



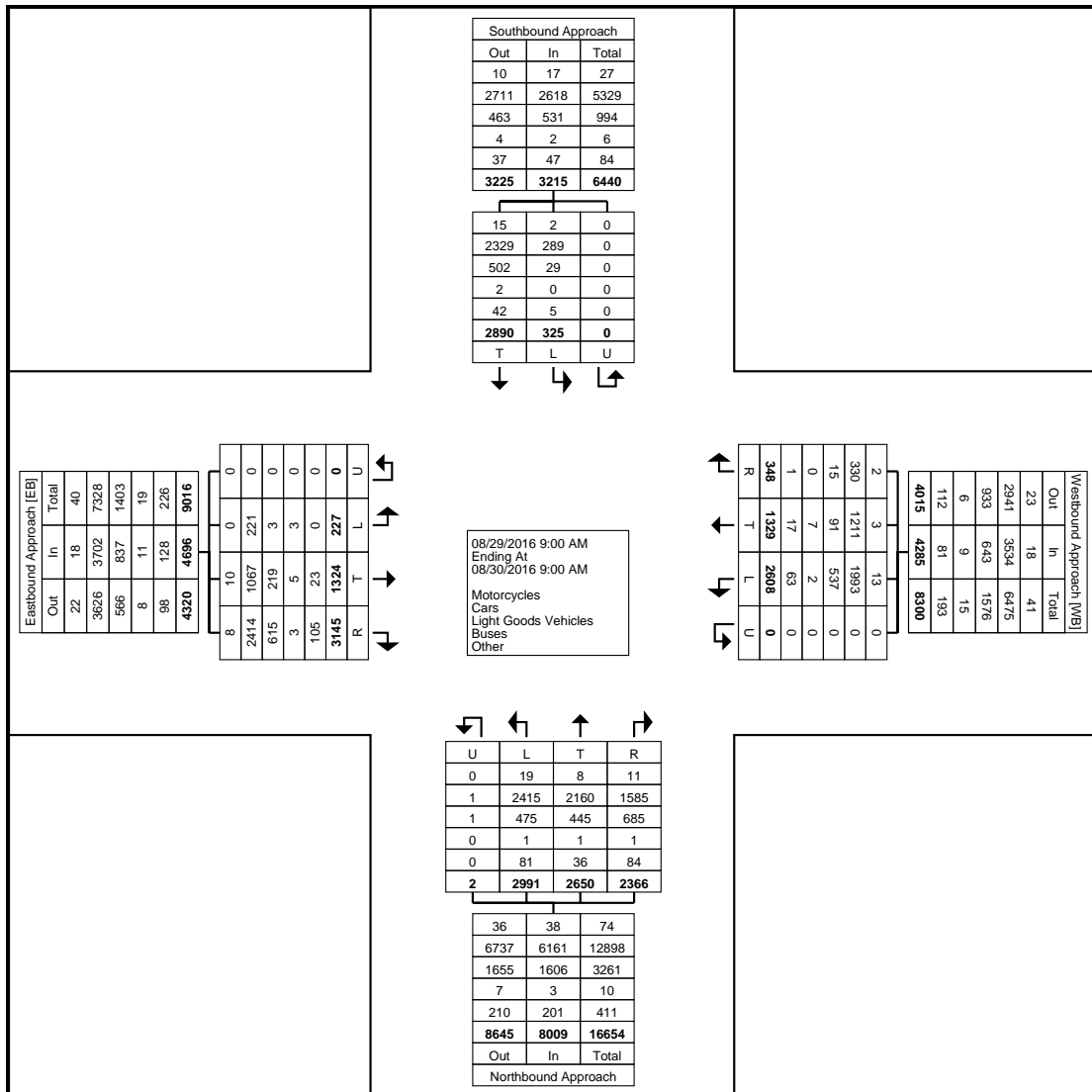
Appendix A

DATA COLLECTION

Turning Movement Data

Start Time	Northbound Approach					Southbound Approach				Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound				Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
9:00 AM	18	25	22	0	65	6	37	0	43	4	11	42	0	57	33	12	2	0	47	212
9:15 AM	22	14	36	1	73	2	32	0	34	4	13	42	0	59	36	13	5	0	54	220
9:30 AM	26	24	30	0	80	3	28	0	31	1	17	47	0	65	40	10	2	0	52	228
9:45 AM	28	33	33	0	94	7	40	0	47	1	20	42	0	63	29	9	2	0	40	244
Hourly Total	94	96	121	1	312	18	137	0	155	10	61	173	0	244	138	44	11	0	193	904
10:00 AM	18	21	37	1	77	6	38	0	44	5	13	34	0	52	32	16	7	0	55	228
10:15 AM	35	24	37	0	96	6	37	0	43	3	23	39	0	65	53	18	4	0	75	279
10:30 AM	39	27	30	0	96	5	39	0	44	3	14	36	0	53	52	21	4	0	77	270
10:45 AM	25	31	49	0	105	7	40	0	47	0	17	50	0	67	45	17	2	0	64	283
Hourly Total	117	103	153	1	374	24	154	0	178	11	67	159	0	237	182	72	17	0	271	1060
11:00 AM	36	22	47	0	105	3	34	0	37	1	16	40	0	57	44	14	3	0	61	260
11:15 AM	42	32	36	0	110	5	37	0	42	3	22	31	0	56	54	22	0	0	76	284
11:30 AM	40	37	39	0	116	7	35	0	42	2	21	53	0	76	37	27	4	0	68	302
11:45 AM	39	39	46	0	124	10	48	0	58	3	29	51	0	83	35	19	1	0	55	320
Hourly Total	157	130	168	0	455	25	154	0	179	9	88	175	0	272	170	82	8	0	260	1166
12:00 PM	60	38	53	0	151	4	72	0	76	0	17	57	0	74	58	17	2	0	77	378
12:15 PM	45	46	51	0	142	1	56	0	57	1	13	58	0	72	62	22	6	0	90	361
12:30 PM	53	55	55	0	163	9	48	0	57	2	24	58	0	84	65	20	6	0	91	395
12:45 PM	53	47	55	0	155	8	52	0	60	3	19	47	0	69	43	13	13	0	69	353
Hourly Total	211	186	214	0	611	22	228	0	250	6	73	220	0	299	228	72	27	0	327	1487
1:00 PM	39	45	46	0	130	4	43	0	47	1	27	51	0	79	58	18	3	0	79	335
1:15 PM	50	33	50	0	133	7	47	0	54	5	19	36	0	60	58	26	3	0	87	334
1:30 PM	63	48	42	0	153	7	32	0	39	2	26	48	0	76	44	26	4	0	74	342
1:45 PM	48	40	43	0	131	6	44	0	50	2	26	46	0	74	44	24	5	0	73	328
Hourly Total	200	166	181	0	547	24	166	0	190	10	98	181	0	289	204	94	15	0	313	1339
2:00 PM	57	33	40	0	130	13	43	0	56	3	28	44	0	75	53	28	8	0	89	350
2:15 PM	41	40	48	0	129	6	40	0	46	4	23	47	0	74	45	23	3	0	71	320
2:30 PM	49	28	34	0	111	7	39	0	46	3	31	56	0	90	45	32	4	0	81	328
2:45 PM	61	44	57	0	162	4	38	0	42	4	27	46	0	77	46	21	13	0	80	361
Hourly Total	208	145	179	0	532	30	160	0	190	14	109	193	0	316	189	104	28	0	321	1359
3:00 PM	52	38	37	0	127	7	36	0	43	2	14	60	0	76	60	19	8	0	87	333
3:15 PM	56	46	53	0	155	7	41	0	48	0	26	54	0	80	44	31	8	0	83	366
3:30 PM	53	52	50	0	155	9	38	0	47	5	32	40	0	77	39	34	11	0	84	363
3:45 PM	73	42	46	0	161	3	31	0	34	3	27	49	0	79	64	34	9	0	107	381
Hourly Total	234	178	186	0	598	26	146	0	172	10	99	203	0	312	207	118	36	0	361	1443
4:00 PM	77	42	52	0	171	5	56	0	61	0	24	37	0	61	80	29	7	0	116	409
4:15 PM	75	63	55	0	193	1	55	0	56	5	13	38	0	56	45	27	5	0	77	382
4:30 PM	79	61	46	0	186	4	46	0	50	6	39	41	0	86	53	37	6	0	96	418
4:45 PM	93	55	56	0	204	5	31	0	36	5	17	50	0	72	63	36	10	0	109	421
Hourly Total	324	221	209	0	754	15	188	0	203	16	93	166	0	275	241	129	28	0	398	1630
5:00 PM	85	58	46	0	189	5	41	0	46	5	28	44	0	77	51	54	7	0	112	424
5:15 PM	97	84	45	0	226	8	39	0	47	6	31	49	0	86	29	52	12	0	93	452
5:30 PM	90	84	24	0	198	5	40	0	45	12	16	46	0	74	39	38	12	0	89	406
5:45 PM	74	124	47	0	245	4	39	0	43	24	26	40	0	90	41	40	19	0	100	478
Hourly Total	346	350	162	0	858	22	159	0	181	47	101	179	0	327	160	184	50	0	394	1760
6:00 PM	82	86	48	0	216	4	45	0	49	15	19	41	0	75	47	30	15	0	92	432
6:15 PM	85	78	35	0	198	5	48	0	53	9	21	29	0	59	41	32	4	0	77	387
6:30 PM	68	66	46	0	180	8	76	0	84	6	19	35	0	60	60	35	8	0	103	427
6:45 PM	80	46	31	0	157	6	66	0	72	3	11	35	0	49	41	18	5	0	64	342
Hourly Total	315	276	160	0	751	23	235	0	258	33	70	140	0	243	189	115	32	0	336	1588
7:00 PM	59	49	28	0	136	8	79	0	87	1	19	33	0	53	29	27	10	0	66	342
7:15 PM	33	37	24	0	94	7	36	0	43	3	13	30	0	46	29	26	1	0	56	239
7:30 PM	46	34	43	0	123	4	51	0	55	1	12	40	0	53	34	23	3	0	60	291
7:45 PM	46	45	19	0	110	3	40	0	43	4	13	29	0	46	21	17	7	0	45	244
Hourly Total	184	165	114	0	463	22	206	0	228	9	57	132	0	198	113	93	21	0	227	1116
8:00 PM	43	44	20	0	107	2	24	0	26	1	6	28	0	35	27	13	4	0	44	212
8:15 PM	41	37	17	0	95	6	20	0	26	1	15	19	0	35	28	14	6	0	48	204
8:30 PM	42	32	18	0	92	2	14	0	16	1	4	26	0	31	27	13	5	0	45	184
8:45 PM	36	37	15	0	88	5	23	0	28	3	7	21	0	31	10	6	1	0	17	164
Hourly Total	162	150	70	0	382	15	81	0	96	6	32	94	0	132	92	46	16	0	154	764
9:00 PM	16	26	9	0	51	1	14	0	15	2	9	15	0	26	14	7	3	0	24	116
9:15 PM	27	25	12	0	64	1	9	0	10	3	9	9	0	21	14	9	1	0	24	119
9:30 PM	26	27	13	0	66	1	11	0	12	2	6	15	0	23	19	4	1	0	24	125
9:45 PM	18	14	13	0	45	0	15	0	15	2	3	16	0	21	21	11	1	0	33	114
Hourly Total	87	92	47	0	226	3	49	0	52	9	27	55	0	91	68	31	6	0	105	474

10:00 PM	21	14	2	0	37	1	6	0	7	1	5	9	0	15	12	5	3	0	20	79
10:15 PM	14	15	8	0	37	0	11	0	11	0	5	8	0	13	5	5	1	0	11	72
10:30 PM	14	11	3	0	28	1	4	0	5	0	5	4	0	9	5	6	1	0	12	54
10:45 PM	13	9	6	0	28	1	6	0	7	2	3	6	0	11	5	2	3	0	10	56
Hourly Total	62	49	19	0	130	3	27	0	30	3	18	27	0	48	27	18	8	0	53	261
11:00 PM	15	8	1	0	24	0	4	0	4	0	0	3	0	3	6	1	2	0	9	40
11:15 PM	5	5	1	0	11	0	5	0	5	0	1	2	0	3	4	2	0	0	6	25
11:30 PM	4	5	2	0	11	0	7	0	7	0	1	4	0	5	3	0	2	0	5	28
11:45 PM	6	7	4	0	17	0	5	0	5	0	1	1	0	2	1	1	1	0	3	27
Hourly Total	30	25	8	0	63	0	21	0	21	0	3	10	0	13	14	4	5	0	23	120
12:00 AM	2	10	5	0	17	0	2	0	2	2	0	2	0	4	1	3	0	0	4	27
12:15 AM	2	5	3	0	10	1	3	0	4	0	2	2	0	4	3	3	0	0	6	24
12:30 AM	4	6	3	0	13	0	3	0	3	1	0	1	0	2	2	0	2	0	4	22
12:45 AM	2	5	0	0	7	0	1	0	1	1	0	1	0	2	2	0	0	0	2	12
Hourly Total	10	26	11	0	47	1	9	0	10	4	2	6	0	12	8	6	2	0	16	85
1:00 AM	4	2	3	0	9	1	0	0	1	0	1	1	0	2	0	0	0	0	0	12
1:15 AM	2	4	1	0	7	0	0	0	0	0	0	0	0	0	2	1	0	0	3	10
1:30 AM	3	0	1	0	4	0	1	0	1	0	1	3	0	4	2	0	0	0	2	11
1:45 AM	1	3	1	0	5	0	2	0	2	0	0	0	0	0	1	0	1	0	2	9
Hourly Total	10	9	6	0	25	1	3	0	4	0	2	4	0	6	5	1	1	0	7	42
2:00 AM	1	3	0	0	4	0	5	0	5	0	0	3	0	3	3	1	0	0	4	16
2:15 AM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	3	1	0	0	4	6
2:30 AM	0	0	0	0	0	0	2	0	2	0	1	1	0	2	0	0	0	0	0	4
2:45 AM	4	3	0	0	7	0	1	0	1	1	0	1	0	2	2	0	0	0	2	12
Hourly Total	6	7	0	0	13	0	8	0	8	1	1	5	0	7	8	2	0	0	10	38
3:00 AM	1	1	1	0	3	0	2	0	2	0	2	1	0	3	0	1	0	0	1	9
3:15 AM	3	0	2	0	5	0	2	0	2	0	0	0	0	0	1	1	0	0	2	9
3:30 AM	1	2	1	0	4	0	4	0	4	0	4	3	0	7	1	0	0	0	1	16
3:45 AM	1	1	0	0	2	0	3	0	3	0	1	2	0	3	3	0	0	0	3	11
Hourly Total	6	4	4	0	14	0	11	0	11	0	7	6	0	13	5	2	0	0	7	45
4:00 AM	1	2	0	0	3	0	3	0	3	0	0	3	0	3	1	0	0	0	1	10
4:15 AM	0	0	1	0	1	0	6	0	6	0	2	4	0	6	1	1	1	0	3	16
4:30 AM	1	0	2	0	3	0	5	0	5	0	2	8	0	10	5	0	0	0	5	23
4:45 AM	2	2	3	0	7	1	6	0	7	1	3	8	0	12	2	0	0	0	2	28
Hourly Total	4	4	6	0	14	1	20	0	21	1	7	23	0	31	9	1	1	0	11	77
5:00 AM	1	1	2	0	4	1	8	0	9	1	3	15	0	19	5	1	0	0	6	38
5:15 AM	3	6	1	0	10	2	19	0	21	2	3	20	0	25	9	3	0	0	12	68
5:30 AM	7	5	4	0	16	1	32	0	33	2	7	47	0	56	9	5	0	0	14	119
5:45 AM	11	8	5	0	24	3	30	0	33	2	8	42	0	52	9	4	1	0	14	123
Hourly Total	22	20	12	0	54	7	89	0	96	7	21	124	0	152	32	13	1	0	46	348
6:00 AM	10	2	6	0	18	3	30	0	33	2	16	43	0	61	17	6	0	0	23	135
6:15 AM	8	4	6	0	18	2	39	0	41	0	15	54	0	69	19	1	0	0	20	148
6:30 AM	4	7	25	0	36	2	58	0	60	1	24	77	0	102	31	4	2	0	37	235
6:45 AM	18	29	22	0	69	2	71	0	73	3	21	79	0	103	21	4	2	0	27	272
Hourly Total	40	42	59	0	141	9	198	0	207	6	76	253	0	335	88	15	4	0	107	790
7:00 AM	14	16	16	0	46	3	62	0	65	0	17	57	0	74	23	5	4	0	32	217
7:15 AM	17	22	29	0	68	5	68	0	73	0	31	98	0	129	21	9	1	0	31	301
7:30 AM	19	36	31	0	86	10	76	0	86	3	40	102	0	145	26	15	6	0	47	364
7:45 AM	22	43	70	0	135	1	66	0	67	1	32	104	0	137	29	10	9	0	48	387
Hourly Total	72	117	146	0	335	19	272	0	291	4	120	361	0	485	99	39	20	0	158	1269
8:00 AM	24	33	41	0	98	1	44	0	45	4	20	75	0	99	25	14	2	0	41	283
8:15 AM	20	18	28	0	66	5	45	0	50	2	26	61	0	89	35	13	3	0	51	256
8:30 AM	18	18	33	0	69	5	45	0	50	2	27	65	0	94	40	6	3	0	49	262
8:45 AM	28	20	29	0	77	4	35	0	39	3	19	55	0	77	32	11	3	0	46	239
Hourly Total	90	89	131	0	310	15	169	0	184	11	92	256	0	359	132	44	11	0	187	1040
Grand Total	2991	2650	2366	2	8009	325	2890	0	3215	227	1324	3145	0	4696	2608	1329	348	0	4285	20205
Approach %	37.3	33.1	29.5	0.0	-	10.1	89.9	0.0	-	4.8	28.2	67.0	0.0	-	60.9	31.0	8.1	0.0	-	-
Total %	14.8	13.1	11.7	0.0	39.6	1.6	14.3	0.0	15.9	1.1	6.6	15.6	0.0	23.2	12.9	6.6	1.7	0.0	21.2	-
Motorcycles	19	8	11	0	38	2	15	0	17	0	10	8	0	18	13	3	2	0	18	91
% Motorcycles	0.6	0.3	0.5	0.0	0.5	0.6	0.5	-	0.5	0.0	0.8	0.3	-	0.4	0.5	0.2	0.6	-	0.4	0.5
Cars	2415	2160	1585	1	6161	289	2329	0	2618	221	1067	2414	0	3702	1993	1211	330	0	3534	16015
% Cars	80.7	81.5	67.0	50.0	76.9	88.9	80.6	-	81.4	97.4	80.6	76.8	-	78.8	76.4	91.1	94.8	-	82.5	79.3
Light Goods Vehicles	475	445	685	1	1606	29	502	0	531	3	219	615	0	837	537	91	15	0	643	3617
% Light Goods Vehicles	15.9	16.8	29.0	50.0	20.1	8.9	17.4	-	16.5	1.3	16.5	19.6	-	17.8	20.6	6.8	4.3	-	15.0	17.9
Buses	1	1	1	0	3	0	2	0	2	3	5	3	0	11	2	7	0	0	9	25
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-	0.1	1.3	0.4	0.1	-	0.2	0.1	0.5	0.0	-	0.2	0.1
Single-Unit Trucks	56	32	48	0	136	5	32	0	37	0	18	71	0	89	39	15	1	0	55	317
% Single-Unit Trucks	1.9	1.2	2.0	0.0	1.7	1.5	1.1	-	1.2	0.0	1.4	2.3	-	1.9	1.5	1.1	0.3	-	1.3	1.6
Articulated Trucks	25	1	31	0	57	0	4	0	4	0	5	34	0	39	22	2	0	0	24	124
% Articulated Trucks	0.8	0.0	1.3	0.0	0.7	0.0	0.1	-	0.1	0.0	0.4	1.1	-	0.8	0.8	0.2	0.0	-	0.6	0.6
Bicycles on Road	0	3	5	0	8	0	6	0	6	0	0	0	0	0	2	0	0	0	2	16
% Bicycles on Road	0.0	0.1	0.2	0.0	0.1	0.0	0.2	-	0.2	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	-	0.0	0.1



Turning Movement Data Plot

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Northbound Approach					Southbound Approach				Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound				Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
12:00 PM	60	38	53	0	151	4	72	0	76	0	17	57	0	74	58	17	2	0	77	378
12:15 PM	45	46	51	0	142	1	56	0	57	1	13	58	0	72	62	22	6	0	90	361
12:30 PM	53	55	55	0	163	9	48	0	57	2	24	58	0	84	65	20	6	0	91	395
12:45 PM	53	47	55	0	155	8	52	0	60	3	19	47	0	69	43	13	13	0	69	353
Total	211	186	214	0	611	22	228	0	250	6	73	220	0	299	228	72	27	0	327	1487
Approach %	34.5	30.4	35.0	0.0	-	8.8	91.2	0.0	-	2.0	24.4	73.6	0.0	-	69.7	22.0	8.3	0.0	-	-
Total %	14.2	12.5	14.4	0.0	41.1	1.5	15.3	0.0	16.8	0.4	4.9	14.8	0.0	20.1	15.3	4.8	1.8	0.0	22.0	-
PHF	0.879	0.845	0.973	0.000	0.937	0.611	0.792	0.000	0.822	0.500	0.760	0.948	0.000	0.890	0.877	0.818	0.519	0.000	0.898	0.941
Motorcycles	5	1	0	0	6	1	1	0	2	0	1	1	0	2	2	0	1	0	3	13
% Motorcycles	2.4	0.5	0.0	-	1.0	4.5	0.4	-	0.8	0.0	1.4	0.5	-	0.7	0.9	0.0	3.7	-	0.9	0.9
Cars	158	159	137	0	454	18	183	0	201	6	49	159	0	214	150	66	24	0	240	1109
% Cars	74.9	85.5	64.0	-	74.3	81.8	80.3	-	80.4	100.0	67.1	72.3	-	71.6	65.8	91.7	88.9	-	73.4	74.6
Light Goods Vehicles	43	19	66	0	128	2	44	0	46	0	20	47	0	67	67	5	2	0	74	315
% Light Goods Vehicles	20.4	10.2	30.8	-	20.9	9.1	19.3	-	18.4	0.0	27.4	21.4	-	22.4	29.4	6.9	7.4	-	22.6	21.2
Buses	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	1.4	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	2	7	9	0	18	1	0	0	1	0	2	9	0	11	3	1	0	0	4	34
% Single-Unit Trucks	0.9	3.8	4.2	-	2.9	4.5	0.0	-	0.4	0.0	2.7	4.1	-	3.7	1.3	1.4	0.0	-	1.2	2.3
Articulated Trucks	3	0	2	0	5	0	0	0	0	0	0	4	0	4	6	0	0	0	6	15
% Articulated Trucks	1.4	0.0	0.9	-	0.8	0.0	0.0	-	0.0	0.0	0.0	1.8	-	1.3	2.6	0.0	0.0	-	1.8	1.0
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Northbound Approach					Southbound Approach				Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound				Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
5:00 PM	85	58	46	0	189	5	41	0	46	5	28	44	0	77	51	54	7	0	112	424
5:15 PM	97	84	45	0	226	8	39	0	47	6	31	49	0	86	29	52	12	0	93	452
5:30 PM	90	84	24	0	198	5	40	0	45	12	16	46	0	74	39	38	12	0	89	406
5:45 PM	74	124	47	0	245	4	39	0	43	24	26	40	0	90	41	40	19	0	100	478
Total	346	350	162	0	858	22	159	0	181	47	101	179	0	327	160	184	50	0	394	1760
Approach %	40.3	40.8	18.9	0.0	-	12.2	87.8	0.0	-	14.4	30.9	54.7	0.0	-	40.6	46.7	12.7	0.0	-	-
Total %	19.7	19.9	9.2	0.0	48.8	1.3	9.0	0.0	10.3	2.7	5.7	10.2	0.0	18.6	9.1	10.5	2.8	0.0	22.4	-
PHF	0.892	0.706	0.862	0.000	0.876	0.688	0.970	0.000	0.963	0.490	0.815	0.913	0.000	0.908	0.784	0.852	0.658	0.000	0.879	0.921
Motorcycles	1	0	1	0	2	0	1	0	1	0	0	0	0	0	2	1	0	0	3	6
% Motorcycles	0.3	0.0	0.6	-	0.2	0.0	0.6	-	0.6	0.0	0.0	0.0	-	0.0	1.3	0.5	0.0	-	0.8	0.3
Cars	325	267	116	0	708	21	140	0	161	47	95	169	0	311	145	168	48	0	361	1541
% Cars	93.9	76.3	71.6	-	82.5	95.5	88.1	-	89.0	100.0	94.1	94.4	-	95.1	90.6	91.3	96.0	-	91.6	87.6
Light Goods Vehicles	18	78	43	0	139	1	16	0	17	0	6	5	0	11	11	15	2	0	28	195
% Light Goods Vehicles	5.2	22.3	26.5	-	16.2	4.5	10.1	-	9.4	0.0	5.9	2.8	-	3.4	6.9	8.2	4.0	-	7.1	11.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	2	2	0	0	4	0	2	0	2	0	0	4	0	4	2	0	0	0	2	12
% Single-Unit Trucks	0.6	0.6	0.0	-	0.5	0.0	1.3	-	1.1	0.0	0.0	2.2	-	1.2	1.3	0.0	0.0	-	0.5	0.7
Articulated Trucks	0	1	2	0	3	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
% Articulated Trucks	0.0	0.3	1.2	-	0.3	0.0	0.0	-	0.0	0.0	0.0	0.6	-	0.3	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Bicycles on Road	0.0	0.6	0.0	-	0.2	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.1

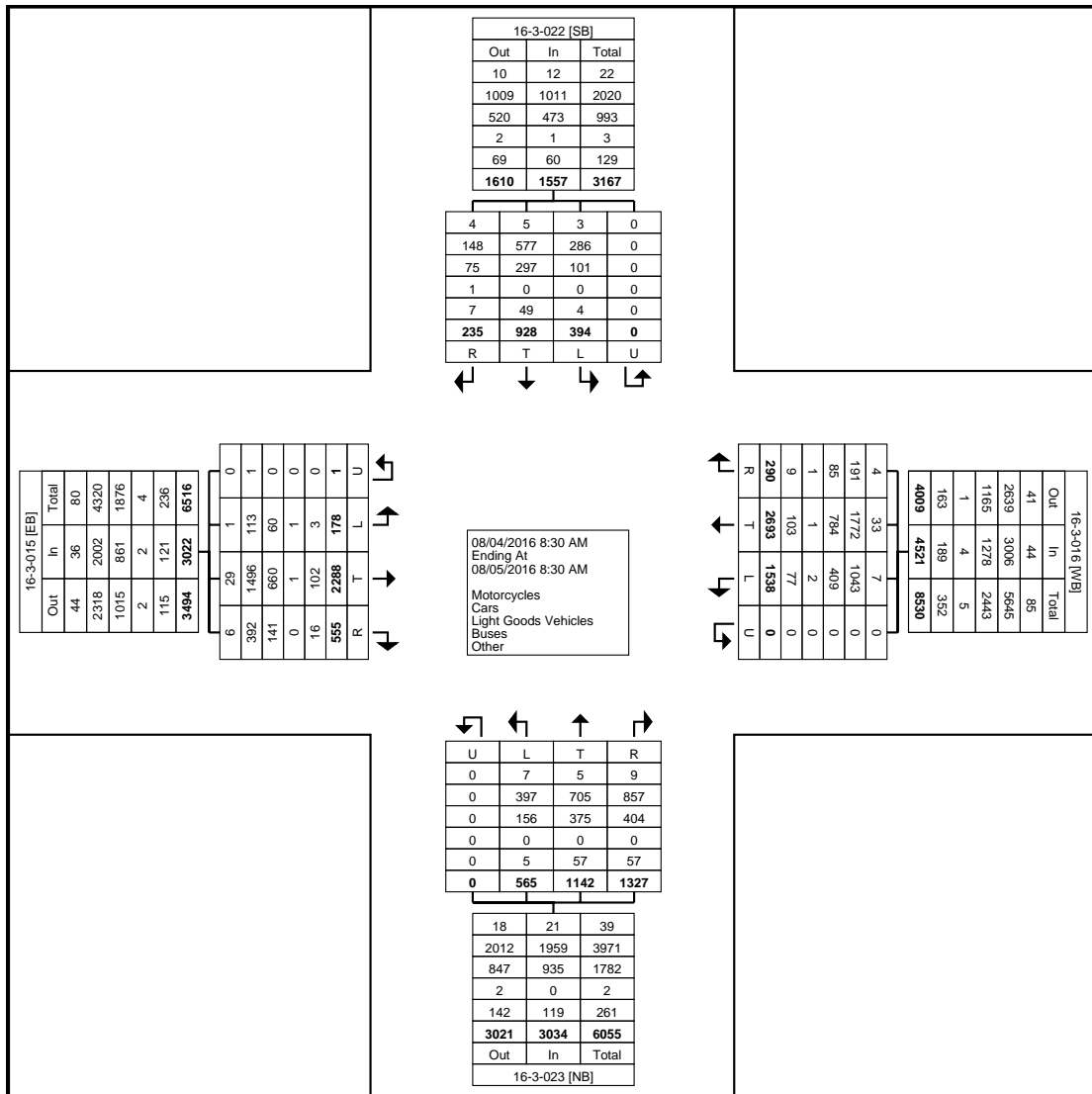
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Northbound Approach					Southbound Approach				Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound				Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:15 AM	17	22	29	0	68	5	68	0	73	0	31	98	0	129	21	9	1	0	31	301
7:30 AM	19	36	31	0	86	10	76	0	86	3	40	102	0	145	26	15	6	0	47	364
7:45 AM	22	43	70	0	135	1	66	0	67	1	32	104	0	137	29	10	9	0	48	387
8:00 AM	24	33	41	0	98	1	44	0	45	4	20	75	0	99	25	14	2	0	41	283
Total	82	134	171	0	387	17	254	0	271	8	123	379	0	510	101	48	18	0	167	1335
Approach %	21.2	34.6	44.2	0.0	-	6.3	93.7	0.0	-	1.6	24.1	74.3	0.0	-	60.5	28.7	10.8	0.0	-	-
Total %	6.1	10.0	12.8	0.0	29.0	1.3	19.0	0.0	20.3	0.6	9.2	28.4	0.0	38.2	7.6	3.6	1.3	0.0	12.5	-
PHF	0.854	0.779	0.611	0.000	0.717	0.425	0.836	0.000	0.788	0.500	0.769	0.911	0.000	0.879	0.871	0.800	0.500	0.000	0.870	0.862
Motorcycles	0	0	0	0	0	1	2	0	3	0	2	1	0	3	0	0	0	0	0	6
% Motorcycles	0.0	0.0	0.0	-	0.0	5.9	0.8	-	1.1	0.0	1.6	0.3	-	0.6	0.0	0.0	0.0	-	0.0	0.4
Cars	70	101	116	0	287	14	186	0	200	7	103	300	0	410	71	36	18	0	125	1022
% Cars	85.4	75.4	67.8	-	74.2	82.4	73.2	-	73.8	87.5	83.7	79.2	-	80.4	70.3	75.0	100.0	-	74.9	76.6
Light Goods Vehicles	10	31	46	0	87	2	62	0	64	1	18	76	0	95	27	11	0	0	38	284
% Light Goods Vehicles	12.2	23.1	26.9	-	22.5	11.8	24.4	-	23.6	12.5	14.6	20.1	-	18.6	26.7	22.9	0.0	-	22.8	21.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	2	5	0	8	0	1	0	1	0	0	0	0	0	3	1	0	0	4	13
% Single-Unit Trucks	1.2	1.5	2.9	-	2.1	0.0	0.4	-	0.4	0.0	0.0	0.0	-	0.0	3.0	2.1	0.0	-	2.4	1.0
Articulated Trucks	1	0	4	0	5	0	1	0	1	0	0	2	0	2	0	0	0	0	0	8
% Articulated Trucks	1.2	0.0	2.3	-	1.3	0.0	0.4	-	0.4	0.0	0.0	0.5	-	0.4	0.0	0.0	0.0	-	0.0	0.6
Bicycles on Road	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.8	-	0.7	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.1

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417 mdttc@mt.gov

Count Name: Jackrabbit and E
Main Belgrade
Site Code:
Start Date: 08/29/2016
Page No: 7



Turning Movement Data Plot

Location: 45.776226, -
111.177134

Turning Movement Peak Hour Data (11:45 AM)

Start Time	16-3-023 Northbound					16-3-022 Southbound					16-3-015 Eastbound					16-3-016 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
11:45 AM	10	20	28	0	58	10	18	5	0	33	5	39	17	0	61	34	47	9	0	90	242
12:00 PM	12	18	30	0	60	10	25	9	0	44	3	40	11	0	54	31	45	10	0	86	244
12:15 PM	16	22	28	0	66	13	18	3	0	34	5	37	12	0	54	27	39	7	0	73	227
12:30 PM	15	19	29	0	63	9	25	9	0	43	2	41	17	0	60	28	41	7	0	76	242
Total	53	79	115	0	247	42	86	26	0	154	15	157	57	0	229	120	172	33	0	325	955
Approach %	21.5	32.0	46.6	0.0	-	27.3	55.8	16.9	0.0	-	6.6	68.6	24.9	0.0	-	36.9	52.9	10.2	0.0	-	-
Total %	5.5	8.3	12.0	0.0	25.9	4.4	9.0	2.7	0.0	16.1	1.6	16.4	6.0	0.0	24.0	12.6	18.0	3.5	0.0	34.0	-
PHF	0.828	0.898	0.958	0.000	0.936	0.808	0.860	0.722	0.000	0.875	0.750	0.957	0.838	0.000	0.939	0.882	0.915	0.825	0.000	0.903	0.978
Motorcycles	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	1	0	1	0	2	5
% Motorcycles	0.0	0.0	0.9	-	0.4	0.0	1.2	0.0	-	0.6	0.0	0.0	1.8	-	0.4	0.8	0.0	3.0	-	0.6	0.5
Cars	35	49	84	0	168	36	54	15	0	105	8	106	39	0	153	66	117	20	0	203	629
% Cars	66.0	62.0	73.0	-	68.0	85.7	62.8	57.7	-	68.2	53.3	67.5	68.4	-	66.8	55.0	68.0	60.6	-	62.5	65.9
Light Goods Vehicles	18	22	25	0	65	6	27	9	0	42	7	44	17	0	68	43	46	12	0	101	276
% Light Goods Vehicles	34.0	27.8	21.7	-	26.3	14.3	31.4	34.6	-	27.3	46.7	28.0	29.8	-	29.7	35.8	26.7	36.4	-	31.1	28.9
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	5	5	0	10	0	0	2	0	2	0	4	0	0	4	5	7	0	0	12	28
% Single-Unit Trucks	0.0	6.3	4.3	-	4.0	0.0	0.0	7.7	-	1.3	0.0	2.5	0.0	-	1.7	4.2	4.1	0.0	-	3.7	2.9
Articulated Trucks	0	3	0	0	3	0	4	0	0	4	0	3	0	0	3	5	2	0	0	7	17
% Articulated Trucks	0.0	3.8	0.0	-	1.2	0.0	4.7	0.0	-	2.6	0.0	1.9	0.0	-	1.3	4.2	1.2	0.0	-	2.2	1.8

Location: 45.776226, -
111.177134

Turning Movement Peak Hour Data (4:30 PM)

Start Time	16-3-023 Northbound					16-3-022 Southbound					16-3-015 Eastbound					16-3-016 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
4:30 PM	16	21	34	0	71	14	20	9	0	43	3	47	17	0	67	25	64	8	0	97	278
4:45 PM	9	17	17	0	43	11	18	0	0	29	2	40	11	0	53	38	84	3	0	125	250
5:00 PM	15	24	32	0	71	12	18	8	0	38	2	50	12	0	64	24	67	4	0	95	268
5:15 PM	18	29	29	0	76	8	21	2	0	31	3	50	15	0	68	24	78	2	0	104	279
Total	58	91	112	0	261	45	77	19	0	141	10	187	55	0	252	111	293	17	0	421	1075
Approach %	22.2	34.9	42.9	0.0	-	31.9	54.6	13.5	0.0	-	4.0	74.2	21.8	0.0	-	26.4	69.6	4.0	0.0	-	-
Total %	5.4	8.5	10.4	0.0	24.3	4.2	7.2	1.8	0.0	13.1	0.9	17.4	5.1	0.0	23.4	10.3	27.3	1.6	0.0	39.2	-
PHF	0.806	0.784	0.824	0.000	0.859	0.804	0.917	0.528	0.000	0.820	0.833	0.935	0.809	0.000	0.926	0.730	0.872	0.531	0.000	0.842	0.963
Motorcycles	2	2	2	0	6	2	1	0	0	3	0	3	0	0	3	1	2	0	0	3	15
% Motorcycles	3.4	2.2	1.8	-	2.3	4.4	1.3	0.0	-	2.1	0.0	1.6	0.0	-	1.2	0.9	0.7	0.0	-	0.7	1.4
Cars	38	59	74	0	171	27	51	15	0	93	7	123	40	0	170	89	191	13	0	293	727
% Cars	65.5	64.8	66.1	-	65.5	60.0	66.2	78.9	-	66.0	70.0	65.8	72.7	-	67.5	80.2	65.2	76.5	-	69.6	67.6
Light Goods Vehicles	18	28	34	0	80	15	22	3	0	40	3	59	15	0	77	18	87	4	0	109	306
% Light Goods Vehicles	31.0	30.8	30.4	-	30.7	33.3	28.6	15.8	-	28.4	30.0	31.6	27.3	-	30.6	16.2	29.7	23.5	-	25.9	28.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	1	2	0	3	1	2	1	0	4	0	2	0	0	2	2	12	0	0	14	23
% Single-Unit Trucks	0.0	1.1	1.8	-	1.1	2.2	2.6	5.3	-	2.8	0.0	1.1	0.0	-	0.8	1.8	4.1	0.0	-	3.3	2.1
Articulated Trucks	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	4
% Articulated Trucks	0.0	1.1	0.0	-	0.4	0.0	1.3	0.0	-	0.7	0.0	0.0	0.0	-	0.0	0.9	0.3	0.0	-	0.5	0.4

Location: 45.776226, -
111.177134

Turning Movement Peak Hour Data (7:15 AM)

Start Time	16-3-023 Northbound					16-3-022 Southbound					16-3-015 Eastbound					16-3-016 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:15 AM	4	17	16	0	37	5	12	0	0	17	3	46	1	0	50	16	23	4	0	43	147
7:30 AM	9	15	10	0	34	9	14	3	0	26	1	46	3	0	50	16	14	3	0	33	143
7:45 AM	9	18	16	0	43	7	10	5	0	22	2	39	4	0	45	18	24	6	0	48	158
8:00 AM	5	13	18	0	36	2	9	3	0	14	4	36	5	0	45	21	21	4	0	46	141
Total	27	63	60	0	150	23	45	11	0	79	10	167	13	0	190	71	82	17	0	170	589
Approach %	18.0	42.0	40.0	0.0	-	29.1	57.0	13.9	0.0	-	5.3	87.9	6.8	0.0	-	41.8	48.2	10.0	0.0	-	-
Total %	4.6	10.7	10.2	0.0	25.5	3.9	7.6	1.9	0.0	13.4	1.7	28.4	2.2	0.0	32.3	12.1	13.9	2.9	0.0	28.9	-
PHF	0.750	0.875	0.833	0.000	0.872	0.639	0.804	0.550	0.000	0.760	0.625	0.908	0.650	0.000	0.950	0.845	0.854	0.708	0.000	0.885	0.932
Motorcycles	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	3
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	4.4	0.0	-	2.5	0.0	0.6	0.0	-	0.5	0.0	0.0	0.0	-	0.0	0.5
Cars	22	40	33	0	95	20	29	6	0	55	6	106	11	0	123	37	56	12	0	105	378
% Cars	81.5	63.5	55.0	-	63.3	87.0	64.4	54.5	-	69.6	60.0	63.5	84.6	-	64.7	52.1	68.3	70.6	-	61.8	64.2
Light Goods Vehicles	5	22	22	0	49	3	12	5	0	20	4	53	2	0	59	28	23	5	0	56	184
% Light Goods Vehicles	18.5	34.9	36.7	-	32.7	13.0	26.7	45.5	-	25.3	40.0	31.7	15.4	-	31.1	39.4	28.0	29.4	-	32.9	31.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	2	0	2	0	0	0	0	0	0	3	0	0	3	3	2	0	0	5	10
% Single-Unit Trucks	0.0	0.0	3.3	-	1.3	0.0	0.0	0.0	-	0.0	0.0	1.8	0.0	-	1.6	4.2	2.4	0.0	-	2.9	1.7
Articulated Trucks	0	1	3	0	4	0	2	0	0	2	0	4	0	0	4	3	1	0	0	4	14
% Articulated Trucks	0.0	1.6	5.0	-	2.7	0.0	4.4	0.0	-	2.5	0.0	2.4	0.0	-	2.1	4.2	1.2	0.0	-	2.4	2.4

