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**2009 BUILD W/ MITIGATION: SAT PEAK**

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	SBL2	SBL	SBT	SBR	SBR2
Lane Configurations	T		T		T		T		T		T	
Volume (vph)	24	370	245	29	241	44	43	21	95	176	224	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	10	10	12	12	13	13	12	12
Total Lost time (s)	6.9	4.2		4.2	4.2		6.9	5.1	5.1			
Lane Util. Factor	0.97	1.00		0.95	1.00		1.00	1.00	0.88			
Frt	1.00	0.98		1.00	0.85		1.00	1.00	0.85			
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00	1.00			
Satd. Flow (prot)	3046	1626		3002	1343		1646	1732	2508			
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3046	1626		3002	1343		1646	1732	2508			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	389	258	31	262	46	47	23	101	83	243	43
RTOR Reduction (vph)	0	0	0	0	0	30	0	0	0	0	11	0
Lane Group Flow (vph)	0	414	269	0	262	65	0	124	63	275	0	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Pct	Prot			Perm	Perm	Perm		Perm		Perm	
Protected Phases	5	5			6				4		4	
Permitted Phases			2		6			4	4		4	
Actuated Green, G (s)	34.5	57.5			16.5			23.5	23.5		23.5	
Effective Green, g (s)	34.1	59.8			18.8			23.1	24.9		24.9	
Actuated g/C Ratio	0.28	0.50			0.16			0.19	0.21		0.21	
Clearance Time (s)	6.5	6.5			6.5			6.5	6.5		6.5	
Lane Grp Cap (vph)	866	810			470			317	359		520	
v/s Ratio Prot	c0.14	0.18			c0.09			0.08	0.05		c0.11	
v/s Ratio Perm					0.05			0.39	0.23		0.53	
w/c Ratio	0.48	0.36			0.56	0.31		0.39	0.23		0.53	
Uniform Delay, d1	35.6	18.4			46.8	44.9		42.3	39.6		42.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	1.9	1.2			4.7	3.8		3.6	1.5		3.8	
Delay (s)	37.5	19.6			51.5	48.7		45.9	41.1		46.1	
Level of Service	D	B			D	D		D	D		D	
Approach Delay (s)		30.1			50.7			45.2			51.1	
Approach LOS		C			D			D			D	
<b>Intersection Summary</b>												
HCM Average Control Delay	42.4		HCM Level of Service		D							
HCM Volume to Capacity ratio	0.52											
Actuated Cycle Length (s)	120.0		Sum of Lost time (s)		21.3							
Intersection Capacity Utilization	85.3%		ICU Level of Service		C							
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBL	EBT	EBR	WBT	WBR	WBR2	SBL2	SBL	SBT	SBR	SBR2
Lane Configurations	T		T		T		T		T		T	
Volume (vph)	18	244	105	29	219	5	99	82	165			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	12	12	12	12	12	12	12	12			
Total Lost time (s)		5.1	5.1		5.1	5.1		5.1	5.1		6.5	
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Frt		1.00	0.95		1.00	0.95		1.00	0.95		0.85	
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00		1.00	
Satd. Flow (prot)		1577	1786		1513	1689		1513	1689		1346	
Flt Permitted		0.70	1.00		0.48	1.00		0.48	1.00		1.00	
Satd. Flow (perm)		1158	1786		763	1689		763	1689		1346	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	48	114		49	10		5	42		89	4
RTOR Reduction (vph)	0	0	0		0	0		0	0		0	0
Lane Group Flow (vph)	0	68	171		0	0		0	47		89	117
Heavy Vehicles (%)	3%	3%	3%		3%	2%		2%	8%		8%	8%
Turn Type	Perm	Perm			Perm	Perm		Perm	Perm		Perm	
Protected Phases	14	14			10	10		10	10		10	
Permitted Phases					10	10		10	10		10	
Actuated Green, G (s)					19.5	19.5		19.5	19.5		19.5	
Effective Green, g (s)					20.9	20.9		20.9	20.9		19.5	
Actuated g/C Ratio					0.17	0.17		0.17	0.17		0.16	
Clearance Time (s)					6.5	6.5		6.5	6.5		6.5	
Lane Grp Cap (vph)					202	311		133	294		219	
v/s Ratio Prot					c0.10			0.05			0.09	
v/s Ratio Perm					0.06			0.35	0.30		0.53	
w/c Ratio					0.34	0.55		0.35	0.30		0.53	
Uniform Delay, d1					43.5	45.3		43.6	43.2		46.1	
Progression Factor					1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2					4.5	6.9		7.2	2.6		9.1	
Delay (s)					47.9	52.1		50.8	45.8		55.2	
Level of Service					D	D		D	D		E	
Approach Delay (s)					50.9			51.1				
Approach LOS					D			D			D	
<b>Intersection Summary</b>												

