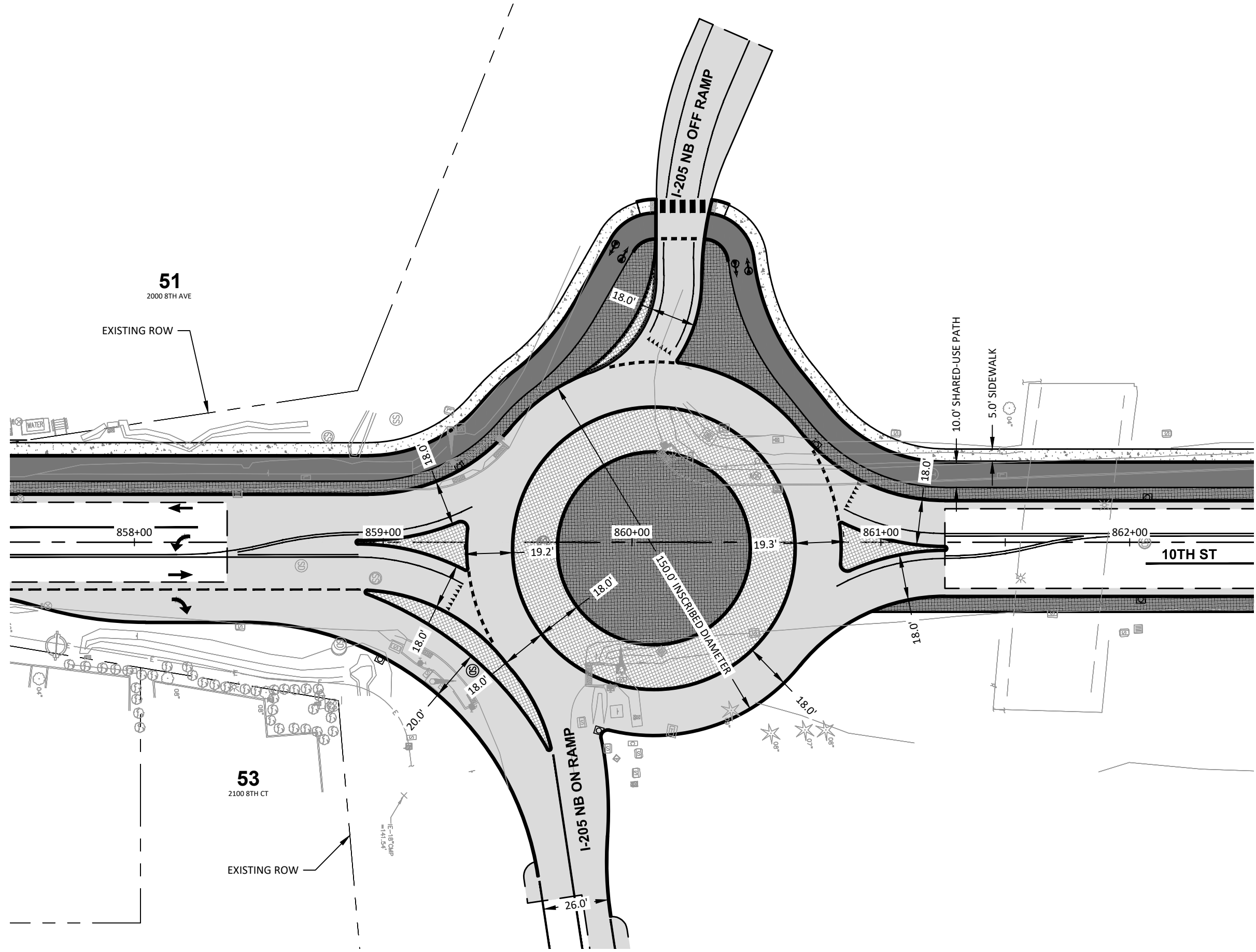


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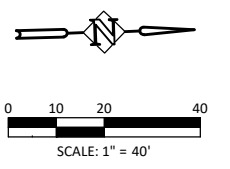


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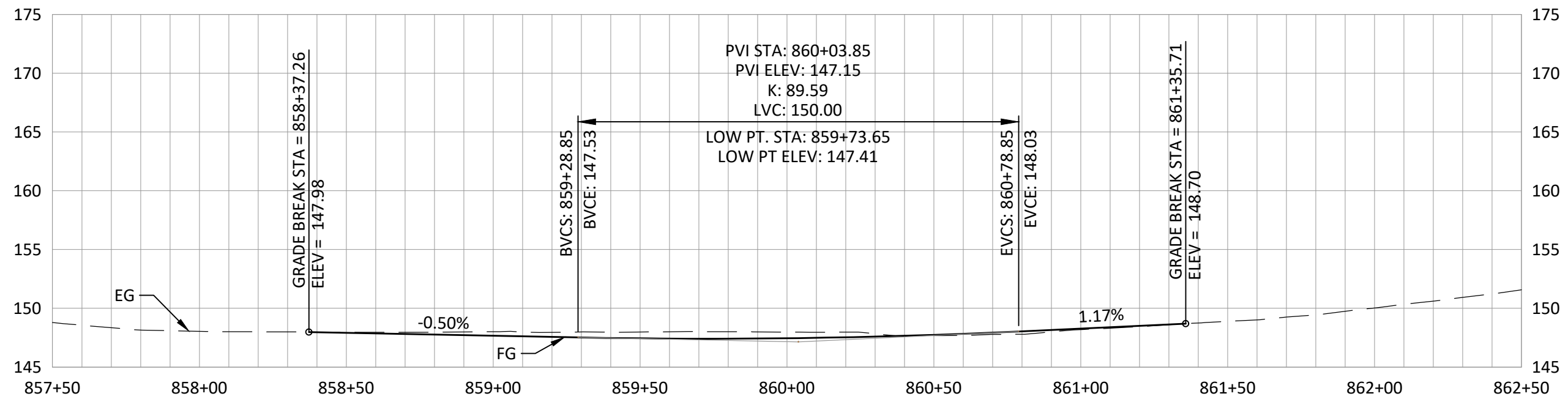
**10TH STREET  
 IMPROVEMENTS**  
 WEST LINN, OREGON  
 NOVEMBER 2020



**10TH STREET/I-205 ROUNDABOUT CONCEPT**  
**WILLAMETTE FALLS DRIVE**  
 WEST LINN, OREGON  
 NOVEMBER 2020



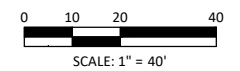




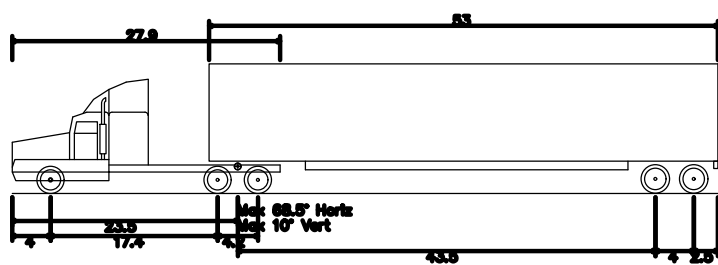
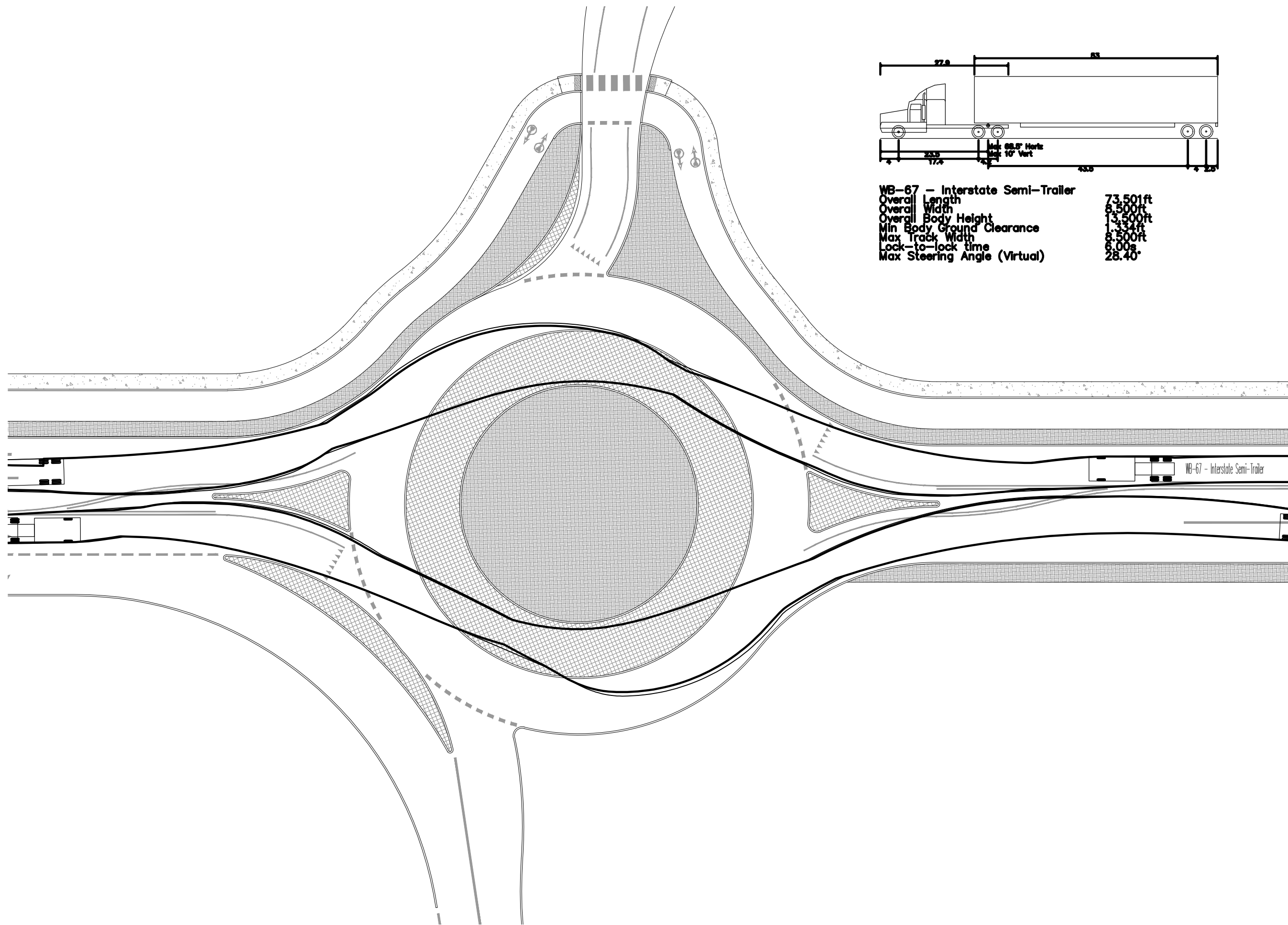
**10TH STREET PROFILE VIEW**

SCALE: 1" = 40' (HORIZ.)  
 1" = 10' (VERT.)

NOTE: PROFILE SHOWN FOR CONCEPT ONLY.  
 FINAL DESIGN TO INCLUDE UPDATES AS REQUIRED.

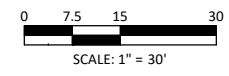
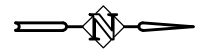


**10TH STREET/I-205 ROUNDABOUT CONCEPT**  
**WILLAMETTE FALLS DRIVE**  
 WEST LINN, OREGON  
 NOVEMBER 2020

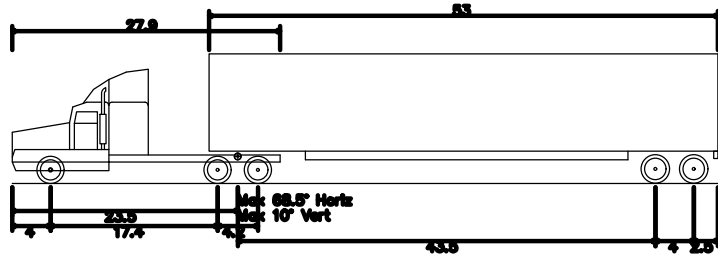
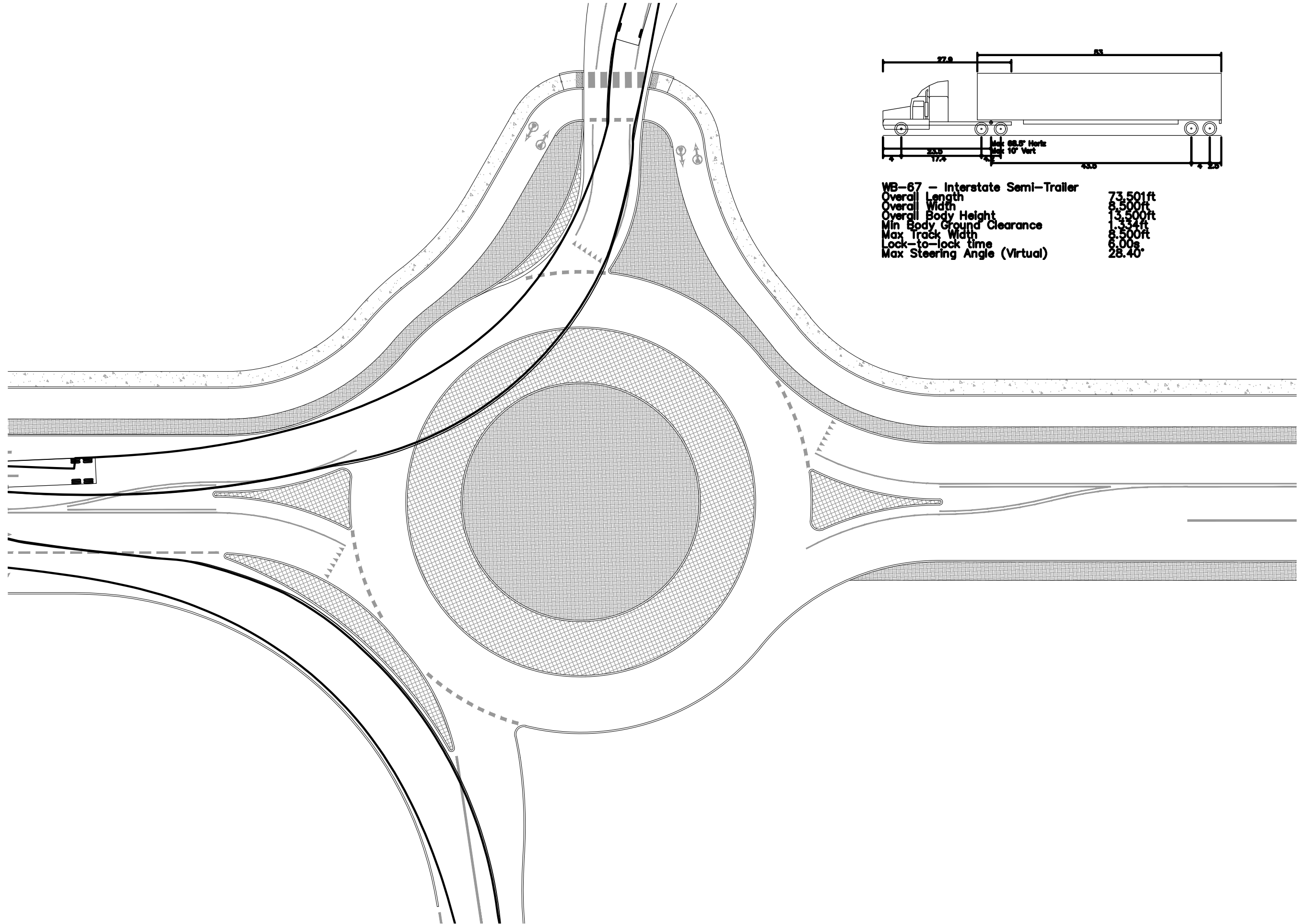