Location: 45.776226, -
111.177134

Montana Department of Transportation
2701 Prospect

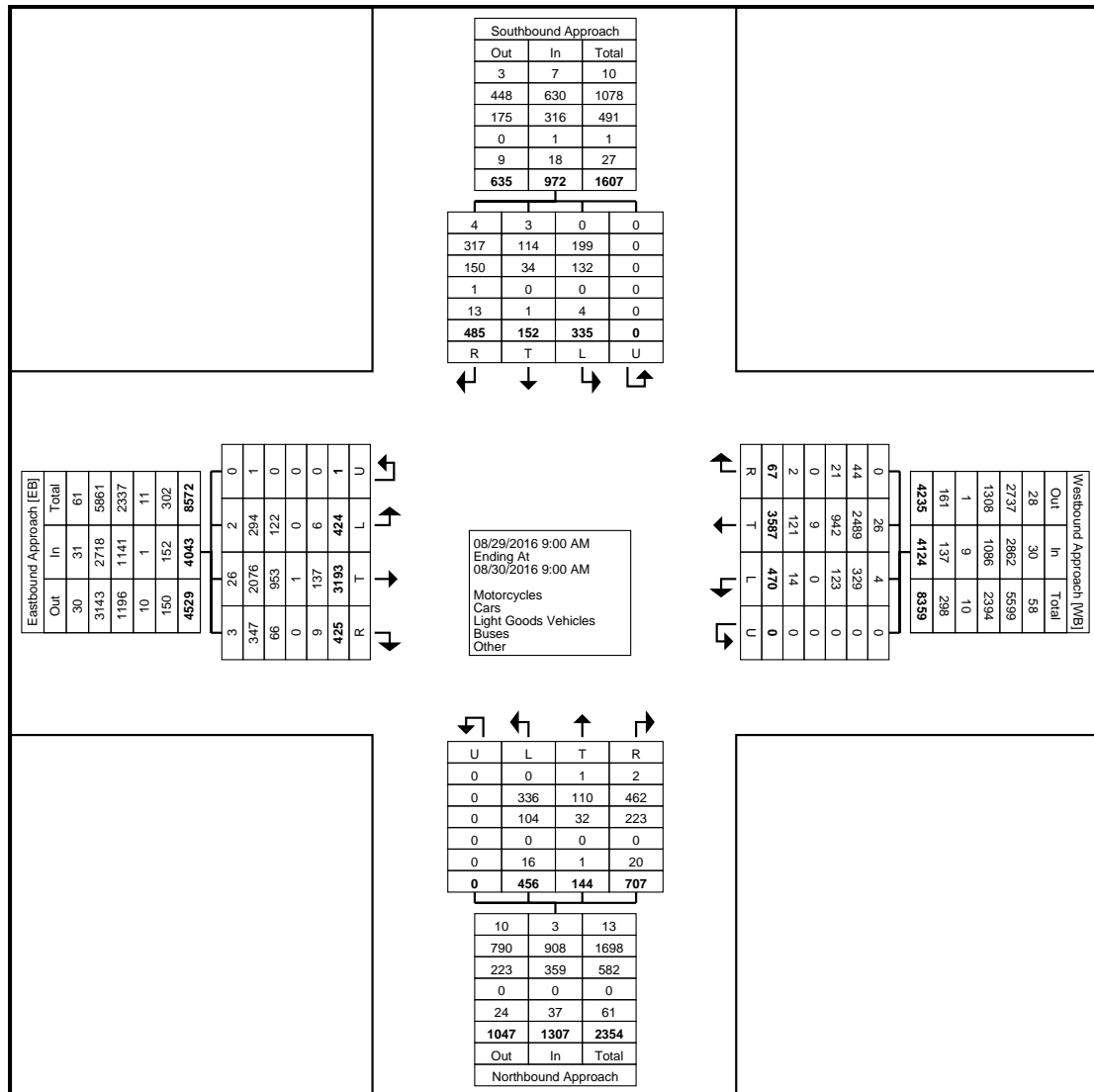
Helena, Montana, United States 59620
406-444-9417

Count Name:
Belgrade_Main_Broadway
(Gallatin)
Site Code:
Start Date: 08/04/2016
Page No: 7

Turning Movement Data

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound				App. Total	Southbound				App. Total	Eastbound				App. Total	Westbound				App. Total	
	Left	Thru	Right	U-Turn		Left	Thru	Right	U-Turn		Left	Thru	Right	U-Turn		Left	Thru	Right	U-Turn		
9:00 AM	4	5	7	0	16	8	1	3	0	12	4	37	2	0	43	1	32	1	0	34	105
9:15 AM	5	5	13	0	23	5	3	3	0	11	5	34	2	0	41	1	31	0	0	32	107
9:30 AM	5	0	8	0	13	4	3	9	0	16	8	59	3	0	70	7	51	0	0	58	157
9:45 AM	3	1	7	0	11	4	0	5	0	9	7	48	6	0	61	7	57	0	0	64	145
Hourly Total	17	11	35	0	63	21	7	20	0	48	24	178	13	0	215	16	171	1	0	188	514
10:00 AM	5	1	11	0	17	3	3	10	0	16	11	35	4	0	50	7	58	0	0	65	148
10:15 AM	3	1	12	0	16	4	2	7	0	13	4	64	4	0	72	9	68	0	0	77	178
10:30 AM	3	2	13	0	18	7	2	8	0	17	5	50	3	0	58	8	52	0	0	60	153
10:45 AM	5	1	8	0	14	7	1	8	0	16	6	58	8	0	72	6	44	0	0	50	152
Hourly Total	16	5	44	0	65	21	8	33	0	62	26	207	19	0	252	30	222	0	0	252	631
11:00 AM	8	2	15	0	25	4	3	8	0	15	4	62	5	0	71	4	54	1	0	59	170
11:15 AM	9	0	12	0	21	8	1	5	0	14	5	51	4	0	60	1	52	1	0	54	149
11:30 AM	5	1	16	0	22	2	1	9	0	12	4	58	8	0	70	9	58	2	0	69	173
11:45 AM	7	2	11	0	20	6	1	7	0	14	9	41	6	0	56	9	78	3	0	90	180
Hourly Total	29	5	54	0	88	20	6	29	0	55	22	212	23	0	257	23	242	7	0	272	672
12:00 PM	6	0	6	0	12	3	0	9	0	12	4	75	10	0	89	10	58	1	0	69	182
12:15 PM	5	2	14	0	21	4	3	9	0	16	11	55	12	1	79	8	60	0	0	68	184
12:30 PM	11	1	17	0	29	8	2	4	0	14	7	81	7	0	95	13	71	1	0	85	223
12:45 PM	12	0	12	0	24	6	1	7	0	14	8	70	4	0	82	8	81	0	0	89	209
Hourly Total	34	3	49	0	86	21	6	29	0	56	30	281	33	1	345	39	270	2	0	311	798
1:00 PM	4	0	20	0	24	3	1	8	0	12	8	62	8	0	78	14	65	2	0	81	195
1:15 PM	2	1	4	0	7	4	0	8	0	12	4	53	9	0	66	12	82	2	0	96	181
1:30 PM	3	3	12	0	18	3	3	12	0	18	3	64	7	0	74	13	71	0	0	84	194
1:45 PM	8	1	16	0	25	2	2	10	0	14	2	50	4	0	56	10	67	1	0	78	173
Hourly Total	17	5	52	0	74	12	6	38	0	56	17	229	28	0	274	49	285	5	0	339	743
2:00 PM	7	1	10	0	18	4	0	12	0	16	6	47	8	0	61	5	67	3	0	75	170
2:15 PM	7	2	14	0	23	2	1	6	0	9	1	50	4	0	55	10	58	0	0	68	155
2:30 PM	4	0	10	0	14	4	2	6	0	12	5	56	7	0	68	5	69	2	0	76	170
2:45 PM	12	4	9	0	25	5	0	7	0	12	7	41	7	0	55	4	64	1	0	69	161
Hourly Total	30	7	43	0	80	15	3	31	0	49	19	194	26	0	239	24	258	6	0	288	656
3:00 PM	4	3	6	0	13	4	2	7	0	13	3	49	8	0	60	9	61	2	0	72	158
3:15 PM	10	1	10	0	21	4	5	5	0	14	2	52	5	0	59	5	75	1	0	81	175
3:30 PM	7	0	14	0	21	3	7	13	0	23	9	48	12	0	69	11	81	5	0	97	210
3:45 PM	11	2	13	0	26	3	2	17	0	22	6	55	7	0	68	6	77	1	0	84	200
Hourly Total	32	6	43	0	81	14	16	42	0	72	20	204	32	0	256	31	294	9	0	334	743
4:00 PM	5	3	12	0	20	1	1	9	0	11	2	67	7	0	76	7	75	3	0	85	192
4:15 PM	6	1	16	0	23	3	4	11	0	18	11	63	9	0	83	9	74	5	0	88	212
4:30 PM	6	0	15	0	21	7	0	10	0	17	13	68	8	0	89	10	76	3	0	89	216
4:45 PM	9	2	14	0	25	0	2	8	0	10	4	49	15	0	68	13	106	2	0	121	224
Hourly Total	26	6	57	0	89	11	7	38	0	56	30	247	39	0	316	39	331	13	0	383	844
5:00 PM	7	1	21	0	29	6	1	11	0	18	8	55	8	0	71	11	91	3	0	105	223
5:15 PM	12	3	17	0	32	9	4	15	0	28	7	66	7	0	80	17	93	0	0	110	250
5:30 PM	14	0	14	0	28	7	2	15	0	24	6	48	13	0	67	17	101	2	0	120	239
5:45 PM	35	0	7	0	42	5	3	8	0	16	7	51	9	0	67	14	120	0	0	134	259
Hourly Total	68	4	59	0	131	27	10	49	0	86	28	220	37	0	285	59	405	5	0	469	971
6:00 PM	10	2	3	0	15	4	1	14	0	19	12	53	8	0	73	4	82	2	0	88	195
6:15 PM	11	5	11	0	27	9	4	11	0	24	6	39	15	0	60	5	63	2	0	70	181
6:30 PM	4	4	11	0	19	2	8	8	0	18	10	49	17	0	76	10	61	1	0	72	185
6:45 PM	10	6	12	0	28	5	5	6	0	16	10	49	14	0	73	13	37	0	0	50	167
Hourly Total	35	17	37	0	89	20	18	39	0	77	38	190	54	0	282	32	243	5	0	280	728
7:00 PM	10	0	13	0	23	7	5	5	0	17	7	63	16	0	86	8	41	4	0	53	179
7:15 PM	6	2	8	0	16	4	3	11	0	18	6	36	11	0	53	10	44	1	0	55	142
7:30 PM	3	2	6	0	11	2	3	3	0	8	5	20	9	0	34	5	40	0	0	45	98
7:45 PM	6	4	7	0	17	3	3	6	0	12	2	20	9	0	31	2	28	1	0	31	91
Hourly Total	25	8	34	0	67	16	14	25	0	55	20	139	45	0	204	25	153	6	0	184	510
8:00 PM	3	0	3	0	6	4	0	3	0	7	3	20	3	0	26	5	18	0	0	23	62
8:15 PM	9	3	6	0	18	5	2	6	0	13	5	29	6	0	40	12	23	0	0	35	106
8:30 PM	2	3	3	0	8	1	5	3	0	9	2	17	3	0	22	3	20	0	0	23	62
8:45 PM	2	2	8	0	12	3	4	2	0	9	5	13	3	0	21	4	17	1	0	22	64
Hourly Total	16	8	20	0	44	13	11	14	0	38	15	79	15	0	109	24	78	1	0	103	294
9:00 PM	2	4	4	0	10	2	2	2	0	6	2	18	7	0	27	3	24	0	0	27	70
9:15 PM	2	0	3	0	5	1	1	5	0	7	5	15	2	0	22	5	27	0	0	32	66
9:30 PM	0	1	3	0	4	0	1	5	0	6	2	13	3	0	18	4	13	0	0	17	45
9:45 PM	3	0	0	0	3	1	2	1	0	4	4	12	3	0	19	3	23	0	0	26	52
Hourly Total	7	5	10	0	22	4	6	13	0	23	13	58	15	0	86	15	87	0	0	102	233

10:00 PM	2	3	2	0	7	2	2	3	0	7	2	10	4	0	16	2	7	1	0	10	40
10:15 PM	1	0	2	0	3	0	0	4	0	4	4	9	1	0	14	3	8	0	0	11	32
10:30 PM	2	0	3	0	5	2	1	3	0	6	1	4	2	0	7	2	8	0	0	10	28
10:45 PM	0	0	1	0	1	2	1	1	0	4	1	6	1	0	8	1	8	0	0	9	22
Hourly Total	5	3	8	0	16	6	4	11	0	21	8	29	8	0	45	8	31	1	0	40	122
11:00 PM	0	0	0	0	0	0	0	0	0	0	1	4	2	0	7	0	8	0	0	8	15
11:15 PM	0	0	4	0	4	0	2	0	0	2	0	4	2	0	6	2	7	0	0	9	21
11:30 PM	1	2	4	0	7	1	0	4	0	5	0	0	0	0	0	2	6	0	0	8	20
11:45 PM	1	1	0	0	2	2	0	1	0	3	0	3	1	0	4	1	4	0	0	5	14
Hourly Total	2	3	8	0	13	3	2	5	0	10	1	11	5	0	17	5	25	0	0	30	70
12:00 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	2	5	0	0	7	9
12:15 AM	0	0	0	0	0	2	0	2	0	4	3	1	1	0	5	1	5	0	0	6	15
12:30 AM	1	0	2	0	3	0	0	0	0	0	2	1	1	0	4	2	4	0	0	6	13
12:45 AM	0	1	2	0	3	0	2	0	0	2	0	3	0	0	3	0	1	0	0	1	9
Hourly Total	2	1	4	0	7	3	2	2	0	7	5	5	2	0	12	5	15	0	0	20	46
1:00 AM	0	1	0	0	1	2	1	0	0	3	0	1	1	0	2	0	1	0	0	1	7
1:15 AM	0	0	1	0	1	1	0	3	0	4	0	2	0	0	2	0	4	0	0	4	11
1:30 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3
1:45 AM	0	0	1	0	1	0	0	2	0	2	2	0	0	0	2	2	2	0	0	4	9
Hourly Total	0	1	3	0	4	3	1	5	0	9	2	3	1	0	6	3	8	0	0	11	30
2:00 AM	1	1	2	0	4	0	1	0	0	1	0	2	0	0	2	0	6	1	0	7	14
2:15 AM	1	0	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	4
2:30 AM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
2:45 AM	0	1	1	0	2	1	0	0	0	1	0	2	0	0	2	0	1	0	0	1	6
Hourly Total	2	2	4	0	8	1	1	1	0	3	0	7	0	0	7	0	7	1	0	8	26
3:00 AM	0	0	0	0	0	1	0	1	0	2	0	3	3	0	6	0	0	0	0	0	8
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
3:30 AM	3	0	1	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
3:45 AM	1	0	0	0	1	0	0	1	0	1	1	4	0	0	5	0	1	0	0	1	8
Hourly Total	4	0	1	0	5	1	0	2	0	3	1	10	3	0	14	0	3	0	0	3	25
4:00 AM	0	0	1	0	1	0	0	2	0	2	0	1	0	0	1	0	1	0	0	1	5
4:15 AM	0	2	1	0	3	2	0	1	0	3	1	4	2	0	7	1	1	0	0	2	15
4:30 AM	1	0	1	0	2	1	0	0	0	1	0	7	0	0	7	0	3	0	0	3	13
4:45 AM	0	0	2	0	2	0	0	2	0	2	4	10	0	0	14	0	7	0	0	7	25
Hourly Total	1	2	5	0	8	3	0	5	0	8	5	22	2	0	29	1	12	0	0	13	58
5:00 AM	2	0	3	0	5	3	0	2	0	5	1	11	0	0	12	0	5	1	0	6	28
5:15 AM	0	3	1	0	4	4	1	0	0	5	0	9	0	0	9	0	8	0	0	8	26
5:30 AM	3	0	5	0	8	3	1	3	0	7	4	15	2	0	21	0	8	0	0	8	44
5:45 AM	2	2	7	0	11	4	0	2	0	6	4	21	0	0	25	0	6	0	0	6	48
Hourly Total	7	5	16	0	28	14	2	7	0	23	9	56	2	0	67	0	27	1	0	28	146
6:00 AM	5	2	6	0	13	6	1	3	0	10	4	22	1	0	27	2	16	1	0	19	69
6:15 AM	6	3	4	0	13	9	1	3	0	13	9	30	3	0	42	3	18	0	0	21	89
6:30 AM	5	2	8	0	15	6	1	3	0	10	11	39	1	0	51	1	12	0	0	13	89
6:45 AM	7	6	3	0	16	9	4	4	0	17	11	58	5	0	74	2	33	0	0	35	142
Hourly Total	23	13	21	0	57	30	7	13	0	50	35	149	10	0	194	8	79	1	0	88	389
7:00 AM	4	2	6	0	12	6	1	3	0	10	8	34	0	0	42	3	17	0	0	20	84
7:15 AM	6	6	17	0	29	14	1	10	0	25	11	70	0	0	81	3	24	0	0	27	162
7:30 AM	5	3	17	0	25	8	0	6	0	14	9	87	0	0	96	5	56	0	0	61	196
7:45 AM	12	1	15	0	28	4	3	4	0	11	6	63	0	0	69	5	72	1	0	78	186
Hourly Total	27	12	55	0	94	32	5	23	0	60	34	254	0	0	288	16	169	1	0	186	628
8:00 AM	8	6	8	0	22	3	3	1	0	7	3	44	2	0	49	5	36	0	0	41	119
8:15 AM	8	3	16	0	27	8	4	3	0	15	7	53	6	0	66	0	44	0	0	44	152
8:30 AM	5	2	12	0	19	6	0	2	0	8	7	62	2	0	71	5	45	0	0	50	148
8:45 AM	10	1	9	0	20	7	3	5	0	15	5	50	3	0	58	8	47	2	0	57	150
Hourly Total	31	12	45	0	88	24	10	11	0	45	22	209	13	0	244	18	172	2	0	192	569
Grand Total	456	144	707	0	1307	335	152	485	0	972	424	3193	425	1	4043	470	3587	67	0	4124	10446
Approach %	34.9	11.0	54.1	0.0	-	34.5	15.6	49.9	0.0	-	10.5	79.0	10.5	0.0	-	11.4	87.0	1.6	0.0	-	-
Total %	4.4	1.4	6.8	0.0	12.5	3.2	1.5	4.6	0.0	9.3	4.1	30.6	4.1	0.0	38.7	4.5	34.3	0.6	0.0	39.5	-
Motorcycles	0	1	2	0	3	0	3	4	0	7	2	26	3	0	31	4	26	0	0	30	71
% Motorcycles	0.0	0.7	0.3	-	0.2	0.0	2.0	0.8	-	0.7	0.5	0.8	0.7	0.0	0.8	0.9	0.7	0.0	-	0.7	0.7
Cars	336	110	462	0	908	199	114	317	0	630	294	2076	347	1	2718	329	2489	44	0	2862	7118
% Cars	73.7	76.4	65.3	-	69.5	59.4	75.0	65.4	-	64.8	69.3	65.0	81.6	100.0	67.2	70.0	69.4	65.7	-	69.4	68.1
Light Goods Vehicles	104	32	223	0	359	132	34	150	0	316	122	953	66	0	1141	123	942	21	0	1086	2902
% Light Goods Vehicles	22.8	22.2	31.5	-	27.5	39.4	22.4	30.9	-	32.5	28.8	29.8	15.5	0.0	28.2	26.2	26.3	31.3	-	26.3	27.8
Buses	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	9	0	0	9	11
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-	0.2	0.1
Single-Unit Trucks	14	1	17	0	32	4	1	11	0	16	4	97	8	0	109	14	84	2	0	100	257
% Single-Unit Trucks	3.1	0.7	2.4	-	2.4	1.2	0.7	2.3	-	1.6	0.9	3.0	1.9	0.0	2.7	3.0	2.3	3.0	-	2.4	2.5
Articulated Trucks	2	0	3	0	5	0	0	1	0	1	1	36	1	0	38	0	35	0	0	35	79
% Articulated Trucks	0.4	0.0	0.4	-	0.4	0.0	0.0	0.2	-	0.1	0.2	1.1	0.2	0.0	0.9	0.0	1.0	0.0	-	0.8	0.8
Bicycles on Road	0	0	0	0	0	0	0	1	0	1	1	4	0	0	5	0	2	0	0	2	8
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.0	-	0.0	0.1



Turning Movement Data Plot

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
12:00 PM	6	0	6	0	12	3	0	9	0	12	4	75	10	0	89	10	58	1	0	69	182
12:15 PM	5	2	14	0	21	4	3	9	0	16	11	55	12	1	79	8	60	0	0	68	184
12:30 PM	11	1	17	0	29	8	2	4	0	14	7	81	7	0	95	13	71	1	0	85	223
12:45 PM	12	0	12	0	24	6	1	7	0	14	8	70	4	0	82	8	81	0	0	89	209
Total	34	3	49	0	86	21	6	29	0	56	30	281	33	1	345	39	270	2	0	311	798
Approach %	39.5	3.5	57.0	0.0	-	37.5	10.7	51.8	0.0	-	8.7	81.4	9.6	0.3	-	12.5	86.8	0.6	0.0	-	-
Total %	4.3	0.4	6.1	0.0	10.8	2.6	0.8	3.6	0.0	7.0	3.8	35.2	4.1	0.1	43.2	4.9	33.8	0.3	0.0	39.0	-
PHF	0.708	0.375	0.721	0.000	0.741	0.656	0.500	0.806	0.000	0.875	0.682	0.867	0.688	0.250	0.908	0.750	0.833	0.500	0.000	0.874	0.895
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	2	0	0	3	5
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.7	0.0	0.0	0.6	2.6	0.7	0.0	-	1.0	0.6
Cars	29	2	30	0	61	12	5	19	0	36	23	196	27	1	247	28	176	2	0	206	550
% Cars	85.3	66.7	61.2	-	70.9	57.1	83.3	65.5	-	64.3	76.7	69.8	81.8	100.0	71.6	71.8	65.2	100.0	-	66.2	68.9
Light Goods Vehicles	4	1	19	0	24	9	1	9	0	19	6	66	6	0	78	9	77	0	0	86	207
% Light Goods Vehicles	11.8	33.3	38.8	-	27.9	42.9	16.7	31.0	-	33.9	20.0	23.5	18.2	0.0	22.6	23.1	28.5	0.0	-	27.7	25.9
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-	0.3	0.1
Single-Unit Trucks	1	0	0	0	1	0	0	0	0	0	1	13	0	0	14	1	7	0	0	8	23
% Single-Unit Trucks	2.9	0.0	0.0	-	1.2	0.0	0.0	0.0	-	0.0	3.3	4.6	0.0	0.0	4.1	2.6	2.6	0.0	-	2.6	2.9
Articulated Trucks	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	7	0	0	7	11
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	3.4	-	1.8	0.0	1.1	0.0	0.0	0.9	0.0	2.6	0.0	-	2.3	1.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.0	-	0.0	0.1

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
5:00 PM	7	1	21	0	29	6	1	11	0	18	8	55	8	0	71	11	91	3	0	105	223
5:15 PM	12	3	17	0	32	9	4	15	0	28	7	66	7	0	80	17	93	0	0	110	250
5:30 PM	14	0	14	0	28	7	2	15	0	24	6	48	13	0	67	17	101	2	0	120	239
5:45 PM	35	0	7	0	42	5	3	8	0	16	7	51	9	0	67	14	120	0	0	134	259
Total	68	4	59	0	131	27	10	49	0	86	28	220	37	0	285	59	405	5	0	469	971
Approach %	51.9	3.1	45.0	0.0	-	31.4	11.6	57.0	0.0	-	9.8	77.2	13.0	0.0	-	12.6	86.4	1.1	0.0	-	-
Total %	7.0	0.4	6.1	0.0	13.5	2.8	1.0	5.0	0.0	8.9	2.9	22.7	3.8	0.0	29.4	6.1	41.7	0.5	0.0	48.3	-
PHF	0.486	0.333	0.702	0.000	0.780	0.750	0.625	0.817	0.000	0.768	0.875	0.833	0.712	0.000	0.891	0.868	0.844	0.417	0.000	0.875	0.937
Motorcycles	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	3	0	0	3	7
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	2.0	-	1.2	0.0	1.4	0.0	-	1.1	0.0	0.7	0.0	-	0.6	0.7
Cars	49	2	39	0	90	15	5	31	0	51	17	142	31	0	190	42	284	3	0	329	660
% Cars	72.1	50.0	66.1	-	68.7	55.6	50.0	63.3	-	59.3	60.7	64.5	83.8	-	66.7	71.2	70.1	60.0	-	70.1	68.0
Light Goods Vehicles	19	2	18	0	39	12	5	16	0	33	10	68	6	0	84	15	113	2	0	130	286
% Light Goods Vehicles	27.9	50.0	30.5	-	29.8	44.4	50.0	32.7	-	38.4	35.7	30.9	16.2	-	29.5	25.4	27.9	40.0	-	27.7	29.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	2	0	2	0	0	1	0	1	1	5	0	0	6	2	5	0	0	7	16
% Single-Unit Trucks	0.0	0.0	3.4	-	1.5	0.0	0.0	2.0	-	1.2	3.6	2.3	0.0	-	2.1	3.4	1.2	0.0	-	1.5	1.6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.9	0.0	-	0.7	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0

Turning Movement Peak Hour Data (7:15 AM)

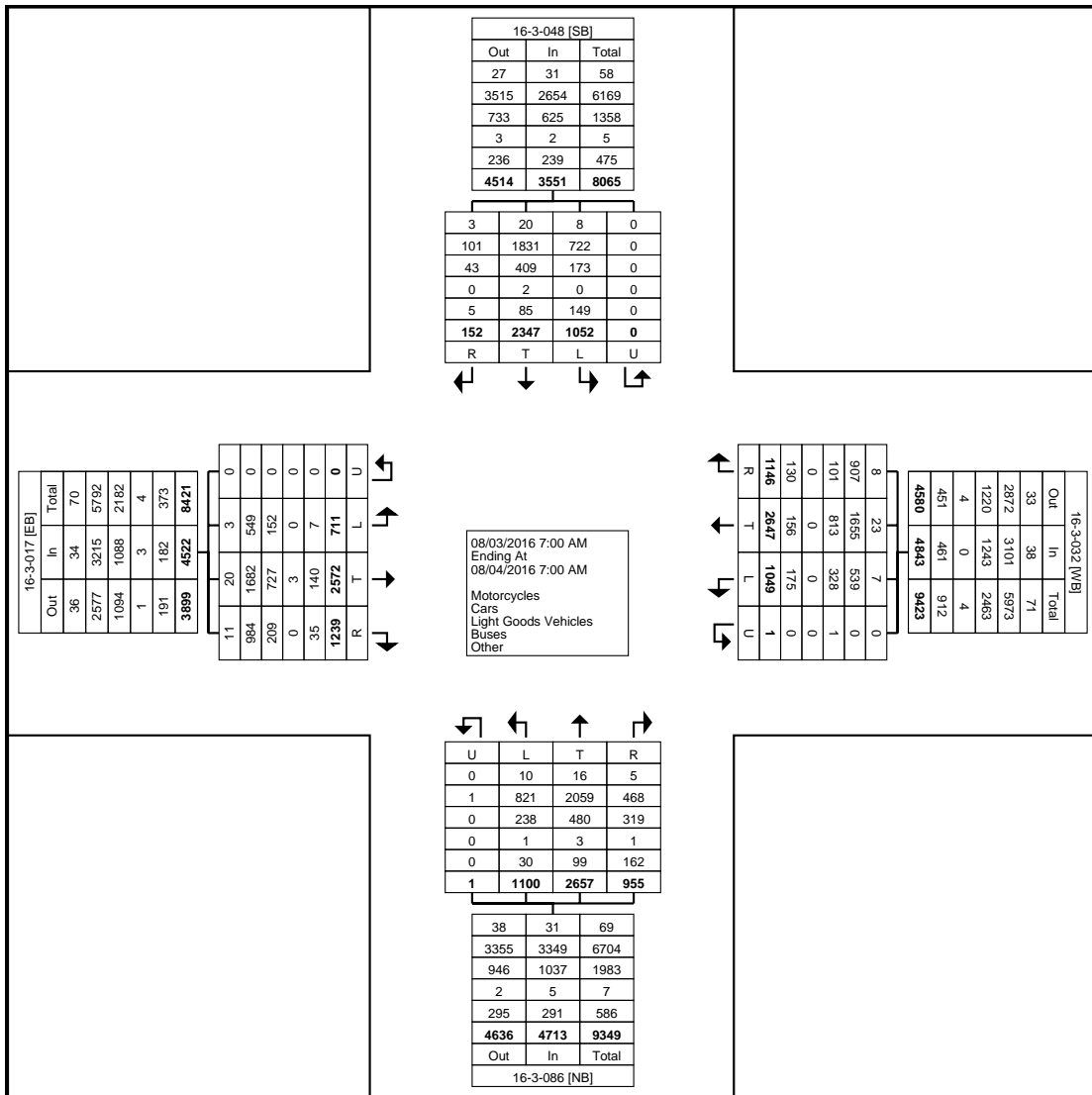
Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:15 AM	6	6	17	0	29	14	1	10	0	25	11	70	0	0	81	3	24	0	0	27	162
7:30 AM	5	3	17	0	25	8	0	6	0	14	9	87	0	0	96	5	56	0	0	61	196
7:45 AM	12	1	15	0	28	4	3	4	0	11	6	63	0	0	69	5	72	1	0	78	186
8:00 AM	8	6	8	0	22	3	3	1	0	7	3	44	2	0	49	5	36	0	0	41	119
Total	31	16	57	0	104	29	7	21	0	57	29	264	2	0	295	18	188	1	0	207	663
Approach %	29.8	15.4	54.8	0.0	-	50.9	12.3	36.8	0.0	-	9.8	89.5	0.7	0.0	-	8.7	90.8	0.5	0.0	-	-
Total %	4.7	2.4	8.6	0.0	15.7	4.4	1.1	3.2	0.0	8.6	4.4	39.8	0.3	0.0	44.5	2.7	28.4	0.2	0.0	31.2	-
PHF	0.646	0.667	0.838	0.000	0.897	0.518	0.583	0.525	0.000	0.570	0.659	0.759	0.250	0.000	0.768	0.900	0.653	0.250	0.000	0.663	0.846
Motorcycles	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.2
Cars	23	10	34	0	67	13	4	17	0	34	19	164	1	0	184	11	140	0	0	151	436
% Cars	74.2	62.5	59.6	-	64.4	44.8	57.1	81.0	-	59.6	65.5	62.1	50.0	-	62.4	61.1	74.5	0.0	-	72.9	65.8
Light Goods Vehicles	8	5	22	0	35	16	3	3	0	22	10	86	1	0	97	6	41	0	0	47	201
% Light Goods Vehicles	25.8	31.3	38.6	-	33.7	55.2	42.9	14.3	-	38.6	34.5	32.6	50.0	-	32.9	33.3	21.8	0.0	-	22.7	30.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	1	1	0	2	0	0	1	0	1	0	9	0	0	9	1	5	1	0	7	19
% Single-Unit Trucks	0.0	6.3	1.8	-	1.9	0.0	0.0	4.8	-	1.8	0.0	3.4	0.0	-	3.1	5.6	2.7	100.0	-	3.4	2.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	1.5	0.0	-	1.4	0.0	1.1	0.0	-	1.0	0.9
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417 mdttdc@mt.gov

Count Name: E. Main and
Oregon (Belgrade)
Site Code:
Start Date: 08/29/2016
Page No: 7

Location: 45.76803, -
 111.161218



Turning Movement Data Plot

Location: 45.76803, -
111.161218

Turning Movement Peak Hour Data (7:00 AM)

Start Time	16-3-086 Northbound					16-3-048 Southbound					16-3-017 Eastbound					16-3-032 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:00 AM	11	30	27	0	68	16	31	1	0	48	0	32	25	0	57	19	14	12	0	45	218
7:15 AM	11	28	23	0	62	17	37	0	0	54	3	43	23	0	69	11	30	11	0	52	237
7:30 AM	13	29	28	0	70	20	56	0	0	76	4	74	41	0	119	20	23	10	0	53	318
7:45 AM	19	38	21	0	78	17	36	1	0	54	5	54	30	0	89	27	38	15	0	80	301
Total	54	125	99	0	278	70	160	2	0	232	12	203	119	0	334	77	105	48	0	230	1074
Approach %	19.4	45.0	35.6	0.0	-	30.2	69.0	0.9	0.0	-	3.6	60.8	35.6	0.0	-	33.5	45.7	20.9	0.0	-	-
Total %	5.0	11.6	9.2	0.0	25.9	6.5	14.9	0.2	0.0	21.6	1.1	18.9	11.1	0.0	31.1	7.2	9.8	4.5	0.0	21.4	-
PHF	0.711	0.822	0.884	0.000	0.891	0.875	0.714	0.500	0.000	0.763	0.600	0.686	0.726	0.000	0.702	0.713	0.691	0.800	0.000	0.719	0.844
Motorcycles	0	1	0	0	1	1	2	0	0	3	1	0	0	0	1	1	1	0	0	2	7
% Motorcycles	0.0	0.8	0.0	-	0.4	1.4	1.3	0.0	-	1.3	8.3	0.0	0.0	-	0.3	1.3	1.0	0.0	-	0.9	0.7
Cars	42	74	51	0	167	46	116	2	0	164	7	136	81	0	224	36	60	25	0	121	676
% Cars	77.8	59.2	51.5	-	60.1	65.7	72.5	100.0	-	70.7	58.3	67.0	68.1	-	67.1	46.8	57.1	52.1	-	52.6	62.9
Light Goods Vehicles	9	45	34	0	88	7	31	0	0	38	4	57	32	0	93	32	35	8	0	75	294
% Light Goods Vehicles	16.7	36.0	34.3	-	31.7	10.0	19.4	0.0	-	16.4	33.3	28.1	26.9	-	27.8	41.6	33.3	16.7	-	32.6	27.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	3	4	8	0	15	8	7	0	0	15	0	3	2	0	5	4	2	7	0	13	48
% Single-Unit Trucks	5.6	3.2	8.1	-	5.4	11.4	4.4	0.0	-	6.5	0.0	1.5	1.7	-	1.5	5.2	1.9	14.6	-	5.7	4.5
Articulated Trucks	0	1	6	0	7	8	4	0	0	12	0	7	4	0	11	4	7	8	0	19	49
% Articulated Trucks	0.0	0.8	6.1	-	2.5	11.4	2.5	0.0	-	5.2	0.0	3.4	3.4	-	3.3	5.2	6.7	16.7	-	8.3	4.6

Location: 45.76803, -
111.161218

Turning Movement Peak Hour Data (11:30 AM)

Start Time	16-3-086 Northbound					16-3-048 Southbound					16-3-017 Eastbound					16-3-032 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
11:30 AM	17	68	18	0	103	22	52	2	0	76	20	39	21	0	80	15	50	31	0	96	355
11:45 AM	12	51	17	0	80	35	78	4	0	117	19	47	18	0	84	26	58	20	0	104	385
12:00 PM	23	49	12	0	84	25	59	4	0	88	11	45	28	0	84	15	64	18	0	97	353
12:15 PM	19	54	15	0	88	29	36	5	0	70	21	48	20	0	89	15	50	26	0	91	338
Total	71	222	62	0	355	111	225	15	0	351	71	179	87	0	337	71	222	95	0	388	1431
Approach %	20.0	62.5	17.5	0.0	-	31.6	64.1	4.3	0.0	-	21.1	53.1	25.8	0.0	-	18.3	57.2	24.5	0.0	-	-
Total %	5.0	15.5	4.3	0.0	24.8	7.8	15.7	1.0	0.0	24.5	5.0	12.5	6.1	0.0	23.5	5.0	15.5	6.6	0.0	27.1	-
PHF	0.772	0.816	0.861	0.000	0.862	0.793	0.721	0.750	0.000	0.750	0.845	0.932	0.777	0.000	0.947	0.683	0.867	0.766	0.000	0.933	0.929
Motorcycles	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2	4	0	0	6	8
% Motorcycles	0.0	0.0	0.0	-	0.0	0.9	0.4	0.0	-	0.6	0.0	0.0	0.0	-	0.0	2.8	1.8	0.0	-	1.5	0.6
Cars	56	185	16	0	257	79	188	9	0	276	63	117	71	0	251	36	127	69	0	232	1016
% Cars	78.9	83.3	25.8	-	72.4	71.2	83.6	60.0	-	78.6	88.7	65.4	81.6	-	74.5	50.7	57.2	72.6	-	59.8	71.0
Light Goods Vehicles	13	27	25	0	65	14	30	5	0	49	8	53	16	0	77	13	78	8	0	99	290
% Light Goods Vehicles	18.3	12.2	40.3	-	18.3	12.6	13.3	33.3	-	14.0	11.3	29.6	18.4	-	22.8	18.3	35.1	8.4	-	25.5	20.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	8	16	0	25	11	4	1	0	16	0	2	0	0	2	17	3	10	0	30	73
% Single-Unit Trucks	1.4	3.6	25.8	-	7.0	9.9	1.8	6.7	-	4.6	0.0	1.1	0.0	-	0.6	23.9	1.4	10.5	-	7.7	5.1
Articulated Trucks	1	2	5	0	8	6	2	0	0	8	0	7	0	0	7	3	10	8	0	21	44
% Articulated Trucks	1.4	0.9	8.1	-	2.3	5.4	0.9	0.0	-	2.3	0.0	3.9	0.0	-	2.1	4.2	4.5	8.4	-	5.4	3.1

Location: 45.76803, -
111.161218

Turning Movement Peak Hour Data (4:45 PM)

Start Time	16-3-086 Northbound					16-3-048 Southbound					16-3-017 Eastbound					16-3-032 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
4:45 PM	31	60	17	0	108	16	50	5	0	71	8	41	26	0	75	27	57	26	0	110	364
5:00 PM	36	57	19	0	112	23	62	4	0	89	7	55	37	0	99	31	67	19	0	117	417
5:15 PM	39	47	13	0	99	23	43	2	0	68	9	54	31	0	94	28	84	28	0	140	401
5:30 PM	34	51	25	0	110	19	52	3	0	74	10	59	22	0	91	30	61	16	0	107	382
Total	140	215	74	0	429	81	207	14	0	302	34	209	116	0	359	116	269	89	0	474	1564
Approach %	32.6	50.1	17.2	0.0	-	26.8	68.5	4.6	0.0	-	9.5	58.2	32.3	0.0	-	24.5	56.8	18.8	0.0	-	-
Total %	9.0	13.7	4.7	0.0	27.4	5.2	13.2	0.9	0.0	19.3	2.2	13.4	7.4	0.0	23.0	7.4	17.2	5.7	0.0	30.3	-
PHF	0.897	0.896	0.740	0.000	0.958	0.880	0.835	0.700	0.000	0.848	0.850	0.886	0.784	0.000	0.907	0.935	0.801	0.795	0.000	0.846	0.938
Motorcycles	1	3	1	0	5	1	2	1	0	4	0	1	1	0	2	0	2	1	0	3	14
% Motorcycles	0.7	1.4	1.4	-	1.2	1.2	1.0	7.1	-	1.3	0.0	0.5	0.9	-	0.6	0.0	0.7	1.1	-	0.6	0.9
Cars	107	148	34	0	289	55	162	11	0	228	24	151	101	0	276	68	179	73	0	320	1113
% Cars	76.4	68.8	45.9	-	67.4	67.9	78.3	78.6	-	75.5	70.6	72.2	87.1	-	76.9	58.6	66.5	82.0	-	67.5	71.2
Light Goods Vehicles	30	61	30	0	121	21	36	2	0	59	10	50	11	0	71	39	78	12	0	129	380
% Light Goods Vehicles	21.4	28.4	40.5	-	28.2	25.9	17.4	14.3	-	19.5	29.4	23.9	9.5	-	19.8	33.6	29.0	13.5	-	27.2	24.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	1	6	0	8	1	5	0	0	6	0	6	2	0	8	6	8	3	0	17	39
% Single-Unit Trucks	0.7	0.5	8.1	-	1.9	1.2	2.4	0.0	-	2.0	0.0	2.9	1.7	-	2.2	5.2	3.0	3.4	-	3.6	2.5
Articulated Trucks	1	2	3	0	6	3	2	0	0	5	0	1	1	0	2	3	2	0	0	5	18
% Articulated Trucks	0.7	0.9	4.1	-	1.4	3.7	1.0	0.0	-	1.7	0.0	0.5	0.9	-	0.6	2.6	0.7	0.0	-	1.1	1.2

Location: 45.76803, -
111.161218

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417

Count Name:
Bozeman_Frontage_Airway Blvd
(Gallatin)
Site Code:
Start Date: 08/03/2016
Page No: 7

