HORROCKS ENGINEERS

To: Jim Horrocks]

From: Mack Christensen

Date: October 26, 2007

Memorandum

Subject: Layton Interchange EIS South Shift Technical Memo

In order to investigate the possibility of missing a historic property in conjunction with option 2G, a southern shift was evaluated from an operational standpoint. This shift would reduce spacing between the I-15 southbound ramp and Main Street by 100 feet for a total spacing of 400 feet. The attached table shows the summary results of this analysis. The analysis used a base condition before the shift for comparison purposes. The analysis was performed with Synchro and Sim Traffic, traffic modeling software. The analysis shows that the shift will result in poor traffic operation with several movements operating with a Level of Service (LOS) of E or F. This is primarily due to the short weave section that is created between the I-15 south bound off ramp and the main street intersection. The results show that the traffic will be operating at near capacity and, as such, several of the runs result in high delays with extremely long queues which is not depicted in the summary results.

Two alternatives were then analyzed to determine if the weave problems could be overcome. The first alternative was adding a dual right turn lane at the southbound off ramp, requiring all traffic to stop and be controlled by an additional traffic signal. The second alternative was to extend three through lanes westbound through the Main Street intersection and drop the third lane at the park and ride intersection. In addition to this, a separate right turn lane was added for the west to north right turn at Main Street. The results showed that the dual right turn reduced the weaving problem, but they shifted delay to the SB off ramp. This created long queues on the ramp which caused backing on to mainline I-15. The results of the third WB lane through Main Street analysis showed that it would have an acceptable LOS on all movements, and the overall delay to be less than the base condition. However, there is concern with moving the SPUI and Main Street intersection closer together by 100 feet. The spacing between signalized intersections is already substandard. For operational efficiency, it is the state of the practice to space signals at a minimum of ¼ mile (1320 ft). The resulting spacing after the shift would be about 650 feet which is ½ of the minimum standard.

For comparison purposes, the base condition was rerun with the third WB through lane option. This showed a reduction of the overall intersection delay and was slightly better than the shift option with the same configuration.

In summary, the weave problems created by the south shift could be mitigated by adding the third west bound through lane at Main Street; and that, even though not preferred, the south shift could work at an acceptable LOS.

Traffic Operations Summary for Southern Shift Alternative

10/24/2007

Lakeshore Blvd Intersection	Aproach								Intersection Average		Network
	EB		WB		NB		SB				
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
Base Condition											88.1
Main Street	16.9	B	19.6	B	-	-	52.9	D	25.7	C	
SPUI	31.9	C	34.2	C	37.8	D	15.1	B	30.7	C	
Fort Lane	16.0	B	-	-	36.5	D	26.2	C	24.5	C	
South Shift - Base											98
Main Street	17.8	B	13.2	B	-	-	57.2	E	24.1	C	
SPUI	31.9	C	64.4	E	32.8	C	16.1	B	37.2	D	
Fort Lane	16.9	B	-	-	38.8	D	31.1	C	27.0	C	
South Shift - Dual SB Rights at Off-Ramp											93.1
Main Street	19.2	B	21.7	C	-	-	64.1	E	29.8	C	
SPUI	24.6	C	44.2	D	42.2	D	49.0	D	37.7	D	
Fort Lane	16.3	B	-	-	32.8	C	16.7	B	21.1	C	
South Shift - Three WB Thru Lanes at Main Street											81.8
Main Street	16.6	B	23.6	C	-	-	38.2	D	24.3	C	
SPUI	29.2	C	27.9	C	32.9	C	14.0	B	26.9	C	
Fort Lane	15.4	B	-	-	33.1	C	16.4	B	20.6	C	
Base - Three WB Thru Lanes at Main Street											79.4
Main Street	15.6	B	24.5	C	-	-	36.8	D	24.0	C	
SPUI	29.4	C	26.4	C	34.3	C	11.4	B	26.5	C	
Fort Lane	14.5	B	-	-	33.1	C	16.5	B	20.2	C	

Notes:

1) The Dual SB Right Turn Lanes improve the SPUI WB Approach, but they also worsen the SB Off-Ramp
2) The Three WB Thru Lanes at Main Street increase capacity, but require Lakeshore Blvd. widening

Traffic Operations Summary for Southern Shift Alternative

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Lakeshore Blvd Intersection	Aproach								Intersection Average		Network
	EB		WB		NB		SB				
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)
Base Condition											88.1
Main Street	16.9	B	19.6	B	-	-	52.9	D	25.7	C	
SPUI	31.9	C	34.2	C	37.8	D	15.1	B	30.7	C	
Fort Lane	16.0	B	-	-	36.5	D	26.2	C	24.5	C	
South Shift - Base											98
Main Street	17.8	B	13.2	B	-	-	57.2	E	24.1	C	
SPUI	31.9	C	64.4	E	32.8	C	16.1	B	37.2	D	
Fort Lane	16.9	B	-	-	38.8	D	31.1	C	27.0	C	
South Shift - Dual SB Rights at Off-Ramp											93.1
Main Street	19.2	B	21.7	C	-	-	64.1	E	29.8	C	
SPUI	24.6	C	44.2	D	42.2	D	49.0	D	37.7	D	
Fort Lane	16.3	B	-	-	32.8	C	16.7	B	21.1	C	
South Shift - Three WB Thru Lanes at Main Street											81.8
Main Street	16.6	B	23.6	C	-	-	38.2	D	24.3	C	
SPUI	29.2	C	27.9	C	32.9	C	14.0	B	26.9	C	
Fort Lane	15.4	B	-	-	33.1	C	16.4	B	20.6	C	
Base - Three WB Thru Lanes at Main Street											79.4
Main Street	15.6	B	24.5	C	-	-	36.8	D	24.0	C	
SPUI	29.4	C	26.4	C	34.3	C	11.4	B	26.5	C	
Fort Lane	14.5	B	-	-	33.1	C	16.5	B	20.2	C	

