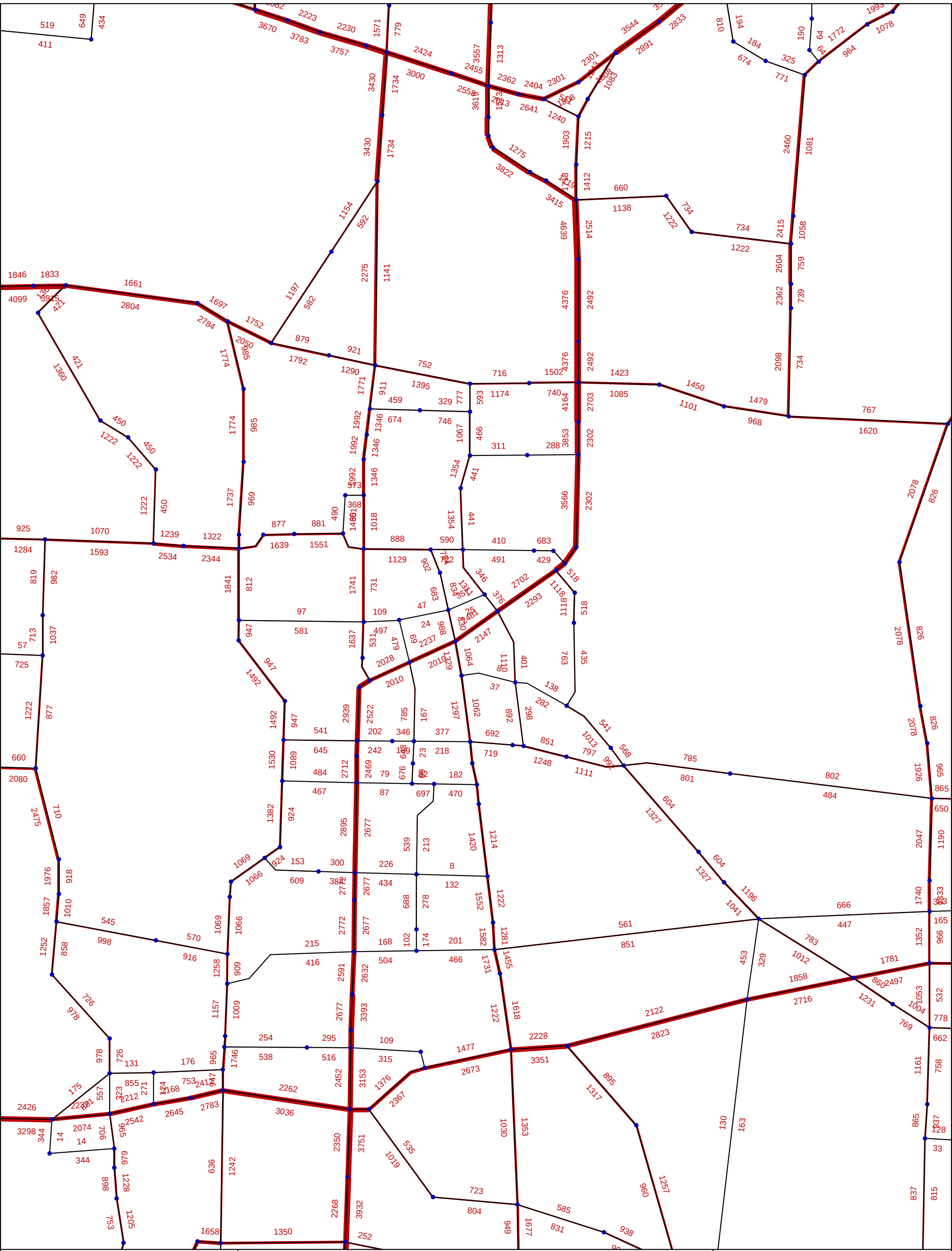
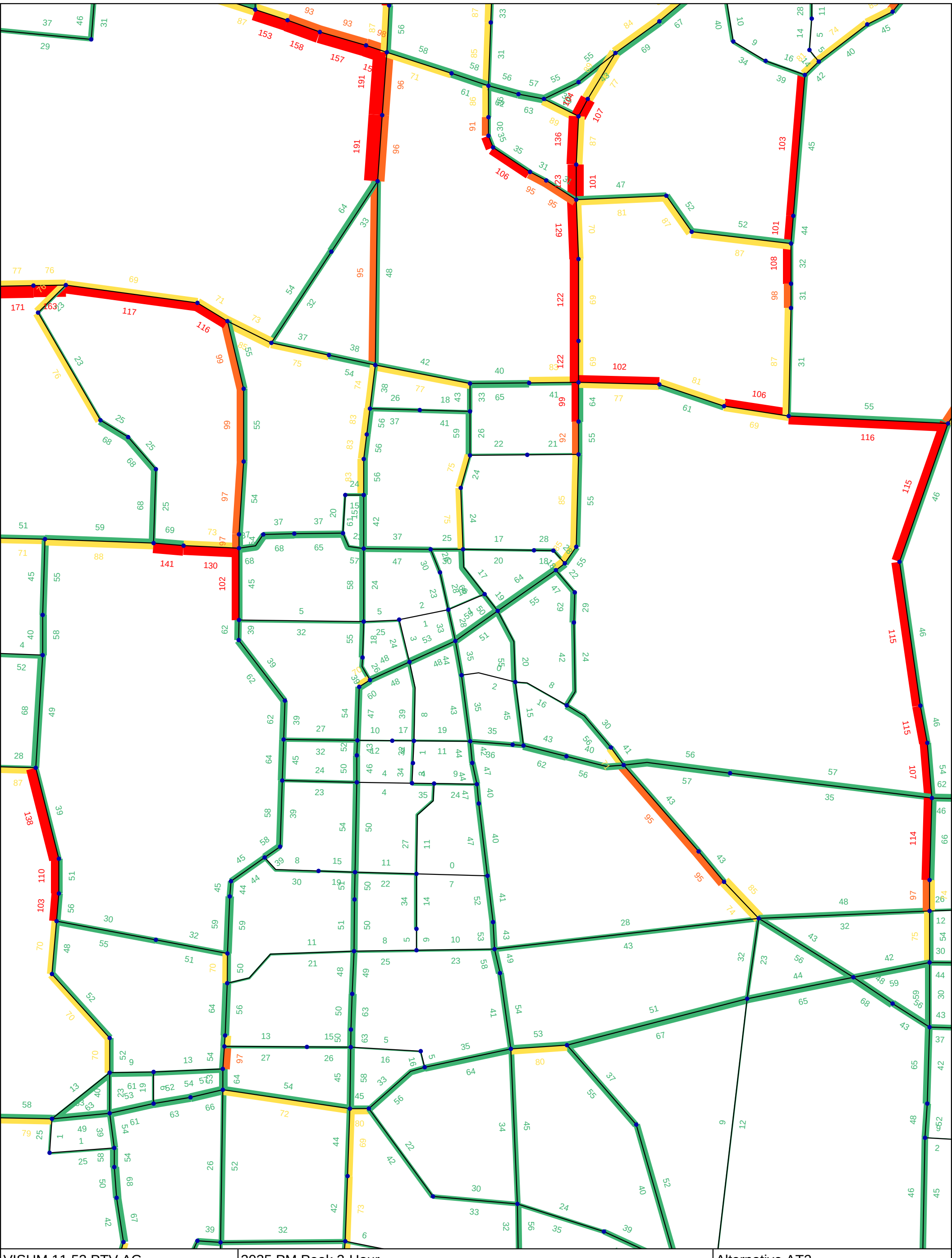
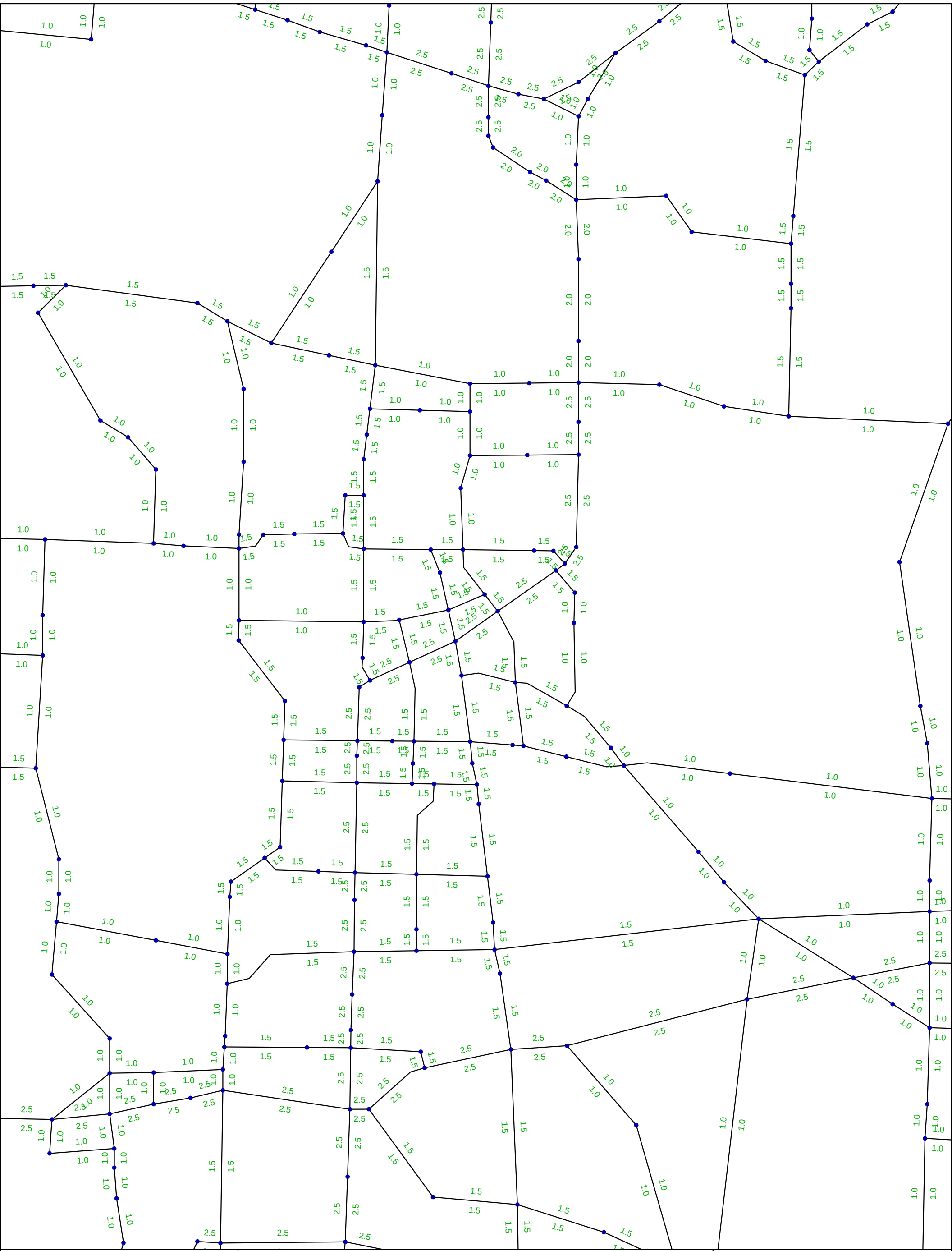