<b>WB-67 - Interstate Semi-Trailer</b>	
Overall Length	73.50ft
Overall Width	8.50ft
Overall Body Height	13.50ft
Min Body Ground Clearance	1.33ft
Max Track Width	8.50ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

**10TH STREET**  
**TRUCK TURNING (WB-67)**  
 WEST LINN, OREGON  
 NOVEMBER 2020

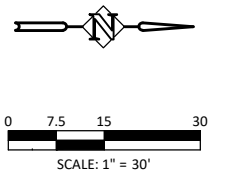


**T1**

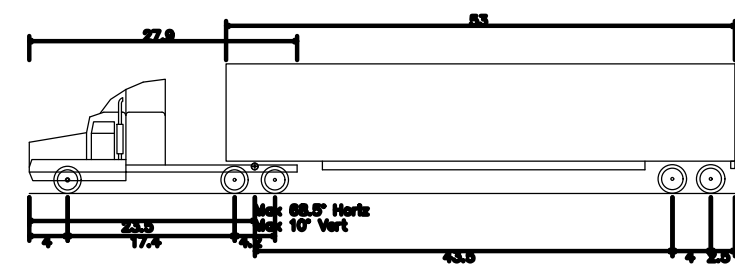
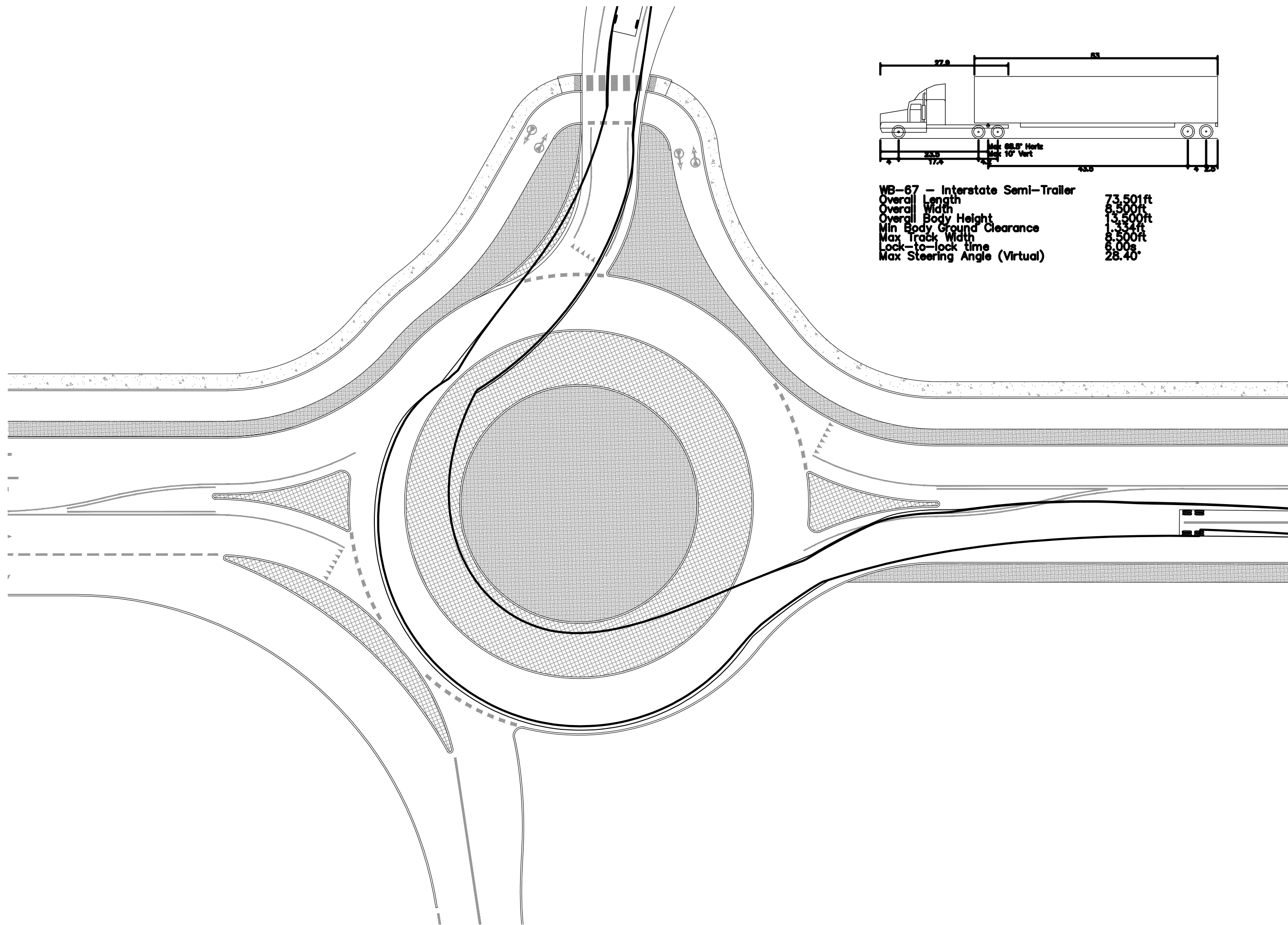


<b>WB-67 - Interstate Semi-Trailer</b>	
Overall Length	73.50ft
Overall Width	8.50ft
Overall Body Height	13.50ft
Min Body Ground Clearance	1.34ft
Max Track Width	8.50ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

**10TH STREET**  
**TRUCK TURNING (WB-67)**  
 WEST LINN, OREGON  
 NOVEMBER 2020

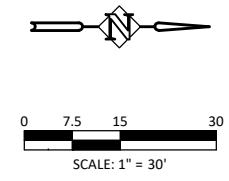


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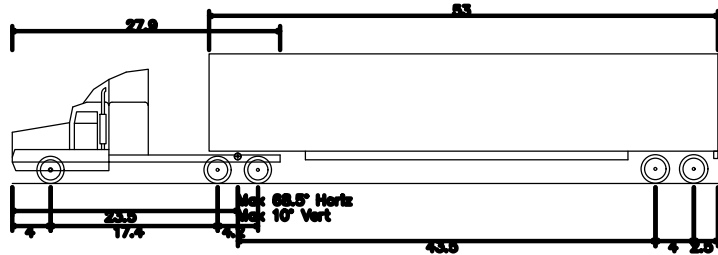
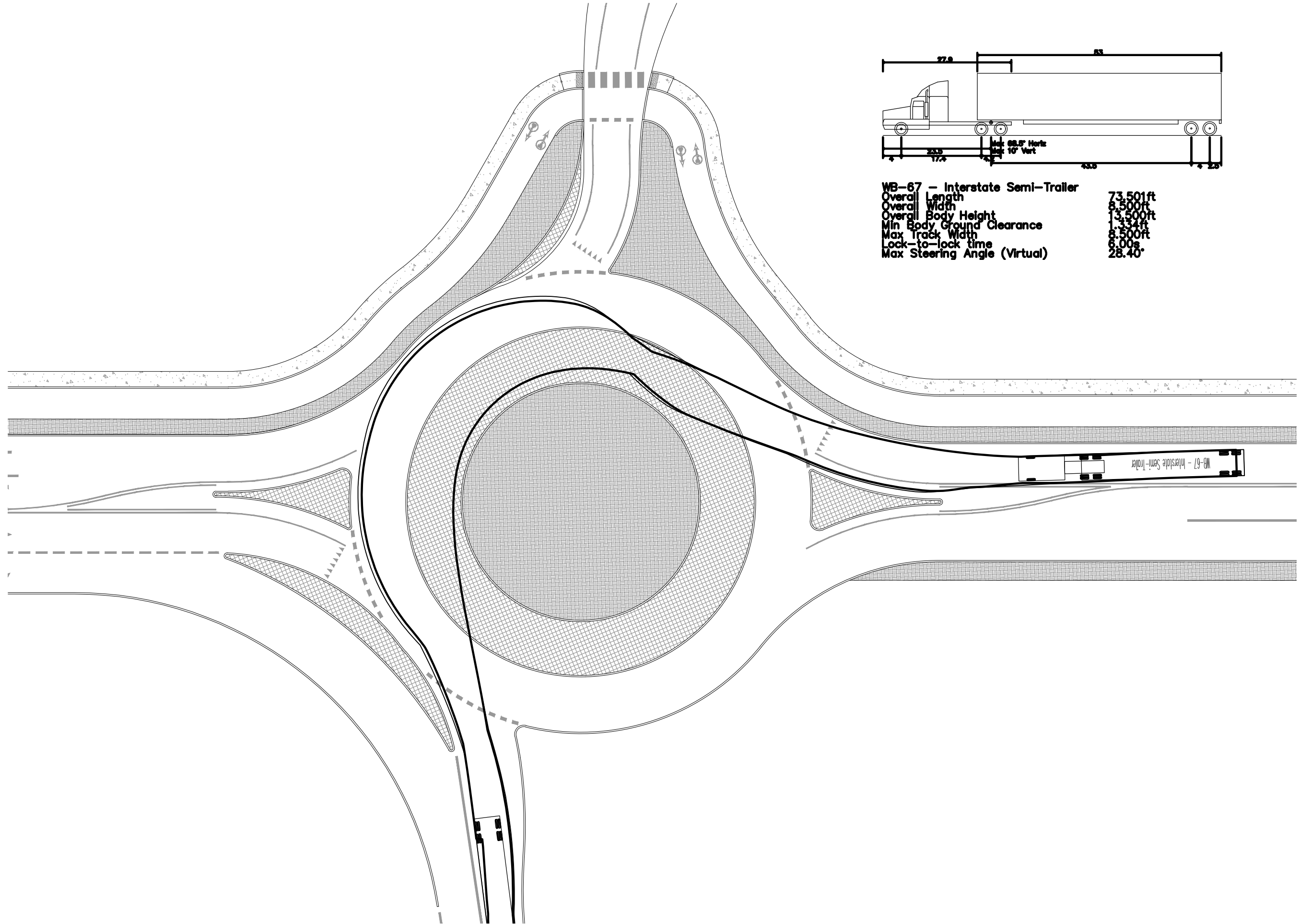


WB-67 - Interstate Semi-Trailer	73.50ft
Overall Length	8.50ft
Overall Width	13.50ft
Overall Body Height	1.34ft
Min Body Ground Clearance	8.50ft
Max Track Width	6.00s
Lock-to-lock time	28.40°
Max Steering Angle (Virtual)	

**10TH STREET  
 TRUCK TURNING (WB-67)  
 WEST LINN, OREGON  
 NOVEMBER 2020**

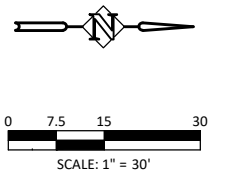


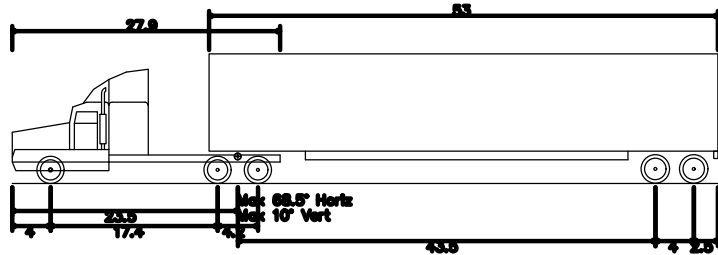
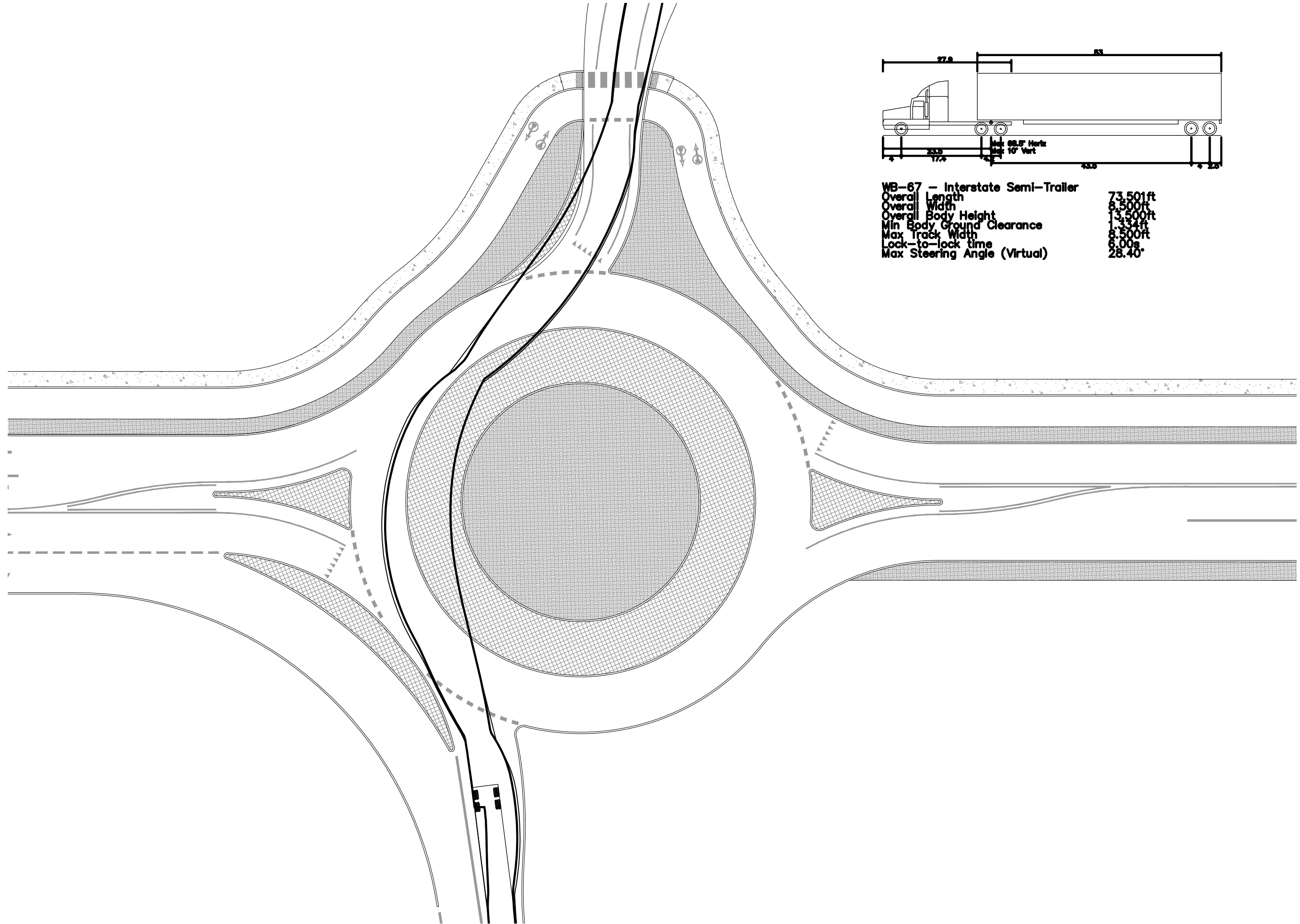
**T3**