Notes:

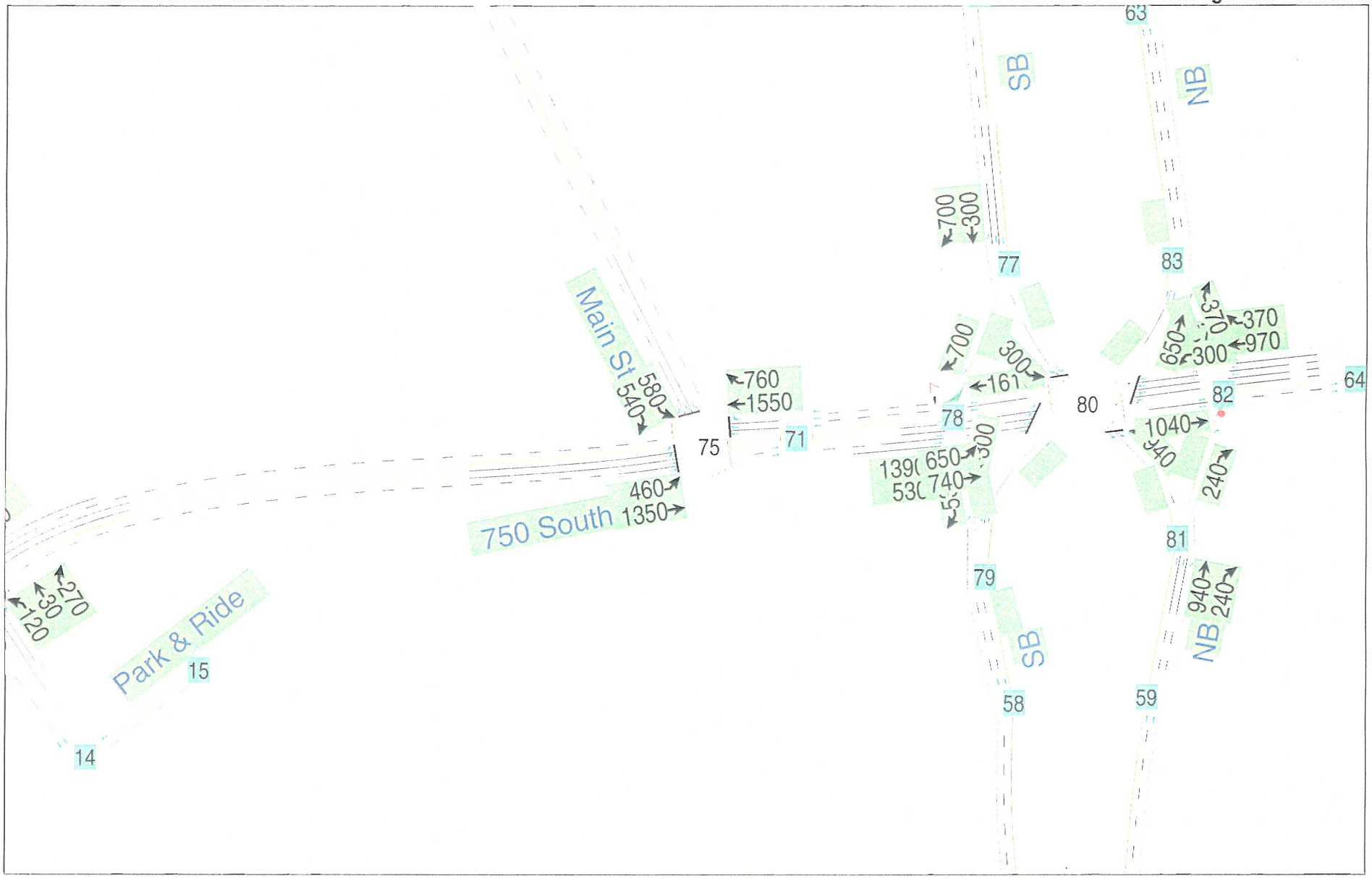
1) The Dual SB Right Turn Lanes improve the SPUI WB Approach, but they also worsen the SB Off-Ramp
2) The Three WB Thru Lanes at Main Street increase capacity, but require Lakeshore Blvd. widening

Layton Interchange Study Base
2030 Alternative 2G 5 Lanes on 700 So Improved

10/26/2007
Timing Plan: PM Peak

10/26/2007
Horrocks Engineers - JTC

Synchro 7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1350
750 South
81
270
30
120
Park & Ride
15
14
79
940
240
NB
SB
58
59

Layton Interchange Study SB off ramp dual right
2030 Alternative 2G South Shift Dual Right

10/26/2007
Timing Plan: PM Peak

10/26/2007
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Synchro 7

Layton Interchange Study - 3 lanes through WB Main
2030 Alternative 2G South Shift 3 WB Thrus