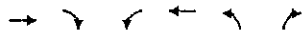
HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave

Movement	WBL	WBR	NB	NBR	SBL	SBT
Lane Configurations	↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	193	163	331	238	165	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	12	13	12	12	12
Total Lost time (s)	2.7	5.0	2.7	2.7	0.7	2.7
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fit	1.00	0.85	1.00	0.85	1.00	1.00
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1906	1599	3693	1599	1770	3539
Fit Permitted	0.95	1.00	1.00	1.00	0.50	1.00
Satd. Flow (perm)	1906	1599	3693	1599	931	3539
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94
Adj. Flow (vph)	193	165	341	245	176	290
RTOR Reduction (vph)	0	110	135	0	0	0
Lane Group Flow (vph)	193	55	341	110	176	290
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	Perm	Perm	pm-pt			
Protected Phases	0	0	0	0	6	0
Permitted Phases	8	2	6			
Actuated Green, G (s)	30.0	30.0	38.0	38.0	50.0	50.0
Effective Green, g (s)	32.3	30.0	40.3	40.3	52.3	52.3
Actuated g/C Ratio	0.36	0.33	0.45	0.45	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	684	533	1654	716	646	2057
v/s Ratio Prot	c0.10	c0.09	c0.03	c0.03	0.08	
v/s Ratio Perm	0.03	0.03	0.07	0.07	0.12	
v/c Ratio	0.28	0.10	0.21	0.15	0.27	0.14
Uniform Delay, d1	20.6	20.7	15.1	14.7	8.9	8.6
Progression Factor	1.00	1.00	1.00	1.00	1.03	0.96
Incremental Delay, d2	1.0	1.0	0.3	0.5	1.0	0.1
Delay (s)	21.6	21.1	15.4	15.2	10.1	8.4
Level of Service	C	C	B	B	B	A
Approach Delay (s)	21.4	15.3			9.0	
Approach LOS	C	B			A	
<b>Intersection Summary</b>						
HCM Average Control Delay	14.8		11.2		HCM Level of Service	
HCM Volume to Capacity ratio	0.24		0.28		B	
Actuated Cycle Length (s)	90.0		90.0		Sum of lost time (s)	
Intersection Capacity Utilization	48.7%		32.7%		ICU Level of Service	
Analysis Period (min)	15		15		A	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NB	NBR	SBL	SBT
Lane Configurations			↑	↑	↑↑	↑↑
Volume (vph)	0	0	1584	553	1903	1380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.3	6.3	6.3	6.3
Lane Util. Factor			0.95	1.00	0.95	
Fit			1.00	1.00	1.00	1.00
Fit Protected			1.00	0.95	1.00	
Satd. Flow (prot)			3497	1770	3539	
Fit Permitted			1.00	0.95	1.00	
Satd. Flow (perm)			3497	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	0	0	1768	568	1981	1392
RTOR Reduction (vph)	0	0	7	0	0	0
Lane Group Flow (vph)	0	0	1584	553	1981	1392
Turn Type			custom			
Protected Phases			3	3	6	6
Permitted Phases			3	3	3	3
Actuated Green, G (s)			52.7	24.7	52.7	52.7
Effective Green, g (s)			52.7	24.7	52.7	52.7
Actuated g/C Ratio			0.59	0.27	0.59	0.59
Clearance Time (s)			6.3	6.3	6.3	6.3
Lane Grp Cap (vph)			2048	486	2072	2072
v/s Ratio Prot			c0.13	c0.11	0.11	
v/s Ratio Perm						
v/c Ratio			0.22	0.40	0.19	0.19
Uniform Delay, d1			29.9	26.6	8.7	8.7
Progression Factor			0.58	1.00	1.00	1.00
Incremental Delay, d2			0.2	2.5	0.2	0.2
Delay (s)			5.4	29.1	8.9	8.9
Level of Service			A	C	A	A
Approach Delay (s)	0.0	5.4			15.6	
Approach LOS	A	A			B	
<b>Intersection Summary</b>						
HCM Average Control Delay	11.2		11.2		HCM Level of Service	
HCM Volume to Capacity ratio	0.28		0.28		B	
Actuated Cycle Length (s)	90.0		90.0		Sum of lost time (s)	
Intersection Capacity Utilization	32.7%		32.7%		ICU Level of Service	
Analysis Period (min)	15		15		A	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
50: Roberts Ave & North Entrance



