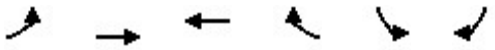
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	385	110	115	325	185	150	150	20	95	170	150
Future Volume (vph)	100	385	110	115	325	185	150	150	20	95	170	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1582	1611		1614	1591		1518	1606	1332	1563	2857	
Flt Permitted	0.36	1.00		0.39	1.00		0.40	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	607	1611		661	1591		646	1606	1332	1089	2857	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	385	110	115	325	185	150	150	20	95	170	150
RTOR Reduction (vph)	0	6	0	0	11	0	0	0	15	0	121	0
Lane Group Flow (vph)	100	489	0	115	499	0	150	150	5	95	199	0
Confl. Peds. (#/hr)	2					2	8		2	2		8
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	9%	9%	9%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA		custom	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2 6		2	6		
Actuated Green, G (s)	87.5	78.8		85.7	77.9		37.4	37.4	37.4	21.4	21.4	
Effective Green, g (s)	87.5	78.8		85.7	77.9		37.4	37.4	37.4	21.4	21.4	
Actuated g/C Ratio	0.58	0.53		0.57	0.52		0.25	0.25	0.25	0.14	0.14	
Clearance Time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0		3.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	410	846		427	826		225	400	332	155	407	
v/s Ratio Prot	c0.01	0.30		0.01	c0.31		c0.05	0.09			0.07	
v/s Ratio Perm	0.13			0.14			c0.12		0.00	0.09		
v/c Ratio	0.24	0.58		0.27	0.60		0.67	0.38	0.02	0.61	0.49	
Uniform Delay, d1	15.2	24.3		15.7	25.2		47.9	46.6	42.4	60.4	59.3	
Progression Factor	1.00	1.00		0.64	0.86		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	2.9		0.3	3.1		7.3	0.2	0.0	5.0	0.3	
Delay (s)	15.5	27.1		10.4	24.9		55.1	46.8	42.4	65.4	59.6	
Level of Service	B	C		B	C		E	D	D	E	E	
Approach Delay (s)		25.2			22.2			50.5			60.9	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↰	↱
Traffic Volume (vph)	0	500	470	0	225	155
Future Volume (vph)	0	500	470	0	225	155
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	10	10	12	12
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1642	1571		1630	1458
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1642	1571		1630	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	500	470	0	225	155
RTOR Reduction (vph)	0	0	0	0	0	129
Lane Group Flow (vph)	0	500	470	0	225	26
Heavy Vehicles (%)	3%	3%	4%	4%	2%	2%
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						
Actuated Green, G (s)		114.6	114.6		25.4	25.4
Effective Green, g (s)		114.6	114.6		25.4	25.4
Actuated g/C Ratio		0.76	0.76		0.17	0.17
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		1254	1200		276	246
v/s Ratio Prot		c0.30	0.30		c0.14	0.02
v/s Ratio Perm						
v/c Ratio		0.40	0.39		0.82	0.11
Uniform Delay, d1		6.0	6.0		60.0	52.7
Progression Factor		0.29	1.00		1.00	1.00
Incremental Delay, d2		0.8	1.0		15.9	0.1
Delay (s)		2.5	6.9		75.9	52.8
Level of Service		A	A		E	D
Approach Delay (s)		2.5	6.9		66.5	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.2	1.4	1.4	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	40.6	34.6	27.3	29.6	28.4	21.7	69.7	43.0	7.6	63.0	54.3	31.4

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	37.9

28: S 154th St & EB SR518 Off Ramp Performance by movement

Movement	EBT	WBT	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	3.8	1.3	0.8
Total Del/Veh (s)	6.6	32.5	54.0	66.7	30.6