10/26/2007
Timing Plan: PM Peak

10/26/2007
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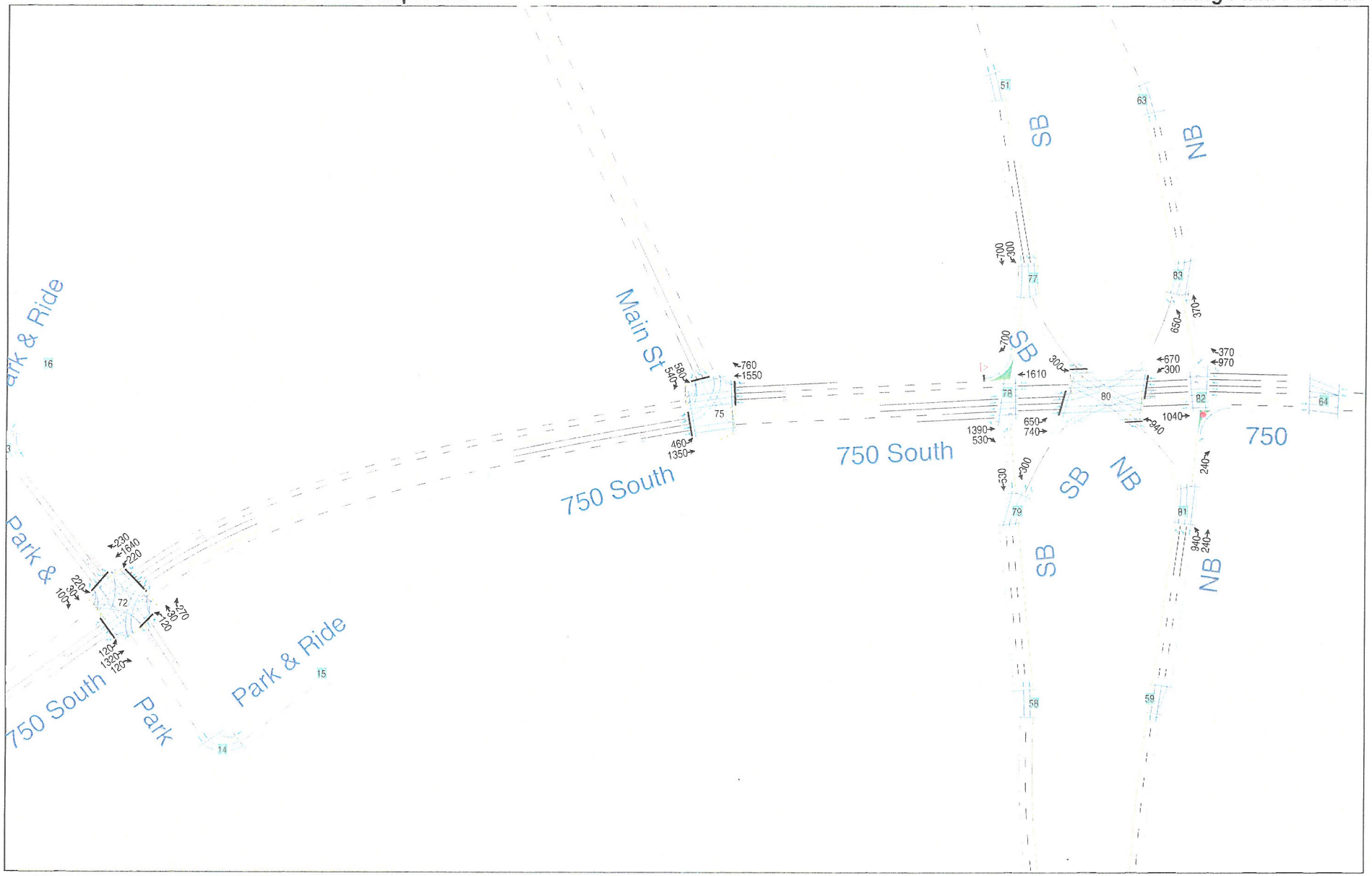
Synchro 7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72: 750 South & Park & Ride Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	3.2	11.5	0.4	3.8	21.3	2.1	1.2	0.5	2.2	2.7	0.3	0.5	49.8
Delay / Veh (s)	90.9	30.5	13.1	63.6	47.8	33.6	38.8	47.3	28.7	43.6	43.3	20.6	40.6
Avg Speed (mph)	4	9	15	9	12	14	4	4	5	5	5	8	10
Vehicles Entered	123	1342	114	218	1617	229	116	37	279	221	29	94	4419
Vehicles Exited	127	1363	114	213	1589	226	115	37	274	224	29	94	4405
Hourly Exit Rate	127	1363	114	213	1589	226	115	37	274	224	29	94	4405
Input Volume	120	1320	120	220	1640	230	120	30	270	220	30	100	4420
% of Volume	106	103	95	97	97	98	96	123	101	102	97	94	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0	0

75: 750 South & Main St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	5.5	3.2	9.8	2.6	10.2	6.1	37.3
Delay / Veh (s)	43.7	8.1	23.2	12.4	65	40.4	25.7
Avg Speed (mph)	12	27	7	9	8	10	12
Vehicles Entered	459	1404	1514	747	563	549	5236
Vehicles Exited	450	1405	1526	749	566	538	5234
Hourly Exit Rate	450	1405	1526	749	566	538	5234
Input Volume	460	1351	1550	760	580	540	5241
% of Volume	98	104	98	99	98	100	100
Denied Entry Before	0	0	0	0	0	0	0

77: SB Off-Ramp Rt & SB Off-Ramp Lt Performance by movement

Movement	SBL	SBT	All
Total Delay (hr)	0.2	0.4	0.6
Delay / Veh (s)	2.7	2.1	2.3
Avg Speed (mph)	21	24	23
Vehicles Entered	316	680	996
Vehicles Exited	316	679	995
Hourly Exit Rate	316	679	995
Input Volume	300	700	1000
% of Volume	105	97	100
Denied Entry Before	0	0	0

78: 750 South & SB Off-Ramp Rt Performance by movement

Movement	EBT	EBR	WBT	SBR	All
Total Delay (hr)	5.7	0.4	2.8	0.8	9.7
Delay / Veh (s)	14.4	2.5	6.4	4.5	8.3
Avg Speed (mph)	10	18	14	13	12
Vehicles Entered	1428	541	1591	679	4239
Vehicles Exited	1422	541	1584	677	4224
Hourly Exit Rate	1422	541	1584	677	4224
Input Volume	1400	530	1610	700	4240
% of Volume	102	102	98	97	100
Denied Entry Before	0	0	0	0	0