Montana Department of Transportation
2701 Prospect

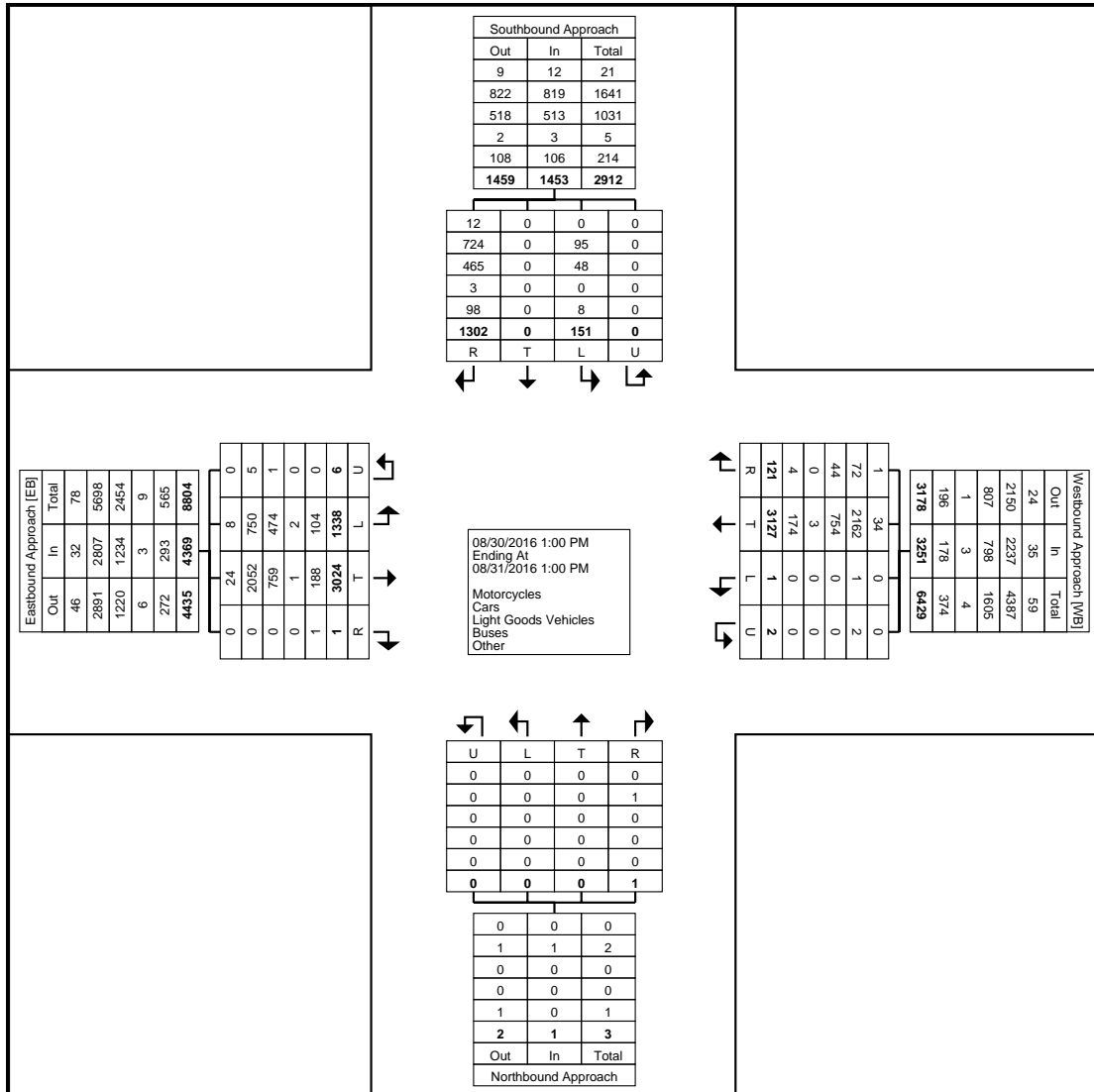
Helena, Montana, United States 59620
406-444-9417 mdttdc@mt.gov

Count Name: Frontage Rd and
Airport Rd
Site Code:
Start Date: 08/30/2016
Page No: 1

Turning Movement Data

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
1:00 PM	0	0	0	0	0	6	0	14	0	20	25	51	0	0	76	0	44	4	0	48	144
1:15 PM	0	0	0	0	0	1	0	24	0	25	21	52	0	0	73	0	57	2	0	59	157
1:30 PM	0	0	0	0	0	1	0	19	0	20	22	51	0	0	73	0	45	3	0	48	141
1:45 PM	0	0	0	0	0	3	0	12	0	15	17	58	0	0	75	0	52	2	0	54	144
Hourly Total	0	0	0	0	0	11	0	69	0	80	85	212	0	0	297	0	198	11	0	209	586
2:00 PM	0	0	0	0	0	1	0	10	0	11	14	43	0	0	57	0	51	8	0	59	127
2:15 PM	0	0	0	0	0	3	0	14	0	17	15	56	0	0	71	0	48	3	0	51	139
2:30 PM	0	0	0	0	0	2	0	21	0	23	19	58	0	0	77	0	45	2	0	47	147
2:45 PM	0	0	0	0	0	1	0	16	0	17	23	59	0	1	83	0	51	1	0	52	152
Hourly Total	0	0	0	0	0	7	0	61	0	68	71	216	0	1	288	0	195	14	0	209	565
3:00 PM	0	0	0	0	0	4	0	19	0	23	18	46	0	0	64	0	58	4	0	62	149
3:15 PM	0	0	0	0	0	4	0	21	0	25	20	41	0	0	61	0	67	2	0	69	155
3:30 PM	0	0	0	0	0	3	0	23	0	26	23	56	0	0	79	0	60	3	1	64	169
3:45 PM	0	0	0	0	0	1	0	26	0	27	24	44	0	0	68	0	65	3	0	68	163
Hourly Total	0	0	0	0	0	12	0	89	0	101	85	187	0	0	272	0	250	12	1	263	636
4:00 PM	0	0	0	0	0	2	0	28	0	30	17	59	0	0	76	0	51	2	0	53	159
4:15 PM	0	0	0	0	0	2	0	23	0	25	29	50	0	0	79	0	77	3	0	80	184
4:30 PM	0	0	0	0	0	2	0	28	0	30	32	48	0	0	80	0	78	3	0	81	191
4:45 PM	0	0	0	0	0	3	0	18	0	21	30	59	0	0	89	0	84	3	0	87	197
Hourly Total	0	0	0	0	0	9	0	97	0	106	108	216	0	0	324	0	290	11	0	301	731
5:00 PM	0	0	0	0	0	3	0	28	0	31	42	55	0	0	97	0	87	3	0	90	218
5:15 PM	0	0	0	0	0	1	0	33	0	34	36	64	1	0	101	0	103	1	0	104	239
5:30 PM	0	0	0	0	0	3	0	22	0	25	23	47	0	0	70	0	87	2	0	89	184
5:45 PM	0	0	0	0	0	5	0	29	0	34	32	46	0	0	78	0	66	0	0	66	178
Hourly Total	0	0	0	0	0	12	0	112	0	124	133	212	1	0	346	0	343	6	0	349	819
6:00 PM	0	0	0	0	0	0	0	23	0	23	32	45	0	0	77	0	63	3	0	66	166
6:15 PM	0	0	0	0	0	4	0	19	0	23	30	37	0	0	67	0	54	2	0	56	146
6:30 PM	0	0	0	0	0	5	0	24	0	29	25	34	0	0	59	0	50	2	0	52	140
6:45 PM	0	0	0	0	0	1	0	25	0	26	23	23	0	0	46	0	45	0	0	45	117
Hourly Total	0	0	0	0	0	10	0	91	0	101	110	139	0	0	249	0	212	7	0	219	569
7:00 PM	0	0	0	0	0	3	0	21	0	24	17	23	0	0	40	0	37	1	0	38	102
7:15 PM	0	0	0	0	0	0	0	17	0	17	18	3	0	0	21	0	47	2	0	49	87
7:30 PM	0	0	1	0	1	1	0	8	0	9	13	18	0	0	31	0	32	3	0	35	76
7:45 PM	0	0	0	0	0	1	0	7	0	8	16	23	0	0	39	0	24	4	0	28	75
Hourly Total	0	0	1	0	1	5	0	53	0	58	64	67	0	0	131	0	140	10	0	150	340
8:00 PM	0	0	0	0	0	1	0	8	0	9	11	34	0	0	45	0	20	1	0	21	75
8:15 PM	0	0	0	0	0	4	0	3	0	7	13	31	0	0	44	0	22	0	0	22	73
8:30 PM	0	0	0	0	0	0	0	10	0	10	20	24	0	0	44	0	26	0	0	26	80
8:45 PM	0	0	0	0	0	1	0	12	0	13	17	18	0	0	35	0	38	2	0	40	88
Hourly Total	0	0	0	0	0	6	0	33	0	39	61	107	0	0	168	0	106	3	0	109	316
9:00 PM	0	0	0	0	0	2	0	11	0	13	12	23	0	0	35	0	30	1	0	31	79
9:15 PM	0	0	0	0	0	0	0	4	0	4	8	21	0	0	29	0	19	1	0	20	53
9:30 PM	0	0	0	0	0	0	0	3	0	3	5	14	0	0	19	0	18	0	0	18	40
9:45 PM	0	0	0	0	0	1	0	2	0	3	5	22	0	0	27	0	9	2	0	11	41
Hourly Total	0	0	0	0	0	3	0	20	0	23	30	80	0	0	110	0	76	4	0	80	213
10:00 PM	0	0	0	0	0	1	0	2	0	3	6	16	0	0	22	0	13	0	0	13	38
10:15 PM	0	0	0	0	0	1	0	2	0	3	3	9	0	1	13	0	6	1	0	7	23
10:30 PM	0	0	0	0	0	1	0	5	0	6	2	8	0	0	10	0	9	0	0	9	25
10:45 PM	0	0	0	0	0	0	0	4	0	4	2	4	0	0	6	0	10	0	0	10	20
Hourly Total	0	0	0	0	0	3	0	13	0	16	13	37	0	1	51	0	38	1	0	39	106
11:00 PM	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	0	13	0	0	13	22
11:15 PM	0	0	0	0	0	1	0	2	0	3	1	3	0	0	4	0	5	0	0	5	12
11:30 PM	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	0	3	0	0	3	12
11:45 PM	0	0	0	0	0	0	0	2	0	2	1	11	0	0	12	0	6	0	0	6	20
Hourly Total	0	0	0	0	0	1	0	4	0	5	6	28	0	0	34	0	27	0	0	27	66
12:00 AM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	6	0	0	6	10
12:15 AM	0	0	0	0	0	0	0	0	0	0	1	9	0	0	10	0	2	0	0	2	12
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	6
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
Hourly Total	0	0	0	0	0	0	0	1	0	1	1	17	0	0	18	0	13	0	0	13	32
1:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	3	0	0	3	4
1:15 AM	0	0	0	0	0	0	0	0	0	0	1	4	0	0	5	0	4	1	0	5	10
1:30 AM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	1	0	0	1	4
1:45 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	4	0	0	4	7
Hourly Total	0	0	0	0	0	0	0	2	0	2	2	8	0	0	10	0	12	1	0	13	25

2:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	3
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
2:45 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	2
Hourly Total	0	0	0	0	0	0	0	1	0	1	2	4	0	0	6	0	0	0	0	0	7
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
3:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	2	0	0	2	4
3:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	4	0	0	4	5
Hourly Total	0	0	0	0	0	0	0	0	0	0	3	5	0	0	8	0	9	0	0	9	17
4:00 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	4	0	0	4	6
4:15 AM	0	0	0	0	0	0	0	3	0	3	0	1	0	0	1	0	17	0	0	17	21
4:30 AM	0	0	0	0	0	0	0	1	0	1	0	11	0	0	11	0	5	0	0	5	17
4:45 AM	0	0	0	0	0	0	0	2	0	2	0	5	0	0	5	0	9	0	0	9	16
Hourly Total	0	0	0	0	0	0	0	7	0	7	0	18	0	0	18	0	35	0	0	35	60
5:00 AM	0	0	0	0	0	0	0	3	0	3	1	9	0	0	10	0	11	0	0	11	24
5:15 AM	0	0	0	0	0	0	0	6	0	6	1	14	0	0	15	0	10	0	0	10	31
5:30 AM	0	0	0	0	0	0	0	3	0	3	2	13	0	0	15	0	12	0	0	12	30
5:45 AM	0	0	0	0	0	2	0	13	0	15	2	21	0	0	23	0	10	0	0	10	48
Hourly Total	0	0	0	0	0	2	0	25	0	27	6	57	0	0	63	0	43	0	0	43	133
6:00 AM	0	0	0	0	0	1	0	12	0	13	3	28	0	0	31	0	20	0	0	20	64
6:15 AM	0	0	0	0	0	0	0	14	0	14	4	27	0	0	31	0	14	0	0	14	59
6:30 AM	0	0	0	0	0	0	0	19	0	19	8	44	0	0	52	0	19	0	0	19	90
6:45 AM	0	0	0	0	0	0	0	23	0	23	35	55	0	0	90	0	24	1	0	25	138
Hourly Total	0	0	0	0	0	1	0	68	0	69	50	154	0	0	204	0	77	1	0	78	351
7:00 AM	0	0	0	0	0	0	0	16	0	16	16	55	0	0	71	0	23	0	0	23	110
7:15 AM	0	0	0	0	0	1	0	21	0	22	21	65	0	0	86	0	41	2	0	43	151
7:30 AM	0	0	0	0	0	2	0	47	0	49	32	87	0	0	119	0	47	3	0	50	218
7:45 AM	0	0	0	0	0	2	0	35	0	37	29	76	0	0	105	0	66	0	0	66	208
Hourly Total	0	0	0	0	0	5	0	119	0	124	98	283	0	0	381	0	177	5	0	182	687
8:00 AM	0	0	0	0	0	1	0	26	0	27	22	57	0	0	79	0	33	1	0	34	140
8:15 AM	0	0	0	0	0	3	0	27	0	30	33	68	0	0	101	0	33	1	0	34	165
8:30 AM	0	0	0	0	0	5	0	20	0	25	16	65	0	1	82	0	30	1	1	32	139
8:45 AM	0	0	0	0	0	3	0	22	0	25	26	45	0	1	72	1	41	4	0	46	143
Hourly Total	0	0	0	0	0	12	0	95	0	107	97	235	0	2	334	1	137	7	1	146	587
9:00 AM	0	0	0	0	0	3	0	16	0	19	21	49	0	0	70	0	42	2	0	44	133
9:15 AM	0	0	0	0	0	1	0	25	0	26	14	39	0	0	53	0	39	6	0	45	124
9:30 AM	0	0	0	0	0	4	0	22	0	26	12	37	0	0	49	0	30	3	0	33	108
9:45 AM	0	0	0	0	0	1	0	17	0	18	19	37	0	0	56	0	36	2	0	38	112
Hourly Total	0	0	0	0	0	9	0	80	0	89	66	162	0	0	228	0	147	13	0	160	477
10:00 AM	0	0	0	0	0	2	0	14	0	16	22	41	0	0	63	0	46	1	0	47	126
10:15 AM	0	0	0	0	0	4	0	19	0	23	15	38	0	1	54	0	44	2	0	46	123
10:30 AM	0	0	0	0	0	5	0	21	0	26	14	36	0	0	50	0	58	0	0	58	134
10:45 AM	0	0	0	0	0	3	0	20	0	23	18	54	0	0	72	0	42	1	0	43	138
Hourly Total	0	0	0	0	0	14	0	74	0	88	69	169	0	1	239	0	190	4	0	194	521
11:00 AM	0	0	0	0	0	4	0	25	0	29	9	42	0	0	51	0	40	1	0	41	121
11:15 AM	0	0	0	0	0	3	0	32	0	35	16	59	0	0	75	0	53	0	0	53	163
11:30 AM	0	0	0	0	0	3	0	27	0	30	24	48	0	0	72	0	58	1	0	59	161
11:45 AM	0	0	0	0	0	2	0	18	0	20	18	41	0	0	59	0	49	1	0	50	129
Hourly Total	0	0	0	0	0	12	0	102	0	114	67	190	0	0	257	0	200	3	0	203	574
12:00 PM	0	0	0	0	0	6	0	27	0	33	31	48	0	1	80	0	47	2	0	49	162
12:15 PM	0	0	0	0	0	3	0	14	0	17	26	54	0	0	80	0	52	1	0	53	150
12:30 PM	0	0	0	0	0	3	0	25	0	28	24	56	0	0	80	0	60	1	0	61	169
12:45 PM	0	0	0	0	0	5	0	20	0	25	30	63	0	0	93	0	53	4	0	57	175
Hourly Total	0	0	0	0	0	17	0	86	0	103	111	221	0	1	333	0	212	8	0	220	656
Grand Total	0	0	1	0	1	151	0	1302	0	1453	1338	3024	1	6	4369	1	3127	121	2	3251	9074
Approach %	0.0	0.0	100.0	0.0	-	10.4	0.0	89.6	0.0	-	30.6	69.2	0.0	0.1	-	0.0	96.2	3.7	0.1	-	-
Total %	0.0	0.0	0.0	0.0	0.0	1.7	0.0	14.3	0.0	16.0	14.7	33.3	0.0	0.1	48.1	0.0	34.5	1.3	0.0	35.8	-
Motorcycles	0	0	0	0	0	0	0	12	0	12	8	24	0	0	32	0	34	1	0	35	79
% Motorcycles	-	-	0.0	-	0.0	0.0	-	0.9	-	0.8	0.6	0.8	0.0	0.0	0.7	0.0	1.1	0.8	0.0	1.1	0.9
Cars	0	0	1	0	1	95	0	724	0	819	750	2052	0	5	2807	1	2162	72	2	2237	5864
% Cars	-	-	100.0	-	100.0	62.9	-	55.6	-	56.4	56.1	67.9	0.0	83.3	64.2	100.0	69.1	59.5	100.0	68.8	64.6
Light Goods Vehicles	0	0	0	0	0	48	0	465	0	513	474	759	0	1	1234	0	754	44	0	798	2545
% Light Goods Vehicles	-	-	0.0	-	0.0	31.8	-	35.7	-	35.3	35.4	25.1	0.0	16.7	28.2	0.0	24.1	36.4	0.0	24.5	28.0
Buses	0	0	0	0	0	0	0	3	0	3	2	1	0	0	3	0	3	0	0	3	9
% Buses	-	-	0.0	-	0.0	0.0	-	0.2	-	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1
Single-Unit Trucks	0	0	0	0	0	7	0	71	0	78	75	118	0	0	193	0	96	4	0	100	371
% Single-Unit Trucks	-	-	0.0	-	0.0	4.6	-	5.5	-	5.4	5.6	3.9	0.0	0.0	4.4	0.0	3.1	3.3	0.0	3.1	4.1
Articulated Trucks	0	0	0	0	0	1	0	24	0	25	27	69	0	0	96	0	77	0	0	77	198
% Articulated Trucks	-	-	0.0	-	0.0	0.7	-	1.8	-	1.7	2.0	2.3	0.0	0.0	2.2	0.0	2.5	0.0	0.0	2.4	2.2
Bicycles on Road	0	0	0	0	0	0	0	3	0	3	2	1	1	0	4	0	1	0	0	1	8
% Bicycles on Road	-	-	0.0	-	0.0	0.0	-	0.2	-	0.2	0.1	0.0	100.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1



Turning Movement Data Plot

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
4:30 PM	0	0	0	0	0	2	0	28	0	30	32	48	0	0	80	0	78	3	0	81	191
4:45 PM	0	0	0	0	0	3	0	18	0	21	30	59	0	0	89	0	84	3	0	87	197
5:00 PM	0	0	0	0	0	3	0	28	0	31	42	55	0	0	97	0	87	3	0	90	218
5:15 PM	0	0	0	0	0	1	0	33	0	34	36	64	1	0	101	0	103	1	0	104	239
Total	0	0	0	0	0	9	0	107	0	116	140	226	1	0	367	0	352	10	0	362	845
Approach %	NaN	NaN	NaN	NaN	-	7.8	0.0	92.2	0.0	-	38.1	61.6	0.3	0.0	-	0.0	97.2	2.8	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	1.1	0.0	12.7	0.0	13.7	16.6	26.7	0.1	0.0	43.4	0.0	41.7	1.2	0.0	42.8	-
PHF	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.811	0.000	0.853	0.833	0.883	0.250	0.000	0.908	0.000	0.854	0.833	0.000	0.870	0.884
Motorcycles	0	0	0	0	0	0	0	2	0	2	1	2	0	0	3	0	1	0	0	1	6
% Motorcycles	-	-	-	-	-	0.0	-	1.9	-	1.7	0.7	0.9	0.0	-	0.8	-	0.3	0.0	-	0.3	0.7
Cars	0	0	0	0	0	8	0	55	0	63	83	152	0	0	235	0	221	5	0	226	524
% Cars	-	-	-	-	-	88.9	-	51.4	-	54.3	59.3	67.3	0.0	-	64.0	-	62.8	50.0	-	62.4	62.0
Light Goods Vehicles	0	0	0	0	0	1	0	45	0	46	50	62	0	0	112	0	113	5	0	118	276
% Light Goods Vehicles	-	-	-	-	-	11.1	-	42.1	-	39.7	35.7	27.4	0.0	-	30.5	-	32.1	50.0	-	32.6	32.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	-	-	-	-	-	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	4	0	4	5	6	0	0	11	0	10	0	0	10	25
% Single-Unit Trucks	-	-	-	-	-	0.0	-	3.7	-	3.4	3.6	2.7	0.0	-	3.0	-	2.8	0.0	-	2.8	3.0
Articulated Trucks	0	0	0	0	0	0	0	1	0	1	1	3	0	0	4	0	7	0	0	7	12
% Articulated Trucks	-	-	-	-	-	0.0	-	0.9	-	0.9	0.7	1.3	0.0	-	1.1	-	2.0	0.0	-	1.9	1.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
% Bicycles on Road	-	-	-	-	-	0.0	-	0.0	-	0.0	0.0	0.4	100.0	-	0.5	-	0.0	0.0	-	0.0	0.2

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:30 AM	0	0	0	0	0	2	0	47	0	49	32	87	0	0	119	0	47	3	0	50	218
7:45 AM	0	0	0	0	0	2	0	35	0	37	29	76	0	0	105	0	66	0	0	66	208
8:00 AM	0	0	0	0	0	1	0	26	0	27	22	57	0	0	79	0	33	1	0	34	140
8:15 AM	0	0	0	0	0	3	0	27	0	30	33	68	0	0	101	0	33	1	0	34	165
Total	0	0	0	0	0	8	0	135	0	143	116	288	0	0	404	0	179	5	0	184	731
Approach %	NaN	NaN	NaN	NaN	-	5.6	0.0	94.4	0.0	-	28.7	71.3	0.0	0.0	-	0.0	97.3	2.7	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	1.1	0.0	18.5	0.0	19.6	15.9	39.4	0.0	0.0	55.3	0.0	24.5	0.7	0.0	25.2	-
PHF	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.718	0.000	0.730	0.879	0.828	0.000	0.000	0.849	0.000	0.678	0.417	0.000	0.697	0.838
Motorcycles	0	0	0	0	0	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	6
% Motorcycles	-	-	-	-	-	0.0	-	0.7	-	0.7	0.0	1.7	-	-	1.2	-	0.0	0.0	-	0.0	0.8
Cars	0	0	0	0	0	3	0	76	0	79	65	178	0	0	243	0	112	2	0	114	436
% Cars	-	-	-	-	-	37.5	-	56.3	-	55.2	56.0	61.8	-	-	60.1	-	62.6	40.0	-	62.0	59.6
Light Goods Vehicles	0	0	0	0	0	5	0	52	0	57	41	87	0	0	128	0	43	3	0	46	231
% Light Goods Vehicles	-	-	-	-	-	62.5	-	38.5	-	39.9	35.3	30.2	-	-	31.7	-	24.0	60.0	-	25.0	31.6
Buses	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	3	0	0	3	5
% Buses	-	-	-	-	-	0.0	-	1.5	-	1.4	0.0	0.0	-	-	0.0	-	1.7	0.0	-	1.6	0.7
Single-Unit Trucks	0	0	0	0	0	0	0	1	0	1	7	10	0	0	17	0	9	0	0	9	27
% Single-Unit Trucks	-	-	-	-	-	0.0	-	0.7	-	0.7	6.0	3.5	-	-	4.2	-	5.0	0.0	-	4.9	3.7
Articulated Trucks	0	0	0	0	0	0	0	2	0	2	3	8	0	0	11	0	12	0	0	12	25
% Articulated Trucks	-	-	-	-	-	0.0	-	1.5	-	1.4	2.6	2.8	-	-	2.7	-	6.7	0.0	-	6.5	3.4
Bicycles on Road	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	-	-	-	-	-	0.0	-	0.7	-	0.7	0.0	0.0	-	-	0.0	-	0.0	0.0	-	0.0	0.1

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Northbound Approach					Southbound Approach					Eastbound Approach					Westbound Approach					Int. Total
	Northbound					Southbound					Eastbound					Westbound					
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
12:00 PM	0	0	0	0	0	6	0	27	0	33	31	48	0	1	80	0	47	2	0	49	162
12:15 PM	0	0	0	0	0	3	0	14	0	17	26	54	0	0	80	0	52	1	0	53	150
12:30 PM	0	0	0	0	0	3	0	25	0	28	24	56	0	0	80	0	60	1	0	61	169
12:45 PM	0	0	0	0	0	5	0	20	0	25	30	63	0	0	93	0	53	4	0	57	175
Total	0	0	0	0	0	17	0	86	0	103	111	221	0	1	333	0	212	8	0	220	656
Approach %	NaN	NaN	NaN	NaN	-	16.5	0.0	83.5	0.0	-	33.3	66.4	0.0	0.3	-	0.0	96.4	3.6	0.0	-	-
Total %	0.0	0.0	0.0	0.0	0.0	2.6	0.0	13.1	0.0	15.7	16.9	33.7	0.0	0.2	50.8	0.0	32.3	1.2	0.0	33.5	-
PHF	0.000	0.000	0.000	0.000	0.000	0.708	0.000	0.796	0.000	0.780	0.895	0.877	0.000	0.250	0.895	0.000	0.883	0.500	0.000	0.902	0.937
Motorcycles	0	0	0	0	0	0	0	1	0	1	1	3	0	0	4	0	3	0	0	3	8
% Motorcycles	-	-	-	-	-	0.0	-	1.2	-	1.0	0.9	1.4	-	0.0	1.2	-	1.4	0.0	-	1.4	1.2
Cars	0	0	0	0	0	7	0	53	0	60	61	143	0	1	205	0	149	3	0	152	417
% Cars	-	-	-	-	-	41.2	-	61.6	-	58.3	55.0	64.7	-	100.0	61.6	-	70.3	37.5	-	69.1	63.6
Light Goods Vehicles	0	0	0	0	0	10	0	21	0	31	36	58	0	0	94	0	47	5	0	52	177
% Light Goods Vehicles	-	-	-	-	-	58.8	-	24.4	-	30.1	32.4	26.2	-	0.0	28.2	-	22.2	62.5	-	23.6	27.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	-	-	-	-	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	8	0	8	11	13	0	0	24	0	8	0	0	8	40
% Single-Unit Trucks	-	-	-	-	-	0.0	-	9.3	-	7.8	9.9	5.9	-	0.0	7.2	-	3.8	0.0	-	3.6	6.1
Articulated Trucks	0	0	0	0	0	0	0	3	0	3	2	4	0	0	6	0	5	0	0	5	14
% Articulated Trucks	-	-	-	-	-	0.0	-	3.5	-	2.9	1.8	1.8	-	0.0	1.8	-	2.4	0.0	-	2.3	2.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	-	-	-	-	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417 mdttdc@mt.gov

Count Name: Frontage Rd and
Airport Rd
Site Code:
Start Date: 08/30/2016
Page No: 7

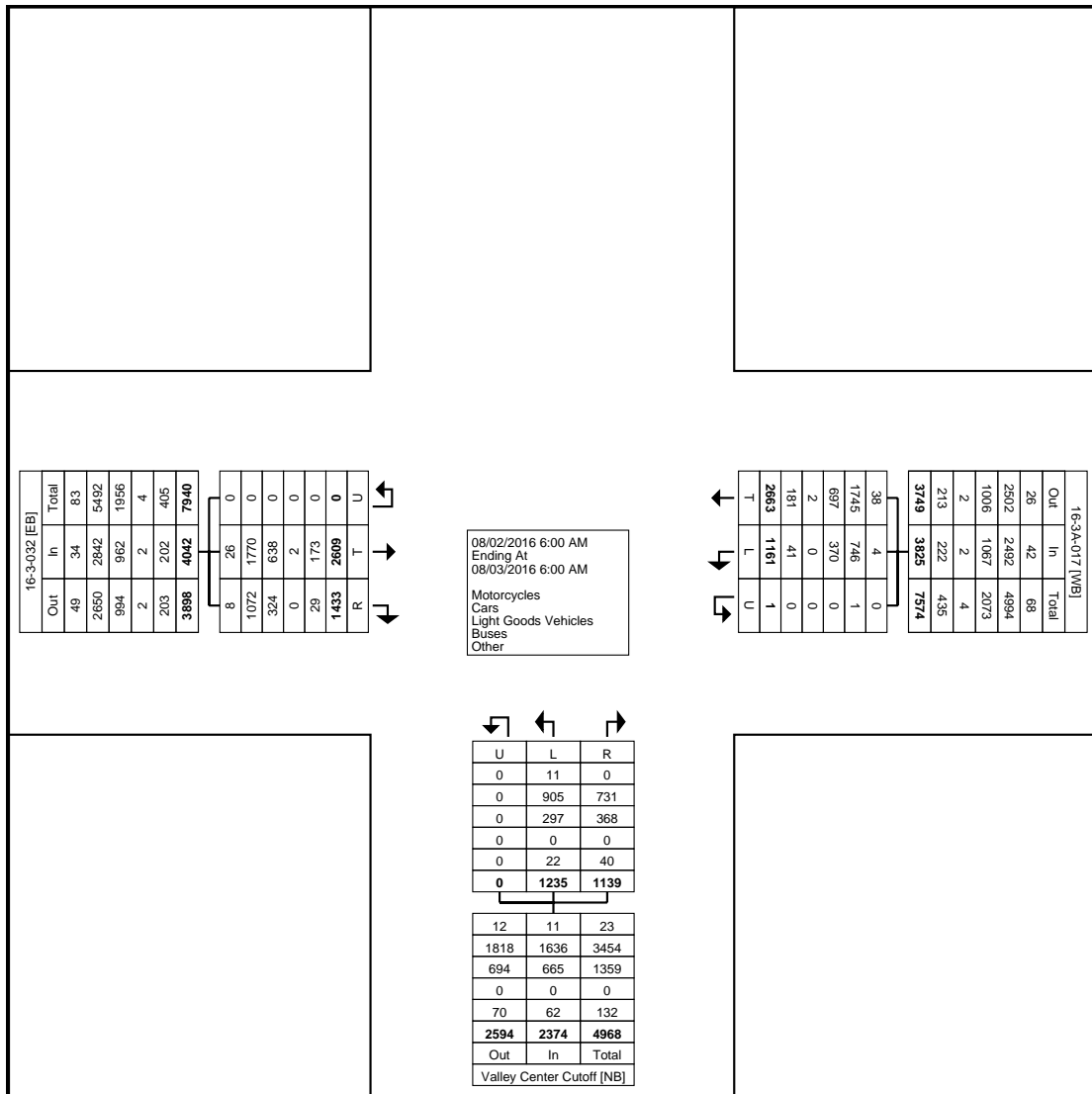
Location: 45.730509, -
111.08963

Turning Movement Data

Start Time	Valley Center Cutoff Northbound				16-3-032 Eastbound				16-3A-017 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	
6:00 AM	6	9	0	15	19	9	0	28	3	3	0	6	49
6:15 AM	6	14	0	20	19	9	0	28	3	7	0	10	58
6:30 AM	9	10	0	19	51	21	0	72	13	13	0	26	117
6:45 AM	14	27	0	41	48	20	0	68	15	13	0	28	137
Hourly Total	35	60	0	95	137	59	0	196	34	36	0	70	361
7:00 AM	10	27	0	37	55	24	0	79	8	18	0	26	142
7:15 AM	10	26	0	36	72	28	0	100	16	17	0	33	169
7:30 AM	15	28	0	43	102	37	0	139	16	17	0	33	215
7:45 AM	17	41	0	58	106	36	0	142	14	26	0	40	240
Hourly Total	52	122	0	174	335	125	0	460	54	78	0	132	766
8:00 AM	14	22	0	36	62	27	0	89	21	28	0	49	174
8:15 AM	10	25	0	35	63	30	0	93	17	26	0	43	171
8:30 AM	12	26	0	38	55	25	0	80	18	29	0	47	165
8:45 AM	15	34	0	49	44	22	0	66	18	16	0	34	149
Hourly Total	51	107	0	158	224	104	0	328	74	99	0	173	659
9:00 AM	6	18	0	24	44	13	0	57	12	35	0	47	128
9:15 AM	15	18	0	33	38	23	0	61	9	35	0	44	138
9:30 AM	14	22	0	36	45	23	0	68	14	27	0	41	145
9:45 AM	14	19	0	33	50	29	0	79	17	32	0	49	161
Hourly Total	49	77	0	126	177	88	0	265	52	129	0	181	572
10:00 AM	17	11	0	28	32	16	0	48	16	30	0	46	122
10:15 AM	20	13	0	33	39	21	0	60	15	40	0	55	148
10:30 AM	19	13	0	32	52	24	0	76	10	37	0	47	155
10:45 AM	18	17	0	35	43	18	0	61	17	34	0	51	147
Hourly Total	74	54	0	128	166	79	0	245	58	141	0	199	572
11:00 AM	12	9	0	21	33	20	0	53	13	53	0	66	140
11:15 AM	19	11	0	30	43	19	0	62	19	34	0	53	145
11:30 AM	16	12	0	28	40	23	0	63	20	42	0	62	153
11:45 AM	18	20	0	38	46	31	0	77	13	37	0	50	165
Hourly Total	65	52	0	117	162	93	0	255	65	166	0	231	603
12:00 PM	24	14	0	38	34	21	0	55	25	68	0	93	186
12:15 PM	21	12	0	33	46	30	0	76	25	38	0	63	172
12:30 PM	16	19	0	35	48	22	0	70	17	50	0	67	172
12:45 PM	32	20	0	52	37	24	0	61	20	58	0	78	191
Hourly Total	93	65	0	158	165	97	0	262	87	214	0	301	721
1:00 PM	18	18	0	36	57	26	0	83	12	44	0	56	175
1:15 PM	21	20	0	41	37	25	0	62	11	42	0	53	156
1:30 PM	17	10	0	27	43	32	0	75	20	45	0	65	167
1:45 PM	16	6	0	22	41	17	0	58	12	33	0	45	125
Hourly Total	72	54	0	126	178	100	0	278	55	164	0	219	623
2:00 PM	22	12	0	34	33	18	0	51	13	55	0	68	153
2:15 PM	21	16	0	37	31	20	0	51	13	35	0	48	136
2:30 PM	18	11	0	29	29	17	0	46	13	47	0	60	135
2:45 PM	16	22	0	38	33	23	0	56	18	31	0	49	143
Hourly Total	77	61	0	138	126	78	0	204	57	168	0	225	567
3:00 PM	16	10	0	26	37	21	0	58	14	56	0	70	154
3:15 PM	22	12	0	34	37	22	0	59	28	68	0	96	189
3:30 PM	27	20	0	47	31	17	0	48	24	57	0	81	176
3:45 PM	19	19	0	38	33	14	0	47	20	57	0	77	162
Hourly Total	84	61	0	145	138	74	0	212	86	238	0	324	681
4:00 PM	21	17	0	38	45	17	0	62	25	66	0	91	191
4:15 PM	14	25	0	39	33	22	0	55	21	58	0	79	173
4:30 PM	27	28	0	55	46	20	0	66	27	68	1	96	217
4:45 PM	34	16	0	50	49	27	0	76	27	76	0	103	229
Hourly Total	96	86	0	182	173	86	0	259	100	268	1	369	810
5:00 PM	25	21	0	46	48	34	0	82	57	98	0	155	283
5:15 PM	26	27	0	53	46	38	0	84	34	102	0	136	273
5:30 PM	29	28	0	57	48	19	0	67	34	81	0	115	239
5:45 PM	30	34	0	64	35	19	0	54	17	49	0	66	184
Hourly Total	110	110	0	220	177	110	0	287	142	330	0	472	979
6:00 PM	21	17	0	38	32	15	0	47	25	55	0	80	165
6:15 PM	17	14	0	31	20	28	0	48	15	55	0	70	149
6:30 PM	21	16	0	37	32	16	0	48	17	40	0	57	142
6:45 PM	21	19	0	40	28	20	0	48	23	33	0	56	144
Hourly Total	80	66	0	146	112	79	0	191	80	183	0	263	600

7:00 PM	17	9	0	26	18	23	0	41	21	27	0	48	115
7:15 PM	28	28	0	56	18	22	0	40	12	39	0	51	147
7:30 PM	16	6	0	22	9	12	0	21	22	26	0	48	91
7:45 PM	19	8	0	27	16	13	0	29	7	24	0	31	87
Hourly Total	80	51	0	131	61	70	0	131	62	116	0	178	440
8:00 PM	17	13	0	30	17	5	0	22	10	27	0	37	89
8:15 PM	15	15	0	30	20	10	0	30	16	20	0	36	96
8:30 PM	15	10	0	25	15	11	0	26	23	29	0	52	103
8:45 PM	14	4	0	18	19	17	0	36	13	26	0	39	93
Hourly Total	61	42	0	103	71	43	0	114	62	102	0	164	381
9:00 PM	13	8	0	21	16	11	0	27	9	21	0	30	78
9:15 PM	17	6	0	23	11	13	0	24	9	21	0	30	77
9:30 PM	8	6	0	14	11	11	0	22	12	15	0	27	63
9:45 PM	16	2	0	18	7	6	0	13	6	17	0	23	54
Hourly Total	54	22	0	76	45	41	0	86	36	74	0	110	272
10:00 PM	4	3	0	7	9	6	0	15	5	16	0	21	43
10:15 PM	3	8	0	11	13	10	0	23	11	9	0	20	54
10:30 PM	3	5	0	8	9	11	0	20	5	12	0	17	45
10:45 PM	3	0	0	3	3	7	0	10	3	7	0	10	23
Hourly Total	13	16	0	29	34	34	0	68	24	44	0	68	165
11:00 PM	5	2	0	7	1	2	0	3	4	9	0	13	23
11:15 PM	2	2	0	4	2	3	0	5	1	4	0	5	14
11:30 PM	8	0	0	8	2	3	0	5	6	7	0	13	26
11:45 PM	4	0	0	4	3	3	0	6	1	13	0	14	24
Hourly Total	19	4	0	23	8	11	0	19	12	33	0	45	87
12:00 AM	0	1	0	1	8	2	0	10	0	3	0	3	14
12:15 AM	1	0	0	1	10	8	0	18	1	5	0	6	25
12:30 AM	1	0	0	1	1	2	0	3	2	1	0	3	7
12:45 AM	0	0	0	0	5	0	0	5	1	3	0	4	9
Hourly Total	2	1	0	3	24	12	0	36	4	12	0	16	55
1:00 AM	5	0	0	5	0	1	0	1	0	5	0	5	11
1:15 AM	2	1	0	3	1	1	0	2	0	6	0	6	11
1:30 AM	3	1	0	4	3	0	0	3	2	1	0	3	10
1:45 AM	0	1	0	1	4	2	0	6	0	1	0	1	8
Hourly Total	10	3	0	13	8	4	0	12	2	13	0	15	40
2:00 AM	2	1	0	3	1	5	0	6	0	2	0	2	11
2:15 AM	1	0	0	1	6	9	0	15	1	2	0	3	19
2:30 AM	1	0	0	1	3	0	0	3	2	1	0	3	7
2:45 AM	0	0	0	0	1	0	0	1	0	2	0	2	3
Hourly Total	4	1	0	5	11	14	0	25	3	7	0	10	40
3:00 AM	0	1	0	1	2	0	0	2	0	2	0	2	5
3:15 AM	0	0	0	0	1	0	0	1	0	4	0	4	5
3:30 AM	4	2	0	6	0	0	0	0	0	1	0	1	7
3:45 AM	0	1	0	1	2	1	0	3	0	2	0	2	6
Hourly Total	4	4	0	8	5	1	0	6	0	9	0	9	23
4:00 AM	6	0	0	6	2	0	0	2	0	1	0	1	9
4:15 AM	6	1	0	7	4	1	0	5	0	3	0	3	15
4:30 AM	12	2	0	14	2	3	0	5	1	10	0	11	30
4:45 AM	6	0	0	6	10	8	0	18	0	8	0	8	32
Hourly Total	30	3	0	33	18	12	0	30	1	22	0	23	86
5:00 AM	3	1	0	4	10	3	0	13	4	1	0	5	22
5:15 AM	2	0	0	2	14	6	0	20	2	7	0	9	31
5:30 AM	5	6	0	11	14	2	0	16	1	4	0	5	32
5:45 AM	10	10	0	20	16	8	0	24	4	5	0	9	53
Hourly Total	20	17	0	37	54	19	0	73	11	17	0	28	138
Grand Total	1235	1139	0	2374	2609	1433	0	4042	1161	2663	1	3825	10241
Approach %	52.0	48.0	0.0	-	64.5	35.5	0.0	-	30.4	69.6	0.0	-	-
Total %	12.1	11.1	0.0	23.2	25.5	14.0	0.0	39.5	11.3	26.0	0.0	37.3	-
Motorcycles	11	0	0	11	26	8	0	34	4	38	0	42	87
% Motorcycles	0.9	0.0	-	0.5	1.0	0.6	-	0.8	0.3	1.4	0.0	1.1	0.8
Cars	905	731	0	1636	1770	1072	0	2842	746	1745	1	2492	6970
% Cars	73.3	64.2	-	68.9	67.8	74.8	-	70.3	64.3	65.5	100.0	65.2	68.1
Light Goods Vehicles	297	368	0	665	638	324	0	962	370	697	0	1067	2694
% Light Goods Vehicles	24.0	32.3	-	28.0	24.5	22.6	-	23.8	31.9	26.2	0.0	27.9	26.3
Buses	0	0	0	0	2	0	0	2	0	2	0	2	4
% Buses	0.0	0.0	-	0.0	0.1	0.0	-	0.0	0.0	0.1	0.0	0.1	0.0
Single-Unit Trucks	19	39	0	58	97	24	0	121	38	103	0	141	320
% Single-Unit Trucks	1.5	3.4	-	2.4	3.7	1.7	-	3.0	3.3	3.9	0.0	3.7	3.1
Articulated Trucks	3	1	0	4	76	5	0	81	3	78	0	81	166
% Articulated Trucks	0.2	0.1	-	0.2	2.9	0.3	-	2.0	0.3	2.9	0.0	2.1	1.6