VISUM 11.52 PTV AG	2035 PM Peak 2-Hour	Alternative AT2
erstellt am: 24.08.2011	5-Lanes 172nd-190th, 3-Lanes north of Connector, 174th Extension & Foste	1:23742



VISUM 11.52 PTV AG	2035 PM Peak 2-Hour	Alternative AT2
erstellt am: 24.08.2011	5-Lanes 172nd-190th, 3-Lanes north of Connector, 174th Extension & Foste	1:23742



VISUM 11.52 PTV AG	2035 PM Peak 2-Hour	Alternative AT2
erstellt am: 24.08.2011	5-Lanes 172nd-190th, 3-Lanes north of Connector, 174th Extension & Foste	1:23742

NCHRP 255 Analysis Worksheets - Preferred Build Alternative AT2

Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
1. 172nd Ave And Sunnyside Rd	Total	1591		1628	5780	1	5648	5743	5695	4	4936	5029
	SB Approach	323	100.00%	424	1275	1	972	1174	1073	3	961	1157
	SBL	17	5.26%	33	98	2	51	82	66	4	66	66
	SBT	86	26.63%	248	934	3	324	772	548	6	548	745
	SBR	220	68.11%	144	243	1	373	320	346	2	346	346
	WB Approach	226	100.00%	258	976	1	853	943	898	4	898	898
	WBL	5	2.21%	9	149	2	84	145	115	23	115	115
	WBT	209	92.48%	242	755	1	651	721	686	3	686	686
	WBR	12	5.31%	7	72	1	118	76	97	8	97	97
	NB Approach	234	100.00%	348	1951	1	1310	1836	1573	7	1427	1355
	NBL	91	38.89%	28	178	0	578	241	241	3	241	241
	NBT	137	58.55%	305	1407	2	632	1239	935	7	935	863
	NBR	6	2.56%	15	365	3	145	356	251	42	251	251
	EB Approach	808	100.00%	597	1579	1	2135	1789	1962	2	1649	1619
	EBL	411	50.87%	79	161	0	836	493	493	1	493	463
	EBT	258	31.93%	374	1279	1	883	1163	1023	4	1023	1023
	EBR	139	17.20%	145	139	1	134	133	133	1	133	133
2. 172nd Ave And Vogel Rd	Total	902		810	3357	1	3740	3449	3594	4	3373	3024
	SB Approach	318	100.00%	422	1392	1	1050	1288	1169	4	1168	1168
	SBL	9	2.83%	0	95	0		104			95	95
	SBT	309	97.17%	422	1257	1	921	1145	1033	3	1033	1033
	SBR	0	0.00%	0	40			40			40	40
	WB Approach	34	100.00%	0	57	0		91			165	165
	WBL	27	79.41%	0	0	0		27			108	108
	WBT	0	0.00%	0	49			49			49	49
	WBR	7	20.59%	0	8	0		15			8	8
	NB Approach	550	100.00%	388	1640	1	2325	1802	2063	4	1773	1423
	NBL	0	0.00%	0	65			65			65	65
	NBT	441	80.18%	388	1559	1	1772	1612	1692	4	1692	1342
	NBR	109	19.82%	0	16	0		125			16	16
	EB Approach	0	0.00%	0	268			268			268	268
	EBL	0		0	197			197			197	197
	EBT	0		0	53			53			53	53
	EBR	0		0	18			18			18	18
3. 172nd Ave And Troge Rd	Total	761		792	3113	1	2990	3082	3036	4	3001	3057
	SB Approach	300	100.00%	419	1441	1	1033	1323	1178	4	1193	1238
	SBL	11	3.67%	2	115	0	608	124	124	11	124	124
	SBT	289	96.33%	417	1267	1	879	1139	1009	3	1009	1054
	SBR	0	0.00%	0	60			60			60	60
	WB Approach	22	100.00%	3	87	0	612	106	106	5	106	105
	WBL	17	77.27%	2	25	0	272	40	40	2	40	40
	WBT	0	0.00%	0	35			35			35	35
	WBR	5	22.73%	2	27	0	85	30	30	6	30	30
	NB Approach	439	100.00%	371	1369	1	1621	1437	1529	3	1486	1497
	NBL	0	0.00%	0	17			17			17	17
	NBT	402	91.57%	363	1276	1	1413	1315	1364	3	1364	1374
	NBR	37	8.43%	8	76	0	363	106	106	3	106	106
	EB Approach	0	0.00%	0	216			216			216	217
	EBL	0		0	90			90			90	90
	EBT	0		0	71			71			71	71
	EBR	0		0	56			56			56	56
4. 172nd Ave And Future Scouter Mountain Rd	Total	793		1083	3214	1	2354	2924	2639	3	3001	3076
	SB Approach	322	100.00%	543	1505	2	893	1284	1088	3	1202	1277
	SBL	0	0.00%	0	154			154			154	154
	SBT	295	91.61%	411	1269	1	910	1152	1031	3	1031	1106
	SBR	27	8.39%	132	82	5	17	-22	17	1	17	17
	WB Approach	1	100.00%	0	118	0		119			118	118
	WBL	1	100.00%	0	25	0		26			25	25
	WBT	0	0.00%	0	4			4			4	4
	WBR	0	0.00%	0	89			89			89	89
	NB Approach	408	100.00%	365	1392	1	1558	1436	1497	4	1498	1498
	NBL	6	1.47%	5	70	1	90	72	81	13	81	81
	NBT	402	98.53%	360	1268	1	1416	1310	1363	3	1363	1363
	NBR	0	0.00%	0	54			54			54	54
	EB Approach	62	100.00%	175	200	3	71	86	79	1	184	183
	EBL	54	87.10%	168	35	3	11	-79	11	0	11	11
	EBT	0	0.00%	0	17			17			17	17
	EBR	8	12.90%	7	148	1	162	148	155	19	155	155
5. 172nd Ave And Scouter Mtn Elementary	Total	782		1070	2889	1	2111	2600	2356	3	2364	2755
	SB Approach	326	100.00%	542	1516	2	911	1299	1105	3	1109	1324
	SBL	0	0.00%	0	0			0				0
	SBT	323	99.08%	542	1516	2	903	1296	1100	3	1100	1315
	SBR	3	0.92%	0	0	0		3			9	9
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	449	100.00%	528	1373	1	1168	1294	1231	3	1235	1410
	NBL	3	0.67%	0	0	0		3			9	9
	NBT	446	99.33%	528	1373	1	1160	1291	1226	3	1226	1401
	NBR	0	0.00%	0	0			0				0
	EB Approach	7	100.00%	0	0	0		7			21	21
	EBL	3	42.86%	0	0	0		3			9	9
	EBT	0	0.00%	0	0			0				0
	EBR	4	57.14%	0	0	0		4			12	12
6. 172nd Ave And Hemrick Rd	Total	798		1073	3087	1	2296	2812	2554	3	2461	3041
	SB Approach	292	100.00%	528	1410	2	780	1174	977	3	994	1244
	SBL	9	3.09%	1	17	0	288	25	25	3	25	35
	SBT	282	96.91%	527	1299	2	695	1054	875	3	875	1075
	SBR	0	0.00%	0	94			94			94	134
	WB Approach	55	100.00%	17	42	0	133	79	79	1	95	125
	WBL	41	74.55%	16	34	0	90	60	75	2	75	95
	WBT	0	0.00%	0	4			4			4	4
	WBR	14	25.45%	2	3	0	28	16	16	1	16	26
	NB Approach	451	100.00%	528	1392	1	1189	1315	1252	3	1129	1379
	NBL	0	0.00%	0	153			153			153	153
	NBT	285	63.19%	466	1223	2	748	1042	895	3	895	1095
	NBR	166	36.81%	62	16	0	42	120	81	0	81	131
	EB Approach	0	0.00%	0	243			243			243	293
	EBL	0		0	58			58			58	58
	EBT	0		0	13			13			13	63
	EBR	0		0	172			172			172	172