Total Zone Performance

Denied Del/Veh (s)	2.2
Total Del/Veh (s)	1784.6

Intersection: 27: Air Cargo Rd/24th Ave S & S 154th St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	255	518	189	213	240	310	53	200	309	215
Average Queue (ft)	103	266	87	193	129	123	9	86	118	117
95th Queue (ft)	244	446	189	229	227	248	33	163	235	198
Link Distance (ft)		1444		190		729	729		683	
Upstream Blk Time (%)			0	22						
Queuing Penalty (veh)			0	135						
Storage Bay Dist (ft)	180		165		175			145		145
Storage Blk Time (%)	0	22	0	28	10	2		2	4	7
Queuing Penalty (veh)	1	22	1	32	15	4		6	13	12

Intersection: 28: S 154th St & EB SR518 Off Ramp

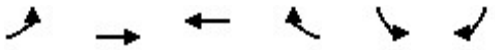
Movement	EB	WB	SB	SB
Directions Served	T	T	L	R
Maximum Queue (ft)	195	440	205	431
Average Queue (ft)	67	215	164	201
95th Queue (ft)	157	411	238	371
Link Distance (ft)	190	832		752
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	2			
Storage Bay Dist (ft)			130	
Storage Blk Time (%)			25	20
Queuing Penalty (veh)			38	46

Zone Summary

Zone wide Queuing Penalty: 325

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	390	110	95	320	200	135	240	15	110	355	165
Future Volume (vph)	100	390	110	95	320	200	135	240	15	110	355	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		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	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1612		1614	1585		1523	1606	1332	1564	2946	
Flt Permitted	0.32	1.00		0.36	1.00		0.25	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	537	1612		606	1585		398	1606	1332	1003	2946	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	390	110	95	320	200	135	240	15	110	355	165
RTOR Reduction (vph)	0	6	0	0	13	0	0	0	11	0	39	0
Lane Group Flow (vph)	100	494	0	95	507	0	135	240	4	110	481	0
Confl. Peds. (#/hr)	2					2	8		2	2		8
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	9%	9%	9%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA		custom	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2 6		2	6		
Actuated Green, G (s)	80.3	71.4		77.9	70.2		44.9	44.9	44.9	29.1	29.1	
Effective Green, g (s)	80.3	71.4		77.9	70.2		44.9	44.9	44.9	29.1	29.1	
Actuated g/C Ratio	0.54	0.48		0.52	0.47		0.30	0.30	0.30	0.19	0.19	
Clearance Time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0		3.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	349	767		366	741		200	480	398	194	571	
v/s Ratio Prot	c0.02	0.31		0.01	c0.32		c0.05	0.15			c0.16	
v/s Ratio Perm	0.14			0.12			0.15		0.00	0.11		
v/c Ratio	0.29	0.64		0.26	0.68		0.68	0.50	0.01	0.57	0.84	
Uniform Delay, d1	19.2	29.7		19.6	31.2		41.4	43.3	36.9	54.7	58.2	
Progression Factor	1.00	1.00		0.98	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	4.1		0.4	4.8		8.7	0.3	0.0	2.3	10.5	
Delay (s)	19.7	33.8		19.7	36.0		50.1	43.6	36.9	57.0	68.7	
Level of Service	B	C		B	D		D	D	D	E	E	
Approach Delay (s)		31.5			33.5			45.6			66.7	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	515	465	0	230	150
Future Volume (vph)	0	515	465	0	230	150
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	10	10	12	12
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1642	1571		1630	1458
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1642	1571		1630	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	515	465	0	230	150
RTOR Reduction (vph)	0	0	0	0	0	123
Lane Group Flow (vph)	0	515	465	0	230	27
Heavy Vehicles (%)	3%	3%	4%	4%	2%	2%
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		113.3	113.3		26.7	26.7
Effective Green, g (s)		113.3	113.3		26.7	26.7
Actuated g/C Ratio		0.76	0.76		0.18	0.18
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1240	1186		290	259
v/s Ratio Prot		c0.31	0.30		c0.14	
v/s Ratio Perm						0.02
v/c Ratio		0.42	0.39		0.79	0.10
Uniform Delay, d1		6.5	6.4		59.0	51.6
Progression Factor		0.62	1.00		1.00	1.00
Incremental Delay, d2		0.8	1.0		13.8	0.2
Delay (s)		4.9	7.4		72.8	51.8
Level of Service		A	A		E	D
Approach Delay (s)		4.9	7.4		64.5	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.3	1.3	1.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	57.8	49.7	43.8	35.5	31.2	24.2	58.1	41.2	8.6	93.8	65.5	52.4