Movement	EB	EBRT	WB	WBRT	NB	NBR
Lane Configurations	↑	↑↓	↑	↑↓	↑	↑
Volume (vph)	154	62	81	426	170	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12
Total Lost time (s)	5.0	5.0	3.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1711	1863	1770	1583
Flt Permitted	1.00	1.00	0.58	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1038	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	67	88	463	185	271
RTOR Reduction (vph)	0	41	0	0	0	194
Lane Group Flow (vph)	167	26	88	463	185	77
Turn Type	Perm	pm+pt	Perm	pm+pt	Perm	Perm
Protected Phases	2	1	6	8	8	8
Permitted Phases	2	2	6	6	6	4
Actuated Green, G (s)	23.0	23.0	33.0	33.0	17.0	17.0
Effective Green, g (s)	23.0	23.0	33.0	33.0	17.0	17.0
Actuated g/C Ratio	0.38	0.38	0.55	0.55	0.28	0.28
Clearance Time (s)	5.0	5.0	3.0	5.0	5.0	5.0
Lane Grp Cap (vph)	714	607	649	1025	502	449
v/s Ratio Prot	0.09	0.02	0.02	0.25	0.10	0.05
v/s Ratio Perm	0.23	0.04	0.14	0.45	0.37	0.17
Uniform Delay, d1	12.5	11.6	6.5	8.1	17.2	16.2
Progression Factor	1.00	1.00	0.62	0.53	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.4	1.2	2.1	0.8
Delay (s)	13.3	11.7	4.4	5.5	19.3	17.0
Level of Service	B	B	A	A	B	B
Approach Delay (s)	12.8	11.6	5.3	17.9	17.9	17.9
Approach LOS	B	B	A	B	B	B

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		
Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St