NCHRP 255 Analysis Worksheets - Preferred Build Alternative AT2

Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
7. Foster Rd And Hemrick Rd	Total	612		686	1561	1	1391	1486	1439	2	1499	1499
	SB Approach	227	100.00%	394	685	2	395	519	457	2	503	503
	SBL	0	0.00%	0	0			0				0
	SBT	185	81.50%	378	616	2	302	423	362	2	362	362
	SBR	42	18.50%	16	69	0	186	96	141	3	141	141
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	212	100.00%	230	631	1	580	612	596	3	589	589
	NBL	11	5.19%	2	25	0	176	34	34	3	34	34
	NBT	201	94.81%	229	606	1	532	578	555	3	555	555
	NBR	0	0.00%	0	0			0				0
	EB Approach	173	100.00%	62	244	0	678	355	516	3	407	407
	EBL	168	97.11%	62	122	0	332	228	280	2	280	280
	EBT	0	0.00%	0	0			0				0
	EBR	5	2.89%	1	122	0	1175	127	127	25	127	127
8. Tillstrom Rd And 190th Dr	Total	501		996	825	2	415	330	372	1	500	774
	SB Approach	93	100.00%	358	397	4	103	131	117	1	204	414
	SBL	74	79.57%	199	388	3	144	263	203	3	203	413
	SBT	1	1.08%	0	0	0		1				0
	SBR	18	19.35%	159	9	9	1	-132	1	0	1	1
	WB Approach	167	100.00%	292	281	2	161	156	158	1	185	250
	WBL	1	0.60%	0	0	0		1				0
	WBT	100	59.88%	179	63	2	35	-16	35	0	35	35
	WBR	66	39.52%	113	218	2	128	172	150	2	150	215
	NB Approach	0	0.00%	0	0			0			0	0
	NBL	0		0	0			0				0
	NBT	0		0	0			0				0
	NBR	0		0	0			0				0
	EB Approach	241	100.00%	345	147	1	102	42	72	0	111	110
	EBL	44	18.26%	109	8	2	3	-57	3	0	3	3
	EBT	197	81.74%	237	139	1	116	99	107	1	107	107
	EBR	0	0.00%	0	0			0				0
9. 172nd Ave And Maple Hill Ln	Total	609		1019	597	2	357	187	272	0	319	1030
	SB Approach	300	100.00%	552	465	2	253	213	233	1	231	665
	SBL	0	0.00%	0	0			0				0
	SBT	295	98.33%	552	465	2	249	208	228	1	228	643
	SBR	5	1.67%	0	0	0		5			2	22
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	307	100.00%	467	132	2	87	-28	87	0	87	364
	NBL	4	1.30%	0	0	0		4			2	32
	NBT	303	98.70%	467	132	2	86	-32	86	0	86	332
	NBR	0	0.00%	0	0			0				0
	EB Approach	2	100.00%	0	0	0		2			1	1
	EBL	0	0.00%	0	0			0			0	0
	EBT	0	0.00%	0	0			0				0
	EBR	2	100.00%	0	0	0		2			1	1
10. Foster Rd And Tillstrom Rd	Total	838		1172	1280	1	915	946	931	1	1250	1425
	SB Approach	356	100.00%	540	696	2	459	513	486	1	522	622
	SBL	148	41.57%	226	24	2	16	-54	16	0	16	66
	SBT	208	58.43%	314	672	2	446	567	506	2	506	556
	SBR	0	0.00%	0	0			0				0
	WB Approach	121	100.00%	339	38	3	14	-180	14	0	15	16
	WBL	29	23.97%	94	2	3	0	-63	0	0	2	2
	WBT	0	0.00%	0	0			0				0
	WBR	92	76.03%	245	37	3	14	-117	14	0	14	14
	NB Approach	361	100.00%	293	545	1	672	613	643	2	712	787
	NBL	0	0.00%	0	0			0				0
	NBT	256	70.91%	174	536	1	790	618	704	3	704	729
	NBR	105	29.09%	119	9	1	8	-5	8	0	8	58
	EB Approach	0	0.00%	0	0			0			0	0
	EBL	0		0	0			0				0
	EBT	0		0	0			0				0
	EBR	0		0	0			0				0
11. 172nd Ave And Sager Rd	Total	607		1110	1540	2	842	1037	939	2	1321	1346
	SB Approach	293	100.00%	314	912	1	850	890	870	3	766	792
	SBL	0	0.00%	9	243		0	234	117		117	142
	SBT	290	98.98%	305	668	1	636	653	645	2	645	645
	SBR	3	1.02%	0	0	0		3			5	5
	WB Approach	0	0.00%	199	61		0	-137	0		61	61
	WBL	0		163	14		0	-149	0		14	14
	WBT	0		0	2			2			2	2
	WBR	0		36	45		0	9	5		45	45
	NB Approach	303	100.00%	467	246	2	159	81	120	0	284	284
	NBL	18	5.94%	7	56	0	139	67	103	6	103	103
	NBT	285	94.06%	296	187	1	180	176	178	1	178	178
	NBR	0	0.00%	164	3		0	-162	0		3	3
	EB Approach	11	100.00%	130	321	12	27	202	114	10	209	209
	EBL	2	18.18%	0	136	0		138			136	136
	EBT	0	0.00%	46	19		0	-27	0		19	19
	EBR	9	81.82%	84	166	9	18	91	54	6	54	54
12. 172nd Ave And Cheldelin Rd	Total	589		1044	2312	2	1305	1857	1581	3	2203	2228
	SB Approach	295	100.00%	442	765	1	511	618	565	2	749	749
	SBL	0	0.00%	0	110			110			110	110
	SBT	293	99.32%	307	655	1	626	641	634	2	634	634
	SBR	2	0.68%	135	0	68	0	-133	0	0	5	5
	WB Approach	0	0.00%	0	456			456			456	481
	WBL	0		0	69			69			69	69
	WBT	0		0	237			237			237	262
	WBR	0		0	150			150			150	150
	NB Approach	289	100.00%	331	369	1	322	327	325	1	324	324
	NBL	6	2.08%	35	41	6	7	11	9	2	9	9
	NBT	283	97.92%	296	325	1	311	312	311	1	311	311
	NBR	0	0.00%	0	4			4			4	4
	EB Approach	5	100.00%	270	722	54	13	456	235	47	674	674
	EBL	1	20.00%	263	61	263	0	-200	0	0	61	61
	EBT	0	0.00%	0	473			473			473	473
	EBR	4	80.00%	8	188	2	96	184	140	35	140	140

NCHRP 255 Analysis Worksheets - Preferred Build Alternative AT2

Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
13. Foster Rd And Cheldelin Rd	Total	724		1074	1316	1	887	965	926	1	1316	1407
	SB Approach	323	100.00%	611	0	2	0	-288	0	0	0	0
	SBL	8	2.48%	0	0	0		8				0
	SBT	315	97.52%	611	0	2	0	-296	0	0		0
	SBR	0	0.00%	0	0			0				0
	WB Approach	46	100.00%	0	300	0		346			300	350
	WBL	40	86.96%	0	138	0		178			138	173
	WBT	0	0.00%	0	162			162			162	177
	WBR	6	13.04%	0	0	0		6				0
	NB Approach	355	100.00%	463	430	1	329	321	325	1	430	520
	NBL	0	0.00%	0	294			294			294	354
	NBT	266	74.93%	463	0	2	0	-197	0	0		0
	NBR	89	25.07%	0	136	0		225			136	166
	EB Approach	0	0.00%	0	587			587			587	537
	EBL	0		0	0			0				0
	EBT	0		0	261			261			261	211
	EBR	0		0	326			326			326	326
14. 190th Dr And Cheldelin Rd	Total	368		575	3437	2	2199	3230	2715	7	2398	3018
	SB Approach	149	100.00%	367	1854	2	753	1636	1194	8	1111	1321
	SBL	0	0.00%	0	0			0				0
	SBT	105	70.47%	367	1714	3	490	1452	971	9	971	1181
	SBR	44	29.53%	0	140	0		184			140	140
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	121	100.00%	208	1360	2	791	1273	1032	9	1064	1314
	NBL	4	3.31%	0	215	0		219			215	265
	NBT	117	96.69%	208	1145	2	644	1054	849	7	849	1049
	NBR	0	0.00%	0	0			0				0
	EB Approach	98	100.00%	0	223	0		321			223	383
	EBL	91	92.86%	0	52	0		143			52	62
	EBT	0	0.00%	0	0			0				0
	EBR	7	7.14%	0	171	0		178			171	321
15. 172nd Ave And Crystal Springs Blvd	Total	619		1082	1782	2	1019	1318	1169	2	1193	1484
	SB Approach	325	100.00%	463	1050	1	736	912	824	3	806	906
	SBL	0	0.00%	0	0			0				0
	SBT	302	92.92%	421	748	1	537	629	583	2	583	683
	SBR	23	7.08%	43	302	2	163	282	223	10	223	223
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	288	100.00%	559	537	2	276	266	271	1	284	474
	NBL	0	0.00%	16	2		0	-14	0		2	22
	NBT	288	100.00%	543	535	2	284	280	282	1	282	452
	NBR	0	0.00%	0	0			0				0
	EB Approach	6	100.00%	60	195	10	20	141	80	13	104	104
	EBL	6	100.00%	38	177	6	28	145	86	14	86	86
	EBT	0	0.00%	0	0			0				0
	EBR	0	0.00%	21	18		0	-4	0		18	18
17. Giese Rd And 174th Extension	Total	0		0	2778			2778			2778	2727
	SB Approach		0.00%	0	1172			1172			1172	1121
	SBL			0	251			251			251	251
	SBT			0	752			752			752	702
	SBR			0	168			168			168	168
	WB Approach		0.00%	0	437			437			437	436
	WBL			0	11			11			11	11
	WBT			0	290			290			290	290
	WBR			0	135			135			135	135
	NB Approach		0.00%	0	490			490			490	490
	NBL			0	50			50			50	50
	NBT			0	381			381			381	381
	NBR			0	59			59			59	59
	EB Approach		0.00%	0	679			679			679	680
	EBL			0	84			84			84	84
	EBT			0	438			438			438	438
	EBR			0	158			158			158	158
18. 182nd Ave And Richey Rd	Total	946		654	961	1	1390	1253	1322	1	967	1018
	SB Approach	39	100.00%	0	535	0		574			540	566
	SBL	4	10.26%	0	0	0		4			6	31
	SBT	0	0.00%	0	535			535			535	535
	SBR	35	89.74%	0	0	0		35				0
	WB Approach	159	100.00%	256	155	2	96	58	77	0	155	155
	WBL	0	0.00%	0	141			141			141	141
	WBT	157	98.74%	256	0	2	0	-99	0	0		0
	WBR	2	1.26%	0	14	0		16			14	14
	NB Approach	0	0.00%	0	272			272			272	297
	NBL	0		0	0			0				0
	NBT	0		0	272			272			272	272
	NBR	0		0	0			0			0	25
	EB Approach	275	100.00%	398	0	1	0	-123	0	0	0	0
	EBL	54	19.64%	0	0	0		54				0
	EBT	221	80.36%	398	0	2	0	-177	0	0		0
	EBR	0	0.00%	0	0			0				0