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	48.8

28: S 154th St & EB SR518 Off Ramp Performance by movement

Movement	EBT	WBT	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.0	3.8	1.3	0.8
Total Del/Veh (s)	10.5	46.3	57.9	40.2	33.6

Total Zone Performance

Denied Del/Veh (s)	2.2
Total Del/Veh (s)	1757.3

Intersection: 27: Air Cargo Rd/24th Ave S & S 154th St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	255	688	179	211	245	322	56	219	619	220
Average Queue (ft)	124	348	67	193	109	164	7	133	306	185
95th Queue (ft)	277	646	157	220	202	271	29	237	576	249
Link Distance (ft)		1444		190		729	729		683	
Upstream Blk Time (%)		0	0	24					1	
Queuing Penalty (veh)		0	0	145					7	
Storage Bay Dist (ft)	180		165		175			145		145
Storage Blk Time (%)	0	33	0	30	2	9		13	25	27
Queuing Penalty (veh)	1	33	0	29	5	13		70	113	79

Intersection: 28: S 154th St & EB SR518 Off Ramp

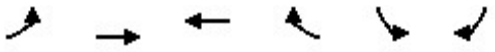
Movement	EB	WB	SB	SB
Directions Served	T	T	L	R
Maximum Queue (ft)	203	522	204	410
Average Queue (ft)	109	238	161	163
95th Queue (ft)	203	493	229	332
Link Distance (ft)	190	832		732
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	7			
Storage Bay Dist (ft)			130	
Storage Blk Time (%)			29	7
Queuing Penalty (veh)			43	16

Zone Summary

Zone wide Queuing Penalty: 560

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	425	120	130	360	205	165	165	25	105	190	165
Future Volume (vph)	115	425	120	130	360	205	165	165	25	105	190	165
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1612		1614	1591		1519	1606	1332	1563	2859	
Flt Permitted	0.31	1.00		0.34	1.00		0.37	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	524	1612		586	1591		585	1606	1332	1074	2859	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	425	120	130	360	205	165	165	25	105	190	165
RTOR Reduction (vph)	0	6	0	0	11	0	0	0	19	0	117	0
Lane Group Flow (vph)	115	539	0	130	554	0	165	165	6	105	238	0
Confl. Peds. (#/hr)	2					2	8		2	2		8
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	9%	9%	9%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	86.8	77.8		84.6	76.7		38.3	38.3	38.3	22.3	22.3	
Effective Green, g (s)	86.8	77.8		84.6	76.7		38.3	38.3	38.3	22.3	22.3	
Actuated g/C Ratio	0.58	0.52		0.56	0.51		0.26	0.26	0.26	0.15	0.15	
Clearance Time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0		3.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	366	836		384	813		217	410	340	159	425	
v/s Ratio Prot	c0.02	0.33		0.02	c0.35		c0.06	0.10			0.08	
v/s Ratio Perm	0.16			0.17			c0.14		0.00	0.10		
v/c Ratio	0.31	0.65		0.34	0.68		0.76	0.40	0.02	0.66	0.56	
Uniform Delay, d1	16.6	26.1		17.0	27.5		48.7	46.4	41.8	60.3	59.3	
Progression Factor	1.00	1.00		0.88	0.97		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	3.8		0.5	4.3		14.5	0.2	0.0	7.7	0.9	
Delay (s)	17.0	29.9		15.4	30.8		63.2	46.6	41.8	68.0	60.2	
Level of Service	B	C		B	C		E	D	D	E	E	
Approach Delay (s)		27.7			27.9			54.0			62.0	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	555	520	0	250	175
Future Volume (vph)	0	555	520	0	250	175
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	10	10	12	12
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1642	1571		1630	1458
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1642	1571		1630	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	555	520	0	250	175
RTOR Reduction (vph)	0	0	0	0	0	142
Lane Group Flow (vph)	0	555	520	0	250	33
Heavy Vehicles (%)	3%	3%	4%	4%	2%	2%
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		111.5	111.5		28.5	28.5
Effective Green, g (s)		111.5	111.5		28.5	28.5
Actuated g/C Ratio		0.74	0.74		0.19	0.19
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1220	1167		309	277
v/s Ratio Prot		c0.34	0.33		c0.15	
v/s Ratio Perm						0.02
v/c Ratio		0.45	0.45		0.81	0.12
Uniform Delay, d1		7.5	7.4		58.1	50.4
Progression Factor		0.53	1.00		1.00	1.00
Incremental Delay, d2		1.0	1.2		14.4	0.2
Delay (s)		4.9	8.6		72.5	50.6
Level of Service		A	A		E	D
Approach Delay (s)		4.9	8.6		63.5	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.4	1.7	1.6	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	78.7	60.6	54.2	40.7	31.2	23.9	68.5	41.2	9.8	68.9	52.9	32.7