WB-67 - Interstate Semi-Trailer	73.50ft
Overall Length	73.50ft
Overall Width	8.50ft
Overall Body Height	13.50ft
Min Body Ground Clearance	1.34ft
Max Track Width	8.50ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

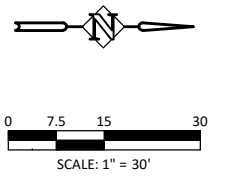
**10TH STREET**  
**TRUCK TURNING (WB-67)**  
 WEST LINN, OREGON  
 NOVEMBER 2020



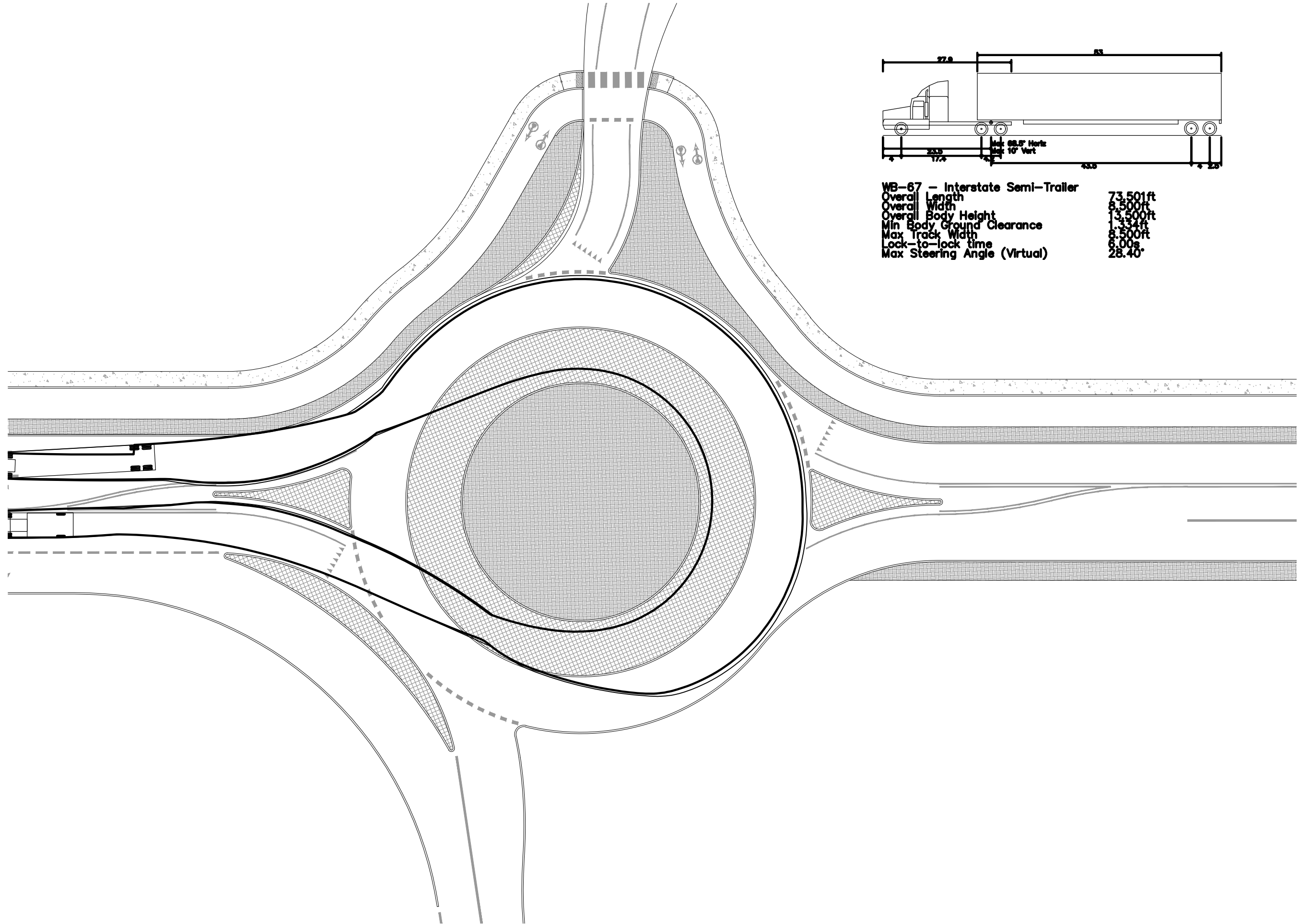


WB-67 - Interstate Semi-Trailer	73.50ft
Overall Length	73.50ft
Overall Width	8.50ft
Overall Body Height	13.50ft
Min Body Ground Clearance	1.34ft
Max Track Width	8.50ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

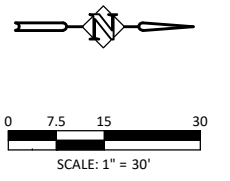
**10TH STREET**  
**TRUCK TURNING (WB-67)**  
 WEST LINN, OREGON  
 NOVEMBER 2020



**T5**

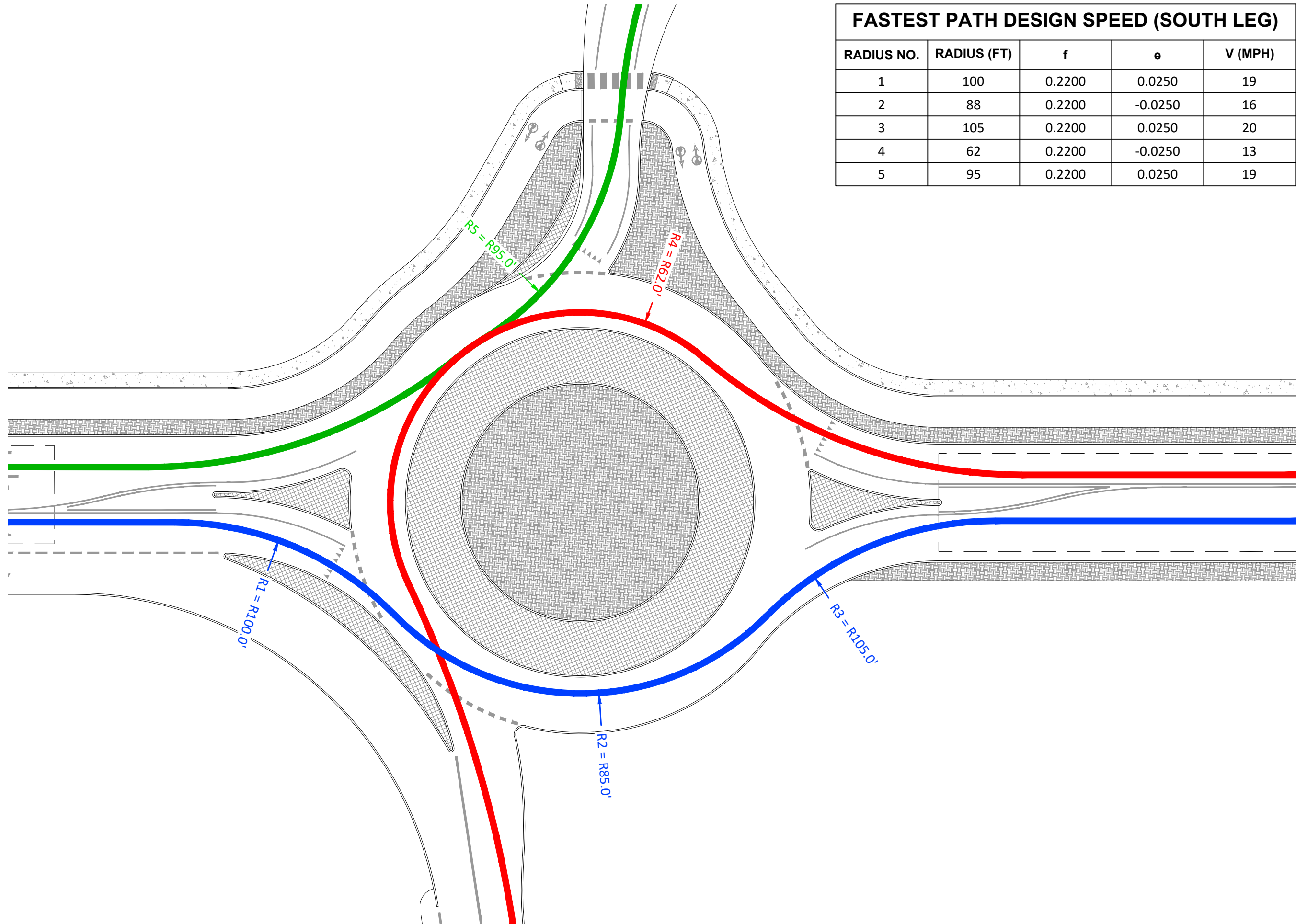


**10TH STREET  
 TRUCK TURNING (WB-67)  
 WEST LINN, OREGON  
 NOVEMBER 2020**

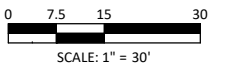
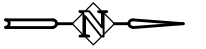


**T6**

FASTEST PATH DESIGN SPEED (SOUTH LEG)				
RADIUS NO.	RADIUS (FT)	f	e	V (MPH)
1	100	0.2200	0.0250	19
2	88	0.2200	-0.0250	16
3	105	0.2200	0.0250	20
4	62	0.2200	-0.0250	13
5	95	0.2200	0.0250	19



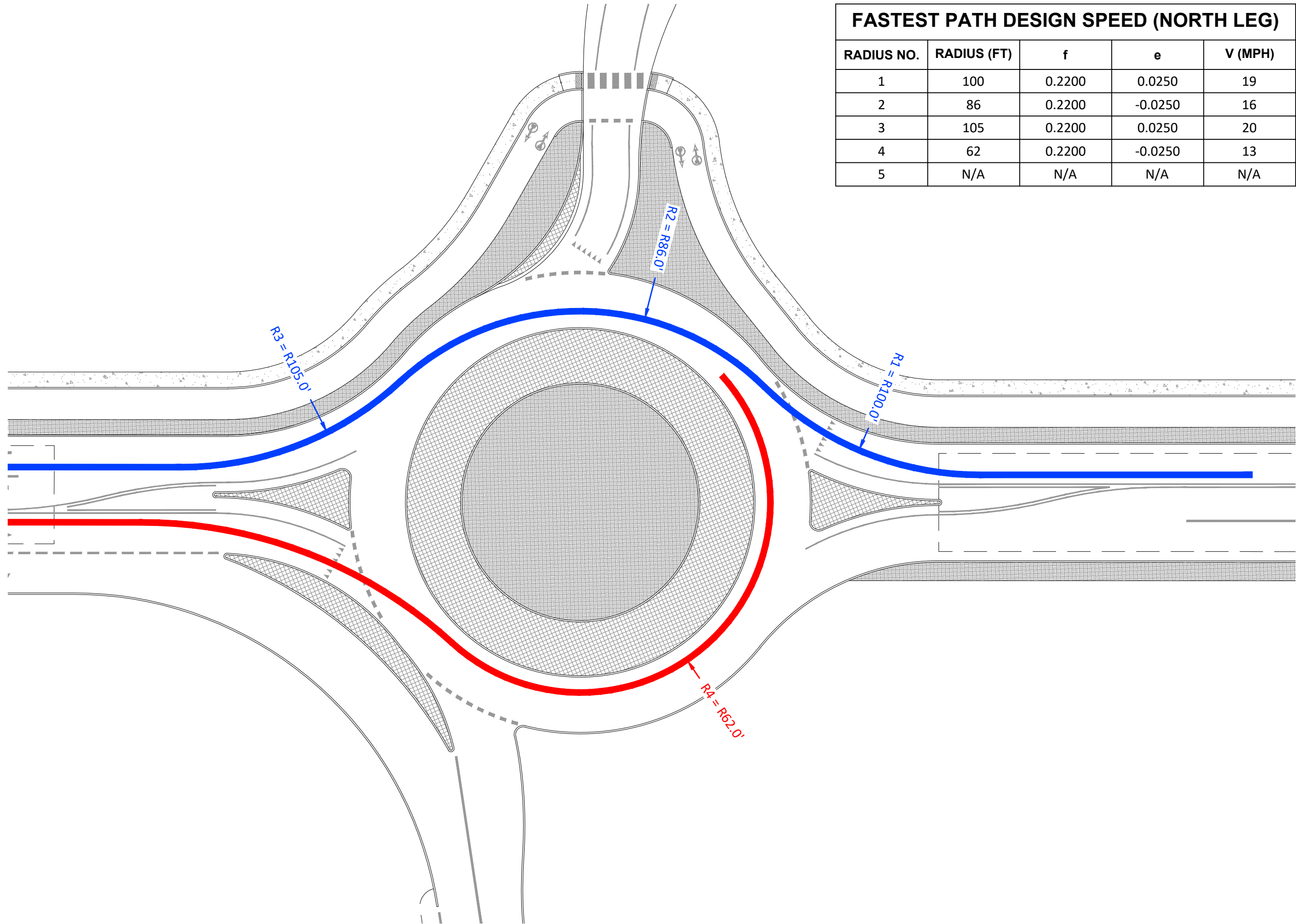
**10TH STREET**  
**FASTEST PATH (SOUTH LEG)**  
 WEST LINN, OREGON  
 NOVEMBER 2020