Location: 45.730509, -
111.08963



Turning Movement Data Plot

Location: 45.730509, -
111.08963

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Valley Center Cutoff Northbound				16-3-032 Eastbound				16-3A-017 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	
7:30 AM	15	28	0	43	102	37	0	139	16	17	0	33	215
7:45 AM	17	41	0	58	106	36	0	142	14	26	0	40	240
8:00 AM	14	22	0	36	62	27	0	89	21	28	0	49	174
8:15 AM	10	25	0	35	63	30	0	93	17	26	0	43	171
Total	56	116	0	172	333	130	0	463	68	97	0	165	800
Approach %	32.6	67.4	0.0	-	71.9	28.1	0.0	-	41.2	58.8	0.0	-	-
Total %	7.0	14.5	0.0	21.5	41.6	16.3	0.0	57.9	8.5	12.1	0.0	20.6	-
PHF	0.824	0.707	0.000	0.741	0.785	0.878	0.000	0.815	0.810	0.866	0.000	0.842	0.833
Motorcycles	0	0	0	0	4	0	0	4	0	0	0	0	4
% Motorcycles	0.0	0.0	-	0.0	1.2	0.0	-	0.9	0.0	0.0	-	0.0	0.5
Cars	39	73	0	112	226	101	0	327	42	58	0	100	539
% Cars	69.6	62.9	-	65.1	67.9	77.7	-	70.6	61.8	59.8	-	60.6	67.4
Light Goods Vehicles	15	42	0	57	85	28	0	113	22	24	0	46	216
% Light Goods Vehicles	26.8	36.2	-	33.1	25.5	21.5	-	24.4	32.4	24.7	-	27.9	27.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	2	1	0	3	9	1	0	10	3	8	0	11	24
% Single-Unit Trucks	3.6	0.9	-	1.7	2.7	0.8	-	2.2	4.4	8.2	-	6.7	3.0
Articulated Trucks	0	0	0	0	9	0	0	9	1	7	0	8	17
% Articulated Trucks	0.0	0.0	-	0.0	2.7	0.0	-	1.9	1.5	7.2	-	4.8	2.1

Location: 45.730509, -
111.08963

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Valley Center Cutoff Northbound				16-3-032 Eastbound				16-3A-017 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	
12:00 PM	24	14	0	38	34	21	0	55	25	68	0	93	186
12:15 PM	21	12	0	33	46	30	0	76	25	38	0	63	172
12:30 PM	16	19	0	35	48	22	0	70	17	50	0	67	172
12:45 PM	32	20	0	52	37	24	0	61	20	58	0	78	191
Total	93	65	0	158	165	97	0	262	87	214	0	301	721
Approach %	58.9	41.1	0.0	-	63.0	37.0	0.0	-	28.9	71.1	0.0	-	-
Total %	12.9	9.0	0.0	21.9	22.9	13.5	0.0	36.3	12.1	29.7	0.0	41.7	-
PHF	0.727	0.813	0.000	0.760	0.859	0.808	0.000	0.862	0.870	0.787	0.000	0.809	0.944
Motorcycles	2	0	0	2	2	0	0	2	0	1	0	1	5
% Motorcycles	2.2	0.0	-	1.3	1.2	0.0	-	0.8	0.0	0.5	-	0.3	0.7
Cars	67	44	0	111	110	70	0	180	57	144	0	201	492
% Cars	72.0	67.7	-	70.3	66.7	72.2	-	68.7	65.5	67.3	-	66.8	68.2
Light Goods Vehicles	23	17	0	40	41	23	0	64	24	55	0	79	183
% Light Goods Vehicles	24.7	26.2	-	25.3	24.8	23.7	-	24.4	27.6	25.7	-	26.2	25.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	4	0	5	7	3	0	10	6	7	0	13	28
% Single-Unit Trucks	1.1	6.2	-	3.2	4.2	3.1	-	3.8	6.9	3.3	-	4.3	3.9
Articulated Trucks	0	0	0	0	5	1	0	6	0	7	0	7	13
% Articulated Trucks	0.0	0.0	-	0.0	3.0	1.0	-	2.3	0.0	3.3	-	2.3	1.8

Location: 45.730509, -
111.08963

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Valley Center Cutoff Northbound				16-3-032 Eastbound				16-3A-017 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	
4:45 PM	34	16	0	50	49	27	0	76	27	76	0	103	229
5:00 PM	25	21	0	46	48	34	0	82	57	98	0	155	283
5:15 PM	26	27	0	53	46	38	0	84	34	102	0	136	273
5:30 PM	29	28	0	57	48	19	0	67	34	81	0	115	239
Total	114	92	0	206	191	118	0	309	152	357	0	509	1024
Approach %	55.3	44.7	0.0	-	61.8	38.2	0.0	-	29.9	70.1	0.0	-	-
Total %	11.1	9.0	0.0	20.1	18.7	11.5	0.0	30.2	14.8	34.9	0.0	49.7	-
PHF	0.838	0.821	0.000	0.904	0.974	0.776	0.000	0.920	0.667	0.875	0.000	0.821	0.905
Motorcycles	1	0	0	1	3	1	0	4	0	15	0	15	20
% Motorcycles	0.9	0.0	-	0.5	1.6	0.8	-	1.3	0.0	4.2	-	2.9	2.0
Cars	90	64	0	154	128	86	0	214	93	225	0	318	686
% Cars	78.9	69.6	-	74.8	67.0	72.9	-	69.3	61.2	63.0	-	62.5	67.0
Light Goods Vehicles	22	27	0	49	52	31	0	83	53	99	0	152	284
% Light Goods Vehicles	19.3	29.3	-	23.8	27.2	26.3	-	26.9	34.9	27.7	-	29.9	27.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	1	1	0	2	3	0	0	3	5	15	0	20	25
% Single-Unit Trucks	0.9	1.1	-	1.0	1.6	0.0	-	1.0	3.3	4.2	-	3.9	2.4
Articulated Trucks	0	0	0	0	5	0	0	5	1	3	0	4	9
% Articulated Trucks	0.0	0.0	-	0.0	2.6	0.0	-	1.6	0.7	0.8	-	0.8	0.9

Location: 45.730509, -
111.08963

Montana Department of Transportation
2701 Prospect

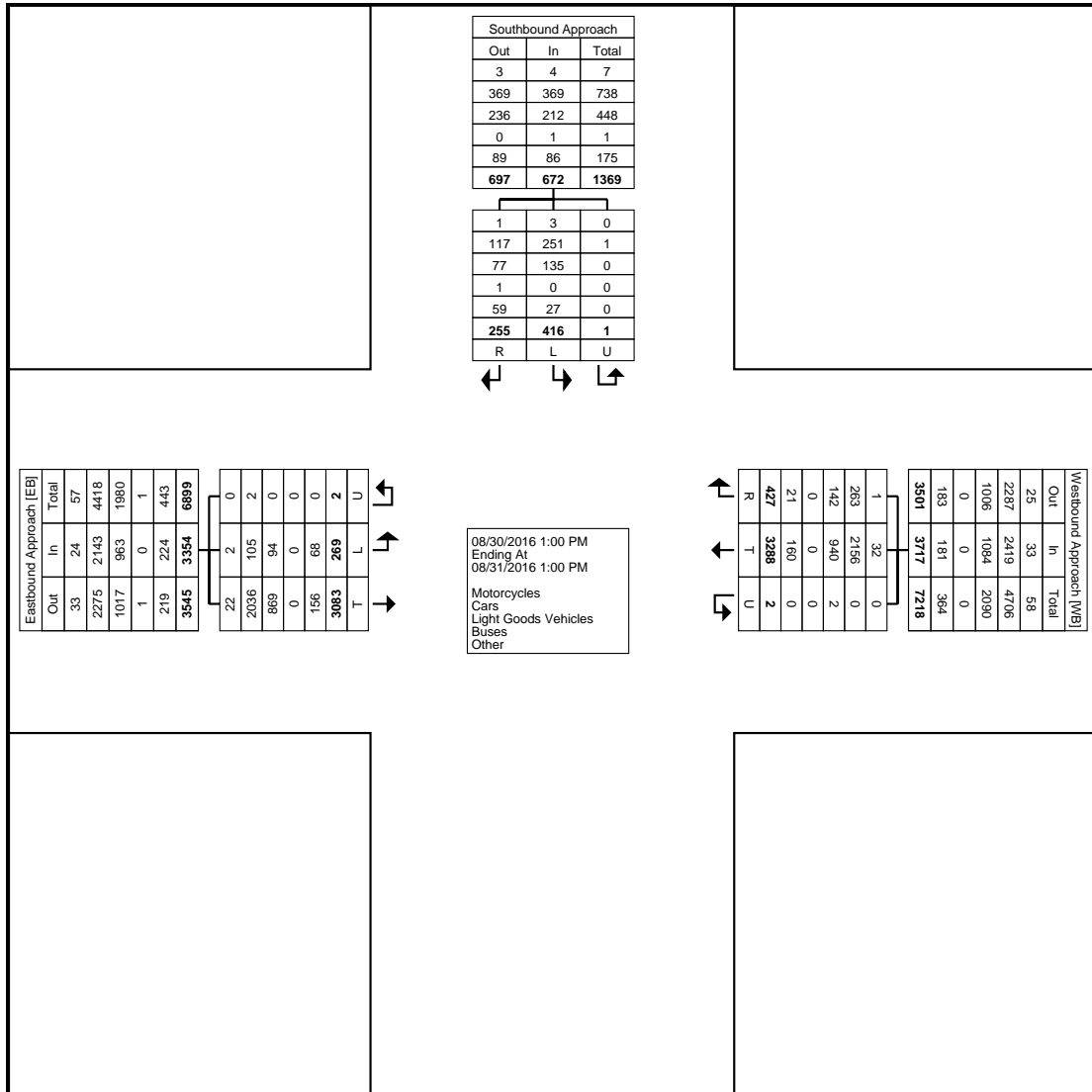
Helena, Montana, United States 59620
406-444-9417

Count Name:
Bozeman_Frontage_Valley
Center Cutoff (Gallatin)
Site Code:
Start Date: 08/02/2016
Page No: 7

Turning Movement Data

Start Time	Southbound Approach				Eastbound Approach				Westbound Approach				Int. Total
	Southbound			App. Total	Eastbound			App. Total	Westbound				
	Left	Right	U-Turn		Left	Thru	U-Turn		Thru	Right	U-Turn		
1:00 PM	10	8	0	18	8	38	0	46	49	3	0	52	116
1:15 PM	6	4	0	10	7	46	0	53	54	6	0	60	123
1:30 PM	4	3	0	7	10	38	0	48	38	5	0	43	98
1:45 PM	12	2	0	14	1	60	1	62	61	8	0	69	145
Hourly Total	32	17	0	49	26	182	1	209	202	22	0	224	482
2:00 PM	3	3	0	6	2	51	0	53	58	7	0	65	124
2:15 PM	4	1	0	5	2	49	0	51	39	10	0	49	105
2:30 PM	5	2	0	7	4	44	0	48	63	6	0	69	124
2:45 PM	2	2	0	4	2	54	0	56	42	10	0	52	112
Hourly Total	14	8	0	22	10	198	0	208	202	33	0	235	465
3:00 PM	9	2	0	11	5	42	0	47	67	6	0	73	131
3:15 PM	7	2	0	9	3	58	0	61	68	11	0	79	149
3:30 PM	14	12	0	26	6	66	0	72	69	11	0	80	178
3:45 PM	7	3	0	10	8	54	0	62	75	11	0	86	158
Hourly Total	37	19	0	56	22	220	0	242	279	39	0	318	616
4:00 PM	7	8	0	15	4	52	0	56	69	9	0	78	149
4:15 PM	6	3	0	9	6	45	0	51	86	6	0	92	152
4:30 PM	5	4	0	9	1	52	0	53	101	14	0	115	177
4:45 PM	3	1	0	4	3	69	0	72	87	7	0	94	170
Hourly Total	21	16	0	37	14	218	0	232	343	36	0	379	648
5:00 PM	11	3	0	14	6	51	0	57	126	11	0	137	208
5:15 PM	6	4	0	10	6	61	0	67	123	13	0	136	213
5:30 PM	4	3	0	7	6	60	0	66	104	19	0	123	196
5:45 PM	6	1	0	7	4	47	0	51	76	17	0	93	151
Hourly Total	27	11	0	38	22	219	0	241	429	60	0	489	768
6:00 PM	4	8	0	12	4	41	0	45	65	7	0	72	129
6:15 PM	3	6	0	9	4	36	0	40	63	8	0	71	120
6:30 PM	6	3	0	9	3	32	0	35	57	10	0	67	111
6:45 PM	1	1	0	2	4	28	0	32	49	3	0	52	86
Hourly Total	14	18	0	32	15	137	0	152	234	28	0	262	446
7:00 PM	5	2	0	7	2	30	0	32	44	3	0	47	86
7:15 PM	1	2	0	3	1	14	0	15	53	9	0	62	80
7:30 PM	3	3	0	6	5	16	1	22	35	3	0	38	66
7:45 PM	4	0	0	4	3	16	0	19	34	5	0	39	62
Hourly Total	13	7	0	20	11	76	1	88	166	20	0	186	294
8:00 PM	5	0	0	5	2	23	0	25	31	3	0	34	64
8:15 PM	3	0	0	3	2	23	0	25	21	2	0	23	51
8:30 PM	1	2	0	3	3	20	0	23	48	4	0	52	78
8:45 PM	5	3	0	8	0	20	0	20	35	6	0	41	69
Hourly Total	14	5	0	19	7	86	0	93	135	15	0	150	262
9:00 PM	2	0	0	2	1	16	0	17	42	4	0	46	65
9:15 PM	0	0	0	0	1	17	0	18	21	3	0	24	42
9:30 PM	3	0	0	3	2	7	0	9	27	3	0	30	42
9:45 PM	2	0	0	2	1	17	0	18	15	3	0	18	38
Hourly Total	7	0	0	7	5	57	0	62	105	13	0	118	187
10:00 PM	2	0	0	2	0	11	0	11	11	5	1	17	30
10:15 PM	0	3	0	3	0	5	0	5	11	2	0	13	21
10:30 PM	1	1	0	2	1	8	0	9	9	1	0	10	21
10:45 PM	0	0	0	0	0	7	0	7	11	1	0	12	19
Hourly Total	3	4	0	7	1	31	0	32	42	9	1	52	91
11:00 PM	0	0	0	0	0	9	0	9	8	0	0	8	17
11:15 PM	0	0	0	0	0	5	0	5	7	0	0	7	12
11:30 PM	0	0	0	0	0	4	0	4	2	0	0	2	6
11:45 PM	0	0	0	0	0	11	0	11	3	0	0	3	14
Hourly Total	0	0	0	0	0	29	0	29	20	0	0	20	49
12:00 AM	0	1	0	1	0	1	0	1	4	1	0	5	7
12:15 AM	0	0	0	0	0	7	0	7	3	0	0	3	10
12:30 AM	0	0	0	0	0	2	0	2	5	0	0	5	7
12:45 AM	0	0	0	0	0	1	0	1	3	0	0	3	4
Hourly Total	0	1	0	1	0	11	0	11	15	1	0	16	28
1:00 AM	0	0	0	0	0	1	0	1	3	0	0	3	4
1:15 AM	0	0	0	0	0	0	0	0	3	0	0	3	3
1:30 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
1:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
Hourly Total	0	0	0	0	0	3	0	3	8	1	0	9	12

2:00 AM	0	1	0	1	0	1	0	1	2	0	0	2	4
2:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	2
2:45 AM	0	0	0	0	0	4	0	4	1	1	0	2	6
Hourly Total	0	2	0	2	0	7	0	7	3	1	0	4	13
3:00 AM	0	1	0	1	0	1	0	1	2	0	0	2	4
3:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
3:30 AM	0	0	0	0	1	1	0	2	2	1	0	3	5
3:45 AM	2	0	0	2	0	1	0	1	3	0	0	3	6
Hourly Total	2	1	0	3	1	3	0	4	8	1	0	9	16
4:00 AM	1	0	0	1	0	0	0	0	1	0	0	1	2
4:15 AM	1	0	0	1	0	2	0	2	8	0	0	8	11
4:30 AM	0	0	0	0	0	4	0	4	1	1	0	2	6
4:45 AM	2	1	0	3	0	4	0	4	4	0	0	4	11
Hourly Total	4	1	0	5	0	10	0	10	14	1	0	15	30
5:00 AM	0	3	0	3	0	4	0	4	5	1	0	6	13
5:15 AM	0	1	0	1	0	13	0	13	3	0	0	3	17
5:30 AM	3	0	0	3	1	14	0	15	6	0	0	6	24
5:45 AM	2	1	0	3	0	24	0	24	7	1	0	8	35
Hourly Total	5	5	0	10	1	55	0	56	21	2	0	23	89
6:00 AM	1	0	0	1	2	16	0	18	14	1	0	15	34
6:15 AM	4	1	0	5	1	22	0	23	11	4	0	15	43
6:30 AM	4	1	0	5	3	42	0	45	21	5	0	26	76
6:45 AM	5	1	0	6	13	61	0	74	8	4	0	12	92
Hourly Total	14	3	0	17	19	141	0	160	54	14	0	68	245
7:00 AM	10	4	0	14	8	66	0	74	24	4	0	28	116
7:15 AM	13	3	0	16	2	84	0	86	27	1	0	28	130
7:30 AM	18	11	0	29	5	105	0	110	44	3	0	47	186
7:45 AM	15	9	0	24	3	106	0	109	39	7	0	46	179
Hourly Total	56	27	0	83	18	361	0	379	134	15	0	149	611
8:00 AM	11	9	0	20	1	79	0	80	37	6	0	43	143
8:15 AM	11	6	0	17	6	67	0	73	33	5	0	38	128
8:30 AM	9	6	1	16	4	82	0	86	36	2	0	38	140
8:45 AM	7	7	0	14	8	62	0	70	41	7	0	48	132
Hourly Total	38	28	1	67	19	290	0	309	147	20	0	167	543
9:00 AM	10	5	0	15	4	49	0	53	36	9	1	46	114
9:15 AM	11	6	0	17	5	40	0	45	44	8	0	52	114
9:30 AM	6	11	0	17	4	38	0	42	34	6	0	40	99
9:45 AM	8	4	0	12	4	47	0	51	39	3	0	42	105
Hourly Total	35	26	0	61	17	174	0	191	153	26	1	180	432
10:00 AM	3	4	0	7	6	40	0	46	39	3	0	42	95
10:15 AM	8	5	0	13	3	41	0	44	41	2	0	43	100
10:30 AM	8	3	0	11	3	53	0	56	45	4	0	49	116
10:45 AM	8	7	0	15	8	38	0	46	34	3	0	37	98
Hourly Total	27	19	0	46	20	172	0	192	159	12	0	171	409
11:00 AM	10	2	0	12	4	65	0	69	45	6	0	51	132
11:15 AM	5	4	0	9	8	43	0	51	47	4	0	51	111
11:30 AM	6	2	0	8	6	49	0	55	51	6	0	57	120
11:45 AM	7	5	0	12	4	39	0	43	64	6	0	70	125
Hourly Total	28	13	0	41	22	196	0	218	207	22	0	229	488
12:00 PM	9	5	0	14	3	49	0	52	64	12	0	76	142
12:15 PM	8	7	0	15	1	45	0	46	53	7	0	60	121
12:30 PM	5	5	0	10	6	48	0	54	44	7	0	51	115
12:45 PM	3	7	0	10	9	65	0	74	47	10	0	57	141
Hourly Total	25	24	0	49	19	207	0	226	208	36	0	244	519
Grand Total	416	255	1	672	269	3083	2	3354	3288	427	2	3717	7743
Approach %	61.9	37.9	0.1	-	8.0	91.9	0.1	-	88.5	11.5	0.1	-	-
Total %	5.4	3.3	0.0	8.7	3.5	39.8	0.0	43.3	42.5	5.5	0.0	48.0	-
Motorcycles	3	1	0	4	2	22	0	24	32	1	0	33	61
% Motorcycles	0.7	0.4	0.0	0.6	0.7	0.7	0.0	0.7	1.0	0.2	0.0	0.9	0.8
Cars	251	117	1	369	105	2036	2	2143	2156	263	0	2419	4931
% Cars	60.3	45.9	100.0	54.9	39.0	66.0	100.0	63.9	65.6	61.6	0.0	65.1	63.7
Light Goods Vehicles	135	77	0	212	94	869	0	963	940	142	2	1084	2259
% Light Goods Vehicles	32.5	30.2	0.0	31.5	34.9	28.2	0.0	28.7	28.6	33.3	100.0	29.2	29.2
Buses	0	1	0	1	0	0	0	0	0	0	0	0	1
% Buses	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	25	54	0	79	62	131	0	193	126	16	0	142	414
% Single-Unit Trucks	6.0	21.2	0.0	11.8	23.0	4.2	0.0	5.8	3.8	3.7	0.0	3.8	5.3
Articulated Trucks	1	4	0	5	5	22	0	27	31	2	0	33	65
% Articulated Trucks	0.2	1.6	0.0	0.7	1.9	0.7	0.0	0.8	0.9	0.5	0.0	0.9	0.8
Bicycles on Road	1	1	0	2	1	3	0	4	3	3	0	6	12
% Bicycles on Road	0.2	0.4	0.0	0.3	0.4	0.1	0.0	0.1	0.1	0.7	0.0	0.2	0.2



Turning Movement Data Plot

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Southbound Approach				Eastbound Approach				Westbound Approach				Int. Total
	Southbound				Eastbound				Westbound				
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
4:45 PM	3	1	0	4	3	69	0	72	87	7	0	94	170
5:00 PM	11	3	0	14	6	51	0	57	126	11	0	137	208
5:15 PM	6	4	0	10	6	61	0	67	123	13	0	136	213
5:30 PM	4	3	0	7	6	60	0	66	104	19	0	123	196
Total	24	11	0	35	21	241	0	262	440	50	0	490	787
Approach %	68.6	31.4	0.0	-	8.0	92.0	0.0	-	89.8	10.2	0.0	-	-
Total %	3.0	1.4	0.0	4.4	2.7	30.6	0.0	33.3	55.9	6.4	0.0	62.3	-
PHF	0.545	0.688	0.000	0.625	0.875	0.873	0.000	0.910	0.873	0.658	0.000	0.894	0.924
Motorcycles	0	0	0	0	1	2	0	3	6	0	0	6	9
% Motorcycles	0.0	0.0	-	0.0	4.8	0.8	-	1.1	1.4	0.0	-	1.2	1.1
Cars	15	7	0	22	14	158	0	172	276	30	0	306	500
% Cars	62.5	63.6	-	62.9	66.7	65.6	-	65.6	62.7	60.0	-	62.4	63.5
Light Goods Vehicles	9	4	0	13	6	76	0	82	136	19	0	155	250
% Light Goods Vehicles	37.5	36.4	-	37.1	28.6	31.5	-	31.3	30.9	38.0	-	31.6	31.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	3	0	3	17	1	0	18	21
% Single-Unit Trucks	0.0	0.0	-	0.0	0.0	1.2	-	1.1	3.9	2.0	-	3.7	2.7
Articulated Trucks	0	0	0	0	0	1	0	1	4	0	0	4	5
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.4	-	0.4	0.9	0.0	-	0.8	0.6
Bicycles on Road	0	0	0	0	0	1	0	1	1	0	0	1	2
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.4	-	0.4	0.2	0.0	-	0.2	0.3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Southbound Approach				Eastbound Approach				Westbound Approach				Int. Total
	Southbound				Eastbound				Westbound				
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
7:15 AM	13	3	0	16	2	84	0	86	27	1	0	28	130
7:30 AM	18	11	0	29	5	105	0	110	44	3	0	47	186
7:45 AM	15	9	0	24	3	106	0	109	39	7	0	46	179
8:00 AM	11	9	0	20	1	79	0	80	37	6	0	43	143
Total	57	32	0	89	11	374	0	385	147	17	0	164	638
Approach %	64.0	36.0	0.0	-	2.9	97.1	0.0	-	89.6	10.4	0.0	-	-
Total %	8.9	5.0	0.0	13.9	1.7	58.6	0.0	60.3	23.0	2.7	0.0	25.7	-
PHF	0.792	0.727	0.000	0.767	0.550	0.882	0.000	0.875	0.835	0.607	0.000	0.872	0.858
Motorcycles	0	0	0	0	0	3	0	3	0	0	0	0	3
% Motorcycles	0.0	0.0	-	0.0	0.0	0.8	-	0.8	0.0	0.0	-	0.0	0.5
Cars	35	15	0	50	4	235	0	239	91	12	0	103	392
% Cars	61.4	46.9	-	56.2	36.4	62.8	-	62.1	61.9	70.6	-	62.8	61.4
Light Goods Vehicles	20	10	0	30	7	123	0	130	47	4	0	51	211
% Light Goods Vehicles	35.1	31.3	-	33.7	63.6	32.9	-	33.8	32.0	23.5	-	31.1	33.1
Buses	0	1	0	1	0	0	0	0	0	0	0	0	1
% Buses	0.0	3.1	-	1.1	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.2
Single-Unit Trucks	2	5	0	7	0	13	0	13	9	1	0	10	30
% Single-Unit Trucks	3.5	15.6	-	7.9	0.0	3.5	-	3.4	6.1	5.9	-	6.1	4.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	1	0	1	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0.0	3.1	-	1.1	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.2

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Southbound Approach				Eastbound Approach				Westbound Approach				Int. Total
	Southbound				Eastbound				Westbound				
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
12:00 PM	9	5	0	14	3	49	0	52	64	12	0	76	142
12:15 PM	8	7	0	15	1	45	0	46	53	7	0	60	121
12:30 PM	5	5	0	10	6	48	0	54	44	7	0	51	115
12:45 PM	3	7	0	10	9	65	0	74	47	10	0	57	141
Total	25	24	0	49	19	207	0	226	208	36	0	244	519
Approach %	51.0	49.0	0.0	-	8.4	91.6	0.0	-	85.2	14.8	0.0	-	-
Total %	4.8	4.6	0.0	9.4	3.7	39.9	0.0	43.5	40.1	6.9	0.0	47.0	-
PHF	0.694	0.857	0.000	0.817	0.528	0.796	0.000	0.764	0.813	0.750	0.000	0.803	0.914
Motorcycles	0	0	0	0	0	2	0	2	3	0	0	3	5
% Motorcycles	0.0	0.0	-	0.0	0.0	1.0	-	0.9	1.4	0.0	-	1.2	1.0
Cars	16	10	0	26	6	122	0	128	138	23	0	161	315
% Cars	64.0	41.7	-	53.1	31.6	58.9	-	56.6	66.3	63.9	-	66.0	60.7
Light Goods Vehicles	7	8	0	15	8	67	0	75	60	11	0	71	161
% Light Goods Vehicles	28.0	33.3	-	30.6	42.1	32.4	-	33.2	28.8	30.6	-	29.1	31.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	2	6	0	8	5	13	0	18	5	1	0	6	32
% Single-Unit Trucks	8.0	25.0	-	16.3	26.3	6.3	-	8.0	2.4	2.8	-	2.5	6.2
Articulated Trucks	0	0	0	0	0	3	0	3	2	0	0	2	5
% Articulated Trucks	0.0	0.0	-	0.0	0.0	1.4	-	1.3	1.0	0.0	-	0.8	1.0
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	2.8	-	0.4	0.2

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417 mdttdc@mt.gov

Count Name: Frontage Rd and
Nelson Rd
Site Code:
Start Date: 08/30/2016
Page No: 7

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417

Count Name:
Bozeman_Frontage_Springhill
(Gallatin)
Site Code:
Start Date: 07/26/2016
Page No: 1

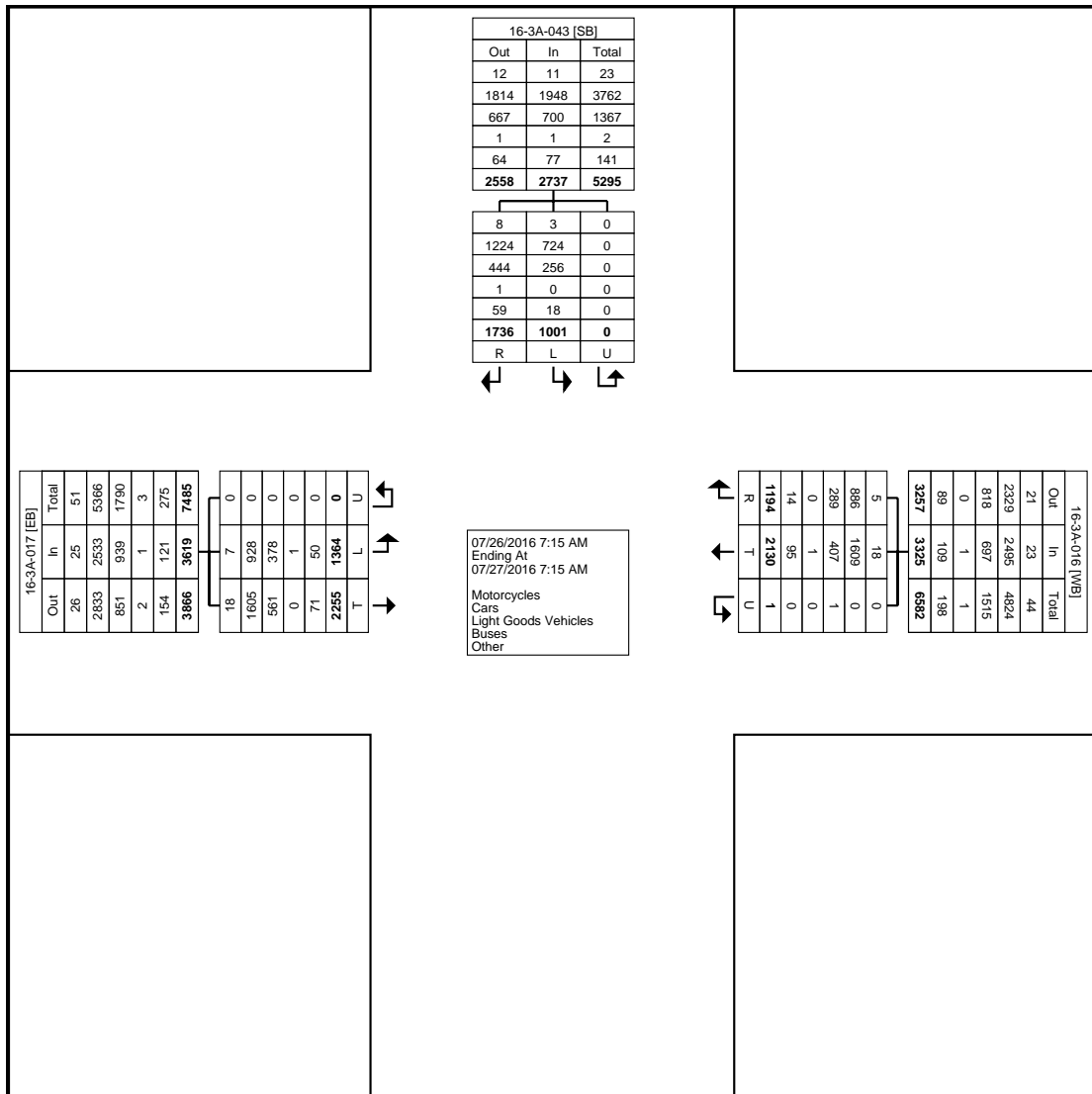
Location: 45.718723, -
111.06689

Turning Movement Data

Start Time	16-3A-043 Southbound				16-3A-017 Eastbound				16-3A-016 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
7:15 AM	21	11	0	32	24	58	0	82	18	9	0	27	141
7:30 AM	26	19	0	45	37	96	0	133	14	7	0	21	199
7:45 AM	30	24	0	54	39	86	0	125	23	15	1	39	218
Hourly Total	77	54	0	131	100	240	0	340	55	31	1	87	558
8:00 AM	28	24	0	52	29	70	0	99	13	15	0	28	179
8:15 AM	27	22	0	49	18	54	0	72	15	25	0	40	161
8:30 AM	24	25	0	49	28	55	0	83	25	18	0	43	175
8:45 AM	29	22	0	51	40	54	0	94	24	32	0	56	201
Hourly Total	108	93	0	201	115	233	0	348	77	90	0	167	716
9:00 AM	17	23	0	40	12	52	0	64	31	15	0	46	150
9:15 AM	15	23	0	38	11	33	0	44	24	15	0	39	121
9:30 AM	18	17	0	35	13	39	0	52	20	14	0	34	121
9:45 AM	24	31	0	55	37	42	0	79	34	13	0	47	181
Hourly Total	74	94	0	168	73	166	0	239	109	57	0	166	573
10:00 AM	21	22	0	43	23	26	0	49	22	18	0	40	132
10:15 AM	18	27	0	45	24	24	0	48	29	31	0	60	153
10:30 AM	18	27	0	45	19	28	0	47	35	16	0	51	143
10:45 AM	16	26	0	42	21	38	0	59	24	21	0	45	146
Hourly Total	73	102	0	175	87	116	0	203	110	86	0	196	574
11:00 AM	25	32	0	57	24	31	0	55	27	13	0	40	152
11:15 AM	20	20	0	40	29	33	0	62	34	13	0	47	149
11:30 AM	18	34	0	52	20	36	0	56	39	20	0	59	167
11:45 AM	16	24	0	40	20	34	0	54	31	20	0	51	145
Hourly Total	79	110	0	189	93	134	0	227	131	66	0	197	613
12:00 PM	21	35	0	56	19	32	0	51	36	22	0	58	165
12:15 PM	21	25	0	46	16	31	0	47	29	20	0	49	142
12:30 PM	8	31	0	39	16	41	0	57	44	16	0	60	156
12:45 PM	20	20	0	40	23	36	0	59	29	19	0	48	147
Hourly Total	70	111	0	181	74	140	0	214	138	77	0	215	610
1:00 PM	18	23	0	41	16	34	0	50	29	18	0	47	138
1:15 PM	13	24	0	37	28	39	0	67	32	23	0	55	159
1:30 PM	12	28	0	40	25	43	0	68	28	12	0	40	148
1:45 PM	20	29	0	49	20	46	0	66	29	25	0	54	169
Hourly Total	63	104	0	167	89	162	0	251	118	78	0	196	614
2:00 PM	13	31	0	44	24	41	0	65	42	23	0	65	174
2:15 PM	18	29	0	47	21	23	0	44	23	9	0	32	123
2:30 PM	16	26	0	42	22	33	0	55	34	27	0	61	158
2:45 PM	20	32	0	52	15	37	0	52	33	21	0	54	158
Hourly Total	67	118	0	185	82	134	0	216	132	80	0	212	613
3:00 PM	17	35	0	52	23	28	0	51	40	20	0	60	163
3:15 PM	18	33	0	51	12	37	0	49	49	22	0	71	171
3:30 PM	10	36	0	46	15	37	0	52	32	23	0	55	153
3:45 PM	13	33	0	46	30	36	0	66	51	22	0	73	185
Hourly Total	58	137	0	195	80	138	0	218	172	87	0	259	672
4:00 PM	12	31	0	43	25	29	0	54	48	25	0	73	170
4:15 PM	15	42	0	57	20	40	0	60	54	29	0	83	200
4:30 PM	16	44	0	60	36	39	0	75	62	30	0	92	227
4:45 PM	17	48	0	65	32	40	0	72	56	32	0	88	225
Hourly Total	60	165	0	225	113	148	0	261	220	116	0	336	822
5:00 PM	18	47	0	65	28	21	0	49	89	28	0	117	231
5:15 PM	16	53	0	69	29	28	0	57	87	33	0	120	246
5:30 PM	8	39	0	47	27	44	0	71	78	27	0	105	223
5:45 PM	17	45	0	62	26	30	0	56	53	33	0	86	204
Hourly Total	59	184	0	243	110	123	0	233	307	121	0	428	904
6:00 PM	14	30	0	44	21	26	0	47	36	18	0	54	145
6:15 PM	13	24	0	37	20	23	0	43	46	28	0	74	154
6:30 PM	8	25	0	33	18	23	0	41	33	21	0	54	128
6:45 PM	14	22	0	36	18	16	0	34	27	22	0	49	119
Hourly Total	49	101	0	150	77	88	0	165	142	89	0	231	546
7:00 PM	13	21	0	34	10	16	0	26	30	18	0	48	108
7:15 PM	9	23	0	32	18	23	0	41	26	15	0	41	114
7:30 PM	7	13	0	20	14	12	0	26	19	10	0	29	75
7:45 PM	7	15	0	22	20	14	0	34	26	16	0	42	98
Hourly Total	36	72	0	108	62	65	0	127	101	59	0	160	395
8:00 PM	5	21	0	26	9	12	0	21	26	6	0	32	79

8:15 PM	3	12	0	15	10	14	0	24	26	8	0	34	73
8:30 PM	5	13	0	18	11	13	0	24	23	10	0	33	75
8:45 PM	9	19	0	28	10	14	0	24	28	12	0	40	92
Hourly Total	22	65	0	87	40	53	0	93	103	36	0	139	319
9:00 PM	5	20	0	25	6	12	0	18	17	16	0	33	76
9:15 PM	11	15	0	26	7	9	0	16	12	7	0	19	61
9:30 PM	3	10	0	13	7	11	0	18	11	15	0	26	57
9:45 PM	3	11	0	14	5	8	0	13	13	4	0	17	44
Hourly Total	22	56	0	78	25	40	0	65	53	42	0	95	238
10:00 PM	3	16	0	19	4	7	0	11	9	9	0	18	48
10:15 PM	4	5	0	9	4	9	0	13	4	11	0	15	37
10:30 PM	1	9	0	10	6	3	0	9	13	6	0	19	38
10:45 PM	3	3	0	6	4	2	0	6	10	4	0	14	26
Hourly Total	11	33	0	44	18	21	0	39	36	30	0	66	149
11:00 PM	1	9	0	10	2	3	0	5	5	2	0	7	22
11:15 PM	0	0	0	0	2	5	0	7	4	2	0	6	13
11:30 PM	1	0	0	1	3	3	0	6	3	1	0	4	11
11:45 PM	0	1	0	1	2	6	0	8	5	4	0	9	18
Hourly Total	2	10	0	12	9	17	0	26	17	9	0	26	64
12:00 AM	1	2	0	3	0	3	0	3	2	2	0	4	10
12:15 AM	1	4	0	5	0	3	0	3	5	0	0	5	13
12:30 AM	0	1	0	1	3	4	0	7	6	1	0	7	15
12:45 AM	2	0	0	2	7	8	0	15	2	1	0	3	20
Hourly Total	4	7	0	11	10	18	0	28	15	4	0	19	58
1:00 AM	0	2	0	2	1	1	0	2	1	0	0	1	5
1:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
1:30 AM	0	0	0	0	2	1	0	3	1	1	0	2	5
1:45 AM	1	0	0	1	2	1	0	3	4	1	0	5	9
Hourly Total	1	2	0	3	5	4	0	9	6	2	0	8	20
2:00 AM	0	0	0	0	0	5	0	5	1	0	0	1	6
2:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
2:30 AM	1	0	0	1	0	1	0	1	2	0	0	2	4
2:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	2
Hourly Total	1	0	0	1	0	8	0	8	3	1	0	4	13
3:00 AM	0	1	0	1	0	1	0	1	1	0	0	1	3
3:15 AM	0	1	0	1	0	1	0	1	1	0	0	1	3
3:30 AM	0	0	0	0	1	0	0	1	2	0	0	2	3
3:45 AM	0	2	0	2	1	2	0	3	1	0	0	1	6
Hourly Total	0	4	0	4	2	4	0	6	5	0	0	5	15
4:00 AM	0	3	0	3	1	0	0	1	4	0	0	4	8
4:15 AM	0	3	0	3	0	3	0	3	3	1	0	4	10
4:30 AM	0	6	0	6	2	5	0	7	7	0	0	7	20
4:45 AM	1	2	0	3	3	5	0	8	4	1	0	5	16
Hourly Total	1	14	0	15	6	13	0	19	18	2	0	20	54
5:00 AM	0	5	0	5	3	3	0	6	2	2	0	4	15
5:15 AM	5	4	0	9	5	6	0	11	6	1	0	7	27
5:30 AM	1	5	0	6	2	19	0	21	5	0	0	5	32
5:45 AM	5	6	0	11	8	22	0	30	3	3	0	6	47
Hourly Total	11	20	0	31	18	50	0	68	16	6	0	22	121
6:00 AM	5	7	0	12	5	12	0	17	0	2	0	2	31
6:15 AM	10	14	0	24	9	21	0	30	16	5	0	21	75
6:30 AM	13	20	0	33	15	33	0	48	6	3	0	9	90
6:45 AM	14	24	0	38	21	37	0	58	13	3	0	16	112
Hourly Total	42	65	0	107	50	103	0	153	35	13	0	48	308
7:00 AM	11	15	0	26	26	37	0	63	11	12	0	23	112
Grand Total	1001	1736	0	2737	1364	2255	0	3619	2130	1194	1	3325	9681
Approach %	36.6	63.4	0.0	-	37.7	62.3	0.0	-	64.1	35.9	0.0	-	-
Total %	10.3	17.9	0.0	28.3	14.1	23.3	0.0	37.4	22.0	12.3	0.0	34.3	-
Motorcycles	3	8	0	11	7	18	0	25	18	5	0	23	59
% Motorcycles	0.3	0.5	-	0.4	0.5	0.8	-	0.7	0.8	0.4	0.0	0.7	0.6
Cars	724	1224	0	1948	928	1605	0	2533	1609	886	0	2495	6976
% Cars	72.3	70.5	-	71.2	68.0	71.2	-	70.0	75.5	74.2	0.0	75.0	72.1
Light Goods Vehicles	256	444	0	700	378	561	0	939	407	289	1	697	2336
% Light Goods Vehicles	25.6	25.6	-	25.6	27.7	24.9	-	25.9	19.1	24.2	100.0	21.0	24.1
Buses	0	1	0	1	1	0	0	1	1	0	0	1	3
% Buses	0.0	0.1	-	0.0	0.1	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	16	48	0	64	37	58	0	95	63	14	0	77	236
% Single-Unit Trucks	1.6	2.8	-	2.3	2.7	2.6	-	2.6	3.0	1.2	0.0	2.3	2.4
Articulated Trucks	1	10	0	11	13	11	0	24	19	0	0	19	54
% Articulated Trucks	0.1	0.6	-	0.4	1.0	0.5	-	0.7	0.9	0.0	0.0	0.6	0.6
Bicycles on Road	1	1	0	2	0	2	0	2	13	0	0	13	17
% Bicycles on Road	0.1	0.1	-	0.1	0.0	0.1	-	0.1	0.6	0.0	0.0	0.4	0.2