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Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
19. 190th Dr And Richey Rd	Total	756		1237	3302	2	2018	2821	2419	3	2484	2745
	SB Approach	299	100.00%	623	1975	2	947	1650	1299	4	1208	1468
	SBL	0	0.00%	0	0			0				0
	SBT	135	45.15%	367	1832	3	674	1600	1137	8	1137	1347
	SBR	164	54.85%	256	142	2	91	50	71	0	71	121
	WB Approach	0	0.00%	0	0			0			0	0
	WBL	0		0	0			0				0
	WBT	0		0	0			0				0
	WBR	0		0	0			0				0
	NB Approach	210	100.00%	216	1185	1	1153	1179	1166	6	1165	1165
	NBL	7	3.33%	0	0	0		7			22	22
	NBT	203	96.67%	216	1185	1	1114	1172	1143	6	1143	1143
	NBR	0	0.00%	0	0			0				0
	EB Approach	247	100.00%	398	142	2	88	-8	88	0	111	112
	EBL	239	96.76%	398	142	2	86	-16	86	0	86	86
	EBT	0	0.00%	0	0			0				0
	EBR	8	3.24%	0	0	0		8			26	26
20. Foster Rd And Troge Rd	Total	0		582	2112		0	1530	765		2112	1962
	SB Approach	0	0.00%	353	822		0	470	235		822	672
	SBL	0		0	184			184			184	184
	SBT	0		353	638		0	285	143		638	488
	SBR	0		0	0			0			0	0
	WB Approach	0	0.00%	0	292			292			292	291
	WBL	0		0	98			98			98	98
	WBT	0		0	36			36			36	36
	WBR	0		0	157			157			157	157
	NB Approach	0	0.00%	220	757		0	536	268		757	757
	NBL	0		3	68		0	64	32		68	68
	NBT	0		217	509		0	292	146		509	509
	NBR	0		0	180			180			180	180
	EB Approach	0	0.00%	9	242		0	232	116		242	242
	EBL	0		0	0			0			0	0
	EBT	0		0	79			79			79	79
	EBR	0		9	163		0	154	77		163	163
22. 172nd Ave And Connector	Total	0		0	2926			2926			2926	2957
	SB Approach	0	0.00%	0	613			613			613	643
	SBL	0		0	67			67			67	67
	SBT	0		0	545			545			545	576
	SBR	0		0	0			0				0
	WB Approach	0	0.00%	0	1032			1032			1032	1033
	WBL	0		0	954			954			954	954
	WBT	0		0	0			0				0
	WBR	0		0	79			79			79	79
	NB Approach	0	0.00%	0	1281			1281			1281	1281
	NBL	0		0	0			0				0
	NBT	0		0	300			300			300	300
	NBR	0		0	981			981			981	981
	EB Approach	0	0.00%	0	0			0			0	0
	EBL	0		0	0			0				0
	EBT	0		0	0			0				0
	EBR	0		0	0			0				0
24. Foster Rd And Connector	Total	0		0	3400			3400			3400	3525
	SB Approach	0	0.00%	0	534			534			534	534
	SBL	0		0	0			0			0	0
	SBT	0		0	480			480			480	480
	SBR	0		0	54			54			54	54
	WB Approach	0	0.00%	0	1259			1259			1259	1184
	WBL	0		0	187			187			187	162
	WBT	0		0	1072			1072			1072	1022
	WBR	0		0	0			0			0	0
	NB Approach	0	0.00%	0	573			573			573	697
	NBL	0		0	12			12			12	12
	NBT	0		0	383			383			383	483
	NBR	0		0	177			177			177	202
	EB Approach	0	0.00%	0	1035			1035			1035	1110
	EBL	0		0	87			87			87	87
	EBT	0		0	919			919			919	994
	EBR	0		0	29			29			29	29
26. Connector And 190th Dr	Total	0		0	3346			3346			3346	2917
	SB Approach	0	0.00%	0	1885			1885			1885	1502
	SBL	0		0	496			496			496	378
	SBT	0		0	1389			1389			1389	1124
	SBR	0		0	0			0				0
	WB Approach	0	0.00%	0	269			269			269	269
	WBL	0		0	16			16			16	16
	WBT	0		0	0			0				0
	WBR	0		0	253			253			253	253
	NB Approach	0	0.00%	0	1192			1192			1192	1146
	NBL	0		0	0			0				0
	NBT	0		0	1107			1107			1107	1061
	NBR	0		0	85			85			85	85
	EB Approach	0	0.00%	0	0			0			0	0
	EBL	0		0	0			0				0
	EBT	0		0	0			0				0
	EBR	0		0	0			0				0
27. Foster Rd And Sunnyside Extension	Total	0		550	3886		0	3336	1668		3886	4214
	SB Approach	0	0.00%	336	635		0	299	150		635	706
	SBL	0		0	228			228			228	228
	SBT	0		336	360		0	23	12		360	410
	SBR	0		0	48			48			48	68
	WB Approach	0	0.00%	0	1158			1158			1158	1388
	WBL	0		0	175			175			175	175
	WBT	0		0	718			718			718	948
	WBR	0		0	265			265			265	265
	NB Approach	0	0.00%	214	703		0	489	245		703	669
	NBL	0		0	2			2			2	2
	NBT	0		214	462		0	248	124		462	427
	NBR	0		0	240			240			240	240
	EB Approach	0	0.00%	0	1390			1390			1390	1451
	EBL	0		0	115			115			115	115
	EBT	0		0	1275			1275			1275	1335
	EBR	0		0	1			1			1	1

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Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
28. Powell Blvd And 174th Ave	Total	2760		2879	4966	1	4761	4847	4804	2	4753	5002
	SB Approach	344	100.00%	252	806	1	1099	898	999	3	859	958
	SBL	74	21.51%	15	63	0	311	122	122	2	122	122
	SBT	192	55.81%	229	716	1	601	679	640	3	640	740
	SBR	78	22.67%	8	27	0	249	96	96	1	96	96
	WB Approach	827	100.00%	865	1253	1	1197	1214	1206	1	1215	1366
	WBL	189	22.85%	306	357	2	221	240	231	1	231	231
	WBT	594	71.83%	557	867	1	924	903	914	2	914	1014
	WBR	44	5.32%	2	29	0	605	71	71	2	71	121
	NB Approach	641	100.00%	657	911	1	888	895	892	1	927	927
	NBL	107	16.69%	171	323	2	202	259	230	2	230	230
	NBT	238	37.13%	135	286	1	503	389	446	2	446	446
	NBR	296	46.18%	351	302	1	255	247	251	1	251	251
	EB Approach	948	100.00%	1104	1996	1	1714	1840	1777	2	1752	1751
	EBL	76	8.02%	23	85	0	275	137	137	2	137	137
	EBT	702	74.05%	859	1200	1	980	1043	1011	1	1011	1011
	EBR	170	17.93%	222	712	1	546	660	603	4	603	603
29. Powell Blvd And 182nd Ave	Total	3492		3175	5190	1	5708	5506	5607	2	5657	5357
	SB Approach	1062	100.00%	843	1837	1	2314	2056	2185	2	2171	1921
	SBL	202	19.02%	175	193	1	224	221	222	1	222	222
	SBT	670	63.09%	579	1476	1	1709	1568	1638	2	1638	1388
	SBR	190	17.89%	89	167	0	355	267	311	2	311	311
	WB Approach	747	100.00%	791	1221	1	1152	1177	1164	2	1170	1221
	WBL	116	15.53%	142	116	1	95	91	93	1	93	93
	WBT	517	69.21%	552	957	1	896	922	909	2	909	959
	WBR	114	15.26%	97	148	1	173	164	169	1	169	169
	NB Approach	695	100.00%	497	797	1	1115	995	1055	2	1051	851
	NBL	202	29.06%	105	145	1	278	242	260	1	260	210
	NBT	438	63.02%	270	458	1	741	625	683	2	683	553
	NBR	55	7.91%	121	194	2	88	128	108	2	108	88
	EB Approach	988	100.00%	1044	1335	1	1264	1279	1271	1	1264	1364
	EBL	195	19.74%	59	92	0	303	228	228	1	228	228
	EBT	648	65.59%	838	970	1	750	780	765	1	765	865
	EBR	145	14.68%	147	273	1	270	271	271	2	271	271
30. Powell Blvd And Powell Loop	Total	2131		1546	3347	1	4614	3932	4273	2	4380	4115
	SB Approach	0	0.00%	0	0			0			0	0
	SBL	0		0	0			0				0
	SBT	0		0	0			0				0
	SBR	0		0	0			0				0
	WB Approach	998	100.00%	758	1835	1	2417	2075	2246	2	2314	2075
	WBL	214	21.44%	131	665	1	1090	749	920	4	920	830
	WBT	784	78.56%	627	1170	1	1463	1327	1395	2	1395	1245
	WBR	0	0.00%	0	0			0				0
	NB Approach	243	100.00%	139	566	1	987	669	828	3	818	818
	NBL	19	7.82%	0	0	0		19			38	38
	NBT	0	0.00%	0	0			0				0
	NBR	224	92.18%	139	566	1	909	650	780	3	780	780
	EB Approach	890	100.00%	649	946	1	1298	1187	1243	1	1247	1222
	EBL	0	0.00%	0	0			0				0
	EBT	884	99.33%	649	946	1	1289	1181	1235	1	1235	1210
	EBR	6	0.67%	0	0	0		6			12	12

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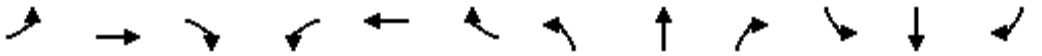
Intersection Name	Movement	Existing Turning Volumes	% Approach Volume	Base Model Volume	Future Model Volume	Base Model: Existing Volume	Ratio Method (Existing * Future/Base)	Difference Method (Ex. + Future - Base)	Average ((Ratio + Diff.)/2)	Growth Factor (From Ex. Volume)	Analysis Volume	Balanced Volumes
31. Pleasant View Dr And Highland Dr	Total	1305		1324	4287	1	4226	4268	4247	3	4244	3945
	SB Approach	580	100.00%	493	1761	1	2072	1848	1960	3	2047	1747
	SBL	129	22.24%	184	430	1	301	375	338	3	338	338
	SBT	451	77.76%	309	1331	1	1944	1473	1709	4	1709	1409
	SBR	0	0.00%	0	0			0			0	0
	WB Approach	193	100.00%	378	1218	2	623	1033	828	4	807	807
	WBL	123	63.73%	285	1048	2	452	886	669	5	669	669
	WBT	0	0.00%	0	0			0			0	0
	WBR	70	36.27%	93	170	1	129	147	138	2	138	138
	NB Approach	532	100.00%	453	1308	1	1535	1387	1461	3	1390	1391
	NBL	0	0.00%	0	0			0			0	0
	NBT	332	62.41%	220	418	1	630	530	580	2	580	580
	NBR	200	37.59%	233	890	1	764	857	811	4	811	811
	EB Approach	0	0.00%	0	0			0			0	0
	EBL	0		0	0			0				0
	EBT	0		0	0			0				0
	EBR	0		0	0			0				0
32. Foster Rd And Jenne Rd	Total	1892		2316	2193	1	1792	1769	1781	1	2097	2167
	SB Approach	528	100.00%	750	634	1	446	412	429	1	561	511
	SBL	175	33.14%	403	142	2	62	-86	62	0	62	62
	SBT	0	0.00%	0	0			0			0	0
	SBR	353	66.86%	347	492	1	500	498	499	1	499	449
	WB Approach	397	100.00%	735	484	2	261	146	204	1	358	478
	WBL	0	0.00%	0	0			0				0
	WBT	255	64.23%	349	458	1	334	364	349	1	349	449
	WBR	142	35.77%	385	25	3	9	-218	9	0	9	29
	NB Approach	0	0.00%	0	0			0			0	0
	NBL	0		0	0			0				0
	NBT	0		0	0			0				0
	NBR	0		0	0			0				0
	EB Approach	967	100.00%	831	1075	1	1251	1211	1231	1	1178	1178
	EBL	551	56.98%	289	280	1	534	542	538	1	538	538
	EBT	416	43.02%	542	796	1	610	669	640	2	640	640
	EBR	0	0.00%	0	0			0			0	0
33. Butler Rd And Pleasant View Dr	Total	1043		1276	4801	1	3924	4568	4246	4	4107	4122
	SB Approach	356	100.00%	433	2238	1	1842	2161	2002	6	1922	1937
	SBL	50	14.04%	33	51	1	78	68	73	1	73	88
	SBT	276	77.53%	400	1780	1	1229	1656	1442	5	1442	1442
	SBR	30	8.43%	0	407	0		437			407	407
	WB Approach	111	100.00%	279	761	3	303	593	448	4	520	520
	WBL	31	27.93%	264	345	9	41	112	76	2	76	76
	WBT	41	36.94%	0	396	0		437			396	396
	WBR	39	35.14%	15	19	0	52	44	48	1	48	48
	NB Approach	444	100.00%	565	1395	1	1097	1274	1186	3	1258	1258
	NBL	0	0.00%	0	0			0			0	0
	NBT	348	78.38%	357	1165	1	1135	1156	1145	3	1145	1145
	NBR	96	21.62%	207	230	2	107	119	113	1	113	113
	EB Approach	132	100.00%	0	407	0		539			407	407
	EBL	62	46.97%	0	114	0		176			114	114
	EBT	67	50.76%	0	292	0		359			292	292
	EBR	3	2.27%	0	1	0		4			1	1

Intersection growth rate negative due to bypass, so intersection growth rate from no build used to account to growth in side-street movements.
Used 255 difference method, as the ratio method was unreasonable.
Used 255 ratio method, as the difference method was unreasonable.
Model shows negative growth for movement, intersection growth rate used instead.
Movement is not in the model, intersection growth rate used instead.
Movement closed in 2030 conditions.
Movement growth factor too large, Intersection growth rate used instead
Raw model volume used
Model shows negative growth for movement, intersection growth rate unavailable, raw model (future) volume used.