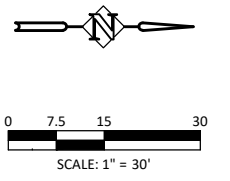
**F1**



FASTEST PATH DESIGN SPEED (NORTH LEG)				
RADIUS NO.	RADIUS (FT)	f	e	V (MPH)
1	100	0.2200	0.0250	19
2	86	0.2200	-0.0250	16
3	105	0.2200	0.0250	20
4	62	0.2200	-0.0250	13
5	N/A	N/A	N/A	N/A

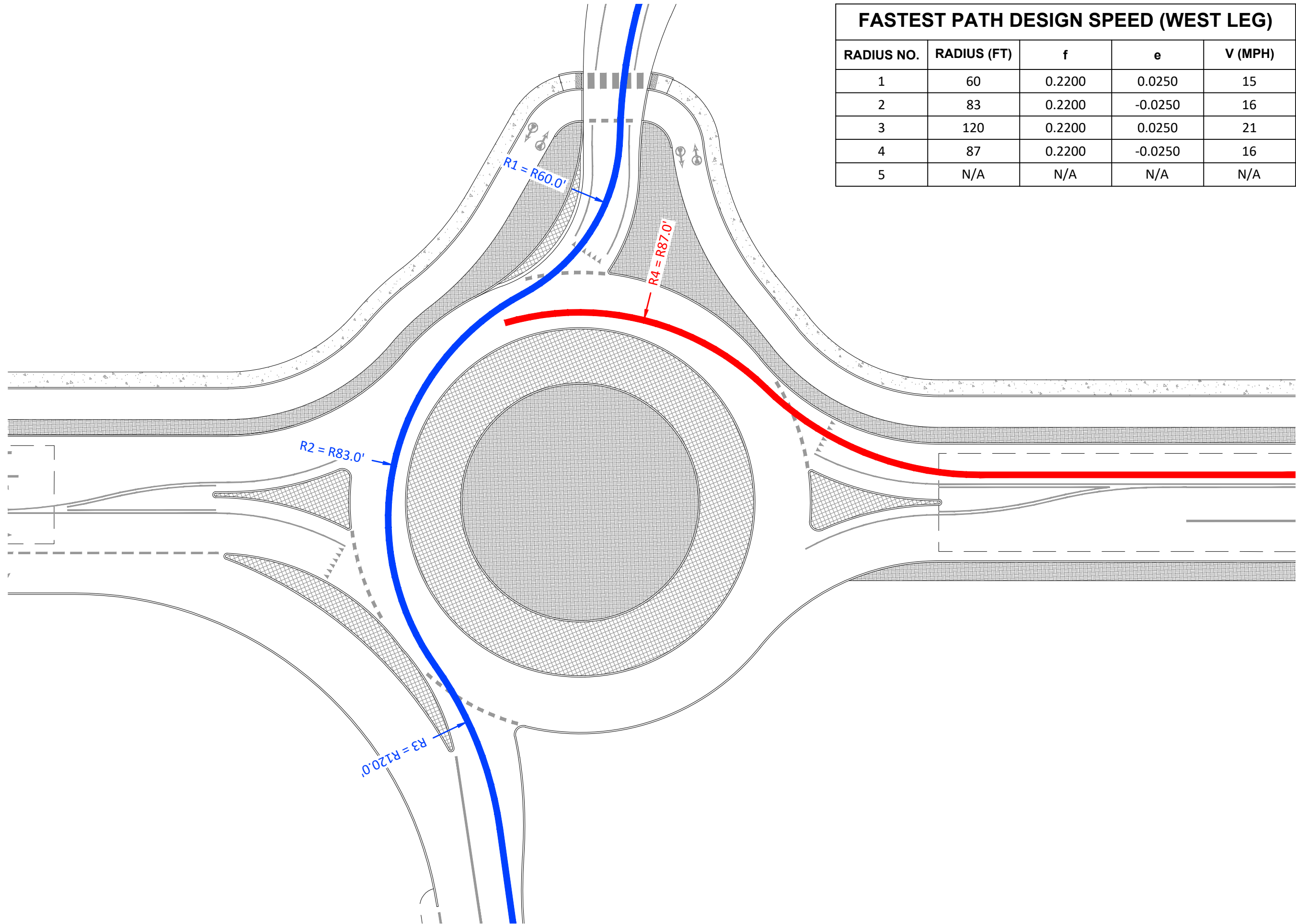


**10TH STREET**  
**FASTEST PATH (NORTH LEG)**  
 WEST LINN, OREGON  
 NOVEMBER 2020

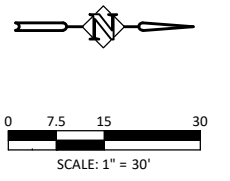


**F2**

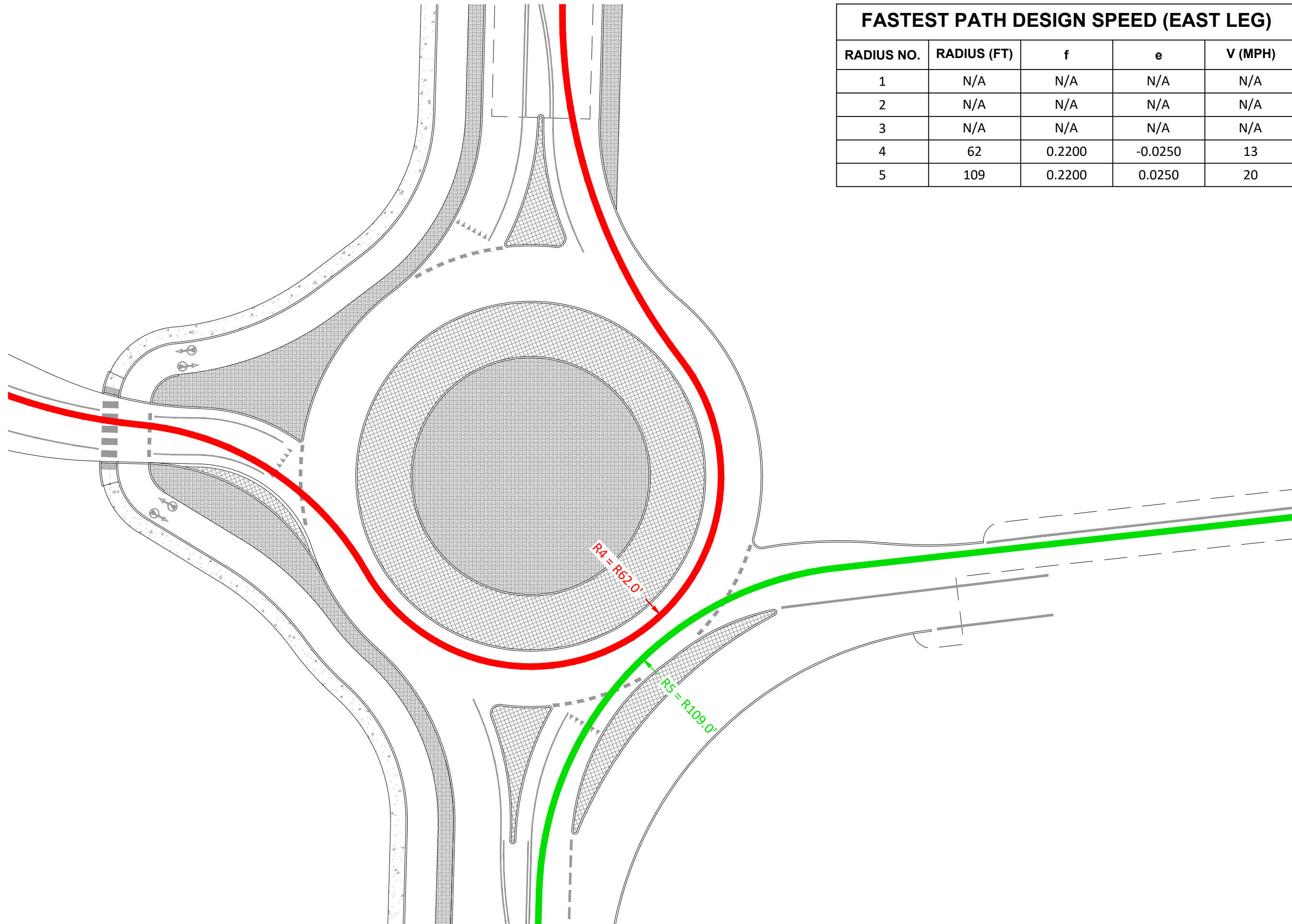
FASTEST PATH DESIGN SPEED (WEST LEG)				
RADIUS NO.	RADIUS (FT)	f	e	V (MPH)
1	60	0.2200	0.0250	15
2	83	0.2200	-0.0250	16
3	120	0.2200	0.0250	21
4	87	0.2200	-0.0250	16
5	N/A	N/A	N/A	N/A



**10TH STREET**  
**FASTEST PATH (WEST LEG)**  
**WEST LINN, OREGON**  
 NOVEMBER 2020

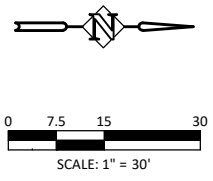


**F3**



FASTEST PATH DESIGN SPEED (EAST LEG)				
RADIUS NO.	RADIUS (FT)	f	e	V (MPH)
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	62	0.2200	-0.0250	13
5	109	0.2200	0.0250	20

**10TH STREET**  
**FASTEST PATH (EAST LEG)**  
**WEST LINN, OREGON**  
 NOVEMBER 2020



**F4**

## **APPENDIX E. ALTERNATIVE 1 (YEAR 2042) HCM AND QUEUING REPORTS**

---

# HCM 6th Signalized Intersection Summary

## 2: 10th St & Blankenship Rd/Salamo Rd

10/06/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↗	↖
Traffic Volume (veh/h)	60	500	395	65	380	270
Future Volume (veh/h)	60	500	395	65	380	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1945	1870	1870	1870	1781
Adj Flow Rate, veh/h	63	509	465	0	400	235
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	2	2	2	2	8
Cap, veh/h	691	1026	752	395	475	696
Arrive On Green	0.37	0.36	0.21	0.00	0.11	0.27
Sat Flow, veh/h	1856	1648	3563	1870	1781	1510
Grp Volume(v), veh/h	63	509	465	0	400	235
Grp Sat Flow(s),veh/h/ln	1856	1648	1781	1870	1781	1510
Q Serve(g_s), s	2.0	15.2	10.7	0.0	19.8	8.9
Cycle Q Clear(g_c), s	2.0	15.2	10.7	0.0	19.8	8.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	691	1026	752	395	475	696
V/C Ratio(X)	0.09	0.50	0.62	0.00	0.84	0.34
Avail Cap(c_a), veh/h	691	1026	752	395	940	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.42	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.66	0.66
Uniform Delay (d), s/veh	18.4	9.3	32.2	0.0	38.1	15.5
Incr Delay (d2), s/veh	0.1	0.4	3.8	0.0	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.9	4.9	0.0	9.7	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.4	9.7	36.0	0.0	40.9	15.7
LnGrp LOS	B	A	D	A	D	B
Approach Vol, veh/h	572			465	635	
Approach Delay, s/veh	10.6			36.0	31.5	
Approach LOS	B			D	C	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		29.5		37.5		23.0
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		47.5		8.5		17.5
Max Q Clear Time (g_c+I1), s		21.8		17.2		12.7
Green Ext Time (p_c), s		2.2		0.0		0.8

### Intersection Summary

HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

10/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕		↕	↕	↕
Traffic Volume (veh/h)	0	0	0	190	0	345	105	305	0	0	675	220
Future Volume (veh/h)	0	0	0	190	0	345	105	305	0	0	675	220
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No		No		No		No		No
Adj Sat Flow, veh/h/ln				1900	1976	1884	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				198	0	56	109	318	0	0	703	198
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	6	0	0	0	0	0	0
Cap, veh/h				267	0	226	175	396	0	874	1652	465
Arrive On Green				0.13	0.00	0.14	0.10	0.21	0.00	0.00	0.52	0.52
Sat Flow, veh/h				1882	0	1596	1810	1900	0	1810	2780	783
Grp Volume(v), veh/h				198	0	56	109	318	0	0	456	445
Grp Sat Flow(s),veh/h/ln				1882	0	1596	1810	1900	0	1810	1805	1758
Q Serve(g_s), s				9.1	0.0	2.8	5.2	14.3	0.0	0.0	14.1	14.1
Cycle Q Clear(g_c), s				9.1	0.0	2.8	5.2	14.3	0.0	0.0	14.1	14.1
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.45
Lane Grp Cap(c), veh/h				267	0	226	175	396	0	874	1073	1045
V/C Ratio(X)				0.74	0.00	0.25	0.62	0.80	0.00	0.00	0.43	0.43
Avail Cap(c_a), veh/h				293	0	248	181	507	0	874	1073	1045
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.87	0.87
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.83	0.83
Uniform Delay (d), s/veh				37.8	0.0	34.3	39.1	33.9	0.0	0.0	12.2	12.2
Incr Delay (d2), s/veh				8.9	0.0	0.6	6.1	7.2	0.0	0.0	1.0	1.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.7	0.0	2.6	2.6	7.2	0.0	0.0	5.9	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.6	0.0	34.9	45.2	41.0	0.0	0.0	13.2	13.3
LnGrp LOS				D	A	C	D	D	A	A	B	B
Approach Vol, veh/h					254			427			901	
Approach Delay, s/veh					44.0			42.1			13.3	
Approach LOS					D			D			B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	2.7	59.0		16.8	49.0	22.8						
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	* 5.5						
Max Green Setting (Gmax), s	5	53.5		12.5	40.0	* 23						
Max Q Clear Time (g_c+I1), s	16.1	16.1		11.1	0.0	16.3						
Green Ext Time (p_c), s	0.0	7.1		0.2	0.0	0.9						

### Intersection Summary

HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

### Notes

User approved ignoring U-Turning movement.