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	48.0

28: S 154th St & EB SR518 Off Ramp Performance by movement

Movement	EBT	WBT	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.0	3.8	1.6	0.9
Total Del/Veh (s)	12.1	113.6	56.5	50.0	58.5

Total Zone Performance

Denied Del/Veh (s)	2.5
Total Del/Veh (s)	2015.9

Intersection: 27: Air Cargo Rd/24th Ave S & S 154th St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	255	784	190	214	238	283	48	206	344	219
Average Queue (ft)	159	447	91	197	137	123	10	103	142	132
95th Queue (ft)	309	842	184	214	232	237	32	188	283	211
Link Distance (ft)		1444		191		729	729		683	
Upstream Blk Time (%)			0	27						
Queuing Penalty (veh)			0	189						
Storage Bay Dist (ft)	180		165		175			145		145
Storage Blk Time (%)	1	36	1	34	12	3		5	5	8
Queuing Penalty (veh)	8	42	3	44	20	4		17	19	16

Intersection: 28: S 154th St & EB SR518 Off Ramp

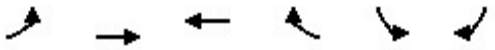
Movement	EB	WB	SB	SB
Directions Served	T	T	L	R
Maximum Queue (ft)	211	790	205	477
Average Queue (ft)	132	548	167	211
95th Queue (ft)	223	965	236	398
Link Distance (ft)	191	832		745
Upstream Blk Time (%)	3	5		
Queuing Penalty (veh)	16	24		
Storage Bay Dist (ft)			130	
Storage Blk Time (%)			30	15
Queuing Penalty (veh)			52	37