Movement	EB	EBRT	WB	WBRT	NB	NBR	SBR	SBRT	SBR
Lane Configurations	↑	↑↓	↑	↑↓	↑	↑	↑	↑	↑
Volume (vph)	94	432	2	124	418	126	373	158	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	16	12	12
Total Lost time (s)	4.0	4.0	2.1	4.0	4.0	4.0	4.0	1.6	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	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	0.96
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1711	3419	1694	3270	1787	2132	1599	1787	1808
Flt Permitted	0.21	1.00	0.49	1.00	0.35	1.00	1.00	0.34	1.00
Satd. Flow (perm)	374	3419	850	3270	665	2132	1599	638	1808
Peak-hour factor, PHF	0.99	0.90	0.90	0.95	0.96	0.92	0.92	0.81	0.81
Adj. Flow (vph)	104	480	2	129	435	131	4	405	172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	104	481	0	129	535	0	4	405	87
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%
Turn Type	pm+pt	pm+pt	Perm	pm+pt	Perm	Perm	pm+pt	pm+pt	pm+pt
Protected Phases	2	2	6	6	6	6	8	4	4
Permitted Phases	2	6	6	6	8	8	8	4	4
Actuated Green, G (s)	36.6	36.6	27.1	21.6	34.6	34.6	34.6	42.6	42.6
Effective Green, g (s)	36.2	36.0	29.9	23.0	36.0	36.0	36.0	44.0	44.0
Actuated g/C Ratio	0.40	0.42	0.33	0.26	0.40	0.40	0.40	0.49	0.49
Clearance Time (s)	3.6	5.4	3.5	5.4	5.4	5.4	5.4	3.0	5.4
Lane Grp Cap (vph)	314	1444	347	836	286	853	640	394	384
v/s Ratio Prot	0.04	0.11	0.03	0.16	0.01	0.19	0.02	0.30	0.30
v/s Ratio Perm	0.09	0.03	0.09	0.16	0.05	0.16	0.12	0.12	0.12
v/c Ratio	0.33	0.33	0.37	0.64	0.02	0.47	0.14	0.28	0.61
Uniform Delay, d1	16.3	17.5	21.7	29.8	16.3	20.0	17.1	13.6	16.7
Progression Factor	1.00	1.00	1.05	1.10	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.6	2.7	3.4	0.1	1.9	0.4	1.7	3.1
Delay (s)	21.1	18.1	25.5	36.2	16.4	21.9	17.6	15.4	19.8
Level of Service	C	C	C	D	B	B	B	B	B
Approach Delay (s)	18.6	18.6	34.2	20.6	19.1	19.1	19.1	19.1	19.1
Approach LOS	B	B	C	C	B	B	B	B	B