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

# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

10/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕	↗	↘	↕	
Traffic Volume (veh/h)	80	0	120	0	0	0	0	330	480	380	485	0
Future Volume (veh/h)	80	0	120	0	0	0	0	330	480	380	485	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No					No		No		No	
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1900	1900	1870	1900	0
Adj Flow Rate, veh/h	86	0	129				0	355	516	409	522	0
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0				0	0	0	2	0	0
Cap, veh/h	228	0	203				0	1011	857	661	1427	0
Arrive On Green	0.11	0.00	0.12				0.00	0.53	0.53	0.15	0.75	0.00
Sat Flow, veh/h	1882	0	1675				0	1900	1610	1781	1900	0
Grp Volume(v), veh/h	86	0	129				0	355	516	409	522	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1900	1610	1781	1900	0
Q Serve(g_s), s	2.7	0.0	4.6				0.0	6.7	13.8	5.2	5.9	0.0
Cycle Q Clear(g_c), s	2.7	0.0	4.6				0.0	6.7	13.8	5.2	5.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	228	0	203				0	1011	857	661	1427	0
V/C Ratio(X)	0.38	0.00	0.64				0.00	0.35	0.60	0.62	0.37	0.00
Avail Cap(c_a), veh/h	361	0	321				0	1275	1081	1068	2125	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.8	0.0	26.2				0.0	8.4	10.1	4.9	2.7	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.0				0.0	1.0	3.1	0.6	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.8				0.0	2.6	4.7	1.1	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	0.0	28.2				0.0	9.4	13.2	5.5	3.4	0.0
LnGrp LOS	C	A	C				A	A	B	A	A	A
Approach Vol, veh/h		215						871			931	
Approach Delay, s/veh		27.5						11.6			4.3	
Approach LOS		C						B			A	
Timer - Assigned Phs		2		5	6		8					
Phs Duration (G+Y+Rc), s		51.0		13.7	37.3		11.6					
Change Period (Y+Rc), s		5.0		5.0	5.0		5.0					
Max Green Setting (Gmax), s		69.0		23.0	41.0		11.0					
Max Q Clear Time (g_c+I1), s		7.9		7.2	15.8		6.6					
Green Ext Time (p_c), s		19.5		1.5	16.5		0.2					

### Intersection Summary

HCM 6th Ctrl Delay	10.0
HCM 6th LOS	A

### Notes

User approved pedestrian interval to be less than phase max green.

Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	129	263	314	399	158	143
Average Queue (ft)	52	172	186	233	94	50
95th Queue (ft)	104	277	299	349	161	125
Link Distance (ft)	239	239		942	149	
Upstream Blk Time (%)		3			1	0
Queuing Penalty (veh)		10			7	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			2	18	3	0
Queuing Penalty (veh)			6	35	8	1

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	360	287	247	306	50	156	208
Average Queue (ft)	173	139	102	175	3	126	167
95th Queue (ft)	366	268	194	277	29	177	217
Link Distance (ft)	1070			269	198	149	149
Upstream Blk Time (%)			0	1	0	1	14
Queuing Penalty (veh)			0	5	0	3	62
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)	6	1	0	1			
Queuing Penalty (veh)	20	1	0	1			

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	131	96	266	217	196	242	201	118
Average Queue (ft)	52	38	106	114	139	109	35	14
95th Queue (ft)	104	73	221	213	204	244	131	69
Link Distance (ft)	708	708	252			198	269	269
Upstream Blk Time (%)			0		1	3	0	
Queuing Penalty (veh)			3		0	25	0	
Storage Bay Dist (ft)				200	180			
Storage Blk Time (%)			1	1	3	2		
Queuing Penalty (veh)			3	3	17	10		



Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	WB	WB	NB	SB	SB
Directions Served	R	L	R	TR	L	TR
Maximum Queue (ft)	72	125	126	109	116	52
Average Queue (ft)	36	42	56	14	43	2
95th Queue (ft)	64	91	104	63	88	23
Link Distance (ft)	990	485		204		252
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200		150	
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	274	1796	283	159	181
Average Queue (ft)	260	658	148	76	78
95th Queue (ft)	312	1574	240	139	142
Link Distance (ft)		2384	622		204
Upstream Blk Time (%)		1			0
Queuing Penalty (veh)		0			0
Storage Bay Dist (ft)	250			150	
Storage Blk Time (%)	22	0		1	1
Queuing Penalty (veh)	92	1		2	1

Zone Summary

Zone wide Queuing Penalty: 316
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Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

10/06/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	149	274	302	388	163	148
Average Queue (ft)	53	189	178	231	96	45
95th Queue (ft)	115	301	287	334	171	115
Link Distance (ft)	239	239		942	149	
Upstream Blk Time (%)		8			2	0
Queuing Penalty (veh)		23			12	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			1	17	4	0
Queuing Penalty (veh)			4	33	11	0

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	303	306	255	307	127	149	215
Average Queue (ft)	139	126	110	187	10	124	166
95th Queue (ft)	241	246	215	300	70	180	225
Link Distance (ft)	1070			269	198	149	149
Upstream Blk Time (%)			0	3	0	1	15
Queuing Penalty (veh)			0	14	1	4	67
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)	1	2	0	3			
Queuing Penalty (veh)	2	4	0	4			

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	121	80	263	223	196	242	226	119
Average Queue (ft)	56	35	102	114	145	117	37	16
95th Queue (ft)	105	66	216	213	207	256	143	76
Link Distance (ft)	708	708	252			198	269	269
Upstream Blk Time (%)			0		2	3	0	
Queuing Penalty (veh)			3		0	30	1	
Storage Bay Dist (ft)				200	180			
Storage Blk Time (%)			1	1	4	3		
Queuing Penalty (veh)			3	4	20	12		

Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

10/06/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	WB	WB	NB	SB	SB
Directions Served	R	L	R	TR	L	TR
Maximum Queue (ft)	77	102	125	136	98	29
Average Queue (ft)	37	37	55	13	38	1
95th Queue (ft)	66	78	104	72	80	13
Link Distance (ft)	990	485		204		252
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)			200		150	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	325	1044	306	152	177
Average Queue (ft)	291	442	149	72	77
95th Queue (ft)	372	1053	256	133	141
Link Distance (ft)		1030	622		204
Upstream Blk Time (%)		5			0
Queuing Penalty (veh)		0			0
Storage Bay Dist (ft)	300			150	
Storage Blk Time (%)	16	0		1	1
Queuing Penalty (veh)	65	0		3	1

Zone Summary

Zone wide Queuing Penalty: 322

# HCM 6th Signalized Intersection Summary

## 2: 10th St & Blankenship Rd/Salamo Rd

10/05/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	120	550	380	60	300	280
Future Volume (veh/h)	120	550	380	60	300	280
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1976	1885	1900	1885	1885
Adj Flow Rate, veh/h	126	559	445	0	316	240
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	1	1
Cap, veh/h	822	1061	718	380	390	640
Arrive On Green	0.43	0.42	0.20	0.00	0.06	0.22
Sat Flow, veh/h	1900	1675	3591	1900	1795	1598
Grp Volume(v), veh/h	126	559	445	0	316	240
Grp Sat Flow(s),veh/h/ln	1900	1675	1795	1900	1795	1598
Q Serve(g_s), s	3.6	16.5	10.2	0.0	15.6	9.5
Cycle Q Clear(g_c), s	3.6	16.5	10.2	0.0	15.6	9.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	822	1061	718	380	390	640
V/C Ratio(X)	0.15	0.53	0.62	0.00	0.81	0.38
Avail Cap(c_a), veh/h	822	1061	718	380	948	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.28	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.61	0.61
Uniform Delay (d), s/veh	15.5	9.1	32.9	0.0	40.4	19.0
Incr Delay (d2), s/veh	0.1	0.5	4.0	0.0	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.4	4.7	0.0	7.8	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.6	9.6	36.9	0.0	43.0	19.3
LnGrp LOS	B	A	D	A	D	B
Approach Vol, veh/h	685			445	556	
Approach Delay, s/veh	10.7			36.9	32.7	
Approach LOS	B			D	C	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		25.0		43.0		22.0
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		47.5		9.5		16.5
Max Q Clear Time (g_c+I1), s		17.6		18.5		12.2
Green Ext Time (p_c), s		1.9		0.0		0.7

### Intersection Summary

HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM 6th Signalized Intersection Summary

## 3: 10th St & I-205 SB ramp

10/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕	↕	↕		↕	↕	↕
Traffic Volume (veh/h)	0	0	0	85	0	170	140	410	0	0	585	345
Future Volume (veh/h)	0	0	0	85	0	170	140	410	0	0	585	345
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No		No		No		No		No
Adj Sat Flow, veh/h/ln				1900	1976	1914	1900	1900	0	1900	1900	1900
Adj Flow Rate, veh/h				89	0	16	147	432	0	0	616	279
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				0	0	4	0	0	0	0	0	0
Cap, veh/h				151	0	130	213	511	0	841	1486	673
Arrive On Green				0.06	0.00	0.08	0.12	0.27	0.00	0.00	0.57	0.57
Sat Flow, veh/h				1882	0	1622	1810	1900	0	1810	2410	1091
Grp Volume(v), veh/h				89	0	16	147	432	0	0	461	434
Grp Sat Flow(s),veh/h/ln				1882	0	1622	1810	1900	0	1810	1805	1696
Q Serve(g_s), s				4.1	0.0	0.8	7.0	19.4	0.0	0.0	13.0	13.0
Cycle Q Clear(g_c), s				4.1	0.0	0.8	7.0	19.4	0.0	0.0	13.0	13.0
Prop In Lane				1.00		1.00	1.00		0.00	1.00		0.64
Lane Grp Cap(c), veh/h				151	0	130	213	511	0	841	1113	1046
V/C Ratio(X)				0.59	0.00	0.12	0.69	0.84	0.00	0.00	0.41	0.41
Avail Cap(c_a), veh/h				188	0	162	241	612	0	841	1113	1046
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.79	0.79
Uniform Delay (d), s/veh				40.7	0.0	38.4	38.1	31.1	0.0	0.0	10.3	10.3
Incr Delay (d2), s/veh				3.6	0.0	0.4	7.0	9.1	0.0	0.0	0.9	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.0	0.0	0.8	3.5	9.9	0.0	0.0	5.2	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				44.3	0.0	38.9	45.1	40.2	0.0	0.0	11.2	11.2
LnGrp LOS				D	A	D	D	D	A	A	B	B
Approach Vol, veh/h					105			579			895	
Approach Delay, s/veh					43.5			41.5			11.2	
Approach LOS					D			D			B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	4.6	61.0		11.2	47.4	28.2						
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	* 5.5						
Max Green Setting (Gmax), s	55.5	55.5		7.5	40.0	* 28						
Max Q Clear Time (g_c+19), s	15.0	15.0		6.1	0.0	21.4						
Green Ext Time (p_c), s	0.1	7.2		0.0	0.0	1.4						

### Intersection Summary

HCM 6th Ctrl Delay	24.5
HCM 6th LOS	C

### Notes

User approved ignoring U-Turning movement.

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

# HCM 6th Signalized Intersection Summary

## 4: 10th St & I-205 NB ramp

10/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↑	↗	↖	↑	
Traffic Volume (veh/h)	130	0	125	0	0	0	0	420	235	310	360	0
Future Volume (veh/h)	130	0	125	0	0	0	0	420	235	310	360	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1976	1976				0	1826	1900	1826	1900	0
Adj Flow Rate, veh/h	138	0	133				0	447	250	330	383	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0				0	5	0	5	0	0
Cap, veh/h	249	0	222				0	927	818	635	1376	0
Arrive On Green	0.11	0.00	0.13				0.00	0.51	0.51	0.14	0.72	0.00
Sat Flow, veh/h	1882	0	1675				0	1826	1610	1739	1900	0
Grp Volume(v), veh/h	138	0	133				0	447	250	330	383	0
Grp Sat Flow(s),veh/h/ln	1882	0	1675				0	1826	1610	1739	1900	0
Q Serve(g_s), s	3.9	0.0	4.2				0.0	8.9	5.0	4.1	3.9	0.0
Cycle Q Clear(g_c), s	3.9	0.0	4.2				0.0	8.9	5.0	4.1	3.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	249	0	222				0	927	818	635	1376	0
V/C Ratio(X)	0.55	0.00	0.60				0.00	0.48	0.31	0.52	0.28	0.00
Avail Cap(c_a), veh/h	506	0	450				0	1408	1242	1007	2283	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.1	0.0	22.8				0.0	8.9	8.0	5.3	2.7	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.6				0.0	1.8	1.0	0.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.5				0.0	3.3	1.6	0.9	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	0.0	24.4				0.0	10.7	9.0	5.7	3.2	0.0
LnGrp LOS	C	A	C				A	B	A	A	A	A
Approach Vol, veh/h		271						697			713	
Approach Delay, s/veh		24.4						10.1			4.3	
Approach LOS		C						B			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		44.4			12.1	32.3		11.4				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		66.0			19.0	42.0		14.0				
Max Q Clear Time (g_c+I1), s		5.9			6.1	10.9		6.2				
Green Ext Time (p_c), s		12.8			1.0	16.4		0.3				

### Intersection Summary

HCM 6th Ctrl Delay	10.0
HCM 6th LOS	A

### Notes

User approved pedestrian interval to be less than phase max green.