79: SB On-Ramp & SB On-Ramp Lt Performance by movement

Movement	SBT	SWL	All
Total Delay (hr)	0	0.2	0.2
Delay / Veh (s)	0.2	2.1	0.8
Avg Speed (mph)	17	19	18
Vehicles Entered	541	284	825
Vehicles Exited	541	284	825
Hourly Exit Rate	541	284	825
Input Volume	530	300	830
% of Volume	102	95	99
Denied Entry Before	0	0	0

80: 750 South & NB On-Ramp Lt Performance by movement

Movement	EBL	EBT	WBL	WBT	SEL	NWL	All
Total Delay (hr)	7	4.3	3.4	5.4	2.7	9.4	32.1
Delay / Veh (s)	37.8	20.7	42.3	29.4	30.7	36.3	32
Avg Speed (mph)	2	4	2	3	4	4	3
Vehicles Entered	669	742	287	663	316	929	3606
Vehicles Exited	665	743	284	660	316	931	3599
Hourly Exit Rate	665	743	284	660	316	931	3599
Input Volume	650	740	300	670	300	940	3600
% of Volume	102	100	95	99	105	99	100
Denied Entry Before	0	0	0	0	0	0	0

81: NB Off-Ramp & NB Off-Ramp Lt Performance by movement

Movement	NBL	NBT	All
Total Delay (hr)	2.9	0	2.9
Delay / Veh (s)	11.3	0.4	9
Avg Speed (mph)	12	28	14
Vehicles Entered	930	255	1185
Vehicles Exited	929	254	1183
Hourly Exit Rate	929	254	1183
Input Volume	940	240	1180
% of Volume	99	106	100
Denied Entry Before	0	0	0

82: 750 South & NB On-Ramp Rt Performance by movement

Movement	EBT	WBT	WBR	NBR	All
Total Delay (hr)	1.1	3.3	0.5	0.1	5
Delay / Veh (s)	3.8	12.5	4.8	1.5	6.9
Avg Speed (mph)	19	10	14	18	14
Vehicles Entered	1058	957	373	254	2642
Vehicles Exited	1057	952	372	255	2636
Hourly Exit Rate	1057	952	372	255	2636
Input Volume	1040	971	370	240	2621
% of Volume	102	98	101	106	101
Denied Entry Before	0	0	0	0	0

83: NB On-Ramp Rt & NB On-Ramp Lt Performance by movement

Movement	NBT	NEL	All
Total Delay (hr)	0	0.4	0.5
Delay / Veh (s)	0.3	2.4	1.6
Avg Speed (mph)	17	19	18
Vehicles Entered	372	665	1037
Vehicles Exited	371	665	1036
Hourly Exit Rate	371	665	1036
Input Volume	370	650	1020
% of Volume	100	102	102
Denied Entry Before	0	0	0

85: 750 South & Fort Lane Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	5.1	0	0.7	7.7	0.5	1.8	4	19.8
Delay / Veh (s)	26.3		4.3	40.7	14.4	45.5	21.9	24.5
Avg Speed (mph)	8	27	18	7	15	8	13	10
Vehicles Entered	698	0	615	679	129	144	651	2916
Vehicles Exited	697	0	616	686	129	144	647	2919
Hourly Exit Rate	697	0	616	686	129	144	647	2919
Input Volume	660	1	620	680	120	140	660	2881
% of Volume	106	0	99	101	108	103	98	101
Denied Entry Before	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	176.6
Delay / Veh (s)	88.1
Avg Speed (mph)	15
Vehicles Entered	7252
Vehicles Exited	7184
Hourly Exit Rate	7184
Input Volume	55563
% of Volume	13
Denied Entry Before	2

72: 750 South & Park & Ride Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	4.5	11.7	0.4	3.7	22.1	2.2	1.3	0.3	1.8	3.1	0.3	0.6	51.9
Delay / Veh (s)	121.4	31.9	11.3	64.2	49.2	36.5	43.5	41.2	24.9	54.4	31.7	21	42.9
Avg Speed (mph)	3	9	15	10	12	14	4	4	6	4	6	8	10
Vehicles Entered	131	1319	125	211	1624	214	108	29	267	206	31	99	4364
Vehicles Exited	133	1332	125	207	1604	210	108	29	262	210	30	98	4348
Hourly Exit Rate	133	1332	125	207	1604	210	108	29	262	210	30	98	4348
Input Volume	120	1320	120	220	1640	230	120	30	270	220	30	100	4420
% of Volume	111	101	104	94	98	91	90	97	97	95	100	98	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0	0

75: 750 South & Main St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	5.5	3.4	6.4	2	10	7.4	34.6
Delay / Veh (s)	43.8	9	15.2	9.3	65	49.3	24.1
Avg Speed (mph)	13	27	5	6	8	10	13
Vehicles Entered	456	1351	1511	762	552	552	5184
Vehicles Exited	449	1345	1518	763	551	530	5156
Hourly Exit Rate	449	1345	1518	763	551	530	5156
Input Volume	460	1351	1550	760	580	540	5241
% of Volume	98	100	98	100	95	98	98
Denied Entry Before	0	0	0	0	0	0	0

77: SB Off-Ramp Lt & SB Off-Ramp Rt Performance by movement

Movement	SBT	SBR	All
Total Delay (hr)	0	0.6	0.6
Delay / Veh (s)	0.6	3	2.3
Avg Speed (mph)	28	19	21
Vehicles Entered	302	708	1010
Vehicles Exited	301	708	1009
Hourly Exit Rate	301	708	1009
Input Volume	300	700	1000
% of Volume	100	101	101
Denied Entry Before	0	0	0