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
70: East Entrance & Fox St

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	207	127	118	458	404	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.46	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	852	1863	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	138	128	498	439	234
RTOR Reduction (vph)	0	101	0	0	0	101
Lane Group Flow (vph)	225	37	128	498	439	133
Turn Type	Perm	Perm			Perm	
Protected Phases	4		2		6	
Permitted Phases		2			6	
Actuated Green, G (s)	16.0	16.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	16.0	16.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.27	0.27	0.57	0.57	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	472	422	483	1056	1056	897
v/s Ratio Prot	c0.13		c0.27		0.24	
v/s Ratio Perm		0.02	0.15		0.08	
v/c Ratio	0.48	0.09	0.27	0.47	0.42	0.15
Uniform Delay, d1	18.5	16.5	6.0	7.7	7.4	8.1
Progression Factor	1.00	1.00	1.00	0.86	0.44	
Incremental Delay, d2	3.4	0.4	1.3	1.5	1.1	0.3
Delay (s)	21.9	16.9	8.0	9.2	7.5	3.1
Level of Service	C	B	A	A	A	A
Approach Delay (s)	20.0		8.9	5.9		
Approach LOS	C		A	A		
<b>Intersection Summary</b>						
HCM Average Control Delay	10.1			HCM Level of Service		
HCM Volume to Capacity ratio	0.47					
Actuated Cycle Length (s)	60.0			Sum of lost time (s)		
Intersection Capacity Utilization	51.8%			ICU Level of Service		
Analysis Period (min)	15					
c - Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	192	159	59	222	393	170	66	414	157	7	335	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	4.0	2.0	4.0	5.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Lane Util. Factor	1.00	0.96	1.00	1.00	0.85	1.00	0.95	0.95	1.00	0.95	1.00	0.94
Friction	1.00	0.86	1.00	1.00	0.85	1.00	0.85	0.85	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	0.94
Satd. Flow (prot)	1770	1787	1605	2027	1915	3385	1770	1787	1605	2027	1915	3429
Flt Permitted	0.95	1.00	0.57	1.00	1.00	0.85	0.95	0.95	1.00	0.85	1.00	0.94
Satd. Flow (perm)	553	1787	1088	2027	1615	2940	553	1787	1088	2027	1615	3241
Peak-hour factor, PHF	0.95	0.95	0.95	0.86	0.86	0.86	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	202	167	62	258	457	81	69	431	174	7	353	92
RTOR Reduction (vph)	0	22	0	0	0	53	0	56	0	0	31	19
Lane Group Flow (vph)	202	207	0	258	457	28	0	616	0	0	421	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt	Perm	pm+pt		Perm			Perm	
Protected Phases	4			8		8		2			6	
Permitted Phases												
Actuated Green, G (s)	27.0	21.0		27.0	21.0	21.0		20.0			20.0	
Effective Green, g (s)	29.0	22.0		29.0	22.0	21.0		22.0			22.0	
Actuated g/C Ratio	0.48	0.37		0.48	0.37	0.35		0.37			0.37	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0		5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	409	655		610	743	565		1078			1188	
v/s Ratio Prot	c0.06	0.12		0.05	c0.23							
v/s Ratio Perm	0.18			0.16		0.02		c0.21			0.13	
v/c Ratio	0.49	0.32		0.42	0.62	0.05		0.57			0.35	
Uniform Delay, d1	9.9	13.6		9.4	15.5	12.9		15.2			13.8	
Progression Factor	1.59	1.57		0.94	0.90	1.25		0.91			1.37	
Incremental Delay, d2	0.9	1.2		0.4	2.9	0.1		0.7			0.7	
Delay (s)	16.7	22.6		9.2	16.8	16.3		14.6			19.7	
Level of Service	B	C		A	B	B		B			B	
Approach Delay (s)	19.8			14.3				14.8			19.7	
Approach LOS	B			B				B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay	16.4			HCM Level of Service			B					
HCM Volume to Capacity ratio	0.57											
Actuated Cycle Length (s)	60.0			Sum of lost time (s)			9.0					
Intersection Capacity Utilization	75.6%			ICU Level of Service			D					
Analysis Period (min)	15											
c1 - Critical Lane Group												