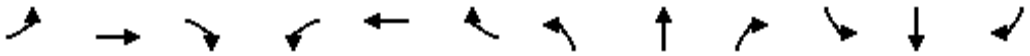
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	493	1023	133	115	686	97	241	935	251	66	548	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3451		3433	3434		1770	3505	1493	1770	3539	1529
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3451		3433	3434		1770	3505	1493	1770	3539	1529
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	519	1077	140	121	722	102	254	984	264	69	577	364
RTOR Reduction (vph)	0	7	0	0	7	0	0	0	102	0	0	253
Lane Group Flow (vph)	519	1210	0	121	817	0	254	984	162	69	577	111
Confl. Peds. (#/hr)	15		15	15		15	15		15	15		15
Heavy Vehicles (%)	2%	2%	3%	2%	2%	8%	2%	3%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot		custom	Prot		custom
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases									2			6
Actuated Green, G (s)	25.6	55.4		10.3	40.1		23.4	42.1	55.4	9.1	27.8	40.1
Effective Green, g (s)	25.6	55.4		10.3	40.1		23.4	42.1	55.4	9.1	27.8	40.1
Actuated g/C Ratio	0.19	0.41		0.08	0.30		0.17	0.31	0.41	0.07	0.20	0.30
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	647	1407		260	1013		305	1086	609	119	724	451
v/s Ratio Prot	c0.15	c0.35		0.04	0.24		c0.14	c0.28		0.04	0.16	
v/s Ratio Perm									0.11			0.07
v/c Ratio	0.80	0.86		0.47	0.81		0.83	0.91	0.27	0.58	0.80	0.25
Uniform Delay, d1	52.7	36.7		60.2	44.3		54.4	45.0	26.7	61.5	51.4	36.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.1	5.6		1.3	4.8		17.4	10.7	0.2	6.7	6.1	0.3
Delay (s)	59.8	42.3		61.5	49.1		71.7	55.7	27.0	68.2	57.5	36.7
Level of Service	E	D		E	D		E	E	C	E	E	D
Approach Delay (s)		47.6			50.7			53.4			50.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	50.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	135.9	Sum of lost time (s)	19.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	197	53	18	108	49	8	65	1392	16	95	883	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1782		1752	1820		1768	3532		1770	3511	
Flt Permitted	0.72	1.00		0.71	1.00		0.23	1.00		0.13	1.00	
Satd. Flow (perm)	1324	1782		1306	1820		423	3532		248	3511	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	207	56	19	114	52	8	68	1465	17	100	929	42
RTOR Reduction (vph)	0	15	0	0	6	0	0	1	0	0	5	0
Lane Group Flow (vph)	207	60	0	114	54	0	68	1481	0	100	966	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Turn Type	Perm			Perm			D.P+P			D.P+P		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	12.9	12.9		12.9	12.9		33.1	30.0		33.1	30.3	
Effective Green, g (s)	12.9	12.9		12.9	12.9		33.1	30.0		33.1	30.3	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.57	0.52		0.57	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	396		290	405		306	1827		223	1834	
v/s Ratio Prot		0.03			0.03		0.01	c0.42		c0.02	0.28	
v/s Ratio Perm	c0.16			0.09			0.12			0.23		
v/c Ratio	0.70	0.15		0.39	0.13		0.22	0.81		0.45	0.53	
Uniform Delay, d1	20.8	18.1		19.2	18.1		6.0	11.6		8.8	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	0.2		0.9	0.1		0.4	2.8		1.4	0.3	
Delay (s)	28.2	18.3		20.1	18.2		6.4	14.5		10.2	9.4	
Level of Service	C	B		C	B		A	B		B	A	
Approach Delay (s)		25.6			19.4			14.1			9.5	
Approach LOS		C			B			B			A	

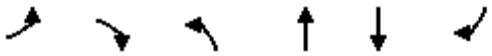
Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	71	56	40	35	30	17	1414	106	124	959	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1765	1728		1765	1721		1769	3494		1656	3503	
Flt Permitted	0.71	1.00		0.67	1.00		0.23	1.00		0.12	1.00	
Satd. Flow (perm)	1323	1728		1247	1721		422	3494		213	3503	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	75	59	42	37	32	18	1488	112	131	1009	63
RTOR Reduction (vph)	0	51	0	0	28	0	0	7	0	0	5	0
Lane Group Flow (vph)	95	83	0	42	41	0	18	1593	0	131	1067	0
Confl. Peds. (#/hr)	3		3	3		3	3		3	3		3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	9%	2%	2%
Turn Type	Perm			Perm			D.P+P			D.P+P		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)	7.7	7.7		7.7	7.7		35.8	32.8		35.8	35.1	
Effective Green, g (s)	7.7	7.7		7.7	7.7		35.8	32.8		35.8	35.1	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.65	0.59		0.65	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	240		173	239		289	2065		215	2215	
v/s Ratio Prot		0.05			0.02		0.00	c0.46		c0.03	0.30	
v/s Ratio Perm	c0.07			0.03			0.04			0.36		
v/c Ratio	0.52	0.35		0.24	0.17		0.06	0.77		0.61	0.48	
Uniform Delay, d1	22.2	21.6		21.3	21.1		3.8	8.5		7.2	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.9		0.7	0.3		0.1	1.8		4.8	0.2	
Delay (s)	24.6	22.5		22.0	21.4		3.9	10.4		12.0	5.6	
Level of Service	C	C		C	C		A	B		B	A	
Approach Delay (s)		23.4			21.7			10.3			6.3	
Approach LOS		C			C			B			A	

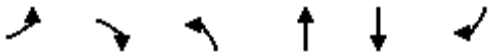
Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	12	9	1401	1200	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	9	13	9	1475	1263	9
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)		6				
Median type				None	Raised	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2030	642	1276			
vC1, stage 1 conf vol	1271					
vC2, stage 2 conf vol	759					
vCu, unblocked vol	2030	642	1276			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	98			
cM capacity (veh/h)	154	415	539			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	22	9	737	737	842	431
Volume Left	9	9	0	0	0	0
Volume Right	13	0	0	0	0	9
cSH	359	539	1700	1700	1700	1700
Volume to Capacity	0.06	0.02	0.43	0.43	0.50	0.25
Queue Length 95th (ft)	5	1	0	0	0	0
Control Delay (s)	20.8	11.8	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	20.8	0.1			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	32	332	628	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	1	34	349	661	23
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	Raised	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1095	679	687			
vC1, stage 1 conf vol	676					
vC2, stage 2 conf vol	420					
vCu, unblocked vol	1095	679	687			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	96			
cM capacity (veh/h)	358	450	904			

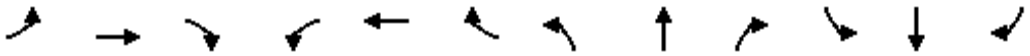
Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	2	34	349	684
Volume Left	1	34	0	0
Volume Right	1	0	0	23
cSH	399	904	1700	1700
Volume to Capacity	0.01	0.04	0.21	0.40
Queue Length 95th (ft)	0	3	0	0
Control Delay (s)	14.1	9.1	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	14.1	0.8		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	14	729	58	66	556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	15	767	61	69	585
Pedestrians	10		10			10
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			Raised			None
Median storage veh)			1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1542	818			838	
vC1, stage 1 conf vol	808					
vC2, stage 2 conf vol	734					
vCu, unblocked vol	1542	818			838	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			91	
cM capacity (veh/h)	248	368			789	

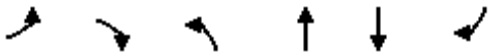
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	828	69	585
Volume Left	2	0	69	0
Volume Right	15	61	0	0
cSH	347	1700	789	1700
Volume to Capacity	0.05	0.49	0.09	0.34
Queue Length 95th (ft)	4	0	7	0
Control Delay (s)	15.9	0.0	10.0	0.0
Lane LOS	C		A	
Approach Delay (s)	15.9	0.0	1.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	473	140	69	262	150	9	311	4	110	634	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1766	1789		1768	1746		1768	1859		1765	1860	
Flt Permitted	0.38	1.00		0.24	1.00		0.22	1.00		0.51	1.00	
Satd. Flow (perm)	713	1789		438	1746		416	1859		947	1860	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	64	498	147	73	276	158	9	327	4	116	667	5
RTOR Reduction (vph)	0	24	0	0	46	0	0	1	0	0	1	0
Lane Group Flow (vph)	64	621	0	73	388	0	9	330	0	116	671	0
Confl. Peds. (#/hr)	3		3	3		3	3		3	3		3
Confl. Bikes (#/hr)								1				
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.0	17.0		17.0	17.0		17.9	17.9		17.9	17.9	
Effective Green, g (s)	17.0	17.0		17.0	17.0		17.9	17.9		17.9	17.9	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.42	0.42		0.42	0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	283	709		174	692		174	776		395	776	
v/s Ratio Prot		c0.35			0.22			0.18			c0.36	
v/s Ratio Perm	0.09			0.17			0.02			0.12		
v/c Ratio	0.23	0.88		0.42	0.56		0.05	0.43		0.29	0.87	
Uniform Delay, d1	8.6	12.0		9.4	10.1		7.4	8.9		8.3	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	11.8		1.6	1.0		0.1	0.4		0.4	9.9	
Delay (s)	9.0	23.8		11.0	11.1		7.6	9.2		8.7	21.3	
Level of Service	A	C		B	B		A	A		A	C	
Approach Delay (s)		22.4			11.1			9.2			19.5	
Approach LOS		C			B			A			B	