78: 750 South & SB Off-Ramp Rt Performance by movement

Movement	EBT	EBR	WBT	SBR	All
Total Delay (hr)	3.4	0.3	4.2	1.4	9.4
Delay / Veh (s)	9	2.1	9.7	7.3	8.1
Avg Speed (mph)	14	18	11	9	12
Vehicles Entered	1379	516	1579	708	4182
Vehicles Exited	1371	516	1573	705	4165
Hourly Exit Rate	1371	516	1573	705	4165
Input Volume	1400	530	1610	700	4240
% of Volume	98	97	98	101	98
Denied Entry Before	0	0	0	0	0

79: SB On-Ramp & SB On-Ramp Rt Performance by movement

Movement	SBT	SER	All
Total Delay (hr)	0.2	0.1	0.3
Delay / Veh (s)	2.8	0.6	1.4
Avg Speed (mph)	20	13	16
Vehicles Entered	291	516	807
Vehicles Exited	291	516	807
Hourly Exit Rate	291	516	807
Input Volume	300	530	830
% of Volume	97	97	97
Denied Entry Before	0	0	0

80: 750 South & NB On-Ramp Lt Performance by movement

Movement	EBL	EBT	WBL	WBT	SEL	NWL	All
Total Delay (hr)	7.8	5.1	5.7	9.7	2.5	9.1	39.9
Delay / Veh (s)	44.3	25.4	70.7	52.7	29.3	35.8	40.7
Avg Speed (mph)	2	4	1	2	5	4	3
Vehicles Entered	638	725	291	666	301	916	3537
Vehicles Exited	631	724	291	662	301	917	3526
Hourly Exit Rate	631	724	291	662	301	917	3526
Input Volume	650	740	300	670	300	940	3600
% of Volume	97	98	97	99	100	98	98
Denied Entry Before	0	0	0	0	0	0	0

81: NB Off-Ramp & NB Off-Ramp Rt Performance by movement

Movement	NBT	NBR	All
Total Delay (hr)	1.4	0	1.4
Delay / Veh (s)	5.5	0.7	4.5
Avg Speed (mph)	16	20	17
Vehicles Entered	912	250	1162
Vehicles Exited	916	250	1166
Hourly Exit Rate	916	250	1166
Input Volume	940	240	1180
% of Volume	97	104	99
Denied Entry Before	0	0	0

82: 750 South & NB On-Ramp Rt Performance by movement

Movement	EBT	WBT	WBR	NBR	All
Total Delay (hr)	1.1	7.4	0.9	0.1	9.5
Delay / Veh (s)	3.9	27.8	8.8	1.1	13.1
Avg Speed (mph)	21	5	10	13	9
Vehicles Entered	1025	962	371	250	2608
Vehicles Exited	1022	958	369	249	2598
Hourly Exit Rate	1022	958	369	249	2598
Input Volume	1040	971	370	240	2621
% of Volume	98	99	100	104	99
Denied Entry Before	0	0	0	0	0

83: NB On-Ramp Lt & NB On-Ramp Rt Performance by movement

Movement	NBT	NWR	All
Total Delay (hr)	0.6	0.1	0.7
Delay / Veh (s)	3.3	1.3	2.6
Avg Speed (mph)	18	12	17
Vehicles Entered	631	369	1000
Vehicles Exited	631	368	999
Hourly Exit Rate	631	368	999
Input Volume	650	370	1020
% of Volume	97	99	98
Denied Entry Before	0	0	0

85: 750 South & Fort Lane Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	5.2	0	0.8	8.3	0.5	1.9	4.9	21.6
Delay / Veh (s)	28.2	2.2	4.5	43.4	13.6	49.4	27.2	27
Avg Speed (mph)	7	24	18	7	15	8	11	9
Vehicles Entered	667	1	604	692	125	138	654	2881
Vehicles Exited	665	1	605	690	126	139	653	2879
Hourly Exit Rate	665	1	605	690	126	139	653	2879
Input Volume	660	1	620	680	120	140	660	2881
% of Volume	101	100	98	101	105	99	99	100
Denied Entry Before	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	194.6
Delay / Veh (s)	98
Avg Speed (mph)	14
Vehicles Entered	7200
Vehicles Exited	7094
Hourly Exit Rate	7094
Input Volume	55563
% of Volume	13
Denied Entry Before	0

72: 750 South & Park & Ride Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	4.3	14	0.6	3.2	16.5	1.5	1.5	0.4	1.9	3.4	0.3	0.4	48.1
Delay / Veh (s)	127.1	37.3	18.3	55.7	37.7	24.4	43.2	44.8	25.4	57.3	33.3	17.8	39.7
Avg Speed (mph)	3	8	12	11	14	17	4	4	6	4	6	8	10
Vehicles Entered	123	1346	120	215	1582	224	124	32	270	216	32	89	4373
Vehicles Exited	122	1356	120	206	1570	222	122	32	264	213	30	88	4345
Hourly Exit Rate	122	1356	120	206	1570	222	122	32	264	213	30	88	4345
Input Volume	120	1320	120	220	1640	230	120	30	270	220	30	100	4420
% of Volume	102	103	100	94	96	97	102	107	98	97	100	88	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0	0

75: 750 South & Main St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	6.2	3.4	10.3	3.3	13.6	6	42.8
Delay / Veh (s)	48.7	9	24.8	15.6	85.7	40.9	29.8
Avg Speed (mph)	12	27	8	10	7	11	12
Vehicles Entered	470	1365	1490	752	572	532	5181
Vehicles Exited	454	1352	1495	754	571	526	5152
Hourly Exit Rate	454	1352	1495	754	571	526	5152
Input Volume	460	1351	1550	760	580	540	5241
% of Volume	99	100	96	99	98	97	98
Denied Entry Before	0	0	0	0	0	0	0