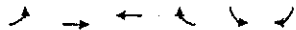
HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4T			4T			4T			4T		
Volume (vph)	67	264	13	0	0	0	0	427	272	277	410	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	11	12	11	11	12
Total Lost time (s)	3.4			3.4			3.4			3.4		
Lane Util. Factor	0.95			0.95			0.95			0.95		
Frt	0.93			0.94			1.00			1.00		
Flt Protected	0.99			1.00			0.98			1.00		
Satd. Flow (prot)	3677			3253			3421			3270		
Flt Permitted	0.99			1.00			0.55			1.00		
Satd. Flow (perm)	3677			3253			1934			3270		
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	66	303	15	0	0	0	0	485	309	295	436	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	379	0	0	0	0	0	794	0	0	731	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	1%	1%	1%	0%	0%
Turn Type	Perm						pm+pt					
Protected Phases	4						2					
Permitted Phases	4						6					
Actuated Green, G (s)	12.2			22.2			38.2			38.2		
Effective Green, g (s)	13.6			23.6			39.6			39.6		
Actuated g/C Ratio	0.23			0.39			0.66			0.66		
Clearance Time (s)	4.8			4.8			4.8			4.8		
Lane Grp Cap (vph)	833			1280			1633			1633		
v/s Ratio Prot				0.24			0.11					
v/s Ratio Perm	0.10			0.19			0.19			0.19		
v/c Ratio	0.46			0.62			0.45			0.57		
Uniform Delay, d1 (s)	20.0			14.6			4.9			6.3		
Progression Factor	1.00			0.91			0.63			1.00		
Incremental Delay, d2 (s)	1.8			2.1			0.7			0.7		
Delay (s)	21.8			15.4			3.7			7.0		
Level of Service	C			B			A			A		
Approach Delay (s)	21.8			0.0			15.4			3.7		
Approach LOS	C			A			B			A		
<b>Intersection Summary</b>												
HCM Average Control Delay (s)	12.2											
HCM Volume to Capacity ratio	0.54											
Actuated Cycle Length (s)	60.0											
Intersection Capacity Utilization	59.3%											
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4T			4T			4T			4T		
Volume (vph)	0	0	0	41	215	270	330	132	0	0	269	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)	4.0			4.0			4.8			4.0		
Lane Util. Factor	1.00			1.00			0.85			1.00		
Frt	1.00			1.00			0.85			1.00		
Flt Protected	1.00			1.00			0.95			1.00		
Satd. Flow (prot)	1787			1881			1599			1801		
Flt Permitted	1.00			1.00			0.30			1.00		
Satd. Flow (perm)	1787			1881			1599			1801		
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.96	0.96	0.96	0.95	0.95	0.95	0.94	0.94
Adj. Flow (vph)	0	0	0	428	224	261	347	139	0	0	286	119
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	428	224	85	347	139	0	0	405	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm						pm+pt					
Protected Phases	8						2					
Permitted Phases	8						2					
Actuated Green, G (s)	18.2			18.2			32.2			32.2		
Effective Green, g (s)	19.0			18.2			31.2			33.0		
Actuated g/C Ratio	0.32			0.30			0.52			0.55		
Clearance Time (s)	4.8			4.8			3.0			4.8		
Lane Grp Cap (vph)	568			596			485			593		
v/s Ratio Prot				0.12			0.16			0.08		
v/s Ratio Perm	0.24			0.05			0.15			0.15		
v/c Ratio	0.76			0.38			0.59			0.14		
Uniform Delay, d1 (s)	18.4			15.9			9.2			6.6		
Progression Factor	1.00			0.99			1.04			0.25		
Incremental Delay, d2 (s)	9.1			1.8			3.4			0.2		
Delay (s)	27.6			17.6			7.1			1.9		
Level of Service	C			B			A			A		
Approach Delay (s)	0.0			21.9			5.6			24.3		
Approach LOS	A			C			B			C		
<b>Intersection Summary</b>												
HCM Average Control Delay (s)	18.1											
HCM Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	60.0											
Intersection Capacity Utilization	62.1%											
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EB	WB	WB	EB	SB	SB
Lane Configurations		↑	↑		↑	↑
Volume (vph)	0	333	511	0	82	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	1.00	1.00	1.00	0.85	0.85
Flt Protected	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1863	1863	1770	1583	1583	1583
Flt Permitted	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1863	1863	1770	1583	1583	1583
Peak-hour factor, PHF	0.82	0.82	0.96	0.96	0.60	0.60
Adj. Flow (vph)	0	406	532	0	137	530
RTOR Reduction (vph)	0	0	0	0	0	107
Lane Group Flow (vph)	0	406	532	0	137	423

Turn Type	Perm					
Protected Phases	2	4	4	4	4	4
Permitted Phases						
Actuated Green, G (s)	21.4	21.4	28.6	28.6	28.6	28.6
Effective Green, g (s)	21.4	21.4	28.6	28.6	28.6	28.6
Actuated g/C Ratio	0.36	0.36	0.48	0.48	0.48	0.48
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	664	664	844	755	755	755
v/s Ratio Prot	0.22	0.29	0.08	0.08	0.08	0.08
v/s Ratio Perm						
v/c Ratio	0.61	0.80	0.16	0.56	0.56	0.56
Uniform Delay, d1	15.9	17.4	8.9	11.2	11.2	11.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	6.9	0.4	3.0	3.0	3.0
Delay (s)	16.8	24.3	9.3	14.2	14.2	14.2
Level of Service	B	C	A	B	B	B
Approach Delay (s)	16.8	24.3	13.2	13.2	13.2	13.2
Approach LOS	B	C	B	B	B	B