**Intersection**

Int Delay, s/veh 5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗	↘		↗		↘		↗	↘	
Traffic Vol, veh/h	0	0	15	55	0	160	0	495	80	140	250	95
Future Vol, veh/h	0	0	15	55	0	160	0	495	80	140	250	95
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	0	-	200	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	4	0	0	0	0	0	0	10	0	0
Mvmt Flow	0	0	16	60	0	176	0	544	88	154	275	104

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	330	1232	-	588	-	0	0	632	0	0
Stage 1	-	-	-	588	-	-	-	-	-	-	-	-
Stage 2	-	-	-	644	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.24	7.1	-	6.2	-	-	-	4.2	-	-
Critical Hdwy Stg 1	-	-	-	6.1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.336	3.5	-	3.3	-	-	-	2.29	-	-
Pot Cap-1 Maneuver	0	0	707	155	0	513	0	-	-	913	-	-
Stage 1	0	0	-	499	0	-	0	-	-	-	-	-
Stage 2	0	0	-	465	0	-	0	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	-	-	705	132	-	513	-	-	-	913	-	-
Mov Cap-2 Maneuver	-	-	-	132	-	-	-	-	-	-	-	-
Stage 1	-	-	-	499	-	-	-	-	-	-	-	-
Stage 2	-	-	-	377	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		25.3		0		2.8	
HCM LOS	B		D					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	-	-	705	132	513	913	-	-
HCM Lane V/C Ratio	-	-	0.023	0.458	0.343	0.169	-	-
HCM Control Delay (s)	-	-	10.2	53.5	15.6	9.7	-	-
HCM Lane LOS	-	-	B	F	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	2.1	1.5	0.6	-	-

# HCM 6th Signalized Intersection Summary

## 18: Willamette Falls Dr & 10th St

10/05/2020



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	435	240	265	140	75	245
Future Volume (veh/h)	435	240	265	140	75	245
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	478	264	291	154	82	49
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	589	1378	356	188	138	123
Arrive On Green	0.33	0.73	0.31	0.31	0.08	0.08
Sat Flow, veh/h	1795	1885	1160	614	1795	1598
Grp Volume(v), veh/h	478	264	0	445	82	49
Grp Sat Flow(s),veh/h/ln	1795	1885	0	1775	1795	1598
Q Serve(g_s), s	10.1	1.8	0.0	9.6	1.8	1.2
Cycle Q Clear(g_c), s	10.1	1.8	0.0	9.6	1.8	1.2
Prop In Lane	1.00			0.35	1.00	1.00
Lane Grp Cap(c), veh/h	589	1378	0	544	138	123
V/C Ratio(X)	0.81	0.19	0.00	0.82	0.60	0.40
Avail Cap(c_a), veh/h	1426	2994	0	1238	691	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.8	1.8	0.0	13.3	18.6	18.3
Incr Delay (d2), s/veh	2.8	0.1	0.0	1.2	4.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.2	0.0	3.4	0.8	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.5	1.8	0.0	14.5	22.6	20.4
LnGrp LOS	B	A	A	B	C	C
Approach Vol, veh/h		742	445		131	
Approach Delay, s/veh		10.7	14.5		21.8	
Approach LOS		B	B		C	
Timer - Assigned Phs		2		4		7
Phs Duration (G+Y+Rc), s		7.2		34.4		17.6
Change Period (Y+Rc), s		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		66.0		33.0
Max Q Clear Time (g_c+I1), s		3.8		3.8		12.1
Green Ext Time (p_c), s		0.3		1.8		1.6
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			13.1			
HCM 6th LOS			B			



Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	202	269	306	366	141	102
Average Queue (ft)	103	188	168	216	52	18
95th Queue (ft)	185	289	270	310	112	62
Link Distance (ft)	239	239		942	149	
Upstream Blk Time (%)	1	7			0	0
Queuing Penalty (veh)	2	25			2	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			1	13	1	0
Queuing Penalty (veh)			3	25	2	0

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	174	142	268	325	169	156	208
Average Queue (ft)	75	60	130	214	18	126	171
95th Queue (ft)	149	109	241	329	99	181	223
Link Distance (ft)	1070			269	198	149	149
Upstream Blk Time (%)			0	5	0	1	16
Queuing Penalty (veh)			0	29	3	3	73
Storage Bay Dist (ft)		275	300				
Storage Blk Time (%)			0	5			
Queuing Penalty (veh)			0	7			

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	EB	NB	NB	SB	SB	B17	B17
Directions Served	LT	R	T	R	L	T	T	
Maximum Queue (ft)	166	77	265	216	190	225	76	46
Average Queue (ft)	75	36	129	68	114	73	8	3
95th Queue (ft)	133	65	233	163	180	164	41	23
Link Distance (ft)	708	708	252			198	269	269
Upstream Blk Time (%)			1		0	0		
Queuing Penalty (veh)			3		0	3		
Storage Bay Dist (ft)				200	180			
Storage Blk Time (%)			2	0	1	0		
Queuing Penalty (veh)			4	0	2	1		

Queuing and Blocking Report  
 Alternative 1 - Signal Improvements

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	WB	WB	NB	SB	SB
Directions Served	R	L	R	TR	L	TR
Maximum Queue (ft)	53	102	107	85	148	31
Average Queue (ft)	13	34	43	7	51	2
95th Queue (ft)	44	72	82	42	110	31
Link Distance (ft)	990	485		204		252
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200		150	
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					1	0

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	274	447	453	105	157
Average Queue (ft)	192	98	214	39	59
95th Queue (ft)	293	291	407	82	115
Link Distance (ft)		2414	622		204
Upstream Blk Time (%)			1		0
Queuing Penalty (veh)			0		0
Storage Bay Dist (ft)	250			150	
Storage Blk Time (%)	4			0	0
Queuing Penalty (veh)	10			0	0

Zone Summary

Zone wide Queuing Penalty: 200

## **APPENDIX F. ALTERNATIVE 2 (YEAR 2042) HCM AND QUEUING REPORTS**

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# USER REPORT FOR SITE

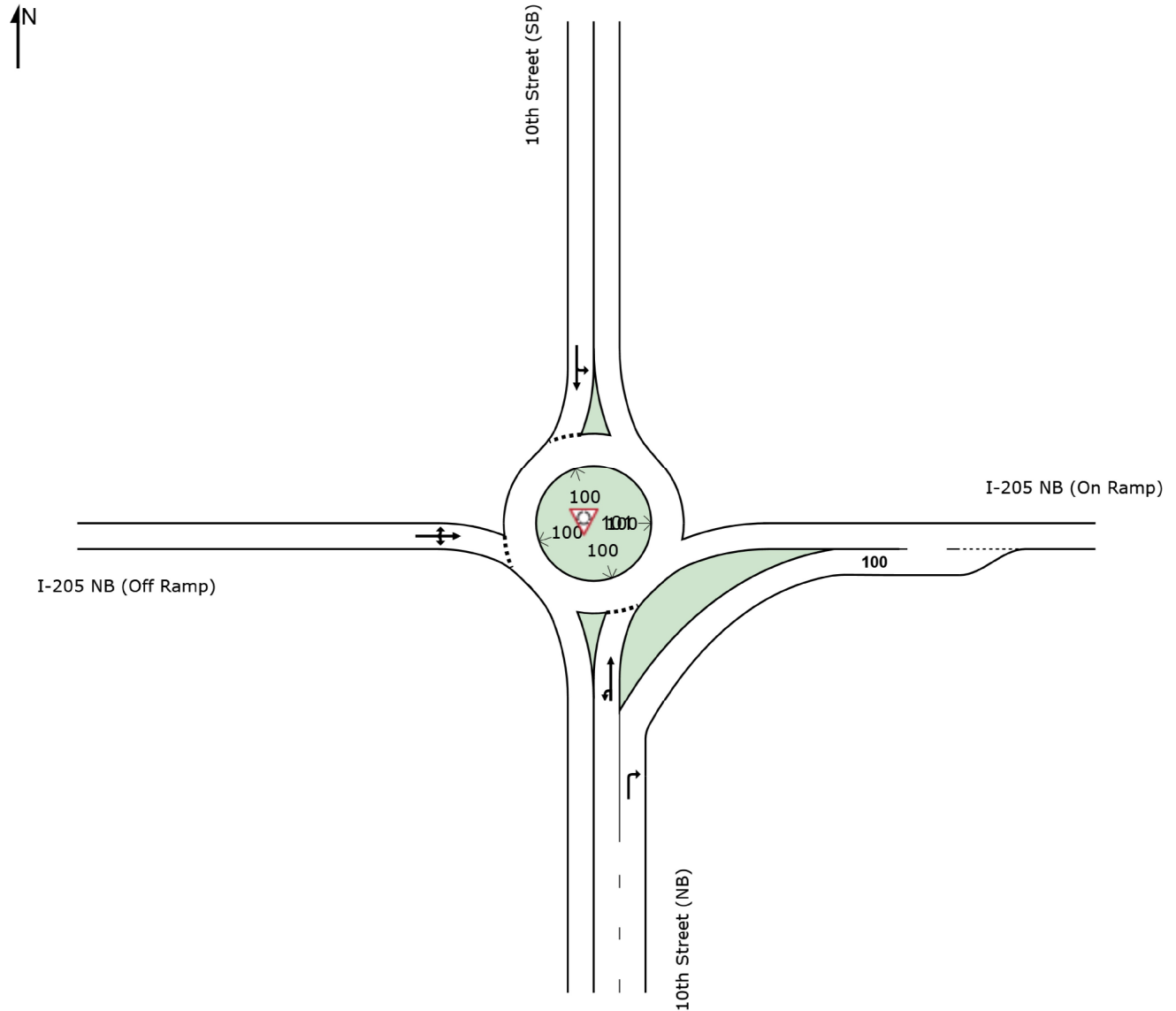
 Project: I-205 NB and 10th Street

Template: Default Site User Report

 Site: 101 [2042 PM - I-205 NB/10th Street]

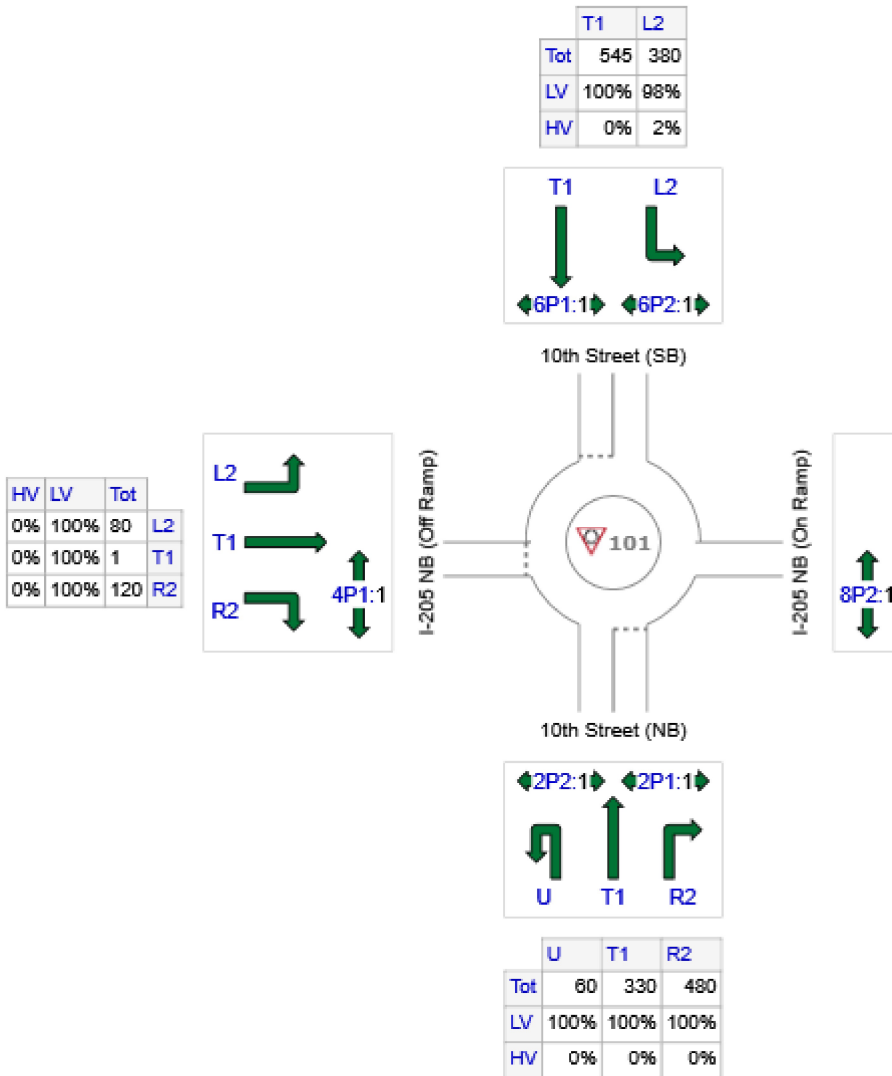
New Site  
Site Category: (None)  
Roundabout

## Site Layout



## Input Volumes

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: 10th Street (NB)	870	870	0
N: 10th Street (SB)	925	917	8
W: I-205 NB (Off Ramp)	201	201	0
Total	1996	1988	8

Lane Use and Performance													
	Demand	Flows		Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: 10th Street (NB)													
Lane 1 <sup>d</sup>	419	0.0	897	0.467	100	9.8	LOS A	3.0	75.3	Full	300	0.0	0.0
Lane 2	516	0.0	1675	0.308	100	0.0	LOS A	0.0	0.0	Full	300	0.0	0.0
Approach	935	0.0		0.467		4.4	LOS A	3.0	75.3				
North: 10th Street (SB)													
Lane 1 <sup>d</sup>	995	0.8	1281	0.776	100	15.6	LOS C	11.5	288.4	Full	500	0.0	0.0
Approach	995	0.8		0.776		15.6	LOS C	11.5	288.4				
West: I-205 NB (Off Ramp)													
Lane 1 <sup>d</sup>	216	0.0	465	0.465	100	16.6	LOS C	2.4	59.4	Full	1600	0.0	0.0
Approach	216	0.0		0.465		16.6	LOS C	2.4	59.4				
Intersection	2146	0.4		0.776		10.8	LOS B	11.5	288.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↘		↗	↘	
Traffic Vol, veh/h	0	0	60	0	0	195	0	665	75	85	430	175
Future Vol, veh/h	0	0	60	0	0	195	0	665	75	85	430	175
Conflicting Peds, #/hr	1	0	4	4	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	0	0	61	0	0	199	0	679	77	87	439	179

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	534	-	-	719	-	0	0	756	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.2	-	-	6.2	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	550	0	0	432	0	-	-	864	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	548	-	-	432	-	-	-	864	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		20.3		0		1.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	548	432	864	-	-
HCM Lane V/C Ratio	-	-	0.112	0.461	0.1	-	-
HCM Control Delay (s)	-	-	12.4	20.3	9.6	-	-
HCM Lane LOS	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.4	2.4	0.3	-	-