77: SB Off-Ramp Lt & SB Off-Ramp Rt Performance by movement

Movement	SBT	SBR	All
Total Delay (hr)	1.7	3.4	5.1
Delay / Veh (s)	20.4	18.4	19
Avg Speed (mph)	10	10	10
Vehicles Entered	294	673	967
Vehicles Exited	290	666	956
Hourly Exit Rate	290	666	956
Input Volume	300	700	1000
% of Volume	97	95	96
Denied Entry Before	0	0	0

78: 750 South & SB Off-Ramp Rt Performance by movement

Movement	EBT	EBR	WBT	SBR	All
Total Delay (hr)	2.3	0.4	2.9	5.8	11.4
Delay / Veh (s)	5.8	3.1	6.6	31.5	9.9
Avg Speed (mph)	21	20	15	4	13
Vehicles Entered	1406	515	1584	666	4171
Vehicles Exited	1402	514	1581	661	4158
Hourly Exit Rate	1402	514	1581	661	4158
Input Volume	1400	530	1610	700	4240
% of Volume	100	97	98	94	98
Denied Entry Before	0	0	0	0	0

79: SB On-Ramp & SB On-Ramp Rt Performance by movement

Movement	SBT	SER	All
Total Delay (hr)	0.2	0.1	0.3
Delay / Veh (s)	2.7	0.5	1.3
Avg Speed (mph)	20	13	16
Vehicles Entered	298	514	812
Vehicles Exited	298	514	812
Hourly Exit Rate	298	514	812
Input Volume	300	530	830
% of Volume	99	97	98
Denied Entry Before	0	0	0

80: 750 South & NB On-Ramp Lt Performance by movement

Movement	EBL	EBT	WBL	WBT	SEL	NWL	All
Total Delay (hr)	5.6	4.7	4.1	7.8	2.1	11.4	35.8
Delay / Veh (s)	30.9	23.1	50	43.3	26.6	44.1	36.3
Avg Speed (mph)	3	4	2	2	5	3	3
Vehicles Entered	661	730	296	650	290	931	3558
Vehicles Exited	650	726	298	649	291	936	3550
Hourly Exit Rate	650	726	298	649	291	936	3550
Input Volume	650	740	300	670	300	940	3600
% of Volume	100	98	99	97	97	100	99
Denied Entry Before	0	0	0	0	0	0	0

81: NB Off-Ramp & NB Off-Ramp Rt Performance by movement

Movement	NBT	NBR	All
Total Delay (hr)	2.4	0.1	2.4
Delay / Veh (s)	9.2	0.8	7.4
Avg Speed (mph)	12	20	13
Vehicles Entered	929	256	1185
Vehicles Exited	931	256	1187
Hourly Exit Rate	931	256	1187
Input Volume	940	240	1180
% of Volume	99	107	101
Denied Entry Before	0	0	0

82: 750 South & NB On-Ramp Rt Performance by movement

Movement	EBT	WBT	WBR	NBR	All
Total Delay (hr)	1.1	3.7	0.4	0.1	5.3
Delay / Veh (s)	3.8	14.2	4.4	1.1	7.4
Avg Speed (mph)	21	9	14	13	13
Vehicles Entered	1017	949	366	256	2588
Vehicles Exited	1012	947	364	257	2580
Hourly Exit Rate	1012	947	364	257	2580
Input Volume	1040	971	370	240	2621
% of Volume	97	98	98	107	98
Denied Entry Before	0	0	0	0	0

83: NB On-Ramp Lt & NB On-Ramp Rt Performance by movement

Movement	NBT	NWR	All
Total Delay (hr)	0.5	0.1	0.6
Delay / Veh (s)	2.7	0.8	2
Avg Speed (mph)	19	13	18
Vehicles Entered	650	364	1014
Vehicles Exited	650	362	1012
Hourly Exit Rate	650	362	1012
Input Volume	650	370	1020
% of Volume	100	98	99
Denied Entry Before	0	0	0

85: 750 South & Fort Lane Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	5	0	0.7	6.8	0.5	1.8	1.9	16.7
Delay / Veh (s)	27.1	2.4	4.3	36.1	14.5	44.1	10.5	21.1
Avg Speed (mph)	8	21	18	8	14	9	17	11
Vehicles Entered	669	2	600	681	121	145	638	2856
Vehicles Exited	669	2	604	683	122	147	637	2864
Hourly Exit Rate	669	2	604	683	122	147	637	2864
Input Volume	660	1	620	680	120	140	660	2881
% of Volume	101	200	97	100	102	105	97	99
Denied Entry Before	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	184.7
Delay / Veh (s)	93.1
Avg Speed (mph)	14
Vehicles Entered	7197
Vehicles Exited	7090
Hourly Exit Rate	7090
Input Volume	51323
% of Volume	14
Denied Entry Before	1

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72: 750 South & Park & Ride Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	4.2	13.5	0.5	3.9	25.8	1	1.4	0.3	2.1	3.3	0.2	0.6	56.9
Delay / Veh (s)	120.5	35.9	15	67.1	56.9	15.8	42.3	41.4	26.5	56.5	32.3	21	46.1
Avg Speed (mph)	3	8	13	9	11	20	4	4	6	4	6	8	9
Vehicles Entered	126	1345	118	214	1645	228	121	29	289	211	26	96	4448
Vehicles Exited	127	1354	119	207	1624	226	122	28	285	210	26	95	4423
Hourly Exit Rate	127	1354	119	207	1624	226	122	28	285	210	26	95	4423
Input Volume	120	1320	120	220	1640	230	120	30	270	220	30	100	4420
% of Volume	106	103	99	94	99	98	102	93	106	95	87	95	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0	0