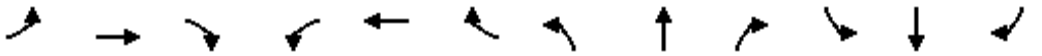
Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	86	18	22	452	683	223
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	91	19	23	476	719	235
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	Raised	
Median storage veh)					1	
Upstream signal (ft)				1272		
pX, platoon unblocked						
vC, conflicting volume	1364	842	957			
vC1, stage 1 conf vol	839					
vC2, stage 2 conf vol	525					
vCu, unblocked vol	1364	842	957			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	69	95	97			
cM capacity (veh/h)	291	362	717			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	109	23	476	954
Volume Left	91	23	0	0
Volume Right	19	0	0	235
cSH	301	717	1700	1700
Volume to Capacity	0.36	0.03	0.28	0.56
Queue Length 95th (ft)	40	3	0	0
Control Delay (s)	23.6	10.2	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	23.6	0.5		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	438	158	11	290	135	50	381	59	251	702	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.95		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1765	1763		1770	1758		1770	1819		1769	1863	1539
Flt Permitted	0.29	1.00		0.13	1.00		0.11	1.00		0.27	1.00	1.00
Satd. Flow (perm)	540	1763		236	1758		198	1819		504	1863	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	88	461	166	12	305	142	53	401	62	264	739	177
RTOR Reduction (vph)	0	14	0	0	19	0	0	6	0	0	0	98
Lane Group Flow (vph)	88	613	0	12	428	0	53	457	0	264	739	79
Confl. Peds. (#/hr)	3		3	3		3	3		3	3		3
Confl. Bikes (#/hr)					1		1					
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			D.P+P			D.P+P		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			6			2		6
Actuated Green, G (s)	31.6	31.6		31.6	31.6		40.6	31.4		40.6	37.6	37.6
Effective Green, g (s)	31.6	31.6		31.6	31.6		40.6	31.4		40.6	37.6	37.6
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.48	0.37		0.48	0.45	0.45
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	203	662		89	660		151	678		381	832	687
v/s Ratio Prot		c0.35			0.24		0.01	0.25		c0.08	c0.40	
v/s Ratio Perm	0.16			0.05			0.16			0.26		0.05
v/c Ratio	0.43	0.93		0.13	0.65		0.35	0.67		0.69	0.89	0.12
Uniform Delay, d1	19.6	25.2		17.3	21.7		16.8	22.1		15.0	21.4	13.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	18.8		0.7	2.2		1.4	2.6		5.4	11.3	0.1
Delay (s)	21.1	44.0		18.0	23.9		18.2	24.8		20.3	32.7	13.7
Level of Service	C	D		B	C		B	C		C	C	B
Approach Delay (s)		41.2			23.8			24.1			27.1	
Approach LOS		D			C			C			C	

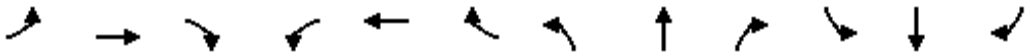
Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	84.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	141	14	272	25	31	535
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	148	15	286	26	33	563
Pedestrians	3		3			3
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			Raised			None
Median storage veh)			1			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	934	305			316	
vC1, stage 1 conf vol	302					
vC2, stage 2 conf vol	631					
vCu, unblocked vol	934	305			316	
tC, single (s)	6.4	6.7			4.3	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.8			2.4	
p0 queue free %	63	98			97	
cM capacity (veh/h)	400	632			1123	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	163	313	596
Volume Left	148	0	33
Volume Right	15	26	0
cSH	413	1700	1123
Volume to Capacity	0.39	0.18	0.03
Queue Length 95th (ft)	46	0	2
Control Delay (s)	19.3	0.0	0.8
Lane LOS	C		A
Approach Delay (s)	19.3	0.0	0.8
Approach LOS	C		

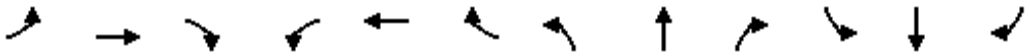
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1335	1	175	948	265	2	427	240	228	410	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3401		1770	1863	1555	1770	1818	
Flt Permitted	0.10	1.00		0.10	1.00		0.22	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	177	3539		186	3401		414	1863	1555	274	1818	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	1405	1	184	998	279	2	449	253	240	432	72
RTOR Reduction (vph)	0	0	0	0	26	0	0	0	99	0	6	0
Lane Group Flow (vph)	121	1406	0	184	1251	0	2	449	154	240	498	0
Confl. Peds. (#/hr)	3		3	3		3	3		3	3		3
Turn Type	D.P+P			D.P+P			D.P+P		Perm	D.P+P		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	6			2			4		8	8		
Actuated Green, G (s)	47.0	40.0		47.0	42.0		39.7	27.2	27.2	39.7	38.9	
Effective Green, g (s)	47.0	40.0		47.0	42.0		39.7	27.2	27.2	39.7	38.9	
Actuated g/C Ratio	0.46	0.39		0.46	0.41		0.39	0.26	0.26	0.39	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	159	1378		193	1391		171	493	412	288	689	
v/s Ratio Prot	0.04	c0.40		c0.06	0.37		0.00	c0.24		c0.10	0.27	
v/s Ratio Perm	0.31			0.37			0.00		0.10	0.22		
v/c Ratio	0.76	1.02		0.95	0.90		0.01	0.91	0.37	0.83	0.72	
Uniform Delay, d1	22.2	31.4		23.9	28.4		21.5	36.6	30.8	25.1	27.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.1	29.5		51.1	8.1		0.0	21.0	0.6	18.3	3.8	
Delay (s)	41.3	60.8		74.9	36.5		21.5	57.5	31.4	43.3	31.1	
Level of Service	D	E		E	D		C	E	C	D	C	
Approach Delay (s)		59.3			41.3			48.0			35.0	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	102.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		

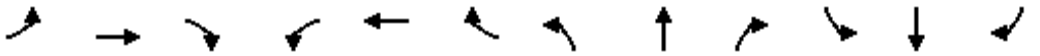
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1011	603	231	1014	121	230	446	251	122	740	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	3.0	3.0	5.0		3.0	4.5	3.0	3.0	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	3539	1512	1770	3416		1770	3505	1550	1770	3466	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1687	3539	1512	1770	3416		1770	3505	1550	1770	3466	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	1064	635	243	1067	127	242	469	264	128	779	101
RTOR Reduction (vph)	0	0	21	0	10	0	0	0	67	0	11	0
Lane Group Flow (vph)	144	1064	614	243	1184	0	242	469	197	128	869	0
Confl. Peds. (#/hr)	4		18	18		4	14		15	15		14
Confl. Bikes (#/hr)		3						1			2	
Heavy Vehicles (%)	7%	2%	2%	2%	4%	2%	2%	3%	2%	2%	2%	2%
Turn Type	Prot		pm+ov	Prot			Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases			2						8			
Actuated Green, G (s)	8.0	28.0	40.0	12.0	32.0		12.0	23.5	35.5	11.0	22.5	
Effective Green, g (s)	8.0	28.0	40.0	12.0	32.0		12.0	23.5	35.5	11.0	22.5	
Actuated g/C Ratio	0.09	0.31	0.44	0.13	0.36		0.13	0.26	0.39	0.12	0.25	
Clearance Time (s)	3.0	5.0	3.0	3.0	5.0		3.0	4.5	3.0	3.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	150	1101	672	236	1215		236	915	611	216	867	
v/s Ratio Prot	0.09	0.30	0.12	c0.14	c0.35		c0.14	0.13	0.04	0.07	c0.25	
v/s Ratio Perm			0.28						0.08			
v/c Ratio	0.96	0.97	0.91	1.03	0.97		1.03	0.51	0.32	0.59	1.00	
Uniform Delay, d1	40.8	30.5	23.4	39.0	28.6		39.0	28.4	18.9	37.4	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	60.6	20.2	16.9	66.5	20.3		65.3	0.5	0.3	4.3	31.1	
Delay (s)	101.5	50.7	40.3	105.5	48.9		104.3	28.9	19.2	41.7	64.8	
Level of Service	F	D	D	F	D		F	C	B	D	E	
Approach Delay (s)		51.1			58.5			45.0			61.9	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM Average Control Delay	54.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	228	865	271	93	959	169	210	553	88	222	1388	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3390		1770	3417		3433	3452		3433	3539	1523
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3390		1770	3417		3433	3452		3433	3539	1523
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	240	911	285	98	1009	178	221	582	93	234	1461	327
RTOR Reduction (vph)	0	24	0	0	11	0	0	10	0	0	0	5
Lane Group Flow (vph)	240	1172	0	98	1176	0	221	665	0	234	1461	322
Confl. Peds. (#/hr)	14		12	12		14	31		14	14		31
Confl. Bikes (#/hr)		2								2	1	
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases												4
Actuated Green, G (s)	16.0	46.0		8.0	38.0		8.0	42.2		12.8	47.0	63.0
Effective Green, g (s)	16.0	46.0		8.0	38.0		8.0	42.2		12.8	47.0	63.0
Actuated g/C Ratio	0.13	0.37		0.06	0.30		0.06	0.34		0.10	0.38	0.50
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	3.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	227	1248		113	1039		220	1165		352	1331	768
v/s Ratio Prot	c0.14	0.35		0.06	c0.34		c0.06	0.19		c0.07	c0.41	0.05
v/s Ratio Perm												0.16
v/c Ratio	1.06	0.94		0.87	1.13		1.00	0.57		0.66	1.10	0.42
Uniform Delay, d1	54.5	38.1		58.0	43.5		58.5	34.0		54.0	39.0	19.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	75.6	13.3		45.7	71.6		61.8	2.0		4.7	55.9	0.4
Delay (s)	130.1	51.4		103.7	115.1		120.3	36.0		58.7	94.9	19.9
Level of Service	F	D		F	F		F	D		E	F	B
Approach Delay (s)		64.6			114.2			56.8			78.6	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM Average Control Delay	79.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1210	12	830	1245	38	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		3.0	5.0	5.0	3.0
Lane Util. Factor	0.95		0.97	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3533		3400	3539	1770	1555
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3533		3400	3539	1770	1555
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1274	13	874	1311	40	821
RTOR Reduction (vph)	1	0	0	0	0	5
Lane Group Flow (vph)	1286	0	874	1311	40	816
Confl. Peds. (#/hr)		3	3		3	3
Confl. Bikes (#/hr)				1		1
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Turn Type			Prot			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Actuated Green, G (s)	46.0		31.0	80.0	30.0	61.0
Effective Green, g (s)	46.0		31.0	80.0	30.0	61.0
Actuated g/C Ratio	0.38		0.26	0.67	0.25	0.51
Clearance Time (s)	5.0		3.0	5.0	5.0	3.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1354		878	2359	443	790
v/s Ratio Prot	c0.36		0.26	0.37	0.02	c0.27
v/s Ratio Perm						0.26
v/c Ratio	0.95		1.00	0.56	0.09	1.03
Uniform Delay, d1	35.9		44.4	10.6	34.5	29.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	14.2		29.1	0.3	0.1	40.6
Delay (s)	50.1		73.5	10.9	34.6	70.1
Level of Service	D		E	B	C	E
Approach Delay (s)	50.1			35.9	68.5	
Approach LOS	D			D	E	