# USER REPORT FOR SITE

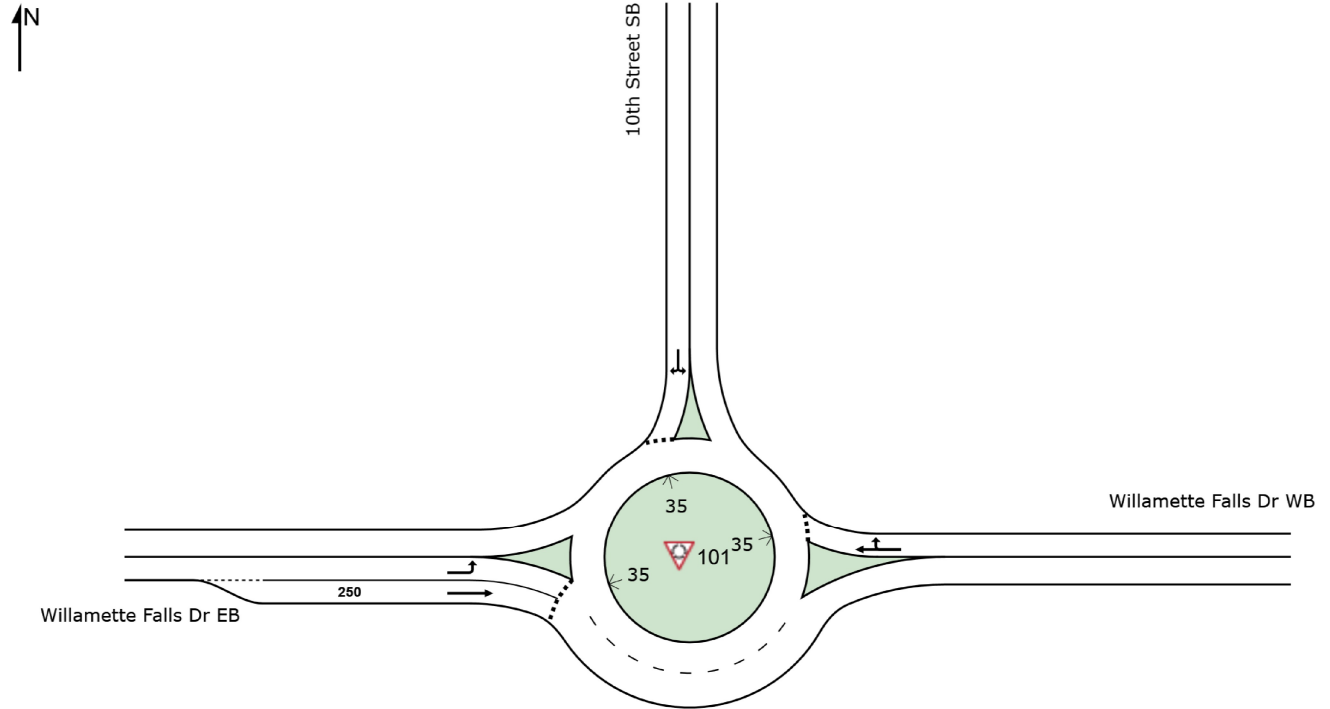
 Project: I-205 NB and 10th Street

Template: Default Site User Report

## Site: 101 [2042 PM - 10th Street/Willamette Falls -Multi]

2040 PM - 10th Street/Willamette Falls Dr  
Site Category: (None)  
Roundabout

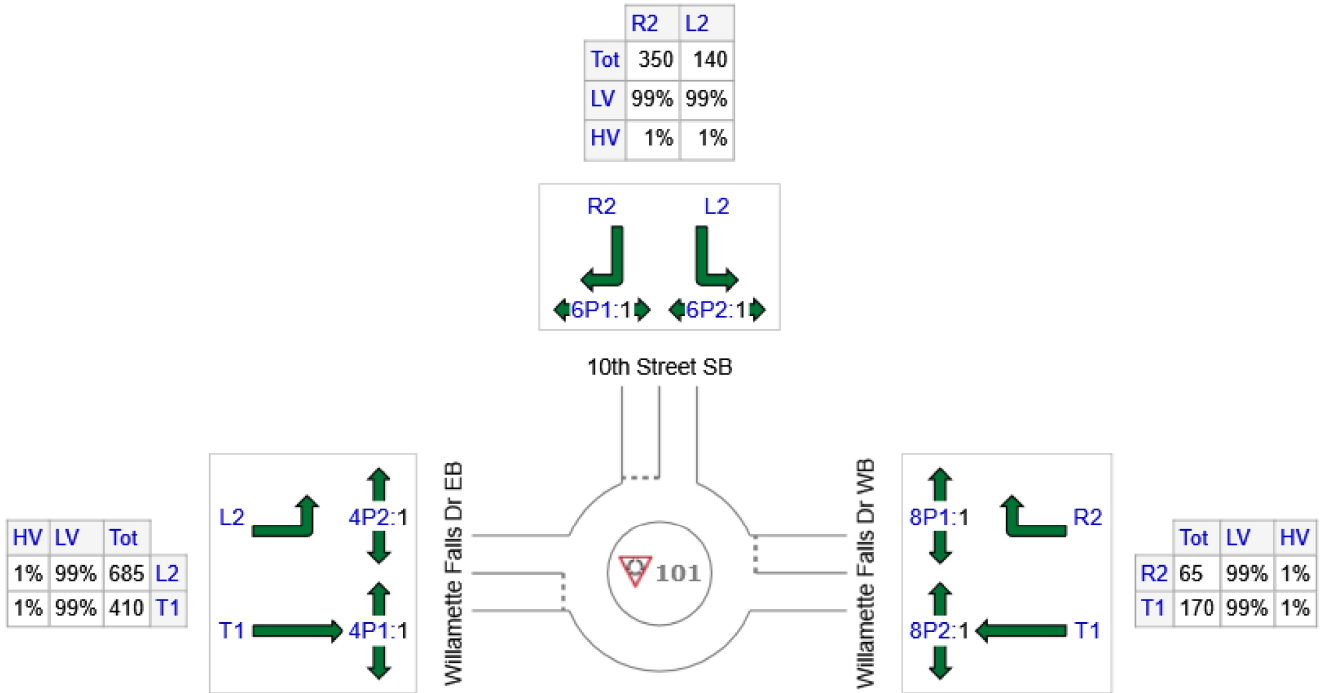
### Site Layout





# Input Volumes

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Willamette Falls Dr WB	235	233	2
N: 10th Street SB	490	485	5
W: Willamette Falls Dr EB	1095	1084	11
Total	1820	1802	18

Lane Use and Performance													
	Demand	Flows		Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
East: Willamette Falls Dr WB													
Lane 1 <sup>d</sup>	258	1.0	629	0.411	100	11.7	LOS B	2.2	54.8	Full	1600	0.0	0.0
Approach	258	1.0		0.411		11.7	LOS B	2.2	54.8				
North: 10th Street SB													
Lane 1 <sup>d</sup>	538	1.0	1127	0.478	100	8.5	LOS A	3.2	79.7	Full	1600	0.0	0.0
Approach	538	1.0		0.478		8.5	LOS A	3.2	79.7				
West: Willamette Falls Dr EB													
Lane 1 <sup>d</sup>	753	1.0	1219	0.617	100	10.7	LOS B	4.9	124.1	Full	1600	0.0	0.0
Lane 2	451	1.0	1219	0.370	100	6.5	LOS A	2.0	51.1	Short	250	0.0	NA
Approach	1203	1.0		0.617		9.1	LOS A	4.9	124.1				
Intersection	2000	1.0		0.617		9.3	LOS A	4.9	124.1				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

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Organisation: DKS ASSOCIATES | Created: Tuesday, November 3, 2020 2:13:43 PM

Project: C:\Users\kayla.fleskes\Desktop\Projects - WFH\West Linn\Synchro4\_2042\_RAB\I-205 NB and 10th Street.sip8

Queuing and Blocking Report  
 Alternative 2 - Roundabouts

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	152	272	314	408	164	142
Average Queue (ft)	55	190	192	243	94	46
95th Queue (ft)	113	298	310	358	164	123
Link Distance (ft)	239	239		942	149	
Upstream Blk Time (%)		9			1	0
Queuing Penalty (veh)		26			10	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			2	19	3	0
Queuing Penalty (veh)			6	38	9	1

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	318	274	151	279	26	148	214
Average Queue (ft)	157	122	81	173	1	130	172
95th Queue (ft)	287	234	138	263	14	183	224
Link Distance (ft)	1070		268	268	170	149	149
Upstream Blk Time (%)				1		1	18
Queuing Penalty (veh)				2		5	79
Storage Bay Dist (ft)		275					
Storage Blk Time (%)	3	0					
Queuing Penalty (veh)	11	1					

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	NB	NB	SB	B17	B17
Directions Served	LTR	T	R	LT	T	
Maximum Queue (ft)	316	218	177	15	156	79
Average Queue (ft)	112	107	16	1	47	23
95th Queue (ft)	268	199	110	13	114	67
Link Distance (ft)	689	236		170	268	268
Upstream Blk Time (%)		0	0			
Queuing Penalty (veh)		3	0			
Storage Bay Dist (ft)			200			
Storage Blk Time (%)		1	0			
Queuing Penalty (veh)		7	0			

Queuing and Blocking Report  
 Alternative 2 - Roundabouts

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	WB	NB	SB	SB
Directions Served	R	R	TR	L	TR
Maximum Queue (ft)	74	192	111	82	40
Average Queue (ft)	37	76	10	39	2
95th Queue (ft)	64	155	56	70	19
Link Distance (ft)	990	485	198		236
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			1		
Storage Bay Dist (ft)				150	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	275	1183	122	144
Average Queue (ft)	213	354	52	58
95th Queue (ft)	332	1118	98	115
Link Distance (ft)		2382	611	198
Upstream Blk Time (%)		1		0
Queuing Penalty (veh)		0		0
Storage Bay Dist (ft)	250			
Storage Blk Time (%)	25	0		
Queuing Penalty (veh)	104	1		

Zone Summary

Zone wide Queuing Penalty: 303
--------------------------------

# USER REPORT FOR SITE

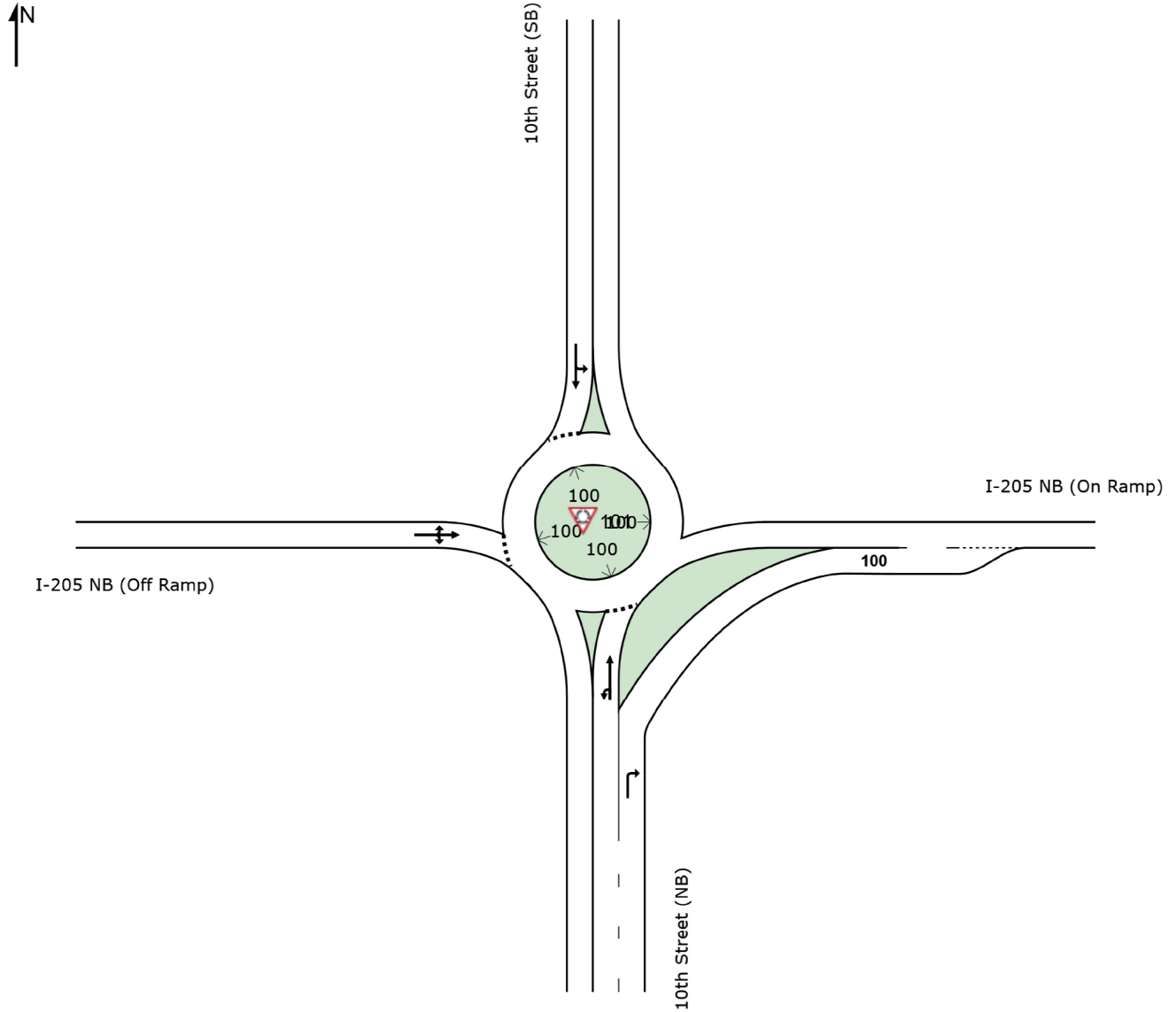
 Project: I-205 NB and 10th Street

Template: Default Site User Report

 Site: 101 [2042 AM - I-205 NB/10th Street]