Location: 45.718723, -
111.06689



Turning Movement Data Plot

Location: 45.718723, -
111.06689

Turning Movement Peak Hour Data (7:30 AM)

Start Time	16-3A-043 Southbound				16-3A-017 Eastbound				16-3A-016 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
7:30 AM	26	19	0	45	37	96	0	133	14	7	0	21	199
7:45 AM	30	24	0	54	39	86	0	125	23	15	1	39	218
8:00 AM	28	24	0	52	29	70	0	99	13	15	0	28	179
8:15 AM	27	22	0	49	18	54	0	72	15	25	0	40	161
Total	111	89	0	200	123	306	0	429	65	62	1	128	757
Approach %	55.5	44.5	0.0	-	28.7	71.3	0.0	-	50.8	48.4	0.8	-	-
Total %	14.7	11.8	0.0	26.4	16.2	40.4	0.0	56.7	8.6	8.2	0.1	16.9	-
PHF	0.925	0.927	0.000	0.926	0.788	0.797	0.000	0.806	0.707	0.620	0.250	0.800	0.868
Motorcycles	1	0	0	1	0	5	0	5	0	0	0	0	6
% Motorcycles	0.9	0.0	-	0.5	0.0	1.6	-	1.2	0.0	0.0	0.0	0.0	0.8
Cars	82	68	0	150	93	193	0	286	50	40	0	90	526
% Cars	73.9	76.4	-	75.0	75.6	63.1	-	66.7	76.9	64.5	0.0	70.3	69.5
Light Goods Vehicles	26	14	0	40	25	106	0	131	12	19	1	32	203
% Light Goods Vehicles	23.4	15.7	-	20.0	20.3	34.6	-	30.5	18.5	30.6	100.0	25.0	26.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	2	6	0	8	4	2	0	6	1	3	0	4	18
% Single-Unit Trucks	1.8	6.7	-	4.0	3.3	0.7	-	1.4	1.5	4.8	0.0	3.1	2.4
Articulated Trucks	0	1	0	1	1	0	0	1	2	0	0	2	4
% Articulated Trucks	0.0	1.1	-	0.5	0.8	0.0	-	0.2	3.1	0.0	0.0	1.6	0.5
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0

Location: 45.718723, -
111.06689

Turning Movement Peak Hour Data (11:15 AM)

Start Time	16-3A-043 Southbound				16-3A-017 Eastbound				16-3A-016 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
11:15 AM	20	20	0	40	29	33	0	62	34	13	0	47	149
11:30 AM	18	34	0	52	20	36	0	56	39	20	0	59	167
11:45 AM	16	24	0	40	20	34	0	54	31	20	0	51	145
12:00 PM	21	35	0	56	19	32	0	51	36	22	0	58	165
Total	75	113	0	188	88	135	0	223	140	75	0	215	626
Approach %	39.9	60.1	0.0	-	39.5	60.5	0.0	-	65.1	34.9	0.0	-	-
Total %	12.0	18.1	0.0	30.0	14.1	21.6	0.0	35.6	22.4	12.0	0.0	34.3	-
PHF	0.893	0.807	0.000	0.839	0.759	0.938	0.000	0.899	0.897	0.852	0.000	0.911	0.937
Motorcycles	0	1	0	1	0	0	0	0	1	0	0	1	2
% Motorcycles	0.0	0.9	-	0.5	0.0	0.0	-	0.0	0.7	0.0	-	0.5	0.3
Cars	53	90	0	143	56	91	0	147	114	58	0	172	462
% Cars	70.7	79.6	-	76.1	63.6	67.4	-	65.9	81.4	77.3	-	80.0	73.8
Light Goods Vehicles	21	18	0	39	26	36	0	62	21	16	0	37	138
% Light Goods Vehicles	28.0	15.9	-	20.7	29.5	26.7	-	27.8	15.0	21.3	-	17.2	22.0
Buses	0	0	0	0	1	0	0	1	0	0	0	0	1
% Buses	0.0	0.0	-	0.0	1.1	0.0	-	0.4	0.0	0.0	-	0.0	0.2
Single-Unit Trucks	1	4	0	5	3	6	0	9	3	1	0	4	18
% Single-Unit Trucks	1.3	3.5	-	2.7	3.4	4.4	-	4.0	2.1	1.3	-	1.9	2.9
Articulated Trucks	0	0	0	0	2	1	0	3	1	0	0	1	4
% Articulated Trucks	0.0	0.0	-	0.0	2.3	0.7	-	1.3	0.7	0.0	-	0.5	0.6
Bicycles on Road	0	0	0	0	0	1	0	1	0	0	0	0	1
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.7	-	0.4	0.0	0.0	-	0.0	0.2

Turning Movement Peak Hour Data (4:30 PM)

Start Time	16-3A-043 Southbound				16-3A-017 Eastbound				16-3A-016 Westbound				Int. Total
	Left	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	
4:30 PM	16	44	0	60	36	39	0	75	62	30	0	92	227
4:45 PM	17	48	0	65	32	40	0	72	56	32	0	88	225
5:00 PM	18	47	0	65	28	21	0	49	89	28	0	117	231
5:15 PM	16	53	0	69	29	28	0	57	87	33	0	120	246
Total	67	192	0	259	125	128	0	253	294	123	0	417	929
Approach %	25.9	74.1	0.0	-	49.4	50.6	0.0	-	70.5	29.5	0.0	-	-
Total %	7.2	20.7	0.0	27.9	13.5	13.8	0.0	27.2	31.6	13.2	0.0	44.9	-
PHF	0.931	0.906	0.000	0.938	0.868	0.800	0.000	0.843	0.826	0.932	0.000	0.869	0.944
Motorcycles	0	0	0	0	2	0	0	2	5	0	0	5	7
% Motorcycles	0.0	0.0	-	0.0	1.6	0.0	-	0.8	1.7	0.0	-	1.2	0.8
Cars	49	130	0	179	84	90	0	174	218	89	0	307	660
% Cars	73.1	67.7	-	69.1	67.2	70.3	-	68.8	74.1	72.4	-	73.6	71.0
Light Goods Vehicles	17	57	0	74	38	33	0	71	64	33	0	97	242
% Light Goods Vehicles	25.4	29.7	-	28.6	30.4	25.8	-	28.1	21.8	26.8	-	23.3	26.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	5	0	5	1	4	0	5	6	1	0	7	17
% Single-Unit Trucks	0.0	2.6	-	1.9	0.8	3.1	-	2.0	2.0	0.8	-	1.7	1.8
Articulated Trucks	1	0	0	1	0	1	0	1	1	0	0	1	3
% Articulated Trucks	1.5	0.0	-	0.4	0.0	0.8	-	0.4	0.3	0.0	-	0.2	0.3
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0

Location: 45.718723, -
111.06689

Montana Department of Transportation
2701 Prospect

Helena, Montana, United States 59620
406-444-9417

Count Name:
Bozeman_Frontage_Springhill
(Gallatin)
Site Code:
Start Date: 07/26/2016
Page No: 7

Location: 45.699994, -
111.046264

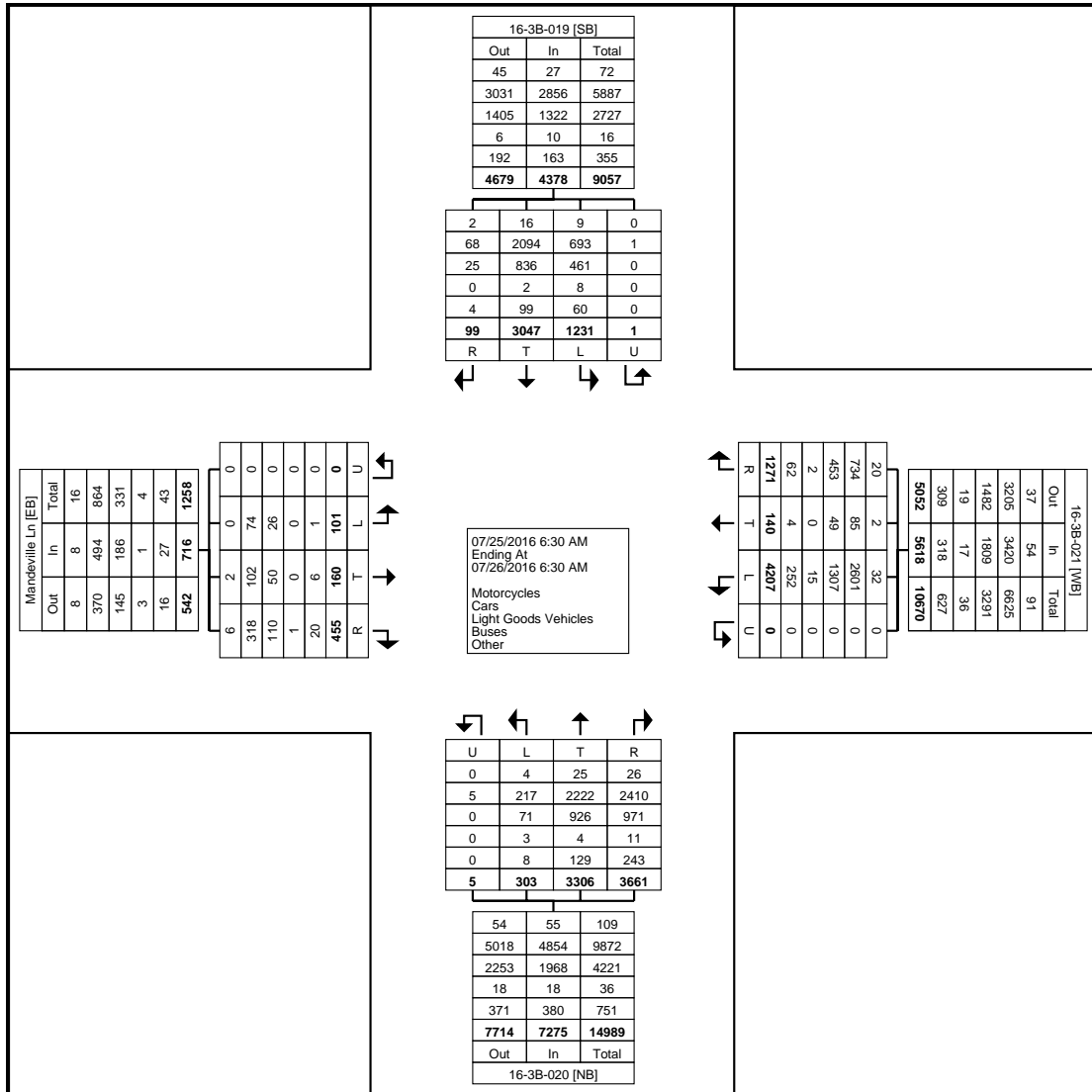
Helena, Montana, United States 59620
406-444-9417

Turning Movement Data

Start Time	16-3B-020 Northbound					16-3B-019 Southbound					Mandeville Ln Eastbound					16-3B-021 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
6:30 AM	0	20	30	0	50	15	21	0	0	36	0	1	6	0	7	16	0	0	0	16	109
6:45 AM	1	36	97	0	134	28	29	1	0	58	3	0	0	0	3	21	2	13	0	36	231
Hourly Total	1	56	127	0	184	43	50	1	0	94	3	1	6	0	10	37	2	13	0	52	340
7:00 AM	2	23	52	0	77	16	38	1	0	55	2	1	4	0	7	24	0	14	0	38	177
7:15 AM	0	24	65	0	89	30	57	3	0	90	0	3	2	0	5	34	0	9	0	43	227
7:30 AM	3	42	110	0	155	48	44	0	0	92	2	2	9	0	13	38	2	9	0	49	309
7:45 AM	2	57	150	0	209	38	58	3	0	99	2	5	3	0	10	53	2	15	0	70	388
Hourly Total	7	146	377	0	530	132	197	7	0	336	6	11	18	0	35	149	4	47	0	200	1101
8:00 AM	2	40	86	0	128	32	65	3	0	100	1	3	5	0	9	70	3	18	0	91	328
8:15 AM	3	45	78	0	126	24	45	1	0	70	2	5	3	0	10	71	1	19	0	91	297
8:30 AM	1	45	78	0	124	29	59	0	0	88	1	1	5	0	7	65	0	12	0	77	296
8:45 AM	4	55	66	0	125	31	61	3	0	95	0	6	7	0	13	57	2	20	0	79	312
Hourly Total	10	185	308	0	503	116	230	7	0	353	4	15	20	0	39	263	6	69	0	338	1233
9:00 AM	1	43	52	0	96	19	47	2	0	68	2	2	5	0	9	71	0	12	0	83	256
9:15 AM	4	58	58	0	120	24	39	0	0	63	1	3	4	0	8	60	2	19	0	81	272
9:30 AM	6	48	52	0	106	23	50	4	0	77	0	6	7	0	13	69	4	25	0	98	294
9:45 AM	6	44	61	0	111	23	57	1	0	81	4	0	12	0	16	74	6	23	0	103	311
Hourly Total	17	193	223	0	433	89	193	7	0	289	7	11	28	0	46	274	12	79	0	365	1133
10:00 AM	6	45	37	0	88	20	52	1	0	73	2	2	6	0	10	79	2	17	0	98	269
10:15 AM	4	38	50	0	92	17	40	1	0	58	1	1	10	0	12	62	1	22	0	85	247
10:30 AM	3	47	48	0	98	18	62	2	0	82	2	2	3	0	7	57	2	14	0	73	260
10:45 AM	5	47	65	0	117	24	56	1	0	81	0	2	11	0	13	53	2	15	0	70	281
Hourly Total	18	177	200	0	395	79	210	5	0	294	5	7	30	0	42	251	7	68	0	326	1057
11:00 AM	7	57	48	0	112	27	45	0	0	72	2	2	12	0	16	66	3	20	0	89	289
11:15 AM	4	52	49	0	105	15	59	2	0	76	3	4	6	0	13	87	2	26	0	115	309
11:30 AM	7	54	55	0	116	31	52	4	0	87	2	6	3	0	11	91	2	20	0	113	327
11:45 AM	4	55	62	1	122	26	69	1	0	96	2	6	7	0	15	92	4	22	0	118	351
Hourly Total	22	218	214	1	455	99	225	7	0	331	9	18	28	0	55	336	11	88	0	435	1276
12:00 PM	8	59	68	0	135	16	76	2	0	94	3	5	12	0	20	116	6	34	0	156	405
12:15 PM	3	60	74	0	137	28	60	2	0	90	7	9	17	0	33	100	2	38	0	140	400
12:30 PM	7	65	67	0	139	21	79	1	0	101	1	7	9	0	17	66	6	14	0	86	343
12:45 PM	4	68	75	0	147	18	65	2	0	85	3	3	10	0	16	88	5	24	0	117	365
Hourly Total	22	252	284	0	558	83	280	7	0	370	14	24	48	0	86	370	19	110	0	499	1513
1:00 PM	5	69	82	0	156	16	66	0	0	82	5	12	9	0	26	60	1	23	0	84	348
1:15 PM	4	65	70	0	139	24	49	6	1	80	0	4	8	0	12	74	5	17	0	96	327
1:30 PM	9	69	71	0	149	33	53	2	0	88	2	0	8	0	10	71	0	22	0	93	340
1:45 PM	5	52	77	0	134	10	66	1	0	77	2	0	8	0	10	75	2	21	0	98	319
Hourly Total	23	255	300	0	578	83	234	9	1	327	9	16	33	0	58	280	8	83	0	371	1334
2:00 PM	6	68	88	0	162	18	57	4	0	79	1	0	14	0	15	55	7	23	0	85	341
2:15 PM	3	53	78	0	134	17	49	4	0	70	7	0	6	0	13	53	3	18	0	74	291
2:30 PM	8	83	67	0	158	16	55	0	0	71	1	2	4	0	7	82	2	32	0	116	352
2:45 PM	5	72	59	0	136	12	66	2	0	80	0	3	6	0	9	71	1	25	0	97	322
Hourly Total	22	276	292	0	590	63	227	10	0	300	9	5	30	0	44	261	13	98	0	372	1306
3:00 PM	1	62	71	0	134	17	50	2	0	69	1	1	4	0	6	67	4	24	0	95	304
3:15 PM	5	54	74	0	133	29	44	0	0	73	3	3	9	0	15	82	1	33	0	116	337
3:30 PM	12	62	73	0	147	23	44	2	0	69	2	1	6	0	9	74	4	28	0	106	331
3:45 PM	8	63	76	0	147	25	78	4	0	107	1	8	8	0	17	107	3	31	0	141	412
Hourly Total	26	241	294	0	561	94	216	8	0	318	7	13	27	0	47	330	12	116	0	458	1384
4:00 PM	5	72	66	0	143	17	45	0	0	62	2	4	10	0	16	117	2	35	0	154	375
4:15 PM	5	101	58	0	164	21	68	2	0	91	1	1	7	0	9	97	4	42	0	143	407
4:30 PM	6	70	56	0	132	26	55	0	0	81	1	1	6	0	8	99	4	29	0	132	353
4:45 PM	9	94	56	0	159	31	53	2	0	86	3	0	6	0	9	119	3	40	0	162	416
Hourly Total	25	337	236	0	598	95	221	4	0	320	7	6	29	0	42	432	13	146	0	591	1551
5:00 PM	5	85	59	0	149	24	88	3	0	115	1	5	13	0	19	133	0	31	0	164	447
5:15 PM	8	108	58	0	174	12	63	2	0	77	1	2	6	0	9	146	1	40	0	187	447
5:30 PM	6	72	54	0	132	18	59	1	0	78	3	4	9	0	16	128	3	38	0	169	395
5:45 PM	3	69	62	0	134	19	52	2	0	73	2	2	16	0	20	79	1	35	0	115	342
Hourly Total	22	334	233	0	589	73	262	8	0	343	7	13	44	0	64	486	5	144	0	635	1631
6:00 PM	5	54	45	0	104	11	53	1	0	65	1	0	7	0	8	68	1	26	0	95	272
6:15 PM	6	44	34	0	84	11	36	0	0	47	1	0	5	0	6	66	0	15	0	81	218
6:30 PM	5	42	41	0	88	14	48	4	0	66	2	0	10	0	12	44	2	11	0	57	223
6:45 PM	6	49	47	0	102	17	41	0	0	58	2	0	9	0	11	36	2	17	0	55	226
Hourly Total	22	189	167	0	378	53	178	5	0	236	6	0	31	0	37	214	5	69	0	288	939
7:00 PM	5	34	27	0	66	8	48	0	0	56	3	2	9	0	14	56	0	15	0	71	207
7:15 PM	8	37	35	0	80	5	16	0	0	21	2	2	11	0	15	50	1	10	0	61	177

7:30 PM	4	20	24	0	48	13	14	2	0	29	0	2	3	0	5	32	2	19	0	53	135
7:45 PM	1	27	22	0	50	6	17	0	0	23	1	1	6	0	8	40	2	6	0	48	129
Hourly Total	18	118	108	0	244	32	95	2	0	129	6	7	29	0	42	178	5	50	0	233	648
8:00 PM	1	28	18	0	47	3	14	0	0	17	0	0	1	0	1	33	3	6	0	42	107
8:15 PM	4	19	22	0	45	6	12	0	0	18	0	2	4	0	6	29	2	7	0	38	107
8:30 PM	1	20	15	0	36	4	19	2	0	25	0	0	4	0	4	31	0	7	0	38	103
8:45 PM	4	22	15	0	41	5	13	1	0	19	1	1	2	0	4	33	4	5	0	42	106
Hourly Total	10	89	70	0	169	18	58	3	0	79	1	3	11	0	15	126	9	25	0	160	423
9:00 PM	1	22	10	0	33	0	9	1	0	10	0	0	2	0	2	26	2	8	0	36	81
9:15 PM	5	20	10	0	35	3	22	0	0	25	0	0	6	0	6	22	0	5	0	27	93
9:30 PM	3	16	15	1	35	2	7	0	0	9	0	1	3	0	4	25	0	2	0	27	75
9:45 PM	3	16	9	0	28	3	8	0	0	11	1	0	4	0	5	19	2	6	0	27	71
Hourly Total	12	74	44	1	131	8	46	1	0	55	1	1	15	0	17	92	4	21	0	117	320
10:00 PM	4	20	11	2	37	3	7	0	0	10	0	0	2	0	2	15	0	3	0	18	67
10:15 PM	2	8	9	0	19	4	6	1	0	11	0	0	3	0	3	6	0	2	0	8	41
10:30 PM	1	10	6	0	17	1	10	0	0	11	0	1	0	0	1	7	1	3	0	11	40
10:45 PM	1	12	9	0	22	1	4	1	0	6	0	0	1	0	1	7	0	1	0	8	37
Hourly Total	8	50	35	2	95	9	27	2	0	38	0	1	6	0	7	35	1	9	0	45	185
11:00 PM	0	5	5	0	10	1	3	0	0	4	0	0	0	0	0	2	0	2	0	4	18
11:15 PM	2	6	2	0	10	0	4	0	0	4	0	0	0	0	0	1	0	3	0	4	18
11:30 PM	2	5	4	1	12	2	2	0	0	4	0	0	2	0	2	4	0	0	0	4	22
11:45 PM	1	6	2	0	9	2	3	0	0	5	0	1	4	0	5	4	0	3	0	7	26
Hourly Total	5	22	13	1	41	5	12	0	0	17	0	1	6	0	7	11	0	8	0	19	84
12:00 AM	1	6	1	0	8	2	1	0	0	3	0	0	1	0	1	2	0	0	0	2	14
12:15 AM	1	4	2	0	7	2	3	0	0	5	0	0	1	0	1	2	0	0	0	2	15
12:30 AM	1	1	6	0	8	1	0	0	0	1	0	0	0	0	0	1	0	2	0	3	12
12:45 AM	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	4
Hourly Total	3	12	10	0	25	5	4	0	0	9	0	0	3	0	3	5	0	3	0	8	45
1:00 AM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	6
1:15 AM	0	0	3	0	3	0	1	0	0	1	0	0	0	0	0	3	0	0	0	3	7
1:30 AM	0	2	1	0	3	0	4	0	0	4	0	0	1	0	1	2	0	2	0	4	12
1:45 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Hourly Total	0	5	5	0	10	0	5	0	0	5	0	0	1	0	1	6	0	5	0	11	27
2:00 AM	1	2	2	0	5	0	2	0	0	2	0	1	0	0	1	2	0	1	0	3	11
2:15 AM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
2:30 AM	0	2	1	0	3	2	1	0	0	3	0	0	0	0	0	3	0	0	0	3	9
2:45 AM	0	1	6	0	7	0	3	0	0	3	0	0	3	0	3	0	0	0	0	0	13
Hourly Total	3	6	9	0	18	2	6	0	0	8	0	1	3	0	4	6	0	1	0	7	37
3:00 AM	0	3	1	0	4	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	6
3:15 AM	0	1	1	0	2	1	1	0	0	2	0	0	1	0	1	2	0	0	0	2	7
3:30 AM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4
3:45 AM	0	4	1	0	5	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	8
Hourly Total	0	10	4	0	14	3	3	0	0	6	0	0	2	0	2	2	1	0	0	3	25
4:00 AM	0	1	1	0	2	0	2	0	0	2	0	0	0	0	0	2	0	3	0	5	9
4:15 AM	0	2	1	0	3	0	2	0	0	2	0	0	0	0	0	6	0	1	0	7	12
4:30 AM	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	12
4:45 AM	0	3	6	0	9	5	5	0	0	10	0	0	0	0	0	1	0	1	0	2	21
Hourly Total	0	9	9	0	18	5	9	0	0	14	0	0	0	0	0	17	0	5	0	22	54
5:00 AM	0	3	3	0	6	2	7	0	0	9	0	0	0	0	0	3	0	1	0	4	19
5:15 AM	0	4	5	0	9	5	7	0	0	12	0	0	0	0	0	2	0	1	0	3	24
5:30 AM	2	9	13	0	24	3	11	2	0	16	0	0	1	0	1	4	0	2	0	6	47
5:45 AM	3	21	26	0	50	11	9	3	0	23	0	0	1	0	1	7	0	5	0	12	86
Hourly Total	5	37	47	0	89	21	34	5	0	60	0	0	2	0	2	16	0	9	0	25	176
6:00 AM	1	3	23	0	27	11	12	1	0	24	0	1	3	0	4	14	3	5	0	22	77
6:15 AM	1	12	29	0	42	10	13	0	0	23	0	5	2	0	7	16	0	0	0	16	88
Grand Total	303	3306	3661	5	7275	1231	3047	99	1	4378	101	160	455	0	716	4207	140	1271	0	5618	17987
Approach %	4.2	45.4	50.3	0.1	-	28.1	69.6	2.3	0.0	-	14.1	22.3	63.5	0.0	-	74.9	2.5	22.6	0.0	-	-
Total %	1.7	18.4	20.4	0.0	40.4	6.8	16.9	0.6	0.0	24.3	0.6	0.9	2.5	0.0	4.0	23.4	0.8	7.1	0.0	31.2	-
Motorcycles	4	25	26	0	55	9	16	2	0	27	0	2	6	0	8	32	2	20	0	54	144
% Motorcycles	1.3	0.8	0.7	0.0	0.8	0.7	0.5	2.0	0.0	0.6	0.0	1.3	1.3	-	1.1	0.8	1.4	1.6	-	1.0	0.8
Cars	217	2222	2410	5	4854	693	2094	68	1	2856	74	102	318	0	494	2601	85	734	0	3420	11624
% Cars	71.6	67.2	65.8	100.0	66.7	56.3	68.7	68.7	100.0	65.2	73.3	63.8	69.9	-	69.0	61.8	60.7	57.7	-	60.9	64.6
Light Goods Vehicles	71	926	971	0	1968	461	836	25	0	1322	26	50	110	0	186	1307	49	453	0	1809	5285
% Light Goods Vehicles	23.4	28.0	26.5	0.0	27.1	37.4	27.4	25.3	0.0	30.2	25.7	31.3	24.2	-	26.0	31.1	35.0	35.6	-	32.2	29.4
Buses	3	4	11	0	18	8	2	0	0	10	0	0	1	0	1	15	0	2	0	17	46
% Buses	1.0	0.1	0.3	0.0	0.2	0.6	0.1	0.0	0.0	0.2	0.0	0.0	0.2	-	0.1	0.4	0.0	0.2	-	0.3	0.3
Single-Unit Trucks	8	112	148	0	268	49	86	2	0	137	1	5	19	0	25	166	3	54	0	223	653
% Single-Unit Trucks	2.6	3.4	4.0	0.0	3.7	4.0	2.8	2.0	0.0	3.1	1.0	3.1	4.2	-	3.5	3.9	2.1	4.2	-	4.0	3.6
Articulated Trucks	0	17	95	0	112	11	13	2	0	26	0	1	1	0	2	86	1	8	0	95	235
% Articulated Trucks	0.0	0.5	2.6	0.0	1.5	0.9	0.4	2.0	0.0	0.6	0.0	0.6	0.2	-	0.3	2.0	0.7	0.6	-	1.7	1.3

Location: 45.699994, -
111.046264



Turning Movement Data Plot

Location: 45.699994, -
111.046264

Turning Movement Peak Hour Data (7:30 AM)

Start Time	16-3B-020 Northbound					16-3B-019 Southbound					Mandeville Ln Eastbound					16-3B-021 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
7:30 AM	3	42	110	0	155	48	44	0	0	92	2	2	9	0	13	38	2	9	0	49	309
7:45 AM	2	57	150	0	209	38	58	3	0	99	2	5	3	0	10	53	2	15	0	70	388
8:00 AM	2	40	86	0	128	32	65	3	0	100	1	3	5	0	9	70	3	18	0	91	328
8:15 AM	3	45	78	0	126	24	45	1	0	70	2	5	3	0	10	71	1	19	0	91	297
Total	10	184	424	0	618	142	212	7	0	361	7	15	20	0	42	232	8	61	0	301	1322
Approach %	1.6	29.8	68.6	0.0	-	39.3	58.7	1.9	0.0	-	16.7	35.7	47.6	0.0	-	77.1	2.7	20.3	0.0	-	-
Total %	0.8	13.9	32.1	0.0	46.7	10.7	16.0	0.5	0.0	27.3	0.5	1.1	1.5	0.0	3.2	17.5	0.6	4.6	0.0	22.8	-
PHF	0.833	0.807	0.707	0.000	0.739	0.740	0.815	0.583	0.000	0.903	0.875	0.750	0.556	0.000	0.808	0.817	0.667	0.803	0.000	0.827	0.852
Motorcycles	0	0	6	0	6	1	1	0	0	2	0	0	0	0	0	1	0	0	0	1	9
% Motorcycles	0.0	0.0	1.4	-	1.0	0.7	0.5	0.0	-	0.6	0.0	0.0	0.0	-	0.0	0.4	0.0	0.0	-	0.3	0.7
Cars	5	127	347	0	479	98	150	5	0	253	4	10	17	0	31	121	5	35	0	161	924
% Cars	50.0	69.0	81.8	-	77.5	69.0	70.8	71.4	-	70.1	57.1	66.7	85.0	-	73.8	52.2	62.5	57.4	-	53.5	69.9
Light Goods Vehicles	4	49	48	0	101	38	50	2	0	90	3	5	3	0	11	82	2	24	0	108	310
% Light Goods Vehicles	40.0	26.6	11.3	-	16.3	26.8	23.6	28.6	-	24.9	42.9	33.3	15.0	-	26.2	35.3	25.0	39.3	-	35.9	23.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.4	0.0	0.0	-	0.3	0.1
Single-Unit Trucks	1	4	7	0	12	4	10	0	0	14	0	0	0	0	0	19	0	2	0	21	47
% Single-Unit Trucks	10.0	2.2	1.7	-	1.9	2.8	4.7	0.0	-	3.9	0.0	0.0	0.0	-	0.0	8.2	0.0	3.3	-	7.0	3.6
Articulated Trucks	0	4	16	0	20	1	1	0	0	2	0	0	0	0	0	8	1	0	0	9	31
% Articulated Trucks	0.0	2.2	3.8	-	3.2	0.7	0.5	0.0	-	0.6	0.0	0.0	0.0	-	0.0	3.4	12.5	0.0	-	3.0	2.3

Location: 45.699994, -
111.046264

Turning Movement Peak Hour Data (12:00 PM)

Start Time	16-3B-020 Northbound					16-3B-019 Southbound					Mandeville Ln Eastbound					16-3B-021 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
12:00 PM	8	59	68	0	135	16	76	2	0	94	3	5	12	0	20	116	6	34	0	156	405
12:15 PM	3	60	74	0	137	28	60	2	0	90	7	9	17	0	33	100	2	38	0	140	400
12:30 PM	7	65	67	0	139	21	79	1	0	101	1	7	9	0	17	66	6	14	0	86	343
12:45 PM	4	68	75	0	147	18	65	2	0	85	3	3	10	0	16	88	5	24	0	117	365
Total	22	252	284	0	558	83	280	7	0	370	14	24	48	0	86	370	19	110	0	499	1513
Approach %	3.9	45.2	50.9	0.0	-	22.4	75.7	1.9	0.0	-	16.3	27.9	55.8	0.0	-	74.1	3.8	22.0	0.0	-	-
Total %	1.5	16.7	18.8	0.0	36.9	5.5	18.5	0.5	0.0	24.5	0.9	1.6	3.2	0.0	5.7	24.5	1.3	7.3	0.0	33.0	-
PHF	0.688	0.926	0.947	0.000	0.949	0.741	0.886	0.875	0.000	0.916	0.500	0.667	0.706	0.000	0.652	0.797	0.792	0.724	0.000	0.800	0.934
Motorcycles	0	1	2	0	3	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	6
% Motorcycles	0.0	0.4	0.7	-	0.5	0.0	0.4	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.5	0.0	0.0	-	0.4	0.4
Cars	17	171	187	0	375	41	198	4	0	243	11	16	31	0	58	256	9	61	0	326	1002
% Cars	77.3	67.9	65.8	-	67.2	49.4	70.7	57.1	-	65.7	78.6	66.7	64.6	-	67.4	69.2	47.4	55.5	-	65.3	66.2
Light Goods Vehicles	5	68	73	0	146	37	73	3	0	113	3	6	15	0	24	87	9	42	0	138	421
% Light Goods Vehicles	22.7	27.0	25.7	-	26.2	44.6	26.1	42.9	-	30.5	21.4	25.0	31.3	-	27.9	23.5	47.4	38.2	-	27.7	27.8
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.4	0.0	-	0.3	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	10	12	0	22	5	7	0	0	12	0	2	1	0	3	18	1	4	0	23	60
% Single-Unit Trucks	0.0	4.0	4.2	-	3.9	6.0	2.5	0.0	-	3.2	0.0	8.3	2.1	-	3.5	4.9	5.3	3.6	-	4.6	4.0
Articulated Trucks	0	2	10	0	12	0	0	0	0	0	0	0	1	0	1	7	0	3	0	10	23
% Articulated Trucks	0.0	0.8	3.5	-	2.2	0.0	0.0	0.0	-	0.0	0.0	0.0	2.1	-	1.2	1.9	0.0	2.7	-	2.0	1.5

Location: 45.699994, -
111.046264

Turning Movement Peak Hour Data (4:45 PM)

Start Time	16-3B-020 Northbound					16-3B-019 Southbound					Mandeville Ln Eastbound					16-3B-021 Westbound					Int. Total
	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	
4:45 PM	9	94	56	0	159	31	53	2	0	86	3	0	6	0	9	119	3	40	0	162	416
5:00 PM	5	85	59	0	149	24	88	3	0	115	1	5	13	0	19	133	0	31	0	164	447
5:15 PM	8	108	58	0	174	12	63	2	0	77	1	2	6	0	9	146	1	40	0	187	447
5:30 PM	6	72	54	0	132	18	59	1	0	78	3	4	9	0	16	128	3	38	0	169	395
Total	28	359	227	0	614	85	263	8	0	356	8	11	34	0	53	526	7	149	0	682	1705
Approach %	4.6	58.5	37.0	0.0	-	23.9	73.9	2.2	0.0	-	15.1	20.8	64.2	0.0	-	77.1	1.0	21.8	0.0	-	-
Total %	1.6	21.1	13.3	0.0	36.0	5.0	15.4	0.5	0.0	20.9	0.5	0.6	2.0	0.0	3.1	30.9	0.4	8.7	0.0	40.0	-
PHF	0.778	0.831	0.962	0.000	0.882	0.685	0.747	0.667	0.000	0.774	0.667	0.550	0.654	0.000	0.697	0.901	0.583	0.931	0.000	0.912	0.954
Motorcycles	2	1	1	0	4	0	3	1	0	4	0	1	0	0	1	3	0	2	0	5	14
% Motorcycles	7.1	0.3	0.4	-	0.7	0.0	1.1	12.5	-	1.1	0.0	9.1	0.0	-	1.9	0.6	0.0	1.3	-	0.7	0.8
Cars	19	241	152	0	412	60	174	6	0	240	6	9	27	0	42	330	4	81	0	415	1109
% Cars	67.9	67.1	67.0	-	67.1	70.6	66.2	75.0	-	67.4	75.0	81.8	79.4	-	79.2	62.7	57.1	54.4	-	60.9	65.0
Light Goods Vehicles	7	108	66	0	181	21	83	1	0	105	2	1	6	0	9	178	3	61	0	242	537
% Light Goods Vehicles	25.0	30.1	29.1	-	29.5	24.7	31.6	12.5	-	29.5	25.0	9.1	17.6	-	17.0	33.8	42.9	40.9	-	35.5	31.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	8	8	0	16	4	3	0	0	7	0	0	1	0	1	9	0	4	0	13	37
% Single-Unit Trucks	0.0	2.2	3.5	-	2.6	4.7	1.1	0.0	-	2.0	0.0	0.0	2.9	-	1.9	1.7	0.0	2.7	-	1.9	2.2
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	6	0	1	0	7	8
% Articulated Trucks	0.0	0.3	0.0	-	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	1.1	0.0	0.7	-	1.0	0.5

Location: 45.699994, -
111.046264

Montana Department of Transportation
2701 Prospect
Helena, Montana, United States 59620
406-444-9417

Count Name:
Bozeman_7th_Griffin (Gallatin)
Site Code:
Start Date: 07/25/2016
Page No: 7



Appendix B

EXISTING OPERATIONAL ANALYSIS

Intersection Level Of Service Report
Intersection 1: Jackrabbit Lane & Main Street

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	100.00	250.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Base Volume Input [veh/h]	82	134	171	17	254	0	8	123	379	101	48	18
Base Volume Adjustment Factor	0.9200	0.9200	0.9200	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	2.40	1.50	5.20	0.00	0.80	0.00	0.00	0.00	0.50	3.00	2.10	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	123	157	18	264	0	8	128	394	93	44	17
Peak Hour Factor	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620	0.8620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	36	46	5	77	0	2	37	114	27	13	5
Total Analysis Volume [veh/h]	87	143	182	21	306	0	9	148	457	108	51	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	19	9	19	19	9	43	0	9	43	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	35	29	38	35	27	32	37	28	28	37	32
g / C, Green / Cycle	0.44	0.37	0.48	0.44	0.34	0.40	0.46	0.35	0.35	0.46	0.40
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.13	0.02	0.18	0.00	0.01	0.09	0.32	0.09	0.04
s, saturation flow rate [veh/h]	1073	1685	1382	1194	1696	1454	1249	1710	1446	1193	1596
c, Capacity [veh/h]	458	615	661	587	568	578	668	594	502	608	635
d1, Uniform Delay [s]	14.30	17.68	12.57	12.90	21.64	0.00	11.78	18.72	25.00	12.71	15.23
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.20	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	0.89	1.03	0.02	3.63	0.00	0.01	0.22	11.50	0.14	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.23	0.28	0.04	0.54	0.00	0.01	0.25	0.91	0.18	0.11
d, Delay for Lane Group [s/veh]	15.21	18.56	13.60	12.93	25.27	0.00	11.78	18.93	36.50	12.85	15.30
Lane Group LOS	B	B	B	B	C	A	B	B	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	1.00	1.90	2.01	0.21	5.01	0.00	0.08	1.92	9.39	1.08	0.80
50th-Percentile Queue Length [ft]	24.92	47.58	50.31	5.19	125.21	0.00	2.11	48.12	234.81	27.08	19.89
95th-Percentile Queue Length [veh]	1.79	3.43	3.62	0.37	8.68	0.00	0.15	3.46	14.42	1.95	1.43
95th-Percentile Queue Length [ft]	44.86	85.64	90.57	9.34	216.97	0.00	3.79	86.61	360.47	48.75	35.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.21	18.56	13.60	12.93	25.27	0.00	11.78	18.93	36.50	12.85	15.30	15.30
Movement LOS	B	B	B	B	C	A	B	B	D	B	B	B
d_A, Approach Delay [s/veh]	15.66			24.48			31.90			13.82		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	23.84											
Intersection LOS	C											
Intersection V/C	0.574											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Broadway Street & Main Street

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Base Volume Input [veh/h]	27	63	60	23	45	11	10	167	13	71	82	17
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	1.60	8.30	0.00	4.40	0.00	0.00	4.20	0.00	8.40	3.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	66	62	24	47	11	9	154	12	65	75	16
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	18	17	6	13	3	2	41	3	17	20	4
Total Analysis Volume [veh/h]	30	71	67	26	50	12	10	165	13	70	80	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes****Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.85	0.42	0.99	0.87
95th-Percentile Queue Length [ft]	21.26	10.48	24.76	21.84
Approach Delay [s/veh]	9.14	8.75	9.40	9.35
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.22			
Intersection LOS	A			