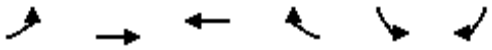
Intersection Summary			
HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	669	138	580	811	338	1409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97		0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	3355		3539	1541	1770	3539
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	3355		3539	1541	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	704	145	611	854	356	1483
RTOR Reduction (vph)	29	0	0	456	0	0
Lane Group Flow (vph)	820	0	611	398	356	1483
Confl. Peds. (#/hr)	3	3		3	3	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%
Turn Type				Perm	Prot	
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	15.9		18.1	18.1	13.0	35.1
Effective Green, g (s)	15.9		18.1	18.1	13.0	35.1
Actuated g/C Ratio	0.27		0.31	0.31	0.22	0.59
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	904		1086	473	390	2105
v/s Ratio Prot	c0.24		0.17		c0.20	0.42
v/s Ratio Perm				c0.26		
v/c Ratio	0.91		0.56	0.84	0.91	0.70
Uniform Delay, d1	20.8		17.1	19.1	22.4	8.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	12.5		0.7	12.7	25.2	1.1
Delay (s)	33.4		17.8	31.8	47.6	9.4
Level of Service	C		B	C	D	A
Approach Delay (s)	33.4		26.0			16.8
Approach LOS	C		C			B

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	59.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

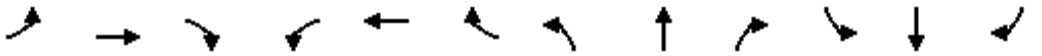
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	538	640	449	29	62	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	5.0	5.0	3.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1863	1863	1557	1770	1568
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	1863	1863	1557	1770	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	566	674	473	31	65	473
RTOR Reduction (vph)	0	0	0	5	0	79
Lane Group Flow (vph)	566	674	473	26	65	394
Confl. Peds. (#/hr)	3			3	3	3
Turn Type	Prot			pm+ov		pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases				6		4
Actuated Green, G (s)	11.0	32.2	18.2	25.6	7.4	18.4
Effective Green, g (s)	11.0	32.2	18.2	25.6	7.4	18.4
Actuated g/C Ratio	0.22	0.65	0.37	0.52	0.15	0.37
Clearance Time (s)	3.0	5.0	5.0	5.0	5.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	761	1209	684	961	264	582
v/s Ratio Prot	c0.16	0.36	c0.25	0.00	0.04	c0.15
v/s Ratio Perm				0.01		0.10
v/c Ratio	0.74	0.56	0.69	0.03	0.25	0.68
Uniform Delay, d1	18.0	4.8	13.3	5.9	18.6	13.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	0.6	3.0	0.0	0.5	3.1
Delay (s)	21.9	5.3	16.3	5.9	19.1	16.2
Level of Service	C	A	B	A	B	B
Approach Delay (s)		12.9	15.7		16.6	
Approach LOS		B	B		B	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	292	1	76	396	48	1	1145	113	88	1442	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1556	1770	1829		1768	3483		1770	3539	1523
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1556	1770	1829		1768	3483		1770	3539	1523
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	307	1	80	417	51	1	1205	119	93	1518	428
RTOR Reduction (vph)	0	0	1	0	5	0	0	8	0	0	0	178
Lane Group Flow (vph)	120	307	0	80	463	0	1	1316	0	93	1518	250
Confl. Peds. (#/hr)	3		3	3		3	3		3	3		3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type	Prot		Perm	Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	7.0	25.1	25.1	4.7	22.8		0.8	41.1		6.0	46.3	46.3
Effective Green, g (s)	7.0	25.1	25.1	4.7	22.8		0.8	41.1		6.0	46.3	46.3
Actuated g/C Ratio	0.08	0.27	0.27	0.05	0.25		0.01	0.44		0.06	0.50	0.50
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	133	503	420	90	449		15	1541		114	1764	759
v/s Ratio Prot	c0.07	0.16		0.05	c0.25		0.00	0.38		c0.05	c0.43	
v/s Ratio Perm			0.00									0.16
v/c Ratio	0.90	0.61	0.00	0.89	1.03		0.07	0.85		0.82	0.86	0.33
Uniform Delay, d1	42.6	29.6	24.7	43.8	35.1		45.7	23.2		42.9	20.5	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	49.4	2.2	0.0	59.2	51.0		1.9	4.8		34.4	4.6	0.3
Delay (s)	92.0	31.8	24.7	103.0	86.1		47.6	28.0		77.3	25.0	14.2
Level of Service	F	C	C	F	F		D	C		E	C	B
Approach Delay (s)		48.7			88.5			28.1			25.1	
Approach LOS		D			F			C			C	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]4_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 4 - Future Scouter Mtn Rd / 172nd Ave**

	Approach															
	EB (West Leg): Future Scouter Mtn Rd				WB (East Leg): Future Scouter Mtn Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LTR				LTR				LT, TR				LT, TR		
Volumes (veh/hr)		11	17	155		25	4	89		81	1363	54		154	1031	17
Heavy Vehicle %		2	2	2		2	2	2		2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		10				10				10				10		

	EB (West Leg): Future Scouter Mtn Rd				WB (East Leg): Future Scouter Mtn Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	1299				1563				195				118			
Entry Flow (pc/hr)		196				127			756	853			606	684		
Entry Volume (veh/hr)		192				125			741	836			594	671		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		2				2			1	1			1	1		
Capacity (pc/hr)		455				378			930	930			1004	1004		
Capacity (veh/hr)		446				371			911	911			983	983		
v/c Ratio		0.43				0.34			0.81	0.92			0.60	0.68		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		16.2				16.2			22.7	34.6			12.1	14.5		
Land LOS		C				C			C	D			B	B		
Approach Delay (sec/veh)		16.2				16.2				29.0				13.4		
Approach LOS		C				C				D				B		
Intersection Delay (sec/veh)	21.5															
Intersection LOS	C															
95%th Queue (veh)		2.1				1.4			9.2	13.7			4.2	5.6		
95%th Queue (feet)		53				36			229	342			105	141		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]6_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 6 - Hemrick Rd / 172nd Ave**

	Approach															
	EB (West Leg): Hemrick Rd				WB (East Leg): Hemrick Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LTR				LTR				LT, TR				LT, TR		
Volumes (veh/hr)		58	63	172		95	4	26		153	1070	131		35	975	134
Heavy Vehicle %		2	2	2		2	2	2		2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		5				5				5				5		

	EB (West Leg): Hemrick Rd				WB (East Leg): Hemrick Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	1187				1375				167				270			
Entry Flow (pc/hr)		314				134			683	771			578	651		
Entry Volume (veh/hr)		308				131			670	756			567	638		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		2				2			1	1			1	1		
Capacity (pc/hr)		492				432			956	956			863	863		
Capacity (veh/hr)		482				424			937	937			845	845		
v/c Ratio		0.64				0.31			0.71	0.81			0.67	0.75		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		22.9				13.8			16.4	21.7			15.8	19.9		
Land LOS		C				B			C	C			C	C		
Approach Delay (sec/veh)		22.9				13.8				19.2				18.0		
Approach LOS		C				B				C				C		
Intersection Delay (sec/veh)	18.9															
Intersection LOS	C															
95%th Queue (veh)		4.4				1.3			6.3	9.0			5.3	7.2		
95%th Queue (feet)		110				33			158	224			132	181		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]7_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 7 - Hemrick Rd / Foster Rd**

	Approach															
	EB (West Leg): Hemrick Rd								NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**					**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LR								LT				TR		
Volumes (veh/hr)		280	0	127						34	555	0		0	362	141
Heavy Vehicle %		2	2	2						2	2	2		2	3	2
Peak Hour Factor		0.95	0.95	0.95						0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		3								3				3		

	EB (West Leg): Hemrick Rd								NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Flow Computation	**Left**	**Right**	**Bypass**						**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)		392								301				37		
Entry Flow (pc/hr)		438								633				543		
Entry Volume (veh/hr)		429								621				527		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		1								1				1		
Capacity (pc/hr)		764								836				1089		
Capacity (veh/hr)		749								819				1057		
v/c Ratio		0.57								0.76				0.50		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		13.9								20.5				9.2		
Land LOS		B								C				A		
Approach Delay (sec/veh)		13.9								20.5				9.2		
Approach LOS		B								C				A		
Intersection Delay (sec/veh)	15.0															
Intersection LOS	B															
95%th Queue (veh)		3.7								7.3				2.9		
95%th Queue (feet)		92								181				72		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]8_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 8 - Tillstsrom Rd / 190th Dr**

	Approach															
	EB (West Leg): Tillstsrom Rd				WB (East Leg): Tillstsrom Rd								SB (North Leg): 190th Dr			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**					**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LT				TR								LR		
Volumes (veh/hr)		3	107	0		0	35	215						413	0	1
Heavy Vehicle %		2	2	2		2	4	2						2	2	6
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95						0.95	0.95	0.95
Number of Pedestrians Crossing Entry		3				3								3		

	EB (West Leg): Tillstsrom Rd				WB (East Leg): Tillstsrom Rd								SB (North Leg): 190th Dr			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**						**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)		444				3								38		
Entry Flow (pc/hr)		118				269								445		
Entry Volume (veh/hr)		116				259								436		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		1				1								1		
Capacity (pc/hr)		725				1127								1088		
Capacity (veh/hr)		710				1083								1066		
v/c Ratio		0.16				0.24								0.41		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		6.9				5.6								7.7		
Land LOS		A				A								A		
Approach Delay (sec/veh)		6.9				5.6								7.7		
Approach LOS		A				A								A		
Intersection Delay (sec/veh)	6.9															
Intersection LOS	A															
95%th Queue (veh)		0.6				0.9								2.0		
95%th Queue (feet)		14				23								51		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]11_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 11 - Sager Rd / 172nd Ave**

	Approach															
	EB (West Leg): Sager Rd				WB (East Leg): Sager Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LTR				LTR				LTR				LTR		
Volumes (veh/hr)		136	19	54		14	2	45		103	178	3		142	645	5
Heavy Vehicle %		4	2	6		2	2	2		6	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		3				3				3				3		

	EB (West Leg): Sager Rd				WB (East Leg): Sager Rd				NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	860				454				321				131			
Entry Flow (pc/hr)		229				65				308				850		
Entry Volume (veh/hr)		221				64				298				833		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		1				1				1				1		
Capacity (pc/hr)		478				718				820				991		
Capacity (veh/hr)		460				704				792				971		
v/c Ratio		0.48				0.09				0.38				0.86		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		17.2				6.1				9.1				25.6		
Land LOS		C				A				A				D		
Approach Delay (sec/veh)		17.2				6.1				9.1				25.6		
Approach LOS		C				A				A				D		
Intersection Delay (sec/veh)	19.9															
Intersection LOS	C															
95%th Queue (veh)		2.5				0.3				1.8				11.1		
95%th Queue (feet)		64				7				44				276		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]13_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 13 - Cheldelin Rd / Foster Rd**