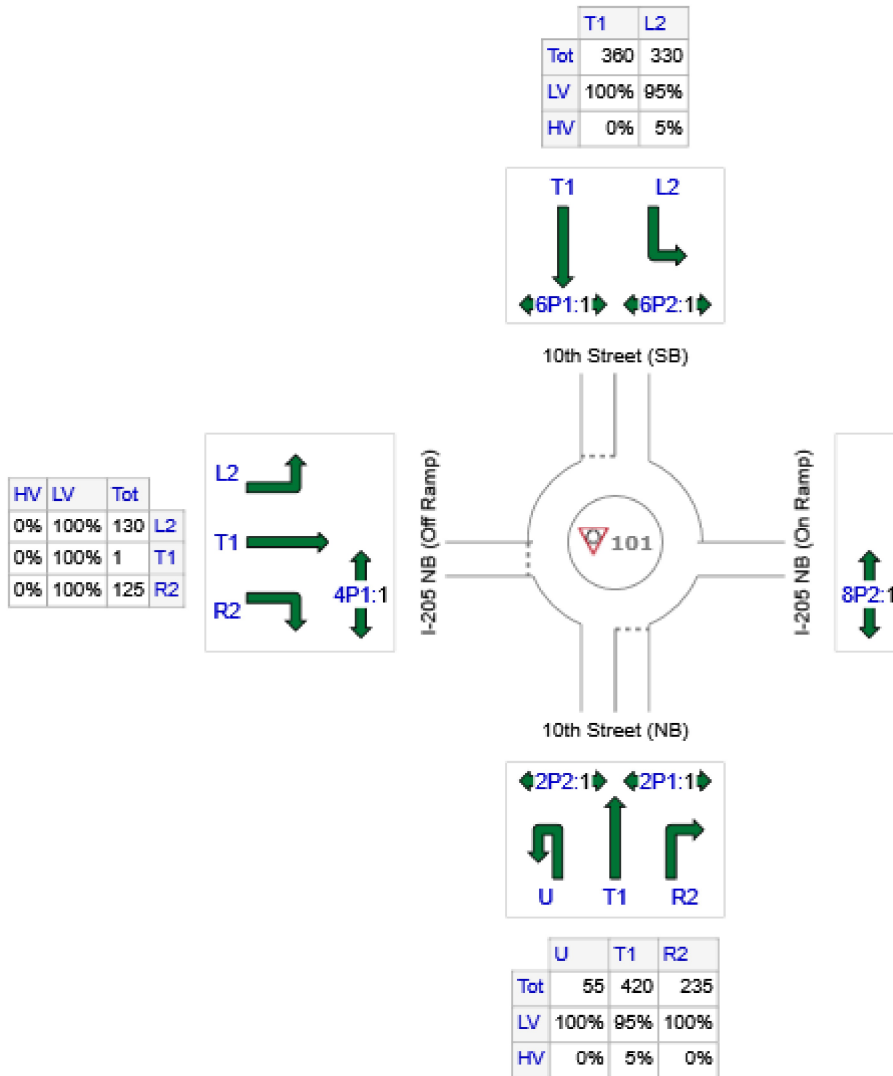
New Site  
Site Category: (None)  
Roundabout

## Site Layout



## Input Volumes

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: 10th Street (NB)	710	689	21
N: 10th Street (SB)	690	674	17
W: I-205 NB (Off Ramp)	256	256	0
Total	1656	1619	38

Lane Use and Performance													
	Demand	Flows		Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
South: 10th Street (NB)													
Lane 1 <sup>d</sup>	505	4.4	856	0.590	100	13.0	LOS B	5.1	130.8	Full	300	0.0	0.0
Lane 2	250	0.0	1675	0.149	100	0.0	LOS A	0.0	0.0	Full	300	0.0	0.0
Approach	755	3.0		0.590		8.7	LOS A	5.1	130.8				
North: 10th Street (SB)													
Lane 1 <sup>d</sup>	734	2.4	1269	0.578	100	9.5	LOS A	5.0	127.9	Full	500	0.0	0.0
Approach	734	2.4		0.578		9.5	LOS A	5.0	127.9				
West: I-205 NB (Off Ramp)													
Lane 1 <sup>d</sup>	272	0.0	604	0.451	100	13.0	LOS B	2.5	63.4	Full	1600	0.0	0.0
Approach	272	0.0		0.451		13.0	LOS B	2.5	63.4				
Intersection	1762	2.3		0.590		9.7	LOS A	5.1	130.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↖		↖	↖	
Traffic Vol, veh/h	0	0	15	0	0	215	0	495	80	140	295	105
Future Vol, veh/h	0	0	15	0	0	215	0	495	80	140	295	105
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	0	4	0	0	0	0	0	0	10	0	0
Mvmt Flow	0	0	16	0	0	236	0	544	88	154	324	115

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	-	-	385	-	-	588	-	0	0	632	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.24	-	-	6.2	-	-	-	4.2	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.336	-	-	3.3	-	-	-	2.29	-	-
Pot Cap-1 Maneuver	0	0	658	0	0	513	0	-	-	913	-	-
Stage 1	0	0	-	0	0	-	0	-	-	-	-	-
Stage 2	0	0	-	0	0	-	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	656	-	-	513	-	-	-	913	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	10.6		17.9		0			2.5		
HCM LOS	B		C							

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	656	513	913	-	-
HCM Lane V/C Ratio	-	-	0.025	0.461	0.169	-	-
HCM Control Delay (s)	-	-	10.6	17.9	9.7	-	-
HCM Lane LOS	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	2.4	0.6	-	-



# USER REPORT FOR SITE

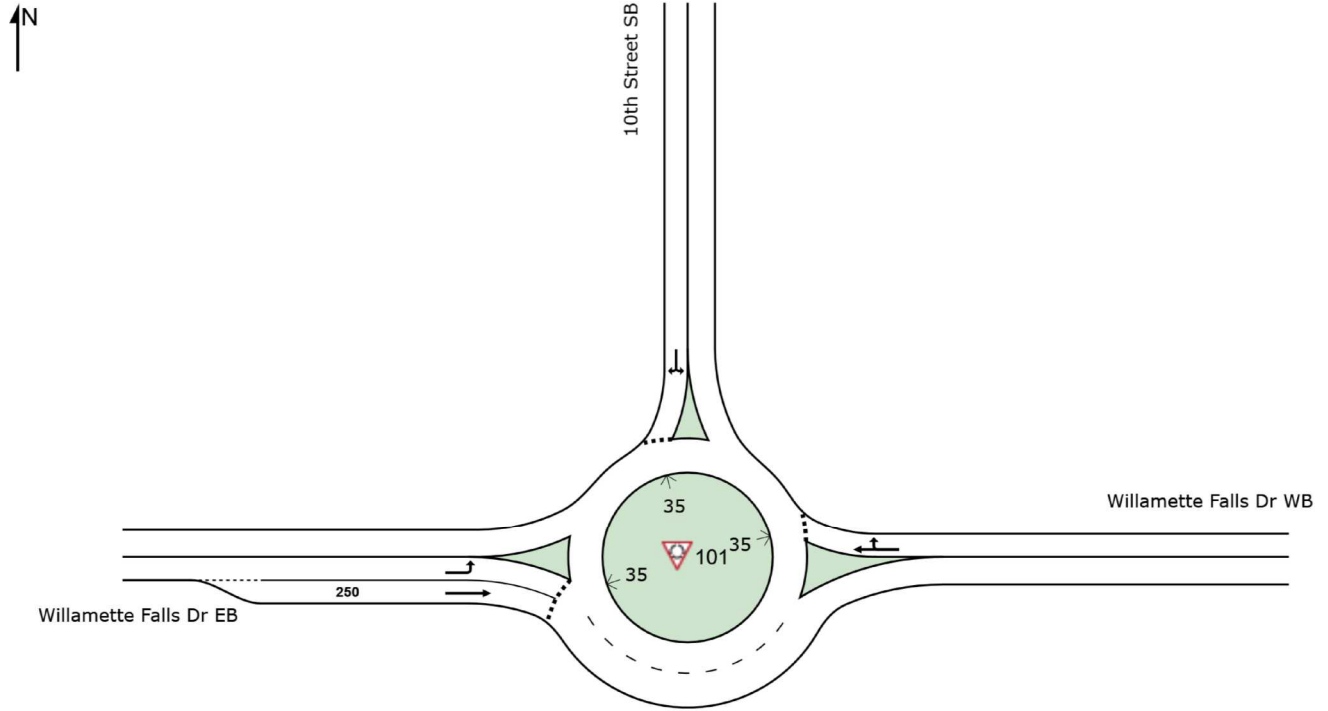
 Project: I-205 NB and 10th Street

Template: Default Site User Report

## Site: 101 [2042 AM - 10th Street/Willamette Falls -Multi]

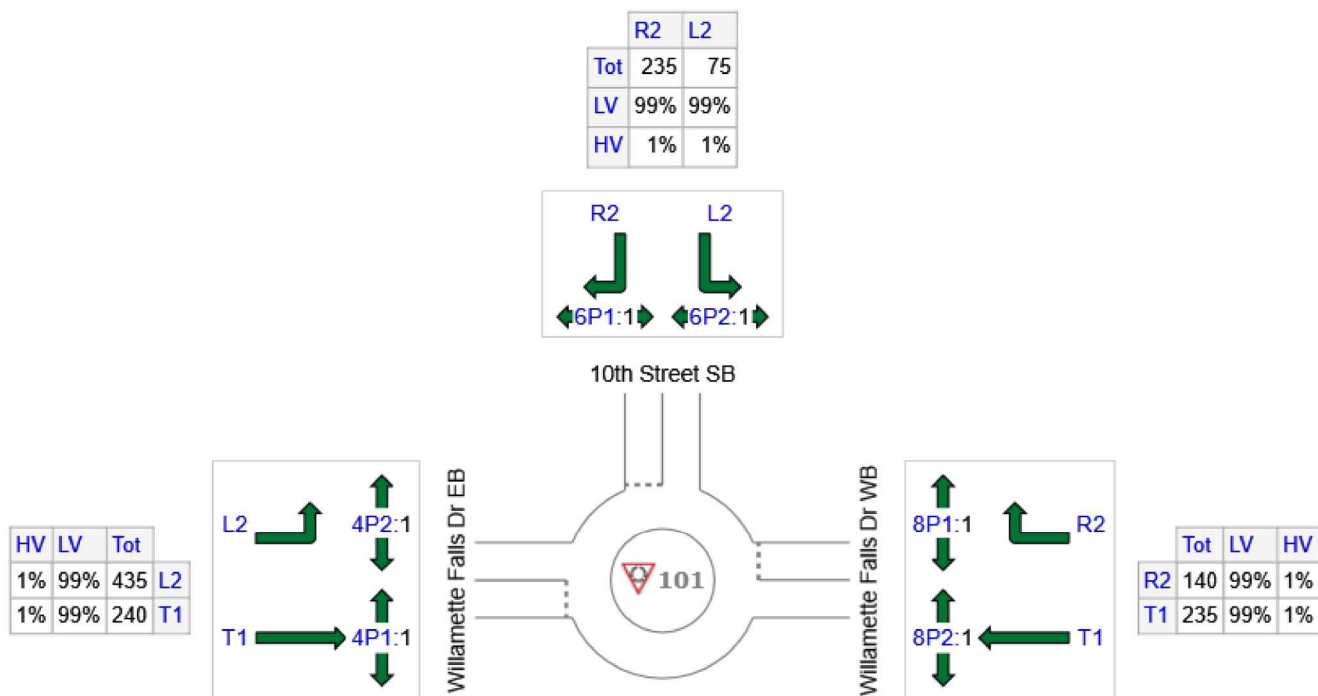
2040 PM - 10th Street/Willamette Falls Dr  
Site Category: (None)  
Roundabout

### Site Layout



## Input Volumes

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Willamette Falls Dr WB	375	371	4
N: 10th Street SB	310	307	3
W: Willamette Falls Dr EB	675	668	7
Total	1360	1346	14

Lane Use and Performance													
	Demand	Flows		Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			ft		ft	%	%
East: Willamette Falls Dr WB													
Lane 1 <sup>d</sup>	412	1.0	835	0.494	100	10.9	LOS B	3.5	88.4	Full	1600	0.0	0.0
Approach	412	1.0		0.494		10.9	LOS B	3.5	88.4				
North: 10th Street SB													
Lane 1 <sup>d</sup>	341	1.0	1047	0.325	100	6.7	LOS A	1.7	43.5	Full	1600	0.0	0.0
Approach	341	1.0		0.325		6.7	LOS A	1.7	43.5				
West: Willamette Falls Dr EB													
Lane 1 <sup>d</sup>	478	1.0	1302	0.367	100	6.2	LOS A	2.1	52.7	Full	1600	0.0	0.0
Lane 2	264	1.0	1302	0.203	100	4.5	LOS A	0.9	23.7	Short	250	0.0	NA
Approach	742	1.0		0.367		5.6	LOS A	2.1	52.7				
Intersection	1495	1.0		0.494		7.3	LOS A	3.5	88.4				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>d</sup> Dominant lane on roundabout approach

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Organisation: DKS ASSOCIATES | Created: Tuesday, November 3, 2020 2:15:07 PM

Project: C:\Users\kayla.fleskes\Desktop\Projects - WFH\West Linn\Synchro4\_2042\_RAB\I-205 NB and 10th Street.sip8

Queuing and Blocking Report  
 Alternative 2 - Roundabouts

11/02/2020

Intersection: 2: 10th St & Blankenship Rd/Salamo Rd

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	R	L	LT	L	R
Maximum Queue (ft)	205	274	284	346	140	94
Average Queue (ft)	107	236	158	211	51	21
95th Queue (ft)	186	307	266	304	112	64
Link Distance (ft)	239	239		942	149	
Upstream Blk Time (%)	0	24			0	0
Queuing Penalty (veh)	0	66			2	0
Storage Bay Dist (ft)			200			125
Storage Blk Time (%)			1	12	1	0
Queuing Penalty (veh)			2	22	2	0

Intersection: 3: 10th St & I-205 SB ramp

Movement	WB	WB	NB	NB	B17	B17	SB	SB
Directions Served	LT	R	L	T	T	T	T	TR
Maximum Queue (ft)	135	133	259	332	114	199	150	205
Average Queue (ft)	61	59	134	267	20	57	138	185
95th Queue (ft)	118	107	240	365	110	184	179	210
Link Distance (ft)	1070		268	268	170	170	149	149
Upstream Blk Time (%)			2	24	0	3	1	26
Queuing Penalty (veh)			7	73	0	10	5	119
Storage Bay Dist (ft)		275						
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 4: 10th St & I-205 NB ramp

Movement	EB	NB	NB	B17	B17
Directions Served	LTR	T	R	T	
Maximum Queue (ft)	239	257	225	127	65
Average Queue (ft)	95	169	83	27	14
95th Queue (ft)	193	282	260	81	52
Link Distance (ft)	689	236		268	268
Upstream Blk Time (%)		4	1		
Queuing Penalty (veh)		29	0		
Storage Bay Dist (ft)			200		
Storage Blk Time (%)		13	1		
Queuing Penalty (veh)		30	3		

Queuing and Blocking Report  
 Alternative 2 - Roundabouts

11/02/2020

Intersection: 5: 10th St & 8th Ave

Movement	EB	WB	NB	SB	SB
Directions Served	R	R	TR	L	TR
Maximum Queue (ft)	58	321	176	126	6
Average Queue (ft)	17	127	40	48	0
95th Queue (ft)	49	335	154	92	6
Link Distance (ft)	990	485	196		236
Upstream Blk Time (%)		4	2		
Queuing Penalty (veh)		0	12		
Storage Bay Dist (ft)				150	
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 18: Willamette Falls Dr & 10th St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	167	113	192	100
Average Queue (ft)	63	17	71	39
95th Queue (ft)	133	70	153	82
Link Distance (ft)		2379	609	196
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	1			

Zone Summary

Zone wide Queuing Penalty: 385