Zone Summary

Zone wide Queuing Penalty: 492

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	430	125	100	360	220	155	275	20	120	395	180
Future Volume (vph)	110	430	125	100	360	220	155	275	20	120	395	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		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	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1610		1614	1586		1523	1606	1332	1564	2949	
Flt Permitted	0.25	1.00		0.30	1.00		0.22	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	423	1610		502	1586		355	1606	1332	972	2949	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	110	430	125	100	360	220	155	275	20	120	395	180
RTOR Reduction (vph)	0	6	0	0	14	0	0	0	14	0	37	0
Lane Group Flow (vph)	110	549	0	100	566	0	155	275	6	120	538	0
Confl. Peds. (#/hr)	2					2	8		2	2		8
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	9%	9%	9%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	77.9	68.8		75.1	67.4		47.5	47.5	47.5	31.5	31.5	
Effective Green, g (s)	77.9	68.8		75.1	67.4		47.5	47.5	47.5	31.5	31.5	
Actuated g/C Ratio	0.52	0.46		0.50	0.45		0.32	0.32	0.32	0.21	0.21	
Clearance Time (s)	4.0	11.0		4.0	11.0		5.0	11.0	11.0	11.0	11.0	
Vehicle Extension (s)	3.0	2.0		3.0	2.0		3.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	290	738		308	712		198	508	421	204	619	
v/s Ratio Prot	c0.02	0.34		0.02	c0.36		c0.06	0.17			c0.18	
v/s Ratio Perm	0.17			0.15			0.19		0.00	0.12		
v/c Ratio	0.38	0.74		0.32	0.80		0.78	0.54	0.02	0.59	0.87	
Uniform Delay, d1	22.1	33.3		22.1	35.4		41.2	42.3	35.2	53.4	57.3	
Progression Factor	1.00	1.00		0.92	0.98		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	6.7		0.6	8.4		18.0	0.6	0.0	2.8	12.0	
Delay (s)	22.9	40.0		21.0	43.0		59.3	42.9	35.2	56.2	69.2	
Level of Service	C	D		C	D		E	D	D	E	E	
Approach Delay (s)		37.2			39.8			48.2			67.0	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	31.0
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	570	510	0	260	170
Future Volume (vph)	0	570	510	0	260	170
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	10	10	12	12
Total Lost time (s)		5.0	5.0		5.0	5.0
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1642	1571		1630	1458
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1642	1571		1630	1458
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	570	510	0	260	170
RTOR Reduction (vph)	0	0	0	0	0	137
Lane Group Flow (vph)	0	570	510	0	260	33
Heavy Vehicles (%)	3%	3%	4%	4%	2%	2%
Turn Type		NA	NA		Prot	Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		110.6	110.6		29.4	29.4
Effective Green, g (s)		110.6	110.6		29.4	29.4
Actuated g/C Ratio		0.74	0.74		0.20	0.20
Clearance Time (s)		5.0	5.0		5.0	5.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1210	1158		319	285
v/s Ratio Prot		c0.35	0.32		c0.16	
v/s Ratio Perm						0.02
v/c Ratio		0.47	0.44		0.82	0.12
Uniform Delay, d1		7.9	7.7		57.7	49.6
Progression Factor		0.72	1.00		1.00	1.00
Incremental Delay, d2		1.0	1.2		14.7	0.2
Delay (s)		6.6	8.9		72.4	49.8
Level of Service		A	A		E	D
Approach Delay (s)		6.6	8.9		63.5	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.4	2.3	2.2	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.5	1.3
Total Del/Veh (s)	119.9	91.7	83.9	38.2	35.3	27.9	89.4	48.3	9.7	152.0	92.0	80.0

27: Air Cargo Rd/24th Ave S & S 154th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.9
Total Del/Veh (s)	74.0

28: S 154th St & EB SR518 Off Ramp Performance by movement

Movement	EBT	WBT	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.0	3.8	1.5	0.9
Total Del/Veh (s)	13.1	160.5	58.2	48.2	73.4

Total Zone Performance

Denied Del/Veh (s)	3.3
Total Del/Veh (s)	2292.0

Intersection: 27: Air Cargo Rd/24th Ave S & S 154th St

Movement	EB	EB	WB	WB	NB	NB	NB	B415	B415	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	T	L	T	TR
Maximum Queue (ft)	255	968	140	208	250	534	58	25	23	220	678	220
Average Queue (ft)	165	610	60	197	157	233	8	2	1	157	496	204
95th Queue (ft)	317	1154	118	207	270	473	32	41	28	258	807	254
Link Distance (ft)		1444	189	189		729	729	222	222		682	
Upstream Blk Time (%)		3	0	33		1		0	0		7	
Queuing Penalty (veh)		0	1	114		0		0	0		46	
Storage Bay Dist (ft)	180				175					145		145
Storage Blk Time (%)	5	47			17	15				28	39	44
Queuing Penalty (veh)	26	52			48	23				162	194	139

Intersection: 28: S 154th St & EB SR518 Off Ramp

Movement	EB	WB	SB	SB
Directions Served	T	T	L	R
Maximum Queue (ft)	207	846	205	457
Average Queue (ft)	139	684	175	218
95th Queue (ft)	210	994	235	399
Link Distance (ft)	189	832		674
Upstream Blk Time (%)	3	7		
Queuing Penalty (veh)	14	38		
Storage Bay Dist (ft)			130	
Storage Blk Time (%)			33	12
Queuing Penalty (veh)			57	32