75: 750 South & Main St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	5	3.5	10.6	4.6	9.4	2.6	35.7
Delay / Veh (s)	37.7	9.2	24.6	21.5	57.5	17.2	24.3
Avg Speed (mph)	14	27	9	8	9	17	14
Vehicles Entered	479	1371	1553	777	585	538	5303
Vehicles Exited	471	1359	1555	778	589	532	5284
Hourly Exit Rate	471	1359	1555	778	589	532	5284
Input Volume	460	1351	1550	760	580	540	5241
% of Volume	102	101	100	102	102	99	101
Denied Entry Before	0	0	0	0	0	0	0

77: SB Off-Ramp Lt & SB Off-Ramp Rt Performance by movement

Movement	SBT	SBR	All
Total Delay (hr)	0	0.8	0.8
Delay / Veh (s)	0.5	3.9	2.9
Avg Speed (mph)	28	18	20
Vehicles Entered	286	700	986
Vehicles Exited	286	700	986
Hourly Exit Rate	286	700	986
Input Volume	300	700	1000
% of Volume	95	100	99
Denied Entry Before	0	0	0

78: 750 South & SB Off-Ramp Rt Performance by movement

Movement	EBT	EBR	WBT	SBR	All
Total Delay (hr)	3.2	0.6	2.5	1	7.2
Delay / Veh (s)	8.2	3.7	5.4	5.1	6.1
Avg Speed (mph)	18	19	15	10	16
Vehicles Entered	1406	540	1633	700	4279
Vehicles Exited	1403	538	1630	700	4271
Hourly Exit Rate	1403	538	1630	700	4271
Input Volume	1400	530	1610	700	4240
% of Volume	100	102	101	100	101
Denied Entry Before	0	0	0	0	0

79: SB On-Ramp & SB On-Ramp Rt Performance by movement

Movement	SBT	SER	All
Total Delay (hr)	0.3	0.1	0.4
Delay / Veh (s)	3.1	0.7	1.6
Avg Speed (mph)	19	13	16
Vehicles Entered	300	538	838
Vehicles Exited	300	539	839
Hourly Exit Rate	300	539	839
Input Volume	300	530	830
% of Volume	100	102	101
Denied Entry Before	0	0	0

80: 750 South & NB On-Ramp Lt Performance by movement

Movement	EBL	EBT	WBL	WBT	SEL	NWL	All
Total Delay (hr)	6.9	4.9	3	5.6	2.1	9.3	31.8
Delay / Veh (s)	38.3	24.3	36.3	29.7	25.9	35.2	31.9
Avg Speed (mph)	3	4	3	3	5	4	3
Vehicles Entered	657	736	298	676	286	950	3603
Vehicles Exited	644	731	300	680	286	953	3594
Hourly Exit Rate	644	731	300	680	286	953	3594
Input Volume	650	740	300	670	300	940	3600
% of Volume	99	99	100	101	95	101	100
Denied Entry Before	0	0	0	0	0	0	0

81: NB Off-Ramp & NB Off-Ramp Rt Performance by movement

Movement	NBT	NBR	All
Total Delay (hr)	1.4	0	1.5
Delay / Veh (s)	5.4	0.6	4.5
Avg Speed (mph)	16	20	17
Vehicles Entered	949	235	1184
Vehicles Exited	950	234	1184
Hourly Exit Rate	950	234	1184
Input Volume	940	240	1180
% of Volume	101	98	100
Denied Entry Before	0	0	0

82: 750 South & NB On-Ramp Rt Performance by movement

Movement	EBT	WBT	WBR	NBR	All
Total Delay (hr)	1.1	1.6	0.2	0.1	2.9
Delay / Veh (s)	3.9	5.7	1.8	1	4
Avg Speed (mph)	21	17	18	13	18
Vehicles Entered	1017	975	356	234	2582
Vehicles Exited	1013	975	356	234	2578
Hourly Exit Rate	1013	975	356	234	2578
Input Volume	1040	971	370	240	2621
% of Volume	97	100	96	98	98
Denied Entry Before	0	0	0	0	0

83: NB On-Ramp Lt & NB On-Ramp Rt Performance by movement

Movement	NBT	NWR	All
Total Delay (hr)	0.4	0	0.5
Delay / Veh (s)	2.4	0.4	1.7
Avg Speed (mph)	20	13	18
Vehicles Entered	644	356	1000
Vehicles Exited	645	355	1000
Hourly Exit Rate	645	355	1000
Input Volume	650	370	1020
% of Volume	99	96	98
Denied Entry Before	0	0	0

85: 750 South & Fort Lane Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	4.6	0	0.8	6.7	0.5	1.8	1.8	16.2
Delay / Veh (s)	25.9	1	4.4	35.9	15.6	45.3	10	20.6
Avg Speed (mph)	8	31	18	8	14	8	18	11
Vehicles Entered	637	1	610	666	106	146	654	2820
Vehicles Exited	638	1	614	674	106	148	655	2836
Hourly Exit Rate	638	1	614	674	106	148	655	2836
Input Volume	660	1	620	680	120	140	660	2881
% of Volume	97	100	99	99	88	106	99	98
Denied Entry Before	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	163.9
Delay / Veh (s)	81.8
Avg Speed (mph)	15
Vehicles Entered	7224
Vehicles Exited	7192
Hourly Exit Rate	7192
Input Volume	51323
% of Volume	14
Denied Entry Before	0

72: 750 South & Park & Ride Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	4.3	12.6	0.5	3.8	24.9	0.8	1.4	0.3	2.2	3.2	0.2	0.5	54.8
Delay / Veh (s)	123.5	33.5	13.9	65.5	54.7	13.2	41.9	41.2	27	55.5	32.6	20	44.4
Avg Speed (mph)	3	9	13	9	11	21	4	4	5	4	6	8	9
Vehicles Entered	125	1345	118	215	1649	228	121	29	289	211	26	96	4452
Vehicles Exited	127	1359	119	208	1628	227	120	28	284	210	26	94	4430
Hourly Exit Rate	127	1359	119	208	1628	227	120	28	284	210	26	94	4430
Input Volume	120	1320	120	220	1640	230	120	30	270	220	30	100	4420
% of Volume	106	103	99	95	99	99	100	93	105	95	87	94	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0	0