**Intersection Level Of Service Report
Intersection 3: Oregon Street & Main Street**

Control Type:	Two-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.098

Intersection Setup

Name	Oregon Street						Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oregon Street						Main Street			Main Street		
Base Volume Input [veh/h]	31	16	57	29	7	21	29	264	2	18	188	1
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	6.30	1.80	0.00	0.00	4.80	4.90	0.00	5.60	5.60	3.80	100.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	17	59	29	7	21	27	243	2	17	173	1
Peak Hour Factor	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460	0.8460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	5	17	9	2	6	8	72	1	5	51	0
Total Analysis Volume [veh/h]	38	20	70	34	8	25	32	287	2	20	204	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.05	0.09	0.10	0.02	0.03	0.02	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	16.28	15.88	10.28	16.78	15.40	10.73	7.73	0.00	0.00	7.92	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.53	0.53	0.31	0.52	0.52	0.52	0.93	0.93	0.93	0.65	0.65	0.65
95th-Percentile Queue Length [ft]	13.30	13.30	7.68	12.93	12.93	12.93	23.24	23.24	23.24	16.34	16.34	16.34
d_A, Approach Delay [s/veh]	12.94			14.36			0.77			0.70		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	4.08											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 4: Airway Boulevard & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.309

Intersection Setup

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	54	125	99	70	160	2	12	203	119	77	105	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	5.60	4.00	14.20	22.80	6.90	0.00	0.00	4.90	5.10	10.40	8.60	31.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	54	125	99	70	160	2	11	187	109	71	97	44
Peak Hour Factor	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	37	29	21	47	1	3	55	32	21	29	13
Total Analysis Volume [veh/h]	64	148	117	83	190	2	13	222	129	84	115	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Split [s]	11	21	0	11	21	0	11	27	0	11	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	36	26	26	36	26	26	22	12	12	22	15	15
g / C, Green / Cycle	0.51	0.37	0.37	0.51	0.38	0.38	0.31	0.17	0.17	0.31	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.09	0.09	0.06	0.06	0.01	0.14	0.09	0.07	0.07	0.05
s, saturation flow rate [veh/h]	1140	1644	1414	942	1600	1594	1277	1630	1383	1150	1575	1107
c, Capacity [veh/h]	688	607	522	569	601	599	481	278	236	382	334	235
d1, Uniform Delay [s]	8.74	15.26	15.36	9.03	14.58	14.58	16.73	27.98	26.66	18.11	23.52	22.88
k, delay calibration	0.50	0.50	0.50	0.26	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.87	1.10	0.28	0.57	0.57	0.02	5.21	1.97	0.29	0.61	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

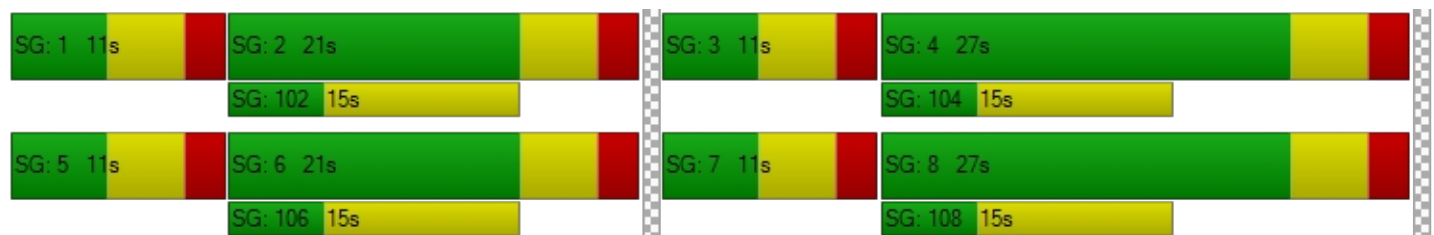
X, volume / capacity	0.09	0.23	0.24	0.15	0.16	0.16	0.03	0.80	0.55	0.22	0.34	0.22
d, Delay for Lane Group [s/veh]	9.01	16.14	16.46	9.31	15.15	15.15	16.75	33.19	28.62	18.40	24.13	23.35
Lane Group LOS	A	B	B	A	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.49	1.56	1.46	0.63	1.04	1.04	0.14	3.82	2.02	0.96	1.60	0.71
50th-Percentile Queue Length [ft]	12.25	39.05	36.59	15.63	26.01	25.97	3.51	95.45	50.48	24.10	40.11	17.79
95th-Percentile Queue Length [veh]	0.88	2.81	2.63	1.13	1.87	1.87	0.25	6.87	3.63	1.74	2.89	1.28
95th-Percentile Queue Length [ft]	22.04	70.28	65.86	28.13	46.81	46.75	6.32	171.81	90.87	43.38	72.20	32.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.01	16.16	16.46	9.31	15.15	15.15	16.75	33.19	28.62	18.40	24.13	23.35
Movement LOS	A	B	B	A	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	14.87			13.39			30.99			22.05		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.83											
Intersection LOS	C											
Intersection V/C	0.309											

Sequence




Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 5: Airport Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Airport Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	8	135	116	288	179	5
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	2.20	2.60	2.80	6.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	135	94	233	145	4
Peak Hour Factor	0.8380	0.8380	0.8380	0.8380	0.8380	0.8380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	40	28	70	43	1
Total Analysis Volume [veh/h]	10	161	112	278	173	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.19	0.08	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.65	10.35	7.81	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.80	0.80	1.15	1.15	0.00	0.00
95th-Percentile Queue Length [ft]	19.97	19.97	28.86	28.86	0.00	0.00
d_A, Approach Delay [s/veh]	10.66		2.24		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.65					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Valley Center Spur & Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.145

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	56	116	333	130	68	97
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	3.60	0.90	3.40	0.80	5.90	15.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	116	270	105	55	79
Peak Hour Factor	0.8330	0.8330	0.8330	0.8330	0.8330	0.8330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	35	81	32	17	24
Total Analysis Volume [veh/h]	67	139	324	126	66	95
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.19	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	15.76	12.99	0.00	0.00	8.52	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.49	1.49	0.00	0.00	0.19	0.00
95th-Percentile Queue Length [ft]	37.18	37.18	0.00	0.00	4.83	0.00
d_A, Approach Delay [s/veh]	13.89		0.00		3.49	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.19					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 8: Nelson Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	57	32	11	374	147	17
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	3.50	15.60	0.00	3.50	6.10	5.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	32	9	303	119	14
Peak Hour Factor	0.8580	0.8580	0.8580	0.8580	0.8580	0.8580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	9	3	88	35	4
Total Analysis Volume [veh/h]	66	37	10	353	139	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.04	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.20	10.34	7.52	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.61	0.61	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	15.25	15.25	0.53	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.17		0.21		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.14					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Springhill Road & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	11.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.302

Intersection Setup

Name	Springhill Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	150.00	100.00	200.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Springhill Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	111	89	123	306	65	62
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	1.80	7.80	4.10	0.70	4.60	4.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	93	129	321	68	65
Peak Hour Factor	0.8680	0.8680	0.8680	0.8680	0.8680	0.8680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	27	37	92	20	19
Total Analysis Volume [veh/h]	135	107	149	370	78	75
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	2.0	0.0	2.0	2.0	2.0	0.0
Split [s]	28	0	11	32	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	4.0	4.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	0.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	7	7	41	41	30	30
g / C, Green / Cycle	0.12	0.12	0.68	0.68	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.12	0.22	0.05	0.05
s, saturation flow rate [veh/h]	1600	1348	1246	1698	1635	1387
c, Capacity [veh/h]	196	165	985	1152	818	694
d1, Uniform Delay [s]	25.31	25.17	3.47	3.99	7.88	7.93
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.27	4.22	0.07	0.74	0.23	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

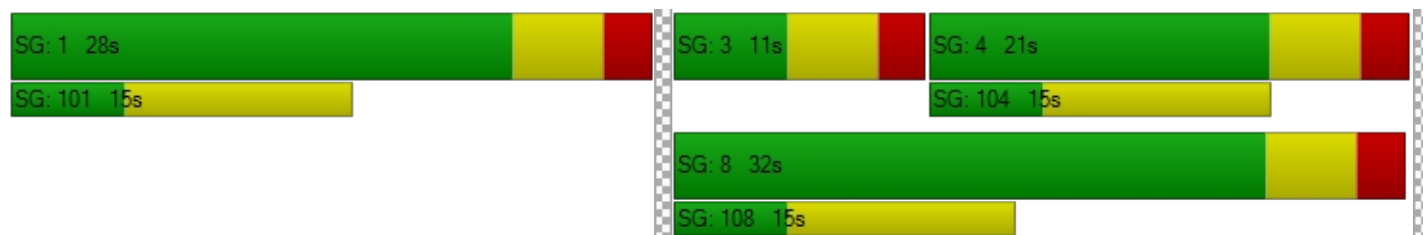
X, volume / capacity	0.69	0.65	0.15	0.32	0.10	0.11
d, Delay for Lane Group [s/veh]	29.58	29.40	3.54	4.72	8.11	8.25
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.97	1.56	0.43	1.41	0.50	0.49
50th-Percentile Queue Length [ft]	49.23	39.07	10.68	35.21	12.44	12.28
95th-Percentile Queue Length [veh]	3.54	2.81	0.77	2.53	0.90	0.88
95th-Percentile Queue Length [ft]	88.61	70.33	19.23	63.37	22.39	22.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.58	29.40	3.54	4.72	8.11	8.25
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	29.50		4.38		8.18	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	11.67					
Intersection LOS	B					
Intersection V/C	0.302					

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 7th Avenue & Griffin Drive**

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← →			← →			↑			↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	10	184	424	142	212	7	7	15	20	232	8	61
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500	1.0000	1.0000	1.0000	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	10.00	4.40	5.50	3.50	5.20	0.00	0.00	0.00	0.00	11.60	12.50	3.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	193	445	149	223	7	7	15	20	244	8	64
Peak Hour Factor	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520	0.8520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	57	131	44	65	2	2	4	6	72	2	19
Total Analysis Volume [veh/h]	13	227	522	175	262	8	8	18	23	286	9	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	63	0	0	63	0	0	57	0	0	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	C	C	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	57	57	57	57	51	51
g / C, Green / Cycle	0.48	0.48	0.48	0.48	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.15	0.38	0.23	0.18	0.03	0.33
s, saturation flow rate [veh/h]	1608	1378	777	1471	1578	1129
c, Capacity [veh/h]	795	654	429	699	706	533
d1, Uniform Delay [s]	19.38	26.63	29.01	20.25	20.47	30.02
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.98	9.79	2.86	1.61	0.19	7.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

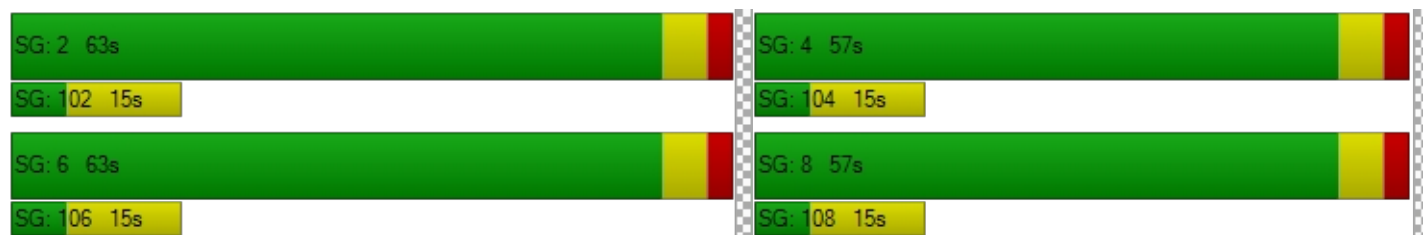
X, volume / capacity	0.30	0.80	0.41	0.39	0.07	0.69
d, Delay for Lane Group [s/veh]	20.35	36.42	31.87	21.87	20.66	37.30
Lane Group LOS	C	D	C	C	C	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.33	14.06	4.19	5.15	0.86	10.10
50th-Percentile Queue Length [ft]	108.14	351.58	104.85	128.65	21.52	252.57
95th-Percentile Queue Length [veh]	7.74	20.21	7.55	8.87	1.55	15.32
95th-Percentile Queue Length [ft]	193.41	505.33	188.73	221.66	38.73	382.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.35	20.35	36.42	31.87	21.87	21.87	20.66	20.66	20.66	37.30	37.30	37.30
Movement LOS	C	C	D	C	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	31.36			25.80			20.66			37.30		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	30.87											
Intersection LOS	C											
Intersection V/C	0.707											

Sequence

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



Intersection Level Of Service Report
Intersection 1: Jackrabbit Lane & Main Street

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	100.00	250.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Base Volume Input [veh/h]	346	350	162	22	159	0	47	101	179	160	184	50
Base Volume Adjustment Factor	0.9200	0.9200	0.9200	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.60	0.90	1.20	0.00	1.30	0.00	0.00	0.00	2.80	1.30	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	322	149	23	165	0	49	105	186	147	169	46
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	87	40	6	45	0	13	29	50	40	46	12
Total Analysis Volume [veh/h]	345	350	162	25	179	0	53	114	202	160	183	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	34	34	20	34	34	10	26	0	16	26	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	4.0	4.0	4.0	4.0	2.0	4.0	0.0	2.0	4.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	41	41	41	30	30	30	19	19	19	19	19
g / C, Green / Cycle	0.51	0.51	0.51	0.38	0.38	0.38	0.24	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.26	0.21	0.11	0.02	0.11	0.00	0.05	0.07	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1311	1695	1436	1174	1688	1454	1049	1710	1414	1154	1648
c, Capacity [veh/h]	715	867	734	345	638	550	179	404	334	271	389
d1, Uniform Delay [s]	12.51	12.04	10.77	24.96	17.32	0.00	35.28	25.01	27.23	33.05	27.19
k, delay calibration	0.50	0.44	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.33	1.22	0.69	0.41	1.10	0.00	0.91	0.38	1.76	2.05	1.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.40	0.22	0.07	0.28	0.00	0.30	0.28	0.60	0.59	0.60
d, Delay for Lane Group [s/veh]	14.83	13.27	11.46	25.37	18.42	0.00	36.18	25.39	28.99	35.10	28.66
Lane Group LOS	B	B	B	C	B	A	D	C	C	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.96	3.81	1.60	0.32	2.38	0.00	1.02	1.76	3.48	3.10	3.98
50th-Percentile Queue Length [ft]	98.93	95.27	39.92	7.91	59.56	0.00	25.48	44.08	87.10	77.52	99.58
95th-Percentile Queue Length [veh]	7.12	6.86	2.87	0.57	4.29	0.00	1.83	3.17	6.27	5.58	7.17
95th-Percentile Queue Length [ft]	178.08	171.49	71.86	14.24	107.20	0.00	45.87	79.35	156.78	139.53	179.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.83	13.27	11.46	25.37	18.42	0.00	36.18	25.39	28.99	35.10	28.66	28.66
Movement LOS	B	B	B	C	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.56			19.27			28.91			31.28		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.12											
Intersection LOS	C											
Intersection V/C	0.398											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Broadway Street & Main Street

Control Type:	All-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Base Volume Input [veh/h]	58	91	112	45	77	19	10	187	55	111	293	17
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	2.20	1.80	2.20	3.90	5.30	0.00	1.10	0.00	2.70	4.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	95	116	47	80	20	9	172	51	102	270	16
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	25	30	12	21	5	2	45	13	26	70	4
Total Analysis Volume [veh/h]	62	99	120	49	83	21	9	179	53	106	280	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes****Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.49	1.13	1.92	4.83
95th-Percentile Queue Length [ft]	62.18	28.16	47.97	120.65
Approach Delay [s/veh]	14.17	12.01	12.90	19.29
Approach LOS	B	B	B	C
Intersection Delay [s/veh]	15.49			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 3: Oregon Street & Main Street

Control Type:	Two-way stop	Delay (sec / veh):	27.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

Intersection Setup

Name	Oregon Street						Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oregon Street						Main Street			Main Street		
Base Volume Input [veh/h]	68	4	59	27	10	49	28	220	37	59	405	5
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	0.00	3.40	0.00	0.00	2.00	3.60	3.20	0.00	3.40	1.20	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	4	61	27	10	49	26	202	34	54	373	5
Peak Hour Factor	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	1	16	7	3	13	7	54	9	14	100	1
Total Analysis Volume [veh/h]	76	4	65	29	11	52	28	216	36	58	398	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.01	0.08	0.11	0.04	0.08	0.02	0.00	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	27.11	24.57	9.89	21.77	20.41	13.26	8.22	0.00	0.00	7.89	0.00	0.00
Movement LOS	D	C	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.38	1.38	0.26	0.89	0.89	0.89	0.96	0.96	0.96	1.61	1.61	1.61
95th-Percentile Queue Length [ft]	34.57	34.57	6.60	22.14	22.14	22.14	24.01	24.01	24.01	40.34	40.34	40.34
d_A, Approach Delay [s/veh]	19.32			16.80			0.82			0.99		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	5.15											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 4: Airway Boulevard & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	140	215	74	81	207	14	34	209	116	116	269	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	1.40	1.40	12.20	4.90	3.40	0.00	0.00	3.40	2.60	7.80	3.70	3.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	215	74	81	207	14	31	192	107	107	247	82
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	57	20	22	55	4	8	51	29	29	66	22
Total Analysis Volume [veh/h]	149	229	79	86	221	15	33	205	114	114	263	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Split [s]	11	21	0	11	21	0	11	27	0	11	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	36	26	26	36	25	25	22	11	11	22	14	14
g / C, Green / Cycle	0.51	0.37	0.37	0.51	0.36	0.36	0.31	0.16	0.16	0.31	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.13	0.09	0.10	0.08	0.07	0.07	0.03	0.12	0.08	0.09	0.16	0.06
s, saturation flow rate [veh/h]	1176	1686	1542	1074	1654	1617	1198	1654	1417	1208	1649	1406
c, Capacity [veh/h]	699	622	569	633	589	576	371	261	224	409	322	274
d1, Uniform Delay [s]	9.26	15.42	15.46	8.98	15.67	15.68	17.62	28.39	27.04	18.33	27.04	24.23
k, delay calibration	0.50	0.50	0.50	0.21	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.70	0.99	1.12	0.18	0.77	0.80	0.10	5.16	1.79	0.37	5.11	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.26	0.26	0.14	0.20	0.20	0.09	0.78	0.51	0.28	0.82	0.32
d, Delay for Lane Group [s/veh]	9.96	16.41	16.58	9.16	16.44	16.48	17.72	33.54	28.84	18.69	32.15	24.89
Lane Group LOS	A	B	B	A	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.21	1.82	1.72	0.63	1.36	1.35	0.36	3.54	1.79	1.33	4.46	1.24
50th-Percentile Queue Length [ft]	30.37	45.45	43.09	15.77	33.97	33.65	9.07	88.43	44.68	33.27	111.48	30.91
95th-Percentile Queue Length [veh]	2.19	3.27	3.10	1.14	2.45	2.42	0.65	6.37	3.22	2.40	7.92	2.23
95th-Percentile Queue Length [ft]	54.67	81.80	77.57	28.39	61.14	60.57	16.32	159.18	80.42	59.89	198.06	55.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.96	16.46	16.58	9.16	16.46	16.48	17.72	33.54	28.84	18.69	32.15	24.89
Movement LOS	A	B	B	A	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	14.36			14.51			30.54			27.48		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.78											
Intersection LOS	C											
Intersection V/C	0.315											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 5: Airport Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Airport Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	9	107	140	226	352	10
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	0.90	0.70	1.70	2.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	107	113	183	285	8
Peak Hour Factor	0.8840	0.8840	0.8840	0.8840	0.8840	0.8840
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	30	32	52	81	2
Total Analysis Volume [veh/h]	10	121	128	207	322	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.17	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.64	11.39	8.25	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.74	0.74	1.10	1.10	0.00	0.00
95th-Percentile Queue Length [ft]	18.54	18.54	27.62	27.62	0.00	0.00
d_A, Approach Delay [s/veh]	11.87		3.15		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.28					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Valley Center Spur & Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	23.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	114	92	191	118	152	357
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.90	1.10	3.20	0.00	4.00	5.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	92	155	96	123	289
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	25	43	27	34	80
Total Analysis Volume [veh/h]	126	102	171	106	136	319
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0




Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.12	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	23.11	16.46	0.00	0.00	8.16	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.68	2.68	0.00	0.00	0.36	0.00
95th-Percentile Queue Length [ft]	66.89	66.89	0.00	0.00	8.94	0.00
d_A, Approach Delay [s/veh]	20.13		0.00		2.44	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.94					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 8: Nelson Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.059

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	24	11	21	241	440	50
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	4.80	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	11	17	195	356	41
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	5	53	96	11
Total Analysis Volume [veh/h]	26	12	18	211	385	44
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.02	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.78	11.00	8.21	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.25	0.25	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	6.23	6.23	1.20	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.90		0.64		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Springhill Road & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.392

Intersection Setup

Name	Springhill Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	150.00	100.00	200.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Springhill Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	67	192	125	128	294	123
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	1.50	2.60	0.80	3.90	2.30	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	202	131	134	309	129
Peak Hour Factor	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	53	35	35	82	34
Total Analysis Volume [veh/h]	74	214	139	142	327	137
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	2.0	0.0	2.0	2.0	2.0	0.0
Split [s]	28	0	11	32	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	4.0	4.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	0.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	11	11	37	37	26	26
g / C, Green / Cycle	0.19	0.19	0.61	0.61	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.13	0.09	0.20	0.10
s, saturation flow rate [veh/h]	1605	1417	1109	1646	1672	1442
c, Capacity [veh/h]	302	267	716	1008	729	629
d1, Uniform Delay [s]	20.79	23.36	5.67	4.95	11.90	10.57
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	5.58	0.13	0.29	1.99	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

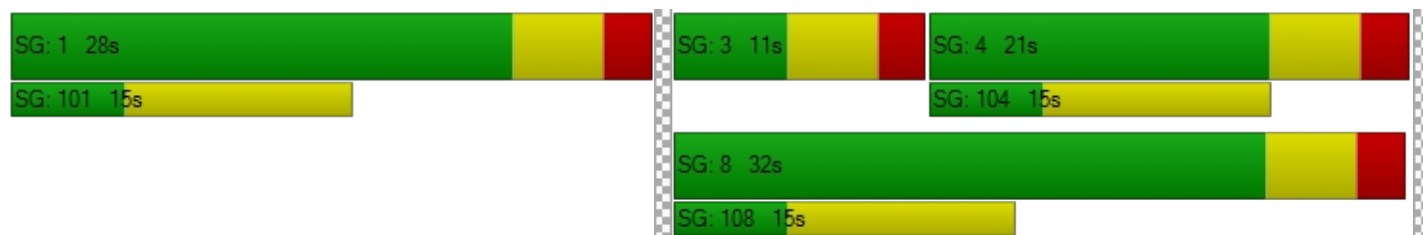
X, volume / capacity	0.25	0.80	0.19	0.14	0.45	0.22
d, Delay for Lane Group [s/veh]	21.21	28.94	5.80	5.24	13.89	11.37
Lane Group LOS	C	C	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	0.86	3.11	0.57	0.64	3.05	1.12
50th-Percentile Queue Length [ft]	21.60	77.66	14.24	15.94	76.23	28.10
95th-Percentile Queue Length [veh]	1.55	5.59	1.03	1.15	5.49	2.02
95th-Percentile Queue Length [ft]	38.87	139.78	25.63	28.68	137.21	50.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.21	28.94	5.80	5.24	13.89	11.37
Movement LOS	C	C	A	A	B	B
d_A, Approach Delay [s/veh]	26.95		5.52		13.15	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	14.92					
Intersection LOS	B					
Intersection V/C	0.392					

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 7th Avenue & Griffin Drive**

Control Type:	Signalized	Delay (sec / veh):	54.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	28	359	227	85	263	8	8	11	34	526	7	149
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500	1.0000	1.0000	1.0000	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	0.00	2.50	3.50	4.70	1.10	0.00	0.00	0.00	2.90	2.80	0.00	3.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	377	238	89	276	8	8	11	34	552	7	156
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	99	62	23	72	2	2	3	9	145	2	41
Total Analysis Volume [veh/h]	30	395	249	93	289	8	8	12	36	579	7	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	54	0	0	54	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	C	C	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	48	48	48	48	70	70
g / C, Green / Cycle	0.37	0.37	0.37	0.37	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.29	0.18	0.44	0.19	0.03	0.59
s, saturation flow rate [veh/h]	1474	1404	212	1532	1623	1267
c, Capacity [veh/h]	574	519	134	566	905	731
d1, Uniform Delay [s]	36.29	31.44	60.22	32.08	14.37	32.80
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.34	3.16	25.96	3.46	0.13	39.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

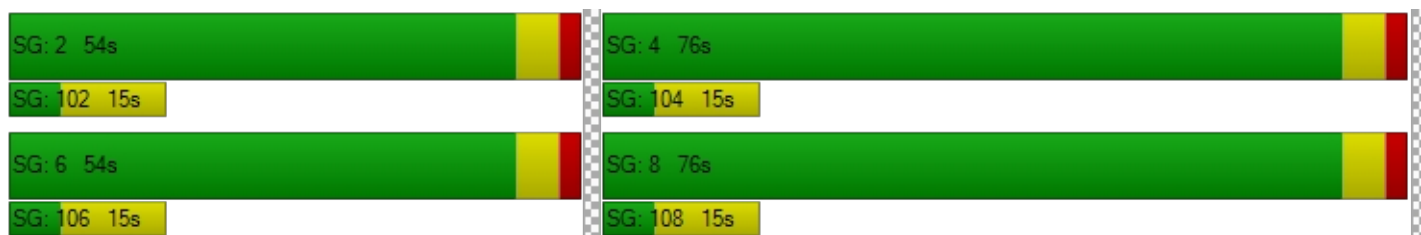
X, volume / capacity	0.74	0.48	0.70	0.53	0.06	1.03
d, Delay for Lane Group [s/veh]	44.63	34.60	86.18	35.54	14.50	72.79
Lane Group LOS	D	C	F	D	B	F
Critical Lane Group	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	13.43	6.48	4.05	7.87	0.83	31.97
50th-Percentile Queue Length [ft]	335.65	161.92	101.33	196.84	20.85	799.33
95th-Percentile Queue Length [veh]	19.44	10.65	7.30	12.48	1.50	42.13
95th-Percentile Queue Length [ft]	485.88	266.26	182.39	311.88	37.53	1053.26

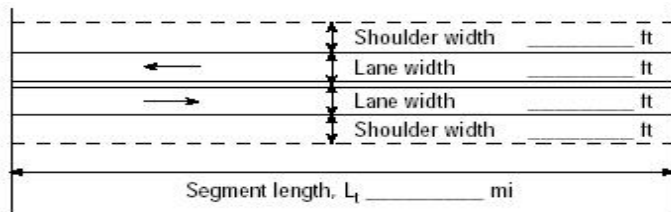
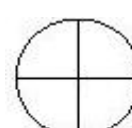
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.63	44.63	34.60	86.18	35.54	35.54	14.50	14.50	14.50	72.79	72.79	72.79
Movement LOS	D	D	C	F	D	D	B	B	B	E	E	E
d_A, Approach Delay [s/veh]	40.92			47.62			14.50			72.79		
Approach LOS	D			D			B			E		
d_I, Intersection Delay [s/veh]	54.31											
Intersection LOS	D											
Intersection V/C	1.031											

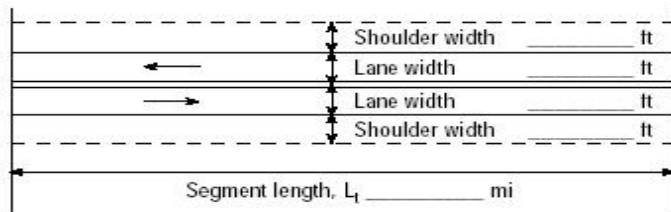
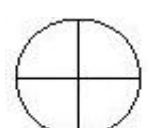
Sequence

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

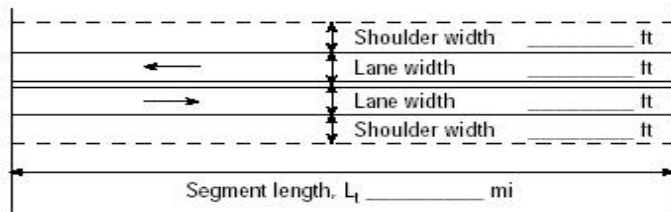



DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur EB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 57% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points mi 9/mi </div> </div>	
Analysis direction vol., V _d	308veh/h		
Opposing direction vol., V _o	143veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.984	0.973	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i / (PHF* f _{g,ATS} * f _{HV,ATS})	340	160	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.5 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 42.2 mi/h		
	Percent free flow speed, PFFS 86.9 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.996	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i / (PHF* f _{HV,PTSF} * f _{g,PTSF})	336	156	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	33.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	45.5		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} + V _{o,PTSF})	64.2		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.20		

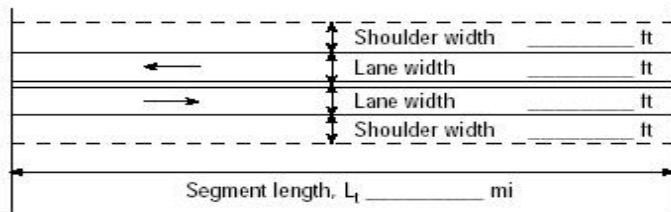
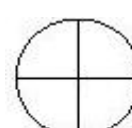
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1654
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	86.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	334.8
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.93
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway </div> <div style="width: 45%;"> <input type="checkbox"/> Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling </div> </div> <div style="margin-top: 10px;">  <p>Show North Arrow</p> </div> <div style="margin-top: 10px;"> Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 57% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points mi 9/mi </div>	
Analysis direction vol., V _d	222veh/h		
Opposing direction vol., V _o	348veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.990	0.994	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	244	381	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.1 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.6 mi/h		
	Percent free flow speed, PFFS 85.7 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	0.998	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	242	379	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	29.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	48.0		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	47.7		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.14		

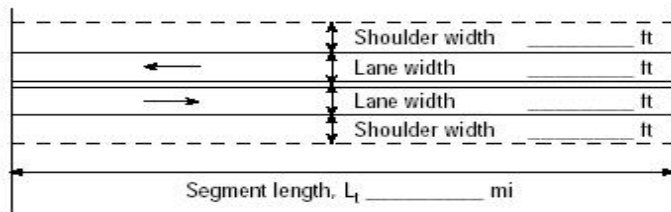
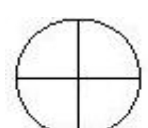
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1690
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1697
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	241.3
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.24
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 60% % Trucks and Buses, P_T 11 % % Recreational vehicles, P_R 0% Access points mi 9/mi </div> </div>	
Analysis direction vol., V _d	143veh/h		
Opposing direction vol., V _o	308veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.7	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.929	0.958	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	167	349	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	2.3 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.4 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	48.5 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS}	42.1 mi/h
		Percent free flow speed, PFFS	86.8 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.989	0.989	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	157	338	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		20.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		46.6	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +v _{o,PTSF})		35.3	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.10		

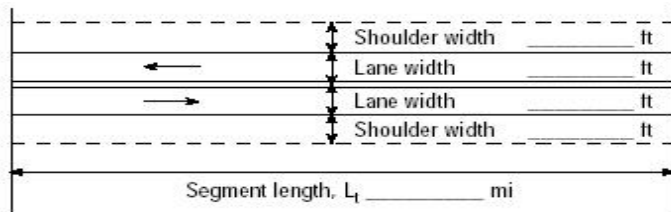
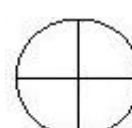
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1629
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1682
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	86.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	155.4
Effective width, Wv (Eq. 15-29) ft	16.06
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	6.50
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 60% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 9/mi </div> </div>	
Analysis direction vol., V _d	248veh/h		
Opposing direction vol., V _o	222veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.984	0.980	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	274	246	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.0 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.5 mi/h		
	Percent free flow speed, PFFS 85.5 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.996	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	271	242	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	29.6		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	55.5		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	58.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.16		

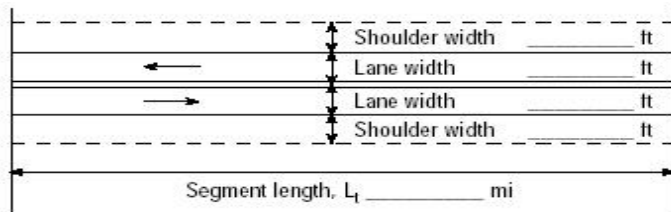
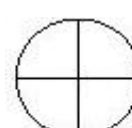
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	269.6
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.82
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport EB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 59% % Trucks and Buses, P_T 9 % % Recreational vehicles, P_R 0% Access points mi 0/mi </div> </div>	
Analysis direction vol., V _d	342veh/h		
Opposing direction vol., V _o	246veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.974	0.965	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	382	277	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.0 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.9 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.8 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 42.8 mi/h		
	Percent free flow speed, PFFS 84.3 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.991	0.991	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	375	270	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	38.8		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	48.5		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	67.0		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.22		

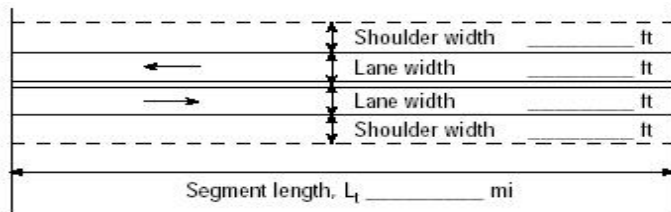
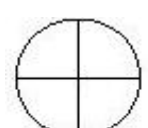
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1641
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1685
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	371.7
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	6.65
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 59% % Trucks and Buses, P_T 5 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 0/mi </div> </div>	
Analysis direction vol., V _d	322veh/h		
Opposing direction vol., V _o	414veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.985	0.985	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	355	457	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.0 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.0 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.8 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 42.5 mi/h		
	Percent free flow speed, PFFS 83.7 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.995	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	352	450	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	40.5		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	40.3		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	58.2		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.21		

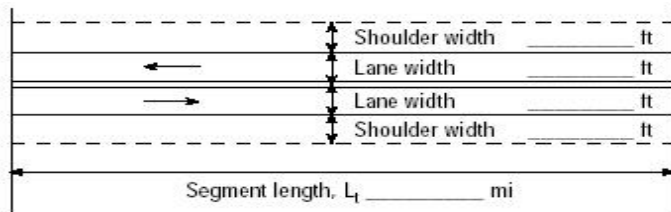
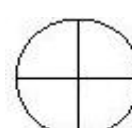
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1675
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	350.0
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.24
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport EB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 84% % Trucks and Buses, P_T 11 % % Recreational vehicles, P_R 0% Access points mi 0/mi </div> </div>	
Analysis direction vol., V _d	246veh/h		
Opposing direction vol., V _o	342veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.958	0.968	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	279	384	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.7 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.8 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS}	42.9 mi/h
		Percent free flow speed, PFFS	84.5 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.989	0.989	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	270	376	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		31.7	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		50.7	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +v _{o,PTSF})		52.9	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.16		

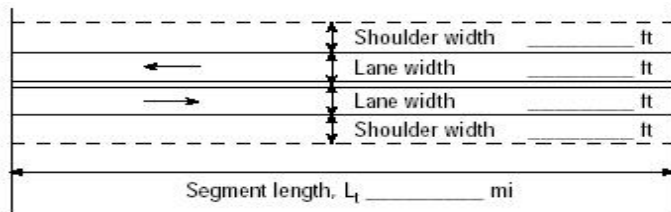

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1646
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1682
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	267.4
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	7.29
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway</p> <p>highway <input checked="" type="checkbox"/> Class III highway</p> <p>Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling</p> <p>Grade Length mi Up/down</p> <p>Peak-hour factor, PHF 0.92</p> <p>No-passing zone 84%</p> <p>% Trucks and Buses, P_T 5%</p> <p>% Recreational vehicles, P_R 0%</p> <p>Access points <i>mi</i> 9/mi</p> </div> <div style="width: 45%; text-align: center;">  <p>Show North Arrow</p> </div> </div>	
Analysis direction vol., V _d	414veh/h		
Opposing direction vol., V _o	322veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.985	0.985	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	457	355	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.9 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.4 mi/h		
	Percent free flow speed, PFFS 81.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.995	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	450	352	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	45.4		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	42.0		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	69.0		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.27		

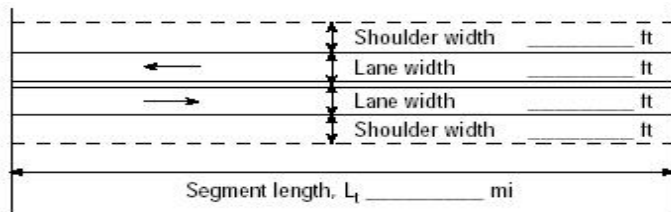
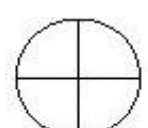
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1675
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1692
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	450.0
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.37
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 95% % Trucks and Buses, P_T 3% % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	405veh/h		
Opposing direction vol., V _o	147veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.991	0.979	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	444	163	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	1.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	3.4 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	49.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS}	41.2 mi/h
		Percent free flow speed, PFFS	83.5 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.997	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	440	160	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})		40.7	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		44.3	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})		73.2	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.26		

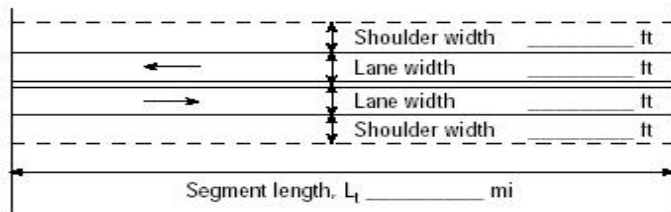
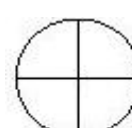
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1664
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1695
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	440.2
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.79
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 95% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	242veh/h		
Opposing direction vol., V _o	454veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.996	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	265	495	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	1.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.3 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	49.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS}	41.1 mi/h
		Percent free flow speed, PFFS	83.4 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	264	493	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		33.2	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		40.6	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})		47.4	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.16		

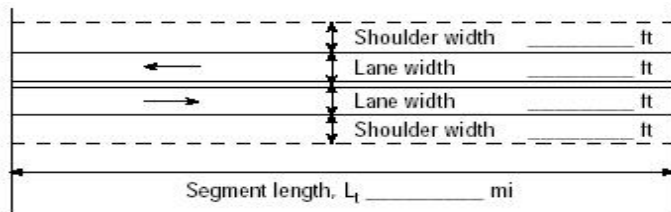
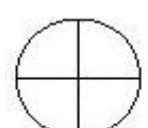
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	263.0
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.28
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 81% % Trucks and Buses, P_T 6% % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	147veh/h		
Opposing direction vol., V _o	405veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.7	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.960	0.982	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	166	448	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.4 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 42.2 mi/h		
	Percent free flow speed, PFFS 85.5 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.994	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	161	440	
Base percent time-spent-following ⁴ , BPTS _d (%)=100(1-e ^{av_d})	21.9		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	43.3		
Percent time-spent-following, PTSF _d (%)=BPTS _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	33.5		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.10		

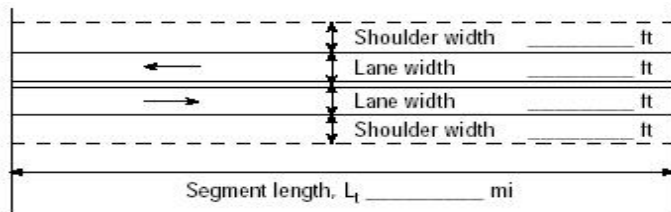
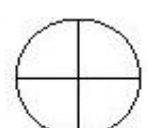
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1669
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	159.8
Effective width, Wv (Eq. 15-29) ft	15.81
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.69
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst RPA	Highway / Direction of Travel Frontage Road	Agency or Company	From/To Nelson to Springhill WB
Date Performed 9/30/2016	Jurisdiction	Analysis Time Period PM	Analysis Year 2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 81% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points mi 6/mi </div> </div>	
Analysis direction vol., V _d 454veh/h	Opposing direction vol., V _o 242veh/h	Shoulder width ft 0.5	Lane Width ft 12.0
Segment Length mi 0.9			
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.984	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	497	267	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.5 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.9 mi/h		
	Percent free flow speed, PFFS 81.0 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	493	264	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	47.4		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	39.7		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	73.3		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.29		

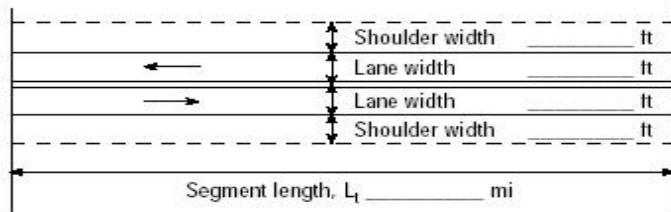
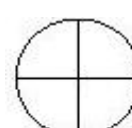
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1673
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	493.5
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.12
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway </div> <div style="width: 45%;"> <input type="checkbox"/> Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling </div> </div> <div style="margin-top: 10px;">  <p>Show North Arrow</p> </div> <div style="margin-top: 10px;"> Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 73% % Trucks and Buses, P_T 1% % Recreational vehicles, P_R 0% Access points mi 7/mi </div>	
Analysis direction vol., V _d	438veh/h		
Opposing direction vol., V _o	133veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	0.993	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	477	146	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.9 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.3 mi/h		
	Percent free flow speed, PFFS 84.3 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.999	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	476	145	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	43.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	39.7		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	73.5		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.28		