Zone Summary

Zone wide Queuing Penalty: 946

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2032 NA Mit)]

Network: N101 [2032 NA MIT Network 2 (Network Folder: Network 2)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2032 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St															
Lane 1[d]	470	4.0	470	4.0	604	0.778	100	24.6	LOS C	1.6[N5]	41.0[N5]	Full	915	-50.0[N3]	0.0
Approach	470	4.0	470	4.0		0.778		24.6	LOS C	1.6	41.0				
North: SR 518 EB Off Ramp															
Lane 1[d]	380	2.0	380	2.0	655	0.580	100	14.1	LOS B	3.3	84.5	Full	1600	-29.0[N3]	0.0
Approach	380	2.0	380	2.0		0.580		14.1	LOS B	3.3	84.5				
West: S 154th St															
Lane 1[d]	500	3.0	500	3.0	944	0.530	100	10.7	LOS B	3.9	98.7	Full	275	0.0	0.0
Approach	500	3.0	500	3.0		0.530		10.7	LOS B	3.9	98.7				
Intersection	1350	3.1	1350	3.1		0.778		16.5	LOS B	3.9	98.7				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	470	470	4.0	604	0.778	100	NA	NA
Approach	470	470	4.0		0.778			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	225	155	380	2.0	655	0.580	100	NA	NA
Approach	225	155	380	2.0		0.580			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	500	500	3.0	944	0.530	100	NA	NA

Approach	500	500	3.0	0.530
	Total	%HV	Deg.Satn (v/c)	
Intersection	1350	3.1	0.778	

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2032 PA Mit)]

Network: N101 [2032 PA MIT Network 2 (Network Folder: Network 2)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2032 Proposed Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St															
Lane 1[d]	465	4.0	465	4.0	604	0.770	100	23.9	LOS C	8.1[N5]	207.7[N5]	Full	915	-50.0[N3]	0.0
Approach	465	4.0	465	4.0		0.770		23.9	LOS C	8.1	207.7				
North: SR 518 EB Off Ramp															
Lane 1[d]	380	2.0	380	2.0	663	0.573	100	13.8	LOS B	4.0[N5]	100.5[N5]	Full	1600	-28.3[N3]	2.1
Approach	380	2.0	380	2.0		0.573		13.8	LOS B	4.0	100.5				
West: S 154th St															
Lane 1[d]	515	3.0	515	3.0	939	0.548	100	11.1	LOS B	4.1	104.1	Full	275	0.0	0.0
Approach	515	3.0	515	3.0		0.548		11.1	LOS B	4.1	104.1				
Intersection	1360	3.1	1360	3.1		0.770		16.2	LOS B	8.1	207.7				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	465	465	4.0	604	0.770	100	NA	NA
Approach	465	465	4.0		0.770			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	230	150	380	2.0	663	0.573	100	NA	NA
Approach	230	150	380	2.0		0.573			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	515	515	3.0	939	0.548	100	NA	NA

Approach	515	515	3.0		0.548
	Total	%HV	Deg.Satn (v/c)		
Intersection	1360	3.1		0.770	

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2037 NA Mit)]

Network: N101 [2037 NA MIT Network 2 (Network Folder: Network 2)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St															
Lane 1[d]	520	4.0	520	4.0	665	0.782	100	23.3	LOS C	9.9[N5]	254.9[N5]	Full	915	-50.0[N3]	0.0
Approach	520	4.0	520	4.0		0.782		23.3	LOS C	9.9	254.9				
North: SR 518 EB Off Ramp															
Lane 1[d]	425	2.0	425	2.0	722	0.589	100	13.4	LOS B	5.1[N5]	128.6[N5]	Full	1600	-29.2[N3]	2.1
Approach	425	2.0	425	2.0		0.589		13.4	LOS B	5.1	128.6				
West: S 154th St															
Lane 1[d]	555	3.0	555	3.0	1039	0.534	100	10.0	LOS B	4.0	102.6	Full	275	0.0	0.0
Approach	555	3.0	555	3.0		0.534		10.0	LOS B	4.0	102.6				
Intersection	1500	3.1	1500	3.1		0.782		15.6	LOS B	9.9	254.9				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	520	520	4.0	665	0.782	100	NA	NA
Approach	520	520	4.0		0.782			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	250	175	425	2.0	722	0.589	100	NA	NA
Approach	250	175	425	2.0		0.589			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	555	555	3.0	1039	0.534	100	NA	NA