75: 750 South & Main St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Total Delay (hr)	4.9	3.1	11.1	4.8	9	2.5	35.4
Delay / Veh (s)	36.8	8.2	25.7	22.2	55.1	16.9	24
Avg Speed (mph)	14	27	10	10	8	16	14
Vehicles Entered	480	1375	1560	778	585	538	5316
Vehicles Exited	472	1362	1558	778	589	534	5293
Hourly Exit Rate	472	1362	1558	778	589	534	5293
Input Volume	460	1351	1550	760	580	540	5241
% of Volume	103	101	101	102	102	99	101
Denied Entry Before	0	0	0	0	0	0	0

77: SB Off-Ramp Rt & SB Off-Ramp Lt Performance by movement

Movement	SBL	SBT	All
Total Delay (hr)	0.2	0.3	0.5
Delay / Veh (s)	2.5	1.6	1.9
Avg Speed (mph)	21	25	24
Vehicles Entered	286	700	986
Vehicles Exited	286	700	986
Hourly Exit Rate	286	700	986
Input Volume	300	700	1000
% of Volume	95	100	99
Denied Entry Before	0	0	0

78: 750 South & SB Off-Ramp Rt Performance by movement

Movement	EBT	EBR	WBT	SBR	All
Total Delay (hr)	4.6	0.8	1.7	0.6	7.7
Delay / Veh (s)	11.7	5.5	3.8	2.9	6.5
Avg Speed (mph)	18	20	16	16	17
Vehicles Entered	1410	539	1636	700	4285
Vehicles Exited	1400	538	1637	700	4275
Hourly Exit Rate	1400	538	1637	700	4275
Input Volume	1400	530	1610	700	4240
% of Volume	100	102	102	100	101
Denied Entry Before	0	0	0	0	0

79: SB On-Ramp & SB On-Ramp Lt Performance by movement

Movement	SBT	SWL	All
Total Delay (hr)	0	0.2	0.2
Delay / Veh (s)	0.2	2	0.9
Avg Speed (mph)	17	19	18
Vehicles Entered	538	301	839
Vehicles Exited	538	301	839
Hourly Exit Rate	538	301	839
Input Volume	530	300	830
% of Volume	102	100	101
Denied Entry Before	0	0	0

80: 750 South & NB On-Ramp Lt Performance by movement

Movement	EBL	EBT	WBL	WBT	SEL	NWL	All
Total Delay (hr)	6.1	4.3	3	4.7	2.1	8.9	29
Delay / Veh (s)	33.6	21	36.1	25	25.8	33.8	29
Avg Speed (mph)	2	4	2	3	5	4	3
Vehicles Entered	655	734	298	677	286	953	3603
Vehicles Exited	646	732	301	682	286	954	3601
Hourly Exit Rate	646	732	301	682	286	954	3601
Input Volume	650	740	300	670	300	940	3600
% of Volume	99	99	100	102	95	101	100
Denied Entry Before	0	0	0	0	0	0	0

81: NB Off-Ramp & NB Off-Ramp Lt Performance by movement

Movement	NBL	NBT	All
Total Delay (hr)	2.2	0	2.3
Delay / Veh (s)	8.5	0.3	6.9
Avg Speed (mph)	14	29	16
Vehicles Entered	949	235	1184
Vehicles Exited	953	234	1187
Hourly Exit Rate	953	234	1187
Input Volume	940	240	1180
% of Volume	101	98	101
Denied Entry Before	0	0	0

82: 750 South & NB On-Ramp Rt Performance by movement

Movement	EBT	WBT	WBR	NBR	All
Total Delay (hr)	1	1.9	0.2	0.1	3.2
Delay / Veh (s)	3.6	6.9	2.1	1.4	4.5
Avg Speed (mph)	20	15	18	19	17
Vehicles Entered	1018	975	356	234	2583
Vehicles Exited	1014	976	355	234	2579
Hourly Exit Rate	1014	976	355	234	2579
Input Volume	1040	971	370	240	2621
% of Volume	98	101	96	98	98
Denied Entry Before	0	0	0	0	0

83: NB On-Ramp Rt & NB On-Ramp Lt Performance by movement

Movement	NBT	NEL	All
Total Delay (hr)	0	0.4	0.4
Delay / Veh (s)	0.2	2.2	1.5
Avg Speed (mph)	18	19	19
Vehicles Entered	355	646	1001
Vehicles Exited	355	647	1002
Hourly Exit Rate	355	647	1002
Input Volume	370	650	1020
% of Volume	96	100	98
Denied Entry Before	0	0	0

85: 750 South & Fort Lane Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	4.3	0	0.7	6.7	0.5	1.8	1.8	15.9
Delay / Veh (s)	24.4	1.1	4.3	35.9	15.7	45.2	10.1	20.2
Avg Speed (mph)	9	28	19	8	14	8	17	11
Vehicles Entered	636	2	612	666	106	146	654	2822
Vehicles Exited	639	2	616	674	106	148	655	2840
Hourly Exit Rate	639	2	616	674	106	148	655	2840
Input Volume	660	1	620	680	120	140	660	2881
% of Volume	97	200	99	99	88	106	99	99
Denied Entry Before	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	159
Delay / Veh (s)	79.4
Avg Speed (mph)	15
Vehicles Entered	7224
Vehicles Exited	7188
Hourly Exit Rate	7188
Input Volume	51323
% of Volume	14
Denied Entry Before	0