	Approach															
	EB (West Leg): Cheldelin Rd				WB (East Leg): Cheldelin Rd				NB (South Leg): Foster Rd							
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**				
Lane Configurations	TR				LT				LR							
Volumes (veh/hr)		0	211	326		173	177	0		354	0	166				
Heavy Vehicle %		2	2	2		2	2	2		2	2	2				
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95				
Number of Pedestrians Crossing Entry	3				3				3							

	EB (West Leg): Cheldelin Rd				WB (East Leg): Cheldelin Rd				NB (South Leg): Foster Rd							
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**					
Circulating/Conflicting Flow (pc/hr)	186				380				226							
Entry Flow (pc/hr)		576				376				559						
Entry Volume (veh/hr)		565				369				548						
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		1				1				1						
Capacity (pc/hr)		938				773				901						
Capacity (veh/hr)		919				758				883						
v/c Ratio		0.61				0.49				0.62						
Delay and LOS Computation																
Lane Control Delay (sec/veh)		13.0				11.6				13.6						
Land LOS		B				B				B						
Approach Delay (sec/veh)	13.0				11.6				13.6							
Approach LOS	B				B				B							
Intersection Delay (sec/veh)	12.9															
Intersection LOS	B															
95%th Queue (veh)		4.4				2.7				4.4						
95%th Queue (feet)		109				67				111						

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]14_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 14 - Cheldelin Rd / 190th Dr**

	Approach															
	EB (West Leg): Cheldelin Rd								NB (South Leg): 190th Dr				SB (North Leg): 190th Dr			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**					**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LR								LT, T				T, TR		
Volumes (veh/hr)		62	0	221						265	1049	0		0	1231	140
Heavy Vehicle %		3	2	4						2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95						0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		3								3				3		

	EB (West Leg): Cheldelin Rd								NB (South Leg): 190th Dr				SB (North Leg): 190th Dr			
Flow Computation	**Left**	**Right**	**Bypass**						**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)		1322								67				285		
Entry Flow (pc/hr)		309							663	748			692	780		
Entry Volume (veh/hr)		300							650	733			678	765		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		2							1	1			1	1		
Capacity (pc/hr)		448							1057	1057			850	850		
Capacity (veh/hr)		435							1036	1036			833	833		
v/c Ratio		0.69							0.63	0.71			0.81	0.92		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		28.2							12.3	15.0			24.3	36.6		
Land LOS		D							B	B			C	E		
Approach Delay (sec/veh)		28.2								13.7				30.8		
Approach LOS		D								B				D		
Intersection Delay (sec/veh)	23.0															
Intersection LOS	C															
95%th Queue (veh)		5.1							4.6	6.2			9.0	13.2		
95%th Queue (feet)		128							115	156			225	330		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]19_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 19 - Richey Rd / 190th Dr**

	Approach															
	EB (West Leg): Richey Rd								NB (South Leg): 190th Dr				SB (North Leg): 190th Dr			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**					**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LR								LT, T				T, TR		
Volumes (veh/hr)		86	0	26						22	1143	0		0	1347	121
Heavy Vehicle %		2	2	2						2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95						0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		3								3				3		

	EB (West Leg): Richey Rd								NB (South Leg): 190th Dr				SB (North Leg): 190th Dr			
Flow Computation	**Left**	**Right**	**Bypass**						**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)		1446								93				23		
Entry Flow (pc/hr)		121							587	663			741	835		
Entry Volume (veh/hr)		119							575	650			726	819		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		2							1	1			1	1		
Capacity (pc/hr)		411							1030	1030			1104	1104		
Capacity (veh/hr)		403							1009	1009			1082	1082		
v/c Ratio		0.29							0.57	0.64			0.67	0.76		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		14.1							11.0	13.0			13.2	16.6		
Land LOS		B							B	B			B	C		
Approach Delay (sec/veh)		14.1								12.1				15.0		
Approach LOS		B								B				C		
Intersection Delay (sec/veh)	13.7															
Intersection LOS	B															
95%th Queue (veh)		1.2							3.7	4.9			5.5	7.6		
95%th Queue (feet)		30							93	122			137	190		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]20_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 20 - Troge Rd / Foster Rd**

	Approach															
	EB (West Leg): Troge Rd				WB (East Leg): Troge Rd				NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations	LTR				LTR				LTR				LTR			
Volumes (veh/hr)		1	79	163		98	36	157		68	509	180		184	488	1
Heavy Vehicle %		2	2	2		2	2	2		2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry	3				3				3				3			

	EB (West Leg): Troge Rd				WB (East Leg): Troge Rd				NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	827				621				284				217			
Entry Flow (pc/hr)		261				312				813				723		
Entry Volume (veh/hr)		256				306				797				709		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes		1				1				1				1		
Capacity (pc/hr)		494				607				851				910		
Capacity (veh/hr)		484				595				834				892		
v/c Ratio		0.53				0.51				0.96				0.79		
Delay and LOS Computation																
Lane Control Delay (sec/veh)		18.1				14.9				43.4				21.6		
Land LOS		C				B				E				C		
Approach Delay (sec/veh)	18.1				14.9				43.4				21.6			
Approach LOS	C				B				E				C			
Intersection Delay (sec/veh)	28.6															
Intersection LOS	D															
95%th Queue (veh)		3.0				2.9				15.1				8.5		
95%th Queue (feet)		76				73				378				212		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]22_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 22 - Connector / 172nd Ave**

	Approach															
	EB (West Leg): Connector								NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**					**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations		LR, R								LT, T				T, TR		
Volumes (veh/hr)		67	0	545						300	981	0		0	954	79
Heavy Vehicle %		2	2	2						2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95						0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry		5								5				5		

	EB (West Leg): Connector								NB (South Leg): 172nd Ave				SB (North Leg): 172nd Ave			
Flow Computation	**Left**	**Right**	**Bypass**						**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	1024								72				322			
Entry Flow (pc/hr)	309	348							647	729			521	588		
Entry Volume (veh/hr)	303	341							634	715			511	576		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes	2	2							1	1			1	1		
Capacity (pc/hr)	524	552							1051	1051			819	819		
Capacity (veh/hr)	514	541							1030	1030			802	802		
v/c Ratio	0.59	0.63							0.62	0.69			0.64	0.72		
Delay and LOS Computation																
Lane Control Delay (sec/veh)	19.5	20.5							12.0	14.5			15.2	18.6		
Land LOS	C	C							B	B			C	C		
Approach Delay (sec/veh)	20.0								13.3				17.0			
Approach LOS	C								B				C			
Intersection Delay (sec/veh)	16.0															
Intersection LOS	C															
95%th Queue (veh)	3.8	4.4							4.4	5.9			4.7	6.3		
95%th Queue (feet)	94	109							110	148			116	157		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]24_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 24 - Connector / Foster Rd**

	Approach															
	EB (West Leg): Connector				WB (East Leg): Connector				NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Volume Summary and Lane Configurations	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations	LT, TR				LT, TR				LT, TR				LT, TR			
Volumes (veh/hr)		87	994	29		162	1022	1		12	483	202		1	480	54
Heavy Vehicle %		2	2	2		2	2	2		2	2	2		2	2	2
Peak Hour Factor		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry	10				10				10				10			

	EB (West Leg): Connector				WB (East Leg): Connector				NB (South Leg): Foster Rd				SB (North Leg): Foster Rd			
Flow Computation	**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)	690				625				1162				1285			
Entry Flow (pc/hr)	561	632			598	675			352	396			270	304		
Entry Volume (veh/hr)	550	620			586	662			345	388			265	298		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes	2	2			2	2			2	2			2	2		
Capacity (pc/hr)	673	697			707	730			473	501			431	460		
Capacity (veh/hr)	657	681			690	712			464	491			423	451		
v/c Ratio	0.84	0.91			0.85	0.93			0.74	0.79			0.63	0.66		
Delay and LOS Computation																
Lane Control Delay (sec/veh)	31.3	40.4			31.7	42.4			30.8	33.6			24.9	25.5		
Land LOS	D	E			D	E			D	D			C	D		
Approach Delay (sec/veh)	36.1				37.4				32.3				25.2			
Approach LOS	E				E				D				D			
Intersection Delay (sec/veh)	34.1															
Intersection LOS	D															
95%th Queue (veh)	9.1	11.9			9.7	12.9			6.2	7.2			4.2	4.7		
95%th Queue (feet)	229	297			243	323			154	181			104	117		

Roundabout Analysis Worksheet

Project: 10213 - 172nd/190th Corridor Plan
Location: Clackamas, Oregon
Filename: H:\projfile\10213 - 172nd Ave Sunnyside Rd Alter. Design\Synchro\2035_Preferred Alternative\[10213_vol_2035pm_preferred_alternative.xlsm]26_Rdbt
Analyst: KAI
Date: 23-Aug-11

Scenario: Year 2035 AT2
Time Period: Weekday PM Peak Hour
Study Intersection: **# 26 - 190th Dr / Connector**

	Approach															
					WB (East Leg): 190th Dr				NB (South Leg): Connector				SB (North Leg): Connector			
Volume Summary and Lane Configurations					**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**	**U-Turn**	**Left**	**Through**	**Right**
Lane Configurations						LR				T, TR				LT, T		
Volumes (veh/hr)						16	0	253		0	1061	85		378	1124	0
Heavy Vehicle %						2	2	2		2	2	2		2	2	2
Peak Hour Factor						0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95
Number of Pedestrians Crossing Entry						3				3				3		

					WB (East Leg): 190th Dr				NB (South Leg): Connector				SB (North Leg): Connector			
Flow Computation					**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**		**Left**	**Right**	**Bypass**	
Circulating/Conflicting Flow (pc/hr)						1139				406				17		
Entry Flow (pc/hr)						288			578	652			758	855		
Entry Volume (veh/hr)						282			567	639			743	838		
Capacity and v/c Ratio Computation																
Number of Conflicting Lanes						2			1	1			1	1		
Capacity (pc/hr)						509			753	753			1111	1111		
Capacity (veh/hr)						499			738	738			1089	1089		
v/c Ratio						0.57			0.77	0.87			0.68	0.77		
Delay and LOS Computation																
Lane Control Delay (sec/veh)						19.0			22.9	32.1			13.5	17.2		
Land LOS						C			C	D			B	C		
Approach Delay (sec/veh)						19.0				27.8				15.5		
Approach LOS						C				D				C		
Intersection Delay (sec/veh)																
Intersection LOS																
95%th Queue (veh)						3.5			7.4	10.5			5.7	8.0		
95%th Queue (feet)						87			185	262			142	200		