Approach	555	555	3.0	0.534
	Total	%HV	Deg.Satn (v/c)	
Intersection	1500	3.1	0.782	

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2037 PA Mit)]

Network: N101 [2037 PA MIT Network 2 (Network Folder: Network 2)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2037 Proposed Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St															
Lane 1[d]	510	4.0	510	4.0	665	0.767	100	22.1	LOS C	13.6[N5]	350.9[N5]	Full	915	-50.0[N3]	0.0
Approach	510	4.0	510	4.0		0.767		22.1	LOS C	13.6	350.9				
North: SR 518 EB Off Ramp															
Lane 1[d]	430	2.0	430	2.0	735	0.585	100	13.1	LOS B	6.9[N5]	175.4[N5]	Full	1600	-28.3[N3]	2.1
Approach	430	2.0	430	2.0		0.585		13.1	LOS B	6.9	175.4				
West: S 154th St															
Lane 1[d]	570	3.0	570	3.0	1029	0.554	100	10.5	LOS B	4.2	108.2	Full	275	0.0	0.0
Approach	570	3.0	570	3.0		0.554		10.5	LOS B	4.2	108.2				
Intersection	1510	3.1	1510	3.1		0.767		15.2	LOS B	13.6	350.9				

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Continuous Lane results determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	510	510	4.0	665	0.767	100	NA	NA
Approach	510	510	4.0		0.767			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	260	170	430	2.0	735	0.585	100	NA	NA
Approach	260	170	430	2.0		0.585			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	570	570	3.0	1029	0.554	100	NA	NA

Approach	570	570	3.0	0.554
	Total	%HV	Deg.Satn (v/c)	
Intersection	1510	3.1	0.767	

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2032 NA Mit)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2032 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St													
Lane 1[d]	470	4.0	1208	0.389	100	2.9	LOS A	0.0	0.0	Full	915	0.0	0.0
Approach	470	4.0		0.389		2.9	LOS A	0.0	0.0				
North: SR 518 EB Off Ramp													
Lane 1[d]	380	2.0	922	0.412	100	5.0	LOS A	2.2	56.7	Full	1600	0.0	0.0
Approach	380	2.0		0.412		5.0	LOS A	2.2	56.7				
West: S 154th St													
Lane 1[d]	500	3.0	952	0.525	100	5.2	LOS A	4.4	112.5	Full	275	0.0	0.0
Approach	500	3.0		0.525		5.2	LOS A	4.4	112.5				
Intersection	1350	3.1		0.525		4.4	LOS A	4.4	112.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	470	470	4.0	1208	0.389	100	NA	NA
Approach	470	470	4.0		0.389			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	225	155	380	2.0	922	0.412	100	NA	NA
Approach	225	155	380	2.0		0.412			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	500	500	3.0	952	0.525	100	NA	NA
Approach	500	500	3.0		0.525			