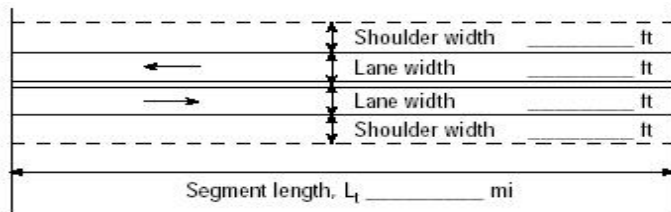
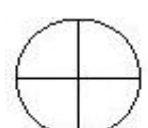
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1688
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1698
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	476.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.35
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway </div> <div style="width: 45%;"> <input type="checkbox"/> Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling </div> </div> <div style="margin-top: 10px;">  <p>Show North Arrow</p> </div> <div style="margin-top: 10px;"> Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 73% % Trucks and Buses, P_T 3% % Recreational vehicles, P_R 0% Access points mi 7/mi </div>	
Analysis direction vol., V _d	204veh/h		
Opposing direction vol., V _o	438veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.985	0.994	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	225	479	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.1 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.5 mi/h		
	Percent free flow speed, PFFS 84.6 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.997	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	222	476	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	28.9		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	40.7		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	41.8		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.13		

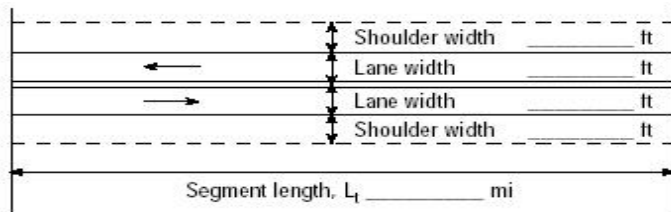
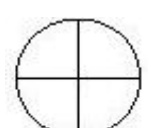
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1690
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	221.7
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.45
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 93% % Trucks and Buses, P_T 5 % % Recreational vehicles, P_R 0% Access points mi 7/mi </div> </div>	
Analysis direction vol., V _d	133veh/h		
Opposing direction vol., V _o	438veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.7	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.966	0.990	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	150	481	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.3 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.8 mi/h		
	Percent free flow speed, PFFS 85.3 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.995	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	145	476	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	20.8		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	40.8		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	30.3		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.09		

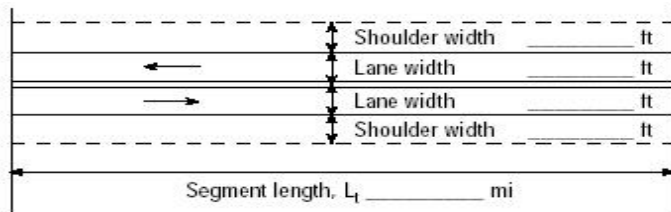
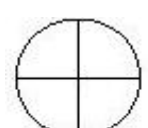
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1683
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	144.6
Effective width, Wv (Eq. 15-29) ft	16.69
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.18
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 93% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points mi 7/mi </div> </div>	
Analysis direction vol., V _d	438veh/h		
Opposing direction vol., V _o	204veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.996	0.990	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	478	224	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.8 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.8 mi/h		
	Percent free flow speed, PFFS 81.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.998	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	476	222	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	44.2		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	42.1		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	72.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.28		

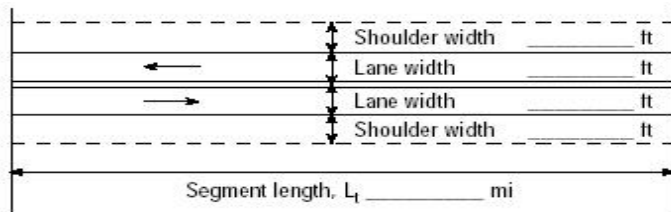
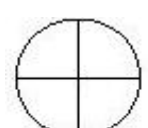
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1683
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1697
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	476.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.58
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson EB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points mi 2/mi </div> </div>	
Analysis direction vol., V _d	349veh/h		
Opposing direction vol., V _o	143veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.988	0.973	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	384	160	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	3.4 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} +V _{o,ATS})-f _{np,ATS}	42.7 mi/h
		Percent free flow speed, PFFS	84.8 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.996	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	381	156	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		36.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		47.0	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})		69.8	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.23		

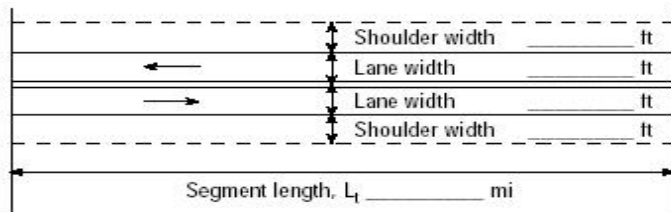

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1654
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	379.3
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.99
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points mi 2/mi </div> </div>	
Analysis direction vol., V _d	230veh/h		
Opposing direction vol., V _o	390veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+ P _T (E _T -1)+P _R (E _R -1))	0.992	0.994	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF* f _{g,ATS} * f _{HV,ATS})	252	426	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.6 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS}	42.4 mi/h
		Percent free flow speed, PFFS	84.4 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+ P _T (E _T -1)+P _R (E _R -1))	0.998	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF* f _{HV,PTSF} * f _{g,PTSF})	250	424	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})		30.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		47.7	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} + V _{o,PTSF})		48.2	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.15		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1690
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	250.0
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.26
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson WB
Date Performed	9/29/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points mi 2/mi </div> </div>	
Analysis direction vol., V _d	143veh/h		
Opposing direction vol., V _o	349veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.7	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.935	0.971	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	166	391	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.8 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS}	43.2 mi/h
		Percent free flow speed, PFFS	85.9 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.990	0.990	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	157	383	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		20.4	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		47.0	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})		34.1	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.10		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1651
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1683
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	155.4
Effective width, Wv (Eq. 15-29) ft	16.06
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	6.09
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2016
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 5% % Recreational vehicles, P_R 0% Access points <i>mi</i> 2/mi </div> </div>	
Analysis direction vol., V _d	390veh/h		
Opposing direction vol., V _o	230veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.985	0.980	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	430	255	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.5 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	3.6 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.3 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS}	41.3 mi/h
		Percent free flow speed, PFFS	82.2 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.995	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	424	251	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})		41.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		47.6	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +v _{o,PTSF})		71.2	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.25		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1692
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	423.9
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.34
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	



Appendix C

PROJECTED OPERATION ANALYSIS

Intersection Level Of Service Report
Intersection 1: Jackrabbit Lane & Main Street

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	100.00	250.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Base Volume Input [veh/h]	82	134	171	17	254	0	8	123	379	101	48	18
Base Volume Adjustment Factor	0.9200	0.9200	0.9200	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	2.40	1.50	5.20	0.00	0.80	0.00	0.00	0.00	0.50	3.00	2.10	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	167	214	24	359	0	11	174	536	126	60	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	45	58	7	98	0	3	47	146	34	16	6
Total Analysis Volume [veh/h]	111	182	233	26	390	0	12	189	583	137	65	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	19	9	19	19	9	73	0	9	73	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	46	39	48	46	37	43	56	47	47	56	50
g / C, Green / Cycle	0.42	0.36	0.44	0.42	0.34	0.39	0.51	0.43	0.43	0.51	0.46
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.17	0.02	0.23	0.00	0.01	0.11	0.40	0.12	0.06
s, saturation flow rate [veh/h]	994	1685	1382	1154	1696	1454	1222	1710	1446	1126	1597
c, Capacity [veh/h]	344	602	607	501	572	563	668	729	617	581	731
d1, Uniform Delay [s]	22.20	25.46	20.79	19.15	31.40	0.00	13.49	20.36	30.34	14.97	17.14
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.21	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	1.29	1.83	0.04	6.47	0.00	0.01	0.19	13.49	0.21	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.30	0.38	0.05	0.68	0.00	0.02	0.26	0.95	0.24	0.12
d, Delay for Lane Group [s/veh]	24.68	26.75	22.63	19.20	37.87	0.00	13.50	20.54	43.83	15.18	17.22
Lane Group LOS	C	C	C	B	D	A	B	C	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	2.01	3.63	4.30	0.40	9.83	0.00	0.15	3.15	16.61	1.85	1.32
50th-Percentile Queue Length [ft]	50.28	90.83	107.55	9.97	245.67	0.00	3.72	78.73	415.32	46.36	33.00
95th-Percentile Queue Length [veh]	3.62	6.54	7.70	0.72	14.97	0.00	0.27	5.67	23.30	3.34	2.38
95th-Percentile Queue Length [ft]	90.51	163.50	192.59	17.95	374.20	0.00	6.69	141.72	582.43	83.44	59.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.68	26.75	22.63	19.20	37.87	0.00	13.50	20.54	43.83	15.18	17.22	17.22
Movement LOS	C	C	C	B	D	A	B	C	D	B	B	B
d_A, Approach Delay [s/veh]	24.49			36.71			37.75			15.99		
Approach LOS	C			D			D			B		
d_I, Intersection Delay [s/veh]	31.43											
Intersection LOS	C											
Intersection V/C	0.726											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Broadway Street & Main Street

Control Type:	All-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Base Volume Input [veh/h]	27	63	60	23	45	11	10	167	13	71	82	17
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	1.60	8.30	0.00	4.40	0.00	0.00	4.20	0.00	8.40	3.60	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	90	84	33	64	15	12	209	16	88	102	22
Peak Hour Factor	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	24	23	9	17	4	3	56	4	24	27	6
Total Analysis Volume [veh/h]	41	97	90	35	69	16	13	224	17	94	109	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.47	0.69	1.72	1.50
95th-Percentile Queue Length [ft]	36.82	17.15	43.09	37.57
Approach Delay [s/veh]	10.93	9.93	11.37	11.14
Approach LOS	B	A	B	B
Intersection Delay [s/veh]	10.98			
Intersection LOS	B			

**Intersection Level Of Service Report
Intersection 3: Oregon Street & Main Street**

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.165

Intersection Setup

Name	Oregon Street						Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oregon Street						Main Street			Main Street		
Base Volume Input [veh/h]	31	16	57	29	7	21	29	264	2	18	188	1
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	6.30	1.80	0.00	0.00	4.80	0.00	4.90	0.00	5.60	3.80	100.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	23	80	39	10	29	37	330	3	23	235	1
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	6	22	11	3	8	10	90	1	6	64	0
Total Analysis Volume [veh/h]	48	25	87	42	11	32	40	359	3	25	255	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.08	0.13	0.17	0.03	0.04	0.03	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	21.56	20.37	11.02	22.34	19.37	12.83	7.81	0.00	0.00	8.13	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.95	0.95	0.43	0.92	0.92	0.92	1.30	1.30	1.30	0.93	0.93	0.93
95th-Percentile Queue Length [ft]	23.82	23.82	10.86	23.10	23.10	23.10	32.45	32.45	32.45	23.33	23.33	23.33
d_A, Approach Delay [s/veh]	15.64			18.37			0.78			0.72		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	4.94											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 4: Airway Boulevard & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	54	125	99	70	160	2	12	203	119	77	105	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	5.60	4.00	14.20	22.80	6.90	0.00	0.00	4.90	5.10	10.40	8.60	31.30
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	170	135	95	218	3	15	254	148	97	132	60
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	46	37	26	59	1	4	69	40	26	36	16
Total Analysis Volume [veh/h]	79	185	147	103	237	3	16	276	161	105	143	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Split [s]	11	21	0	11	21	0	11	27	0	11	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	33	23	23	33	23	23	25	14	14	25	18	18
g / C, Green / Cycle	0.47	0.32	0.32	0.47	0.33	0.33	0.36	0.20	0.20	0.36	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.11	0.11	0.08	0.08	0.01	0.17	0.12	0.09	0.09	0.06
s, saturation flow rate [veh/h]	1122	1644	1412	923	1600	1593	1245	1630	1383	1112	1575	1107
c, Capacity [veh/h]	621	526	451	507	524	522	507	331	281	392	397	279
d1, Uniform Delay [s]	10.49	18.20	18.30	10.97	17.18	17.18	14.82	26.86	25.25	16.65	21.63	20.89
k, delay calibration	0.50	0.50	0.50	0.40	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	1.69	2.12	0.72	1.02	1.03	0.02	5.46	1.84	0.36	0.55	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

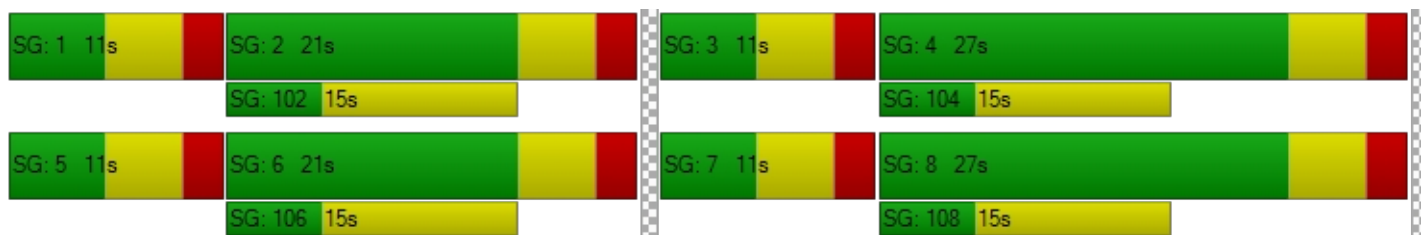
X, volume / capacity	0.13	0.33	0.35	0.20	0.23	0.23	0.03	0.83	0.57	0.27	0.36	0.23
d, Delay for Lane Group [s/veh]	10.91	19.89	20.42	11.69	18.20	18.21	14.85	32.31	27.09	17.01	22.18	21.31
Lane Group LOS	B	B	C	B	B	B	B	C	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.69	2.27	2.10	0.93	1.47	1.47	0.16	4.70	2.45	1.13	1.90	0.84
50th-Percentile Queue Length [ft]	17.24	56.67	52.40	23.22	36.79	36.72	3.98	117.62	61.21	28.23	47.52	21.02
95th-Percentile Queue Length [veh]	1.24	4.08	3.77	1.67	2.65	2.64	0.29	8.26	4.41	2.03	3.42	1.51
95th-Percentile Queue Length [ft]	31.04	102.00	94.32	41.80	66.22	66.10	7.17	206.55	110.17	50.82	85.54	37.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.91	19.92	20.42	11.69	18.20	18.21	14.85	32.31	27.09	17.01	22.18	21.31
Movement LOS	B	B	C	B	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	18.37			16.25			29.84			20.27		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.70											
Intersection LOS	C											
Intersection V/C	0.386											

Sequence




Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 5: Airport Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Airport Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	8	135	116	288	179	5
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	2.20	2.60	2.80	6.70	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	184	128	317	197	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	50	35	86	54	1
Total Analysis Volume [veh/h]	12	200	139	345	214	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.24	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.12	11.27	7.98	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.17	1.17	1.66	1.66	0.00	0.00
95th-Percentile Queue Length [ft]	29.21	29.21	41.43	41.43	0.00	0.00
d_A, Approach Delay [s/veh]	11.72		2.29		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.93					
Intersection LOS	C					

**Intersection Level Of Service Report
Intersection 6: Valley Center Spur & Frontage Road**

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.412

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	56	116	333	130	68	97
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	3.60	0.90	3.40	0.80	5.90	15.40
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	158	367	143	75	107
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	43	100	39	20	29
Total Analysis Volume [veh/h]	83	172	399	155	82	116
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	7	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.0	0.0	4.0	0.0	0.0	4.0
All red [s]	2.0	0.0	2.0	0.0	0.0	2.0
Split [s]	39	0	21	0	0	21
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	0.0	0.0	4.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	L	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	12	36	36	36	36
g / C, Green / Cycle	0.21	0.59	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.17	0.24	0.11	0.10	0.08
s, saturation flow rate [veh/h]	1493	1654	1442	851	1482
c, Capacity [veh/h]	307	983	857	481	881
d1, Uniform Delay [s]	22.85	6.52	5.54	11.00	5.36
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.73	1.25	0.46	0.77	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.41	0.18	0.17	0.13
d, Delay for Lane Group [s/veh]	28.57	7.76	6.00	11.77	5.67
Lane Group LOS	C	A	A	B	A
Critical Lane Group	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.68	2.38	0.78	0.71	0.56
50th-Percentile Queue Length [ft]	91.97	59.42	19.57	17.77	14.08
95th-Percentile Queue Length [veh]	6.62	4.28	1.41	1.28	1.01
95th-Percentile Queue Length [ft]	165.54	106.95	35.23	31.99	25.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.57	28.57	7.76	6.00	11.77	5.67
Movement LOS	C	C	A	A	B	A
d_A, Approach Delay [s/veh]	28.57		7.27		8.20	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	12.85					
Intersection LOS	B					
Intersection V/C	0.412					

Sequence




Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 8: Nelson Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.199

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	57	32	11	374	147	17
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	3.50	15.60	0.00	3.50	6.10	5.90
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	44	12	412	162	19
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	12	3	112	44	5
Total Analysis Volume [veh/h]	85	48	13	448	176	21
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.06	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.80	11.70	7.62	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.01	1.01	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	25.34	25.34	0.71	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.32		0.21		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.53					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Springhill Road & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

Intersection Setup

Name	Springhill Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	150.00	100.00	200.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Springhill Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	111	89	123	306	65	62
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	1.80	7.80	4.10	0.70	4.60	4.80
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	126	175	437	92	88
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	34	48	119	25	24
Total Analysis Volume [veh/h]	173	137	190	475	100	96
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	2.0	0.0	2.0	2.0	2.0	0.0
Split [s]	28	0	11	32	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	4.0	4.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	0.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	9	9	39	39	28	28
g / C, Green / Cycle	0.15	0.15	0.65	0.65	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.11	0.10	0.15	0.28	0.06	0.07
s, saturation flow rate [veh/h]	1600	1348	1237	1698	1635	1387
c, Capacity [veh/h]	238	200	935	1107	762	647
d1, Uniform Delay [s]	24.46	24.28	4.20	5.06	9.13	9.21
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.22	4.07	0.11	1.22	0.36	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

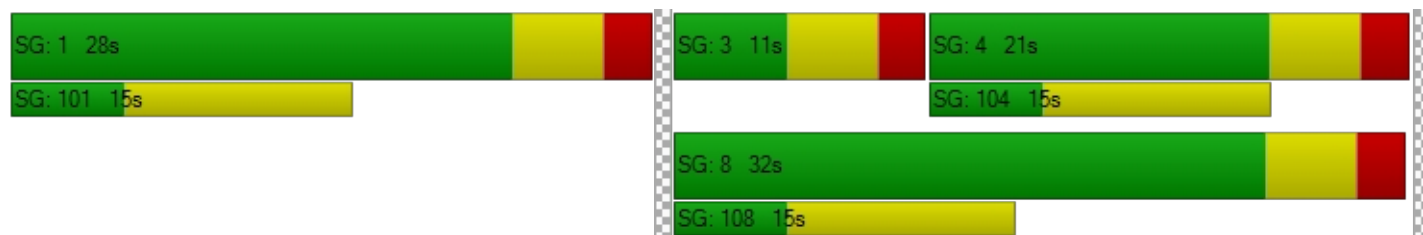
X, volume / capacity	0.73	0.68	0.20	0.43	0.13	0.15
d, Delay for Lane Group [s/veh]	28.67	28.35	4.31	6.28	9.49	9.69
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.48	1.96	0.66	2.30	0.71	0.71
50th-Percentile Queue Length [ft]	61.97	48.91	16.45	57.42	17.85	17.64
95th-Percentile Queue Length [veh]	4.46	3.52	1.18	4.13	1.29	1.27
95th-Percentile Queue Length [ft]	111.54	88.04	29.61	103.35	32.13	31.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.67	28.35	4.31	6.28	9.49	9.69
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	28.53		5.71		9.59	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	12.40					
Intersection LOS	B					
Intersection V/C	0.388					

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 7th Avenue & Griffin Drive**

Control Type:	Signalized	Delay (sec / veh):	45.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.899

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← →			← →			↑ ↓			↑ ↓		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	10	184	424	142	212	7	7	15	20	232	8	61
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500	1.0000	1.0000	1.0000	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	10.00	4.40	5.50	3.50	5.20	0.00	0.00	0.00	0.00	11.60	12.50	3.30
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	262	605	203	303	10	10	20	27	332	11	87
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	71	164	55	82	3	3	5	7	90	3	24
Total Analysis Volume [veh/h]	16	285	658	221	329	11	11	22	29	361	12	95
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	64	0	0	64	0	0	56	0	0	56	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	C	C	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	58	58	58	58	50	50
g / C, Green / Cycle	0.48	0.48	0.48	0.48	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.19	0.48	0.32	0.23	0.04	0.42
s, saturation flow rate [veh/h]	1604	1378	689	1471	1616	1111
c, Capacity [veh/h]	807	666	393	711	709	516
d1, Uniform Delay [s]	19.62	30.66	32.99	20.83	21.25	35.93
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.32	32.10	5.71	2.30	0.24	22.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.99	0.56	0.48	0.09	0.91
d, Delay for Lane Group [s/veh]	20.94	62.76	38.70	23.13	21.49	58.18
Lane Group LOS	C	E	D	C	C	E
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.58	24.00	6.03	6.79	1.12	16.62
50th-Percentile Queue Length [ft]	139.59	599.95	150.71	169.87	27.91	415.62
95th-Percentile Queue Length [veh]	9.46	32.03	10.05	11.07	2.01	23.31
95th-Percentile Queue Length [ft]	236.47	800.79	251.37	276.74	50.25	582.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.94	20.94	62.76	38.70	23.13	23.13	21.49	21.49	21.49	58.18	58.18	58.18
Movement LOS	C	C	E	D	C	C	C	C	C	E	E	E
d_A, Approach Delay [s/veh]	49.64			29.27			21.49			58.18		
Approach LOS	D			C			C			E		
d_I, Intersection Delay [s/veh]	45.16											
Intersection LOS	D											
Intersection V/C	0.899											

Sequence

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



Intersection Level Of Service Report
Intersection 1: Jackrabbit Lane & Main Street

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	100.00	250.00	100.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Jackrabbit Lane			Jackrabbit Lane			Frontage Road			Main Street		
Base Volume Input [veh/h]	346	350	162	22	159	0	47	101	179	160	184	50
Base Volume Adjustment Factor	0.9200	0.9200	0.9200	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.60	0.90	1.20	0.00	1.30	0.00	0.00	0.00	2.80	1.30	0.00	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	438	203	31	224	0	67	143	253	200	230	63
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	119	55	8	61	0	18	39	69	54	62	17
Total Analysis Volume [veh/h]	469	476	220	34	243	0	73	155	275	217	250	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

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

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	0	7	4	0
Auxiliary Signal Groups			2,7			3,6						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	19	9	19	19	14	53	0	9	48	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	53	46	55	53	44	52	29	20	20	29	21
g / C, Green / Cycle	0.59	0.51	0.61	0.59	0.49	0.58	0.32	0.22	0.22	0.32	0.23
(v / s)_i Volume / Saturation Flow Rate	0.42	0.28	0.15	0.04	0.14	0.00	0.07	0.09	0.19	0.18	0.19
s, saturation flow rate [veh/h]	1112	1695	1436	914	1688	1454	1112	1710	1414	1232	1648
c, Capacity [veh/h]	669	861	874	479	818	838	303	385	318	434	385
d1, Uniform Delay [s]	16.06	15.19	8.15	9.89	14.00	0.00	23.05	29.78	33.62	25.52	32.81
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.04	2.56	0.69	0.06	0.93	0.00	0.41	0.68	6.98	0.89	4.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.55	0.25	0.07	0.30	0.00	0.24	0.40	0.86	0.50	0.83
d, Delay for Lane Group [s/veh]	22.10	17.75	8.84	9.95	14.93	0.00	23.46	30.46	40.60	26.42	37.33
Lane Group LOS	C	B	A	A	B	A	C	C	D	C	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	6.05	6.83	1.96	0.27	3.04	0.00	1.11	2.89	6.26	3.62	6.91
50th-Percentile Queue Length [ft]	151.36	170.72	48.88	6.69	76.11	0.00	27.63	72.23	156.46	90.56	172.71
95th-Percentile Queue Length [veh]	10.09	11.11	3.52	0.48	5.48	0.00	1.99	5.20	10.36	6.52	11.22
95th-Percentile Queue Length [ft]	252.24	277.86	87.98	12.04	136.99	0.00	49.73	130.01	259.03	163.00	280.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.10	17.75	8.84	9.95	14.93	0.00	23.46	30.46	40.60	26.42	37.33	37.33
Movement LOS	C	B	A	A	B	A	C	C	D	C	D	D
d_A, Approach Delay [s/veh]	17.82			14.32			34.99			32.90		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	24.16											
Intersection LOS	C											
Intersection V/C	0.601											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Broadway Street & Main Street

Control Type:	All-way stop	Delay (sec / veh):	57.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Broadway Street			Broadway Street			Main Street			Main Street		
Base Volume Input [veh/h]	58	91	112	45	77	19	10	187	55	111	293	17
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	2.20	1.80	2.20	3.90	5.30	0.00	1.10	0.00	2.70	4.40	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	129	158	64	109	27	12	234	69	139	367	22
Peak Hour Factor	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630	0.9630
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	33	41	17	28	7	3	61	18	36	95	6
Total Analysis Volume [veh/h]	85	134	164	66	113	28	12	243	72	144	381	23
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes****Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	7.28	2.55	5.25	18.84
95th-Percentile Queue Length [ft]	182.12	63.75	131.28	470.91
Approach Delay [s/veh]	33.49	18.89	26.12	108.05
Approach LOS	D	C	D	F
Intersection Delay [s/veh]	57.67			
Intersection LOS	F			

**Intersection Level Of Service Report
Intersection 3: Oregon Street & Main Street**

Control Type:	Two-way stop	Delay (sec / veh):	98.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Oregon Street						Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Oregon Street						Main Street			Main Street		
Base Volume Input [veh/h]	68	4	59	27	10	49	28	220	37	59	405	5
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	0.00	0.00	3.40	0.00	0.00	2.00	3.60	3.20	0.00	3.40	1.20	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	5	83	37	14	67	35	275	46	73	507	7
Peak Hour Factor	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	1	22	10	4	18	9	73	12	19	135	2
Total Analysis Volume [veh/h]	104	5	89	39	15	72	37	293	49	78	541	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.79	0.03	0.12	0.26	0.08	0.13	0.04	0.00	0.00	0.06	0.01	0.00
d_M, Delay for Movement [s/veh]	98.95	90.96	10.71	41.27	36.93	23.69	8.69	0.00	0.00	8.18	0.00	0.00
Movement LOS	F	F	B	E	E	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	5.05	5.05	0.42	2.42	2.42	2.42	1.75	1.75	1.75	3.09	3.09	3.09
95th-Percentile Queue Length [ft]	126.17	126.17	10.53	60.53	60.53	60.53	43.83	43.83	43.83	77.22	77.22	77.22
d_A, Approach Delay [s/veh]	59.08			30.71			0.85			1.02		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	12.44											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 4: Airway Boulevard & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.431

Intersection Setup

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airway Boulevard			Airway Boulevard			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	140	215	74	81	207	14	34	209	116	116	269	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Heavy Vehicles Percentage [%]	1.40	1.40	12.20	4.90	3.40	0.00	0.00	3.40	2.60	7.80	3.70	3.40
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	292	101	110	282	19	42	261	146	146	336	112
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	78	27	29	75	5	11	70	39	39	90	30
Total Analysis Volume [veh/h]	203	311	108	117	301	20	45	278	156	156	358	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Split [s]	11	21	0	11	21	0	11	26	0	12	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	32	21	21	32	20	20	27	15	15	27	18	18
g / C, Green / Cycle	0.45	0.30	0.30	0.45	0.29	0.29	0.38	0.21	0.21	0.38	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.18	0.13	0.13	0.11	0.10	0.10	0.04	0.17	0.11	0.14	0.22	0.08
s, saturation flow rate [veh/h]	1143	1686	1540	1041	1654	1618	1119	1654	1417	1152	1649	1406
c, Capacity [veh/h]	589	498	455	525	481	470	376	345	295	431	415	354
d1, Uniform Delay [s]	12.48	20.05	20.08	12.00	19.59	19.61	15.53	26.46	24.74	16.16	25.15	21.51
k, delay calibration	0.50	0.50	0.50	0.40	0.50	0.50	0.11	0.11	0.11	0.11	0.16	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	2.78	3.10	0.79	1.88	1.95	0.14	4.46	1.46	0.51	7.89	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

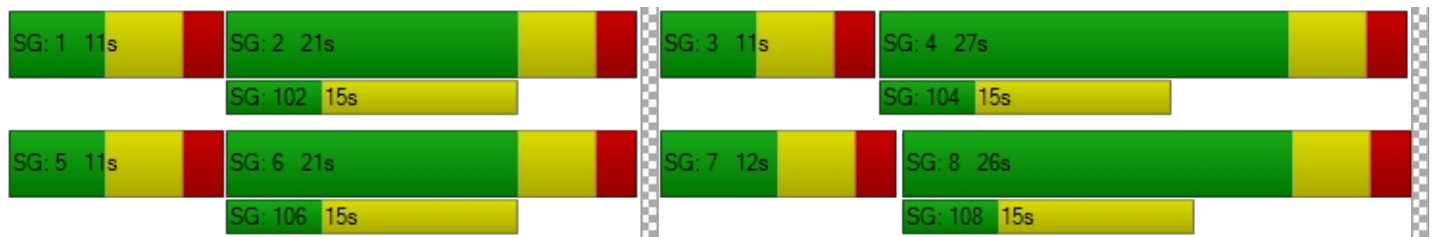
X, volume / capacity	0.34	0.44	0.44	0.22	0.34	0.34	0.12	0.81	0.53	0.36	0.86	0.34
d, Delay for Lane Group [s/veh]	14.08	22.83	23.19	12.79	21.48	21.55	15.67	30.92	26.20	16.67	33.03	22.06
Lane Group LOS	B	C	C	B	C	C	B	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.08	3.09	2.90	1.11	2.21	2.18	0.44	4.62	2.32	1.66	6.26	1.58
50th-Percentile Queue Length [ft]	52.11	77.26	72.40	27.70	55.20	54.55	11.02	115.54	58.01	41.56	156.52	39.41
95th-Percentile Queue Length [veh]	3.75	5.56	5.21	1.99	3.97	3.93	0.79	8.15	4.18	2.99	10.36	2.84
95th-Percentile Queue Length [ft]	93.79	139.07	130.32	49.87	99.37	98.20	19.83	203.68	104.42	74.81	259.11	70.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.08	22.94	23.19	12.79	21.51	21.55	15.67	30.92	26.20	16.67	33.03	22.06
Movement LOS	B	C	C	B	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	20.09			19.19			27.95			26.94		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.64											
Intersection LOS	C											
Intersection V/C	0.431											

Sequence




Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 5: Airport Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	24.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.061

Intersection Setup

Name	Airport Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	9	107	140	226	352	10
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	0.90	0.70	1.70	2.00	0.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	146	154	249	388	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	40	42	68	105	3
Total Analysis Volume [veh/h]	13	159	167	271	422	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.25	0.15	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	24.77	13.69	8.73	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.33	1.33	1.85	1.85	0.00	0.00
95th-Percentile Queue Length [ft]	33.29	33.29	46.30	46.30	0.00	0.00
d_A, Approach Delay [s/veh]	14.53		3.33		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.79					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Valley Center Spur & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	13.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	250.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	114	92	191	118	152	357
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.90	1.10	3.20	0.00	4.00	5.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	125	211	131	167	393
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	34	57	36	45	107
Total Analysis Volume [veh/h]	168	136	229	142	182	427
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	7	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	5	0	0	5
Maximum Green [s]	30	0	30	0	0	30
Amber [s]	4.0	0.0	4.0	0.0	0.0	4.0
All red [s]	2.0	0.0	2.0	0.0	0.0	2.0
Split [s]	39	0	21	0	0	21
Vehicle Extension [s]	3.0	0.0	3.0	0.0	0.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	0.0	0.0	4.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	L	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	14	34	34	34	34
g / C, Green / Cycle	0.24	0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.20	0.14	0.10	0.18	0.26
s, saturation flow rate [veh/h]	1528	1657	1454	1012	1629
c, Capacity [veh/h]	361	935	820	578	919
d1, Uniform Delay [s]	21.90	6.63	6.34	10.99	7.75
k, delay calibration	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.30	0.62	0.46	1.42	1.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.24	0.17	0.31	0.46
d, Delay for Lane Group [s/veh]	27.20	7.26	6.80	12.41	9.44
Lane Group LOS	C	A	A	B	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.28	1.33	0.79	1.61	2.96
50th-Percentile Queue Length [ft]	107.04	33.13	19.84	40.33	74.11
95th-Percentile Queue Length [veh]	7.67	2.39	1.43	2.90	5.34
95th-Percentile Queue Length [ft]	191.87	59.63	35.70	72.59	133.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.20	27.20	7.26	6.80	12.41	9.44
Movement LOS	C	C	A	A	B	A
d_A, Approach Delay [s/veh]	27.20		7.08		10.33	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	13.38					
Intersection LOS	B					
Intersection V/C	0.461					

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report
Intersection 8: Nelson Road & Frontage Road**

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.112

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	24	11	21	241	440	50
Base Volume Adjustment Factor	1.0000	1.0000	0.8100	0.8100	0.8100	0.8100
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	4.80	2.00
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	15	23	265	484	56
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	4	6	72	131	15
Total Analysis Volume [veh/h]	36	16	25	287	524	61
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.03	0.03	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.84	13.06	8.69	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.49	0.49	0.08	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	12.17	12.17	1.92	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.37		0.70		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.13					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Springhill Road & Frontage Road

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	Springhill Road		Frontage Road		Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	150.00	100.00	200.00	100.00	100.00	300.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Springhill Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	67	192	125	128	294	123
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	1.50	2.60	0.80	3.90	2.30	0.80
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	275	178	182	420	175
Peak Hour Factor	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	73	47	48	111	46
Total Analysis Volume [veh/h]	101	291	189	193	445	185
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	4.0	0.0	4.0	4.0	4.0	0.0
All red [s]	2.0	0.0	2.0	2.0	2.0	0.0
Split [s]	28	0	11	32	21	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	0.0	4.0	4.0	4.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	0.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	15	15	34	34	22	22
g / C, Green / Cycle	0.24	0.24	0.56	0.56	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.18	0.12	0.27	0.13
s, saturation flow rate [veh/h]	1605	1417	1075	1646	1672	1442
c, Capacity [veh/h]	390	345	567	917	608	525
d1, Uniform Delay [s]	18.39	21.69	8.90	6.68	16.60	13.97
k, delay calibration	0.11	0.11	0.23	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	5.68	0.72	0.52	7.60	1.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

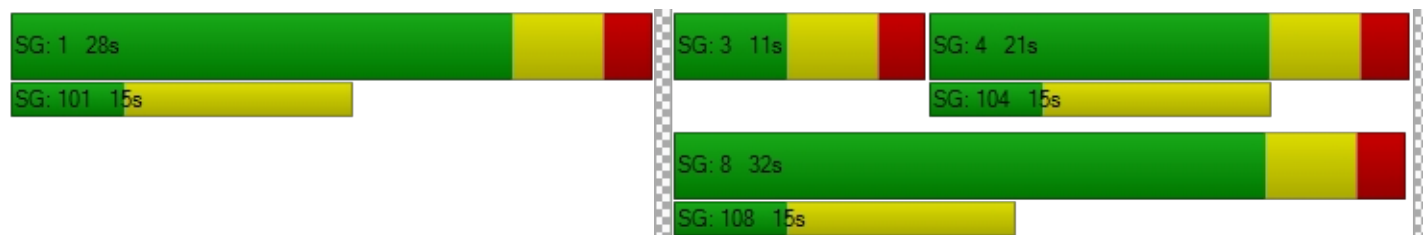
X, volume / capacity	0.26	0.84	0.33	0.21	0.73	0.35
d, Delay for Lane Group [s/veh]	18.74	27.37	9.62	7.20	24.20	15.83
Lane Group LOS	B	C	A	A	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	1.09	4.12	1.08	1.12	5.96	1.91
50th-Percentile Queue Length [ft]	27.26	103.00	26.88	27.88	148.96	47.67
95th-Percentile Queue Length [veh]	1.96	7.42	1.94	2.01	9.96	3.43
95th-Percentile Queue Length [ft]	49.06	185.39	48.38	50.18	249.04	85.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.74	27.37	9.62	7.20	24.20	15.83
Movement LOS	B	C	A	A	C	B
d_A, Approach Delay [s/veh]	25.15		8.40		21.74	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	19.06					
Intersection LOS	B					
Intersection V/C	0.542					

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 7th Avenue & Griffin Drive**

Control Type:	Signalized	Delay (sec / veh):	184.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.259

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← →			← →			↑			↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	28	359	227	85	263	8	8	11	34	526	7	149
Base Volume Adjustment Factor	1.0500	1.0500	1.0500	1.0500	1.0500	1.0500	1.0000	1.0000	1.0000	1.0500	1.0500	1.0500
Heavy Vehicles Percentage [%]	0.00	2.50	3.50	4.70	1.10	0.00	0.00	0.00	2.90	2.80	0.00	3.40
Growth Rate	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	513	324	121	375	11	11	15	46	751	10	212
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	134	85	32	98	3	3	4	12	197	3	56
Total Analysis Volume [veh/h]	41	538	340	127	393	12	12	16	48	787	10	222
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	67	0	0	67	0	0	63	0	0	63	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	C	C	C
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	61	61	61	61	57	57
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.42	0.24	1.43	0.26	0.05	0.83
s, saturation flow rate [veh/h]	1379	1404	89	1531	1616	1222
c, Capacity [veh/h]	677	659	97	718	741	585
d1, Uniform Delay [s]	32.33	24.16	63.51	24.90	21.56	39.81
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.13	2.87	194.12	3.19	0.28	340.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

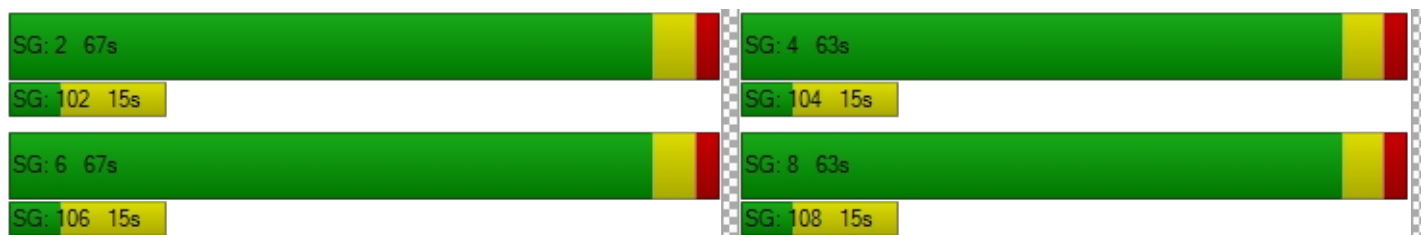
X, volume / capacity	0.86	0.52	1.31	0.56	0.10	1.74
d, Delay for Lane Group [s/veh]	45.47	27.03	257.63	28.08	21.84	380.65
Lane Group LOS	D	C	F	C	C	F
Critical Lane Group	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	19.29	7.83	8.47	9.60	1.45	74.83
50th-Percentile Queue Length [ft]	482.29	195.76	211.75	240.04	36.19	1870.79
95th-Percentile Queue Length [veh]	26.50	12.42	15.25	14.68	2.61	118.80
95th-Percentile Queue Length [ft]	662.38	310.49	381.15	367.09	65.15	2969.90

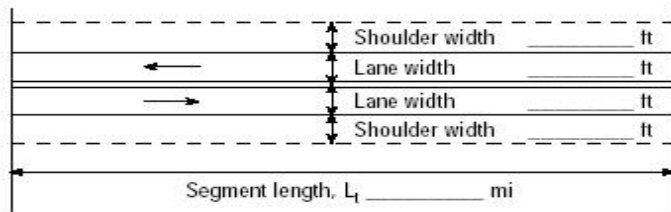
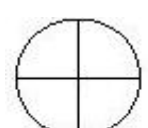
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.47	45.47	27.03	257.63	28.08	28.08	21.84	21.84	21.84	380.65	380.65	380.65
Movement LOS	D	D	C	F	C	C	C	C	C	F	F	F
d_A, Approach Delay [s/veh]	38.65			82.88			21.84			380.65		
Approach LOS	D			F			C			F		
d_I, Intersection Delay [s/veh]	184.27											
Intersection LOS	F											
Intersection V/C	2.259											

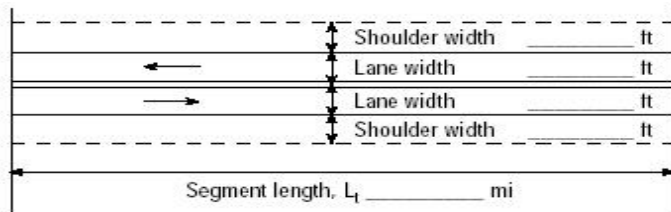
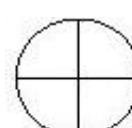
Sequence

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

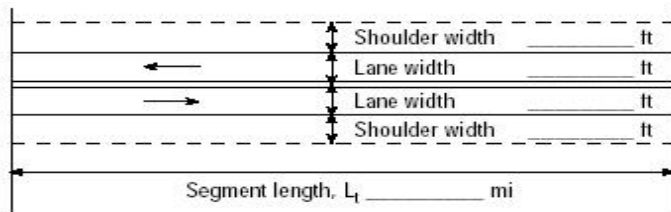
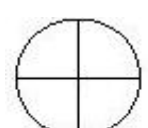


DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 57% % Trucks and Buses, P_T 5% % Recreational vehicles, P_R 0% Access points mi 9/mi </div> </div>	
Analysis direction vol., V _d	419veh/h		
Opposing direction vol., V _o	193veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.990	0.976	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	460	215	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.0 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.4 mi/h		
	Percent free flow speed, PFFS 83.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.995	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	455	211	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	41.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	40.5		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	68.8		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.27		

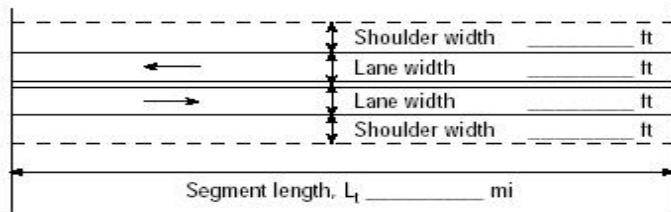
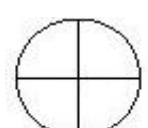
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1659
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1692
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	455.4
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.37
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 57% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 9/mi </div> </div>	
Analysis direction vol., V _d	301veh/h		
Opposing direction vol., V _o	473veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.996	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	330	516	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.6 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.4 mi/h		
	Percent free flow speed, PFFS 83.2 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	328	514	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	39.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	36.3		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	53.1		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.19		

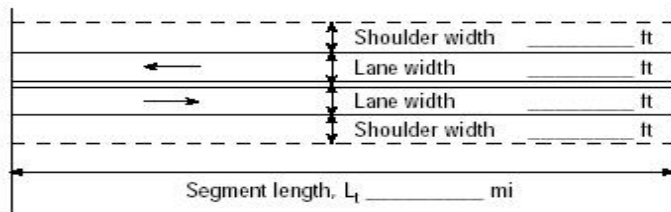
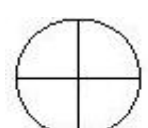
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1693
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	327.2
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.39
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 60% % Trucks and Buses, P_T 11 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 9/mi </div> </div>	
Analysis direction vol., V _d	193veh/h		
Opposing direction vol., V _o	419veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.948	0.978	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	221	466	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.9 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.3 mi/h		
	Percent free flow speed, PFFS 85.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.989	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	212	455	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	27.7		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	41.4		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	40.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.13		

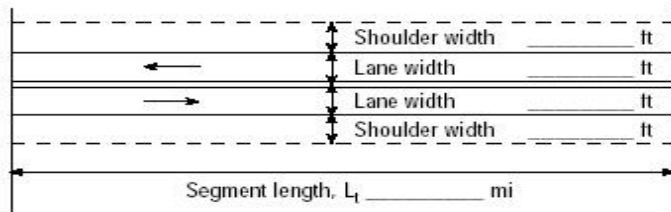
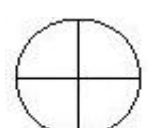
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1663
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	85.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	209.8
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	7.17
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airport to Spur WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 60% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 9/mi </div> </div>	
Analysis direction vol., V _d	437veh/h		
Opposing direction vol., V _o	301veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	3.7		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.984	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	479	332	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.5 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 48.5 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.7 mi/h		
	Percent free flow speed, PFFS 81.9 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	475	328	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	46.6		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	39.0		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	69.7		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.28		

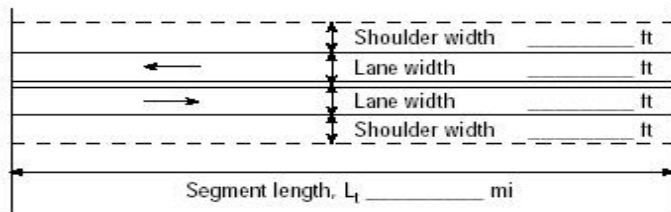
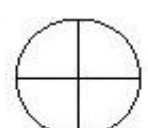
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1673
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	475.0
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.10
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 59% % Trucks and Buses, P_T 9 % % Recreational vehicles, P_R 0% Access points mi 0/mi </div> </div>	
Analysis direction vol., V _d	464veh/h		
Opposing direction vol., V _o	335veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.982	0.974	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	514	374	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.0 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.3 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.8 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.6 mi/h		
	Percent free flow speed, PFFS 81.8 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.991	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	504	367	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	49.8		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	37.7		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	71.6		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.30		

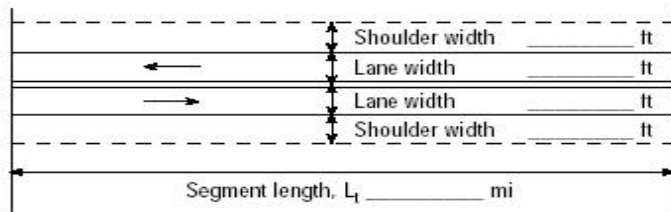
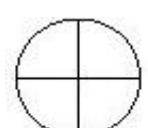
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1656
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1685
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	504.3
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	6.80
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 59% % Trucks and Buses, P_T 5% % Recreational vehicles, P_R 0% Access points <i>mi</i> 0/mi </div> </div>	
Analysis direction vol., V _d	437veh/h		
Opposing direction vol., V _o	563veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.990	0.995	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	480	615	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	1.4 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.8 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} +v _{o,ATS})-f _{np,ATS}	40.9 mi/h
		Percent free flow speed, PFFS	80.6 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	475	612	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		51.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		33.3	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} (v _{d,PTSF} /v _{d,PTSF} +v _{o,PTSF})		65.7	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.28		

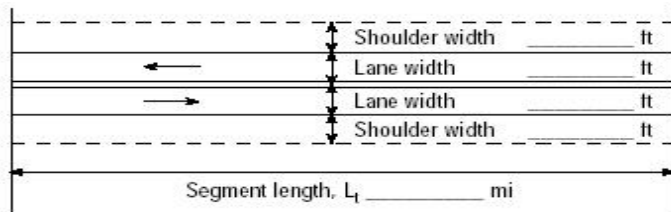
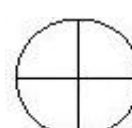
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1692
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	80.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	475.0
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.40
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 84% % Trucks and Buses, P_T 11 % % Recreational vehicles, P_R 0% Access points mi 0/mi </div> </div>	
Analysis direction vol., V _d	335veh/h		
Opposing direction vol., V _o	464veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.968	0.978	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	376	516	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.1 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.8 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS}	41.8 mi/h
		Percent free flow speed, PFFS	82.2 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.989	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	368	504	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		42.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		39.4	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})		59.1	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.22		

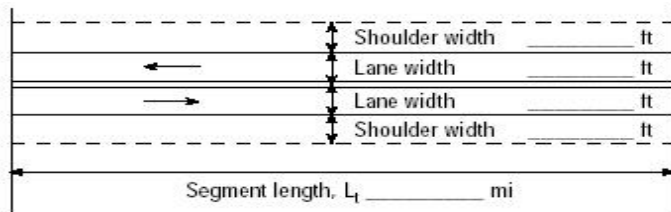
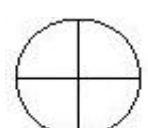
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1663
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	82.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	364.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	7.44
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Airway to Airport WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 84% % Trucks and Buses, P_T 5 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 0/mi </div> </div>	
Analysis direction vol., V _d	563veh/h		
Opposing direction vol., V _o	437veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.8		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.995	0.990	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	615	480	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}		Base free-flow speed ⁴ , BFFS	55.0 mi/h
Total demand flow rate, both directions, v		Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.2 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})		Adj. for access points ⁴ , f _A (Exhibit 15-8)	0.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)	2.3 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A)	50.8 mi/h
		Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS}	40.0 mi/h
		Percent free flow speed, PFFS	78.8 %
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	612	475	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})		57.4	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		34.8	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +v _{o,PTSF})		77.0	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.36		

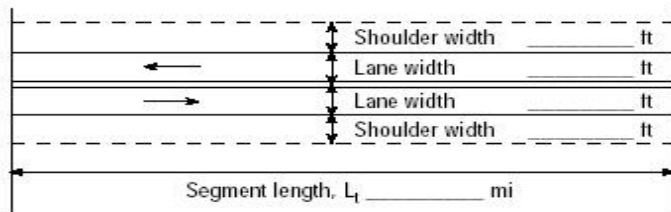
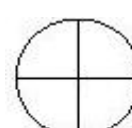
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1683
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	78.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	612.0
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.52
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 95% % Trucks and Buses, P_T 3% % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	551veh/h		
Opposing direction vol., V _o	200veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.997	0.985	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	601	221	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.8 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.1 mi/h		
	Percent free flow speed, PFFS 79.3 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.997	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	599	218	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	52.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	33.1		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	76.4		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.35		

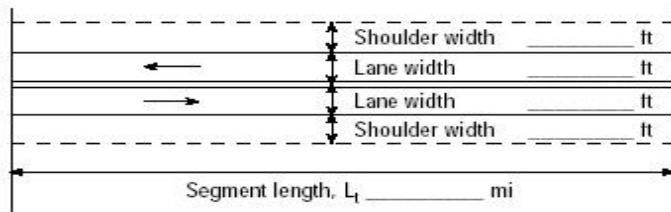
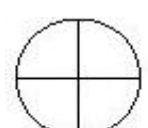
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1675
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1695
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	79.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	598.9
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.95
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 95% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	329veh/h		
Opposing direction vol., V _o	617veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.3	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.994	0.998	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	360	672	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.6 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 39.7 mi/h		
	Percent free flow speed, PFFS 80.4 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	358	671	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	43.5		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.8		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	54.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.21		

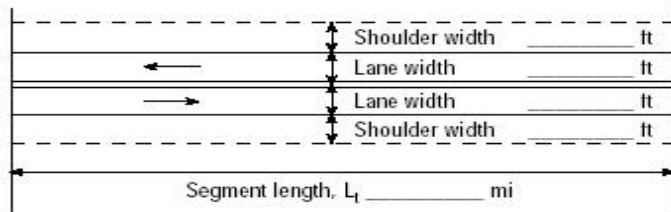
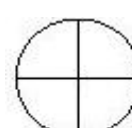
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1697
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	80.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	357.6
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.44
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway </div> <div style="width: 45%;"> <input type="checkbox"/> Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling </div> </div> <div style="margin-top: 10px;">  <p>Show North Arrow</p> </div> <div style="margin-top: 10px;"> Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 81% % Trucks and Buses, P_T 6% % Recreational vehicles, P_R 0% Access points mi 6/mi </div>	
Analysis direction vol., V _d	200veh/h		
Opposing direction vol., V _o	551veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.971	0.994	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	224	603	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.2 mi/h		
	Percent free flow speed, PFFS 83.5 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.994	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	219	599	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	30.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.4		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	38.8		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.13		

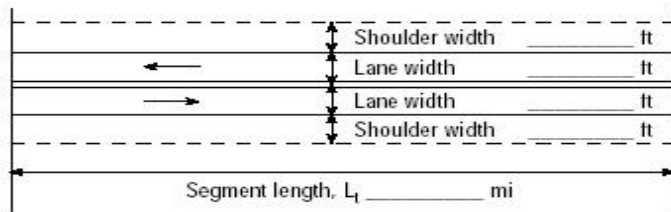
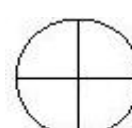
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1690
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	217.4
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.31
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Nelson to Springhill WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 81% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 6/mi </div> </div>	
Analysis direction vol., V _d	617veh/h		
Opposing direction vol., V _o	329veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.9		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.3	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.996	0.988	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	673	362	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.8 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 38.4 mi/h		
	Percent free flow speed, PFFS 78.0 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	671	359	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	58.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.1		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	78.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.40		

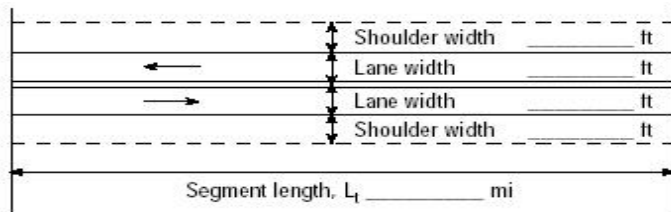
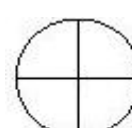
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1680
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	78.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	670.7
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.28
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst RPA	Highway / Direction of Travel Frontage Road	Agency or Company Springhill to Viaduct EB	From/To Springhill to Viaduct EB
Date Performed 9/30/2016	Jurisdiction	Analysis Time Period AM	Analysis Year 2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 73% % Trucks and Buses, P_T 1% % Recreational vehicles, P_R 0% Access points mi 7/mi </div> </div>	
Analysis direction vol., V _d 596veh/h	Opposing direction vol., V _o 181veh/h	Shoulder width ft 0.5	Lane Width ft 12.0
Segment Length mi 1.4			
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.999	0.995	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	648	198	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.6 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 38.9 mi/h		
	Percent free flow speed, PFFS 79.2 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.999	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	648	197	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	53.3		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	29.6		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	76.0		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.38		

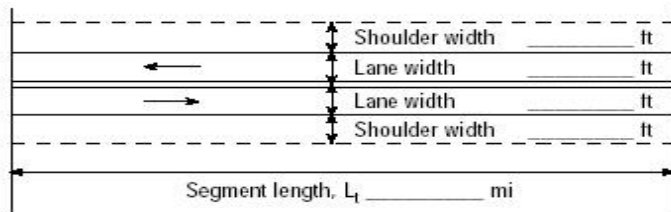
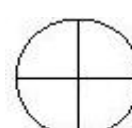
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1692
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1698
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	79.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	647.8
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.51
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 73% % Trucks and Buses, P_T 3% % Recreational vehicles, P_R 0% Access points mi 7/mi </div> </div>	
Analysis direction vol., V _d	277veh/h		
Opposing direction vol., V _o	596veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.988	0.997	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	305	650	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.5 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.2 mi/h		
	Percent free flow speed, PFFS 81.9 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.997	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	302	648	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d})	38.8		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	31.8		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	48.9		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.18		

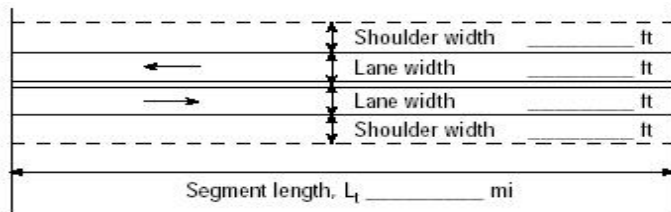
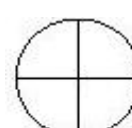
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1695
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	301.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.60
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 93% % Trucks and Buses, P_T 5 % % Recreational vehicles, P_R 0% Access points mi 7/mi </div> </div>	
Analysis direction vol., V _d	181veh/h		
Opposing direction vol., V _o	596veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.976	0.995	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	202	651	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.8 mi/h		
	Percent free flow speed, PFFS 83.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.995	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	198	648	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	28.9		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	30.9		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	36.1		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.12		

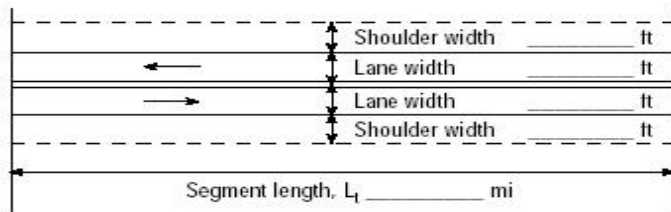
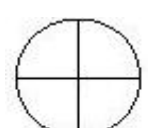
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1692
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	83.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	196.7
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.95
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Springhill to Viaduct WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 93% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 7/mi </div> </div>	
Analysis direction vol., V _d	596veh/h		
Opposing direction vol., V _o	277veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	1.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	0.992	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	649	304	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 1.8 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.3 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 49.0 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 38.4 mi/h		
	Percent free flow speed, PFFS 78.2 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.998	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	648	302	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	56.3		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.8		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	78.7		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.38		

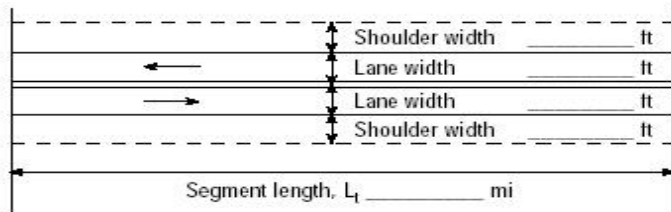
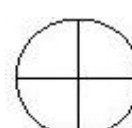
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1686
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1697
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	78.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	647.8
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.74
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 4 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 2/mi </div> </div>	
Analysis direction vol., V _d	475veh/h		
Opposing direction vol., V _o	194veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.2	1.5	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.980	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	520	215	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.9 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.7 mi/h		
	Percent free flow speed, PFFS 80.9 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.996	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	516	212	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	45.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	39.0		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	72.7		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.31		

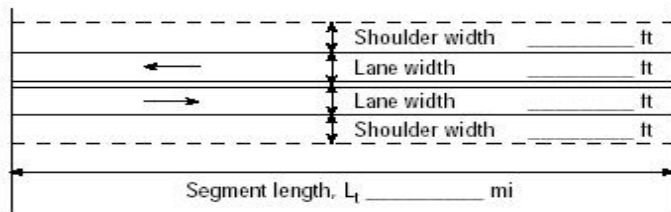
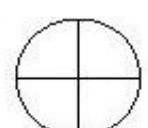
Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1693
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	80.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	516.3
Effective width, Wv (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.15
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson EB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 2 % % Recreational vehicles, P_R 0% Access points <i>mi</i> 2/mi </div> </div>	
Analysis direction vol., V _d	312veh/h		
Opposing direction vol., V _o	530veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.4	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.992	0.998	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	342	577	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.0 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 41.2 mi/h		
	Percent free flow speed, PFFS 81.9 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.998	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	340	576	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{-av_d^b})	41.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	36.9		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	54.7		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.20		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1697
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	81.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	339.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.41
Bicycle level of service (Exhibit 15-4)	D
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div style="font-size: small;"> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 10 % % Recreational vehicles, P_R 0% Access points mi 2/mi </div> </div>	
Analysis direction vol., V _d	194veh/h		
Opposing direction vol., V _o	475veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+ P _T (E _T -1)+P _R (E _R -1))	0.952	0.980	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF* f _{g,ATS} * f _{HV,ATS})	222	527	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.2 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 42.3 mi/h		
	Percent free flow speed, PFFS 84.1 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.0	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+ P _T (E _T -1)+P _R (E _R -1))	0.990	1.000	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	213	516	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	28.4		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	39.0		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} + V _{o,PTSF})	39.8		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	B		
Volume to capacity ratio, v/c	0.13		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1700
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	84.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	210.9
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	6.75
Bicycle level of service (Exhibit 15-4)	F
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst	RPA	Highway / Direction of Travel	Frontage Road
Agency or Company		From/To	Spur to Nelson WB
Date Performed	9/30/2016	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2040
Project Description:			
Input Data			
		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Show North Arrow</p> </div> <div> <input type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input checked="" type="checkbox"/> Class III highway Terrain <input checked="" type="checkbox"/> Level <input type="checkbox"/> Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.92 No-passing zone 100% % Trucks and Buses, P_T 5% % Recreational vehicles, P_R 0% Access points mi 2/mi </div> </div>	
Analysis direction vol., V _d	530veh/h		
Opposing direction vol., V _o	312veh/h		
Shoulder width ft	0.5		
Lane Width ft	12.0		
Segment Length mi	0.4		
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV,ATS} =1/(1+P _T (E _T -1)+P _R (E _R -1))	0.995	0.980	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	1.00	1.00	
Demand flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{g,ATS} *f _{HV,ATS})	579	346	
Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS 55.0 mi/h		
Total demand flow rate, both directions, v	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 4.2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(v/f _{HV,ATS})	Adj. for access points ⁴ , f _A (Exhibit 15-8) 0.5 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.1 mi/h	Free-flow speed, FFS (FFS=BFFS-f _{LS} -f _A) 50.3 mi/h		
	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + V _{o,ATS}) - f _{np,ATS} 40.1 mi/h		
	Percent free flow speed, PFFS 79.7 %		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.0	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/(1+P _T (E _T -1)+P _R (E _R -1))	1.000	0.995	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} *f _{g,PTSF})	576	341	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})	54.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	36.9		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +V _{o,PTSF})	77.2		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	C		
Volume to capacity ratio, v/c	0.34		

Capacity, $C_{d,ATS}$ (Equation 15-12) veh/h	1666
Capacity, $C_{d,PTSF}$ (Equation 15-13) veh/h	1692
Percent Free-Flow Speed $PFFS_d$ (Equation 15-11 - Class III only)	79.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	576.1
Effective width, W_v (Eq. 15-29) ft	12.50
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.49
Bicycle level of service (Exhibit 15-4)	E
Notes	
<p>1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.</p> <p>2. If $v_i(v_d \text{ or } v_o) \geq 1,700$ pc/h, terminate analysis--the LOS is F.</p> <p>3. For the analysis direction only and for $v > 200$ veh/h.</p> <p>4. For the analysis direction only</p> <p>5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.</p> <p>6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.</p>	



Appendix D

PHOTO LOG



Photo 1: Looking east at Jackrabbit Lane (RP 19.7)



Photo 2: Looking west at Grogan Street (RP 19.9)



Photo 3: Looking east at Grogan Street (RP 19.9)



Photo 4: Looking west at Grogan Street after school (RP 19.9)



Photo 5: Looking east near Quaws Boulevard (RP 20.0)



Photo 6: Looking east at Weaver Street (RP 20.1)

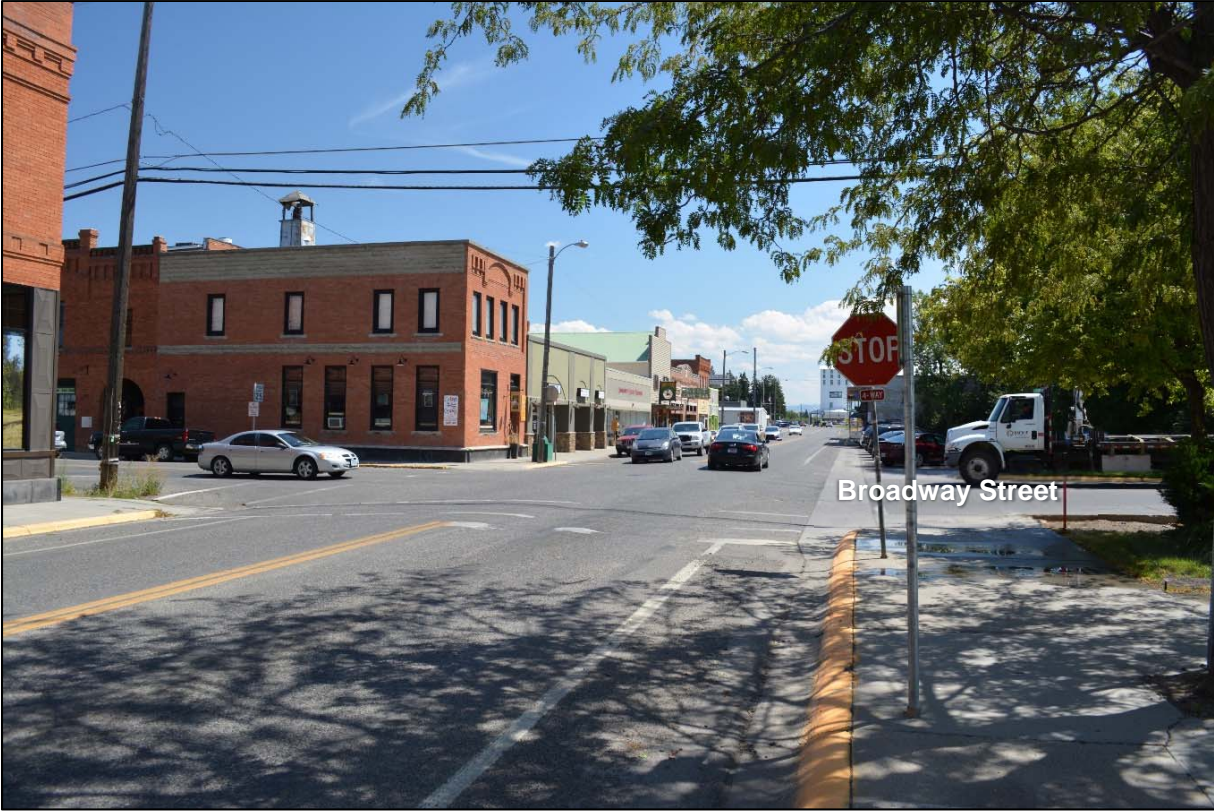


Photo 7: Looking east near Broadway Street (RP 20.2)



Photo 8: Looking east near Broadway Street (RP 20.2)



Kennedy Street

Photo 9: Looking east near Kennedy Street (RP 20.3)



Oregon Street

Photo 10: Looking east near Davis Street (RP 20.4)



Photo 11: Pedestrian crossing near Oregon Street (RP 20.4)



Photo 12: Looking east near Birch Lane (RP 20.5)



Photo 13: Looking east near Birch Lane (RP 20.5)

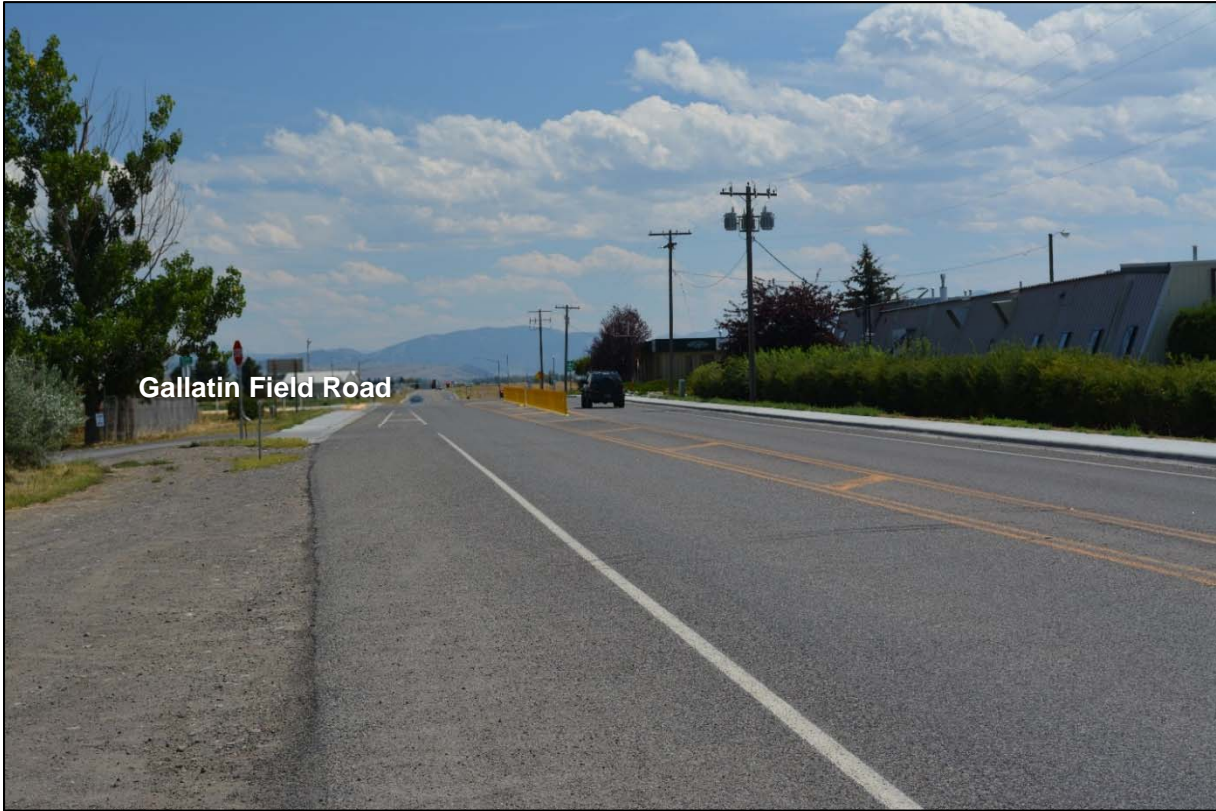
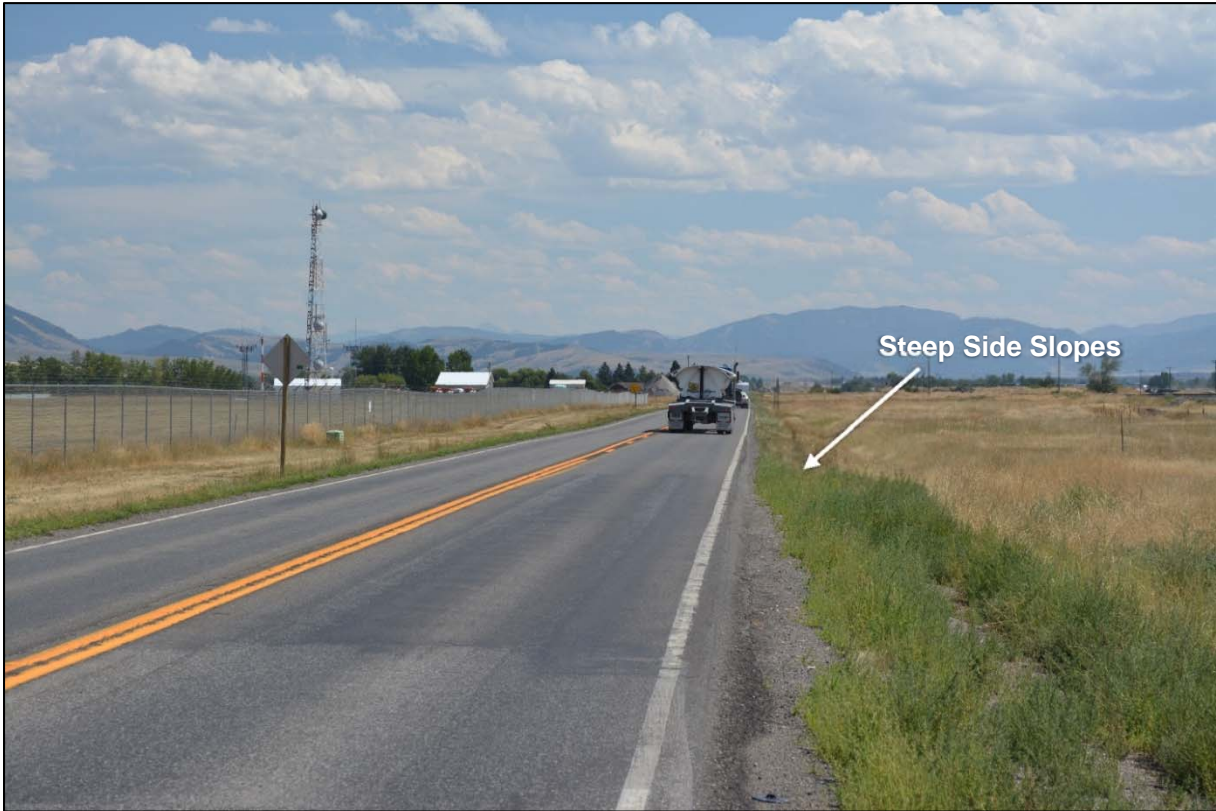


Photo 14: looking east near Voegles Trailer Park Turnpike (RP 20.9)



Airport Boulevard

Photo 15: Looking east near Gallatin Field Road (RP 21.1)



Steep Side Slopes

Photo 16: Looking east between Airway Boulevard and Airport Road (RP 21.4)



Photo 17: Looking east at Airport Road (RP 21.8)



Photo 18: Looking east near Dollar Drive (RP 22.5)



Photo 19: Looking east near Hyalite Creek (RP 22.9)



Photo 20: Looking east at Arete Drive (RP 24.5)

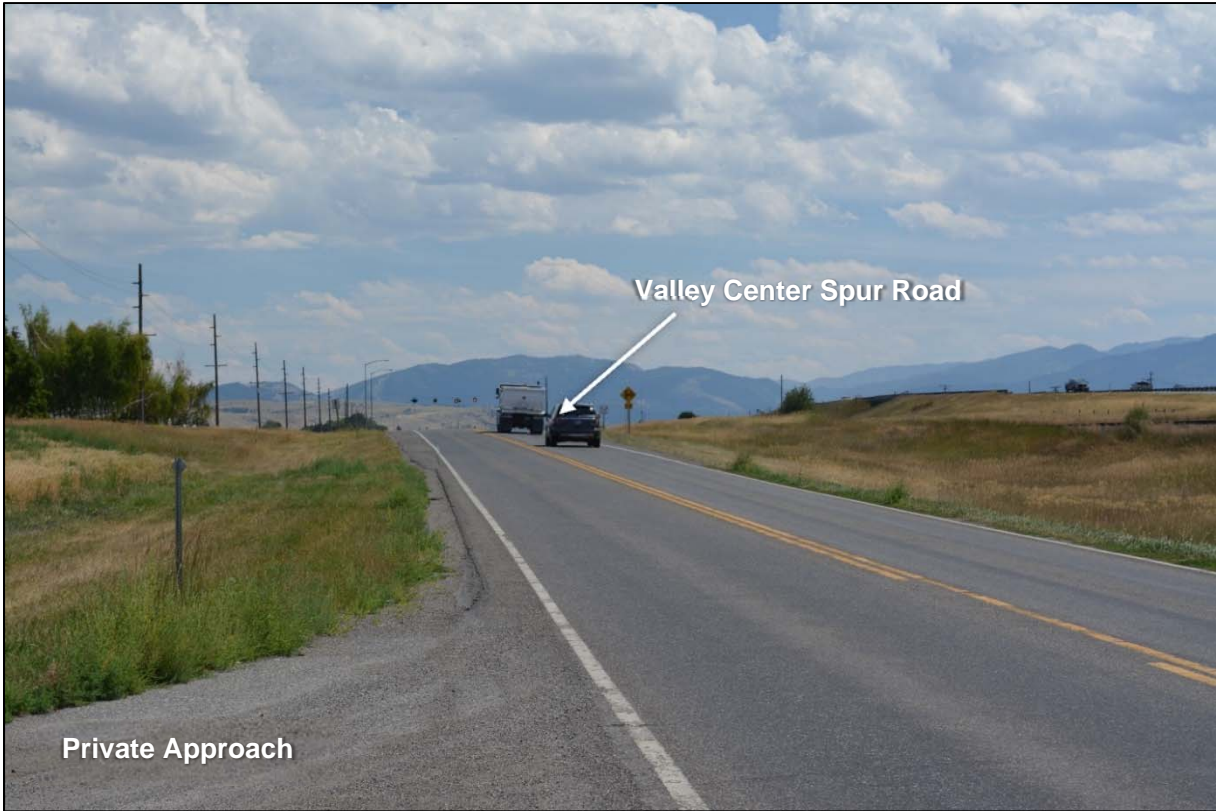


Photo 21: Looking east near RP 24.7



Photo 22: Looking east near Valley Center Spur Road (RP 25.4)



Photo 23: Looking east near Valley Center Spur Road (RP 25.6)

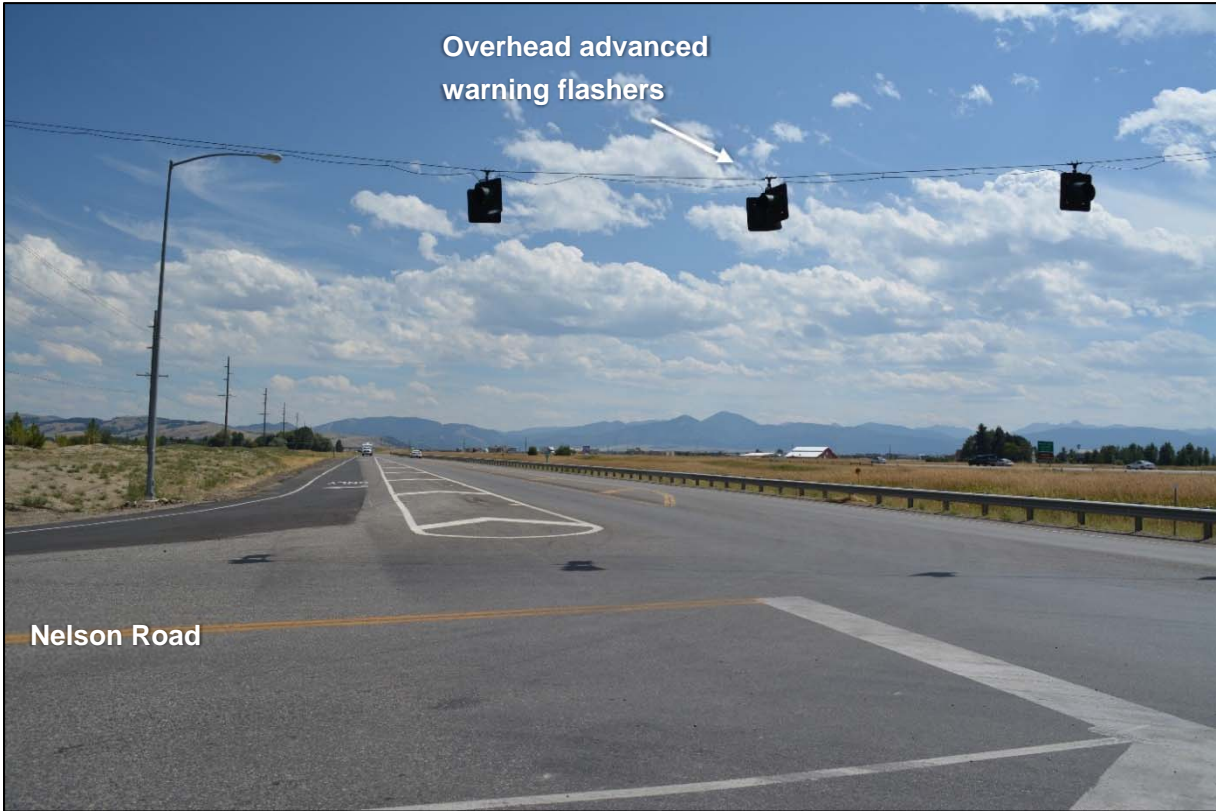


Photo 24: Looking east at Nelson Road (RP 25.9)



Photo 25: Looking east at RP 26.5

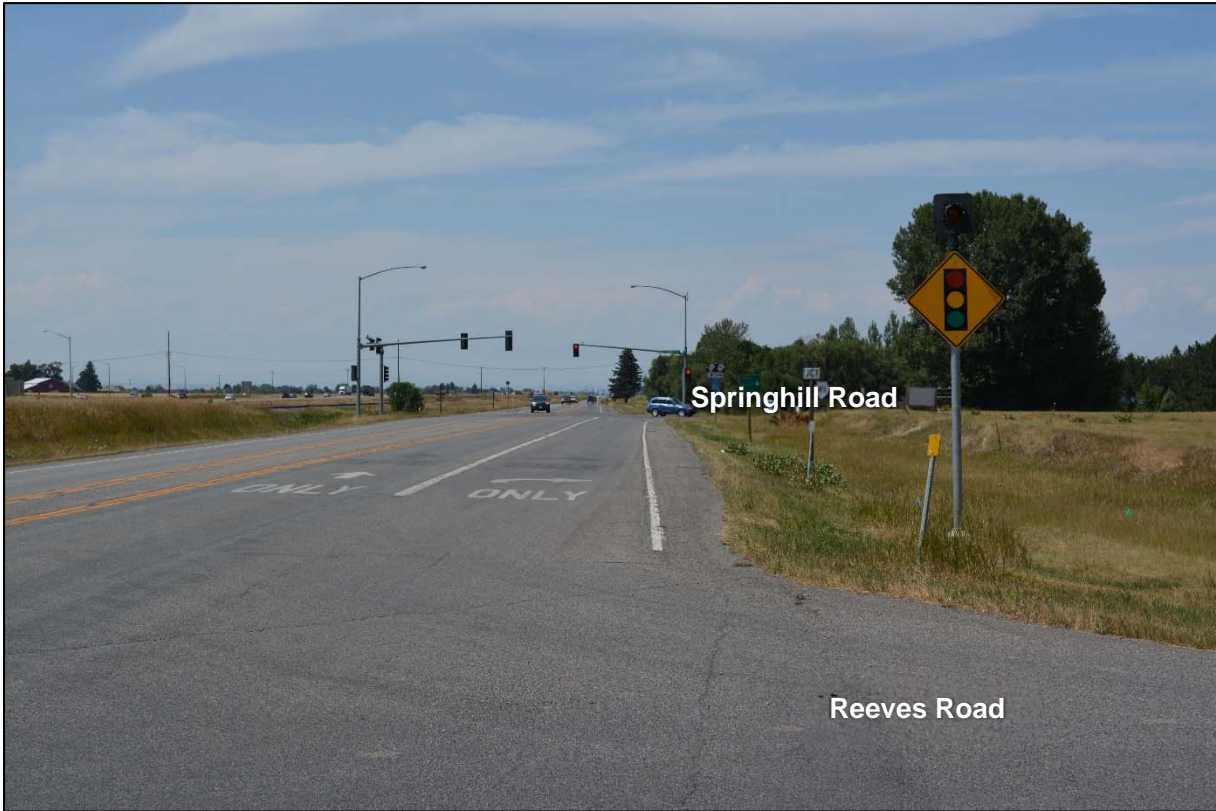


Photo 26: Looking west from Reeves Road (RP 3.1)



Photo 27: Looking east at Reeves Road (RP 3.1)



Photo 28: Looking east at Red Wing Road (RP 2.8)



Photo 29: Looking east near Cherry River Fishing Access (RP 2.1)



Photo 30: Looking south near Red Wing Road (RP 1.7)



Photo 31: Looking south near Griffin Drive (RP 1.5)



Photo 32: Looking south near Griffin Drive (RP 1.4)