	Total	%HV	Deg.Satn (v/c)
Intersection	1350	3.1	0.525

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2032 PA Mit)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2032 Proposed Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St													
Lane 1[d]	465	4.0	1208	0.385	100	2.9	LOS A	0.0	0.0	Full	915	0.0	0.0
Approach	465	4.0		0.385		2.9	LOS A	0.0	0.0				
North: SR 518 EB Off Ramp													
Lane 1[d]	380	2.0	925	0.411	100	5.0	LOS A	2.2	56.4	Full	1600	0.0	0.0
Approach	380	2.0		0.411		5.0	LOS A	2.2	56.4				
West: S 154th St													
Lane 1[d]	515	3.0	948	0.544	100	5.4	LOS A	4.6	118.4	Full	275	0.0	0.0
Approach	515	3.0		0.544		5.4	LOS A	4.6	118.4				
Intersection	1360	3.1		0.544		4.4	LOS A	4.6	118.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	465	465	4.0	1208	0.385	100	NA	NA
Approach	465	465	4.0		0.385			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	230	150	380	2.0	925	0.411	100	NA	NA
Approach	230	150	380	2.0		0.411			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	515	515	3.0	948	0.544	100	NA	NA
Approach	515	515	3.0		0.544			

	Total	%HV	Deg.Satn (v/c)
Intersection	1360	3.1	0.544

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2037 NA Mit)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2037 No Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St													
Lane 1[d]	520	4.0	1329	0.391	100	2.9	LOS A	0.0	0.0	Full	915	0.0	0.0
Approach	520	4.0		0.391		2.9	LOS A	0.0	0.0				
North: SR 518 EB Off Ramp													
Lane 1[d]	425	2.0	1019	0.417	100	4.9	LOS A	2.4	60.2	Full	1600	0.0	0.0
Approach	425	2.0		0.417		4.9	LOS A	2.4	60.2				
West: S 154th St													
Lane 1[d]	555	3.0	1044	0.532	100	5.1	LOS A	4.5	116.0	Full	275	0.0	0.0
Approach	555	3.0		0.532		5.1	LOS A	4.5	116.0				
Intersection	1500	3.1		0.532		4.3	LOS A	4.5	116.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	520	520	4.0	1329	0.391	100	NA	NA
Approach	520	520	4.0		0.391			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	250	175	425	2.0	1019	0.417	100	NA	NA
Approach	250	175	425	2.0		0.417			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	555	555	3.0	1044	0.532	100	NA	NA
Approach	555	555	3.0		0.532			

	Total	%HV	Deg.Satn (v/c)
Intersection	1500	3.1	0.532

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										

LANE SUMMARY

Site: 28 [28-S 154th St @ SR 518 EB Off Ramps (Site Folder: 2037 PA Mit)]

S 154th St @ SR 518 EB Off Ramp
Site Category: 2037 Proposed Action
Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: S 154th St													
Lane 1[d]	510	4.0	1329	0.384	100	2.9	LOS A	0.0	0.0	Full	915	0.0	0.0
Approach	510	4.0		0.384		2.9	LOS A	0.0	0.0				
North: SR 518 EB Off Ramp													
Lane 1[d]	430	2.0	1025	0.419	100	4.9	LOS A	2.4	60.5	Full	1600	0.0	0.0
Approach	430	2.0		0.419		4.9	LOS A	2.4	60.5				
West: S 154th St													
Lane 1[d]	570	3.0	1034	0.551	100	5.2	LOS A	4.8	122.1	Full	275	0.0	0.0
Approach	570	3.0		0.551		5.2	LOS A	4.8	122.1				
Intersection	1510	3.1		0.551		4.3	LOS A	4.8	122.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: S 154th St

Mov. From E To Exit:	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	510	510	4.0	1329	0.384	100	NA	NA
Approach	510	510	4.0		0.384			

North: SR 518 EB Off Ramp

Mov. From N To Exit:	L2 E	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	260	170	430	2.0	1025	0.419	100	NA	NA
Approach	260	170	430	2.0		0.419			

West: S 154th St

Mov. From W To Exit:	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	570	570	3.0	1034	0.551	100	NA	NA
Approach	570	570	3.0		0.551			

	Total	%HV	Deg.Satn (v/c)
Intersection	1510	3.1	0.551

Lane flow rates given in this report are based on the arrival flow rates subject to upstream capacity constraint where applicable.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
East Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										
West Exit: S 154th St Merge Type: **Not Applied**												
Full Length Lane	1	Merge Analysis not applied.										