Intersection Summary		
HCM Average Control Delay	17.8	HCM Level of Service B
HCM Volume to Capacity ratio	0.66	
Actuated Cycle Length (s)	60.0	Sum of lost time (s) 10.0
Intersection Capacity Utilization	54.9%	ICU Level of Service A
Analysis Period (min)	15	
c - Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave



Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations		↑	↑		↑	↑		↑	↑		↑	↑
Volume (vph)	0	537	0	0	554	162	222	134	134	240	218	170
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	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	1.00	0.97	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1745	3490	3836	3836	3427	1745	1837	1561	1561	1561	1561	1561
Flt Permitted	0.19	1.00	1.00	1.00	1.00	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	357	3490	3836	3836	3072	885	1837	1561	1561	1561	1561	1561
Peak-hour factor, PHF	0.80	0.80	0.96	0.96	0.86	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	671	0	577	169	26	156	15	253	229	74	74
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	120	671	0	716	0	0	197	0	253	229	30	30
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Turn Type	pm-pt			Perm			pm-pt			Perm		
Protected Phases	2	5	6	8	4	4	4	4	4	4	4	4
Permitted Phases												
Actuated Green, G (s)	44.6	44.6	30.6	15.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6
Effective Green, g (s)	44.2	46.0	32.0	17.0	34.2	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Actuated g/C Ratio	0.49	0.51	0.36	0.19	0.38	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Clearance Time (s)	3.6	5.4	5.4	5.4	3.6	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Lane Grp Cap (vph)	330	1784	1364	590	480	735	624	624	624	624	624	624
v/s Ratio Prot	0.04	0.19	0.19	0.06	0.09	0.12	0.12	0.12	0.12	0.12	0.12	0.12
v/s Ratio Perm	0.14	0.14	0.14	0.06	0.11	0.02	0.02	0.02	0.02	0.02	0.02	0.02
v/c Ratio	0.36	0.38	0.52	0.34	0.53	0.31	0.05	0.05	0.05	0.05	0.05	0.05
Uniform Delay, d1	14.3	13.3	23.0	31.6	20.4	18.5	16.5	16.5	16.5	16.5	16.5	16.5
Progression Factor	1.07	0.72	1.00	1.00	1.05	1.04	1.51	1.51	1.51	1.51	1.51	1.51
Incremental Delay, d2	3.0	0.6	1.4	1.6	3.8	21.0	0.1	0.1	0.1	0.1	0.1	0.1
Delay (s)	18.3	10.1	24.4	33.2	25.2	20.4	25.1	25.1	25.1	25.1	25.1	25.1
Level of Service	B	B	C	C	C	C	C	C	C	C	C	C
Approach Delay (s)	11.4	24.4	33.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
Approach LOS	B	C	C	C	C	C	C	C	C	C	C	C

Intersection Summary		
HCM Average Control Delay	20.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.50	
Actuated Cycle Length (s)	90.0	Sum of lost time (s) 12.0
Intersection Capacity Utilization	57.2%	ICU Level of Service B
Analysis Period (min)	15	
c - Critical Lane Group		

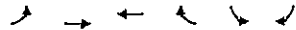
HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave



Movement	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	108	259	78	243	292	133	118	364	45	199	199	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	1.6	3.6	1.6	3.6	3.6	1.0	3.0	1.0	3.0	1.0	3.0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	0.95
Flt	1.00	0.95	1.00	1.00	0.85	1.00	0.98	1.00	0.95	1.00	0.95	0.95
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	2037	1770	1863	1794	1770	3481	1770	3373	1770	3373	3373
Flt Permitted	0.43	1.00	0.37	1.00	1.00	0.45	1.00	0.35	1.00	0.35	1.00	1.00
Satd. Flow (perm)	803	2037	690	1863	1794	832	3481	646	3373	646	3373	3373
Peak hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88
Adj. Flow (vph)	120	284	87	264	317	145	19	383	47	8	226	103
RTOR Reduction (vph)	0	12	0	0	0	90	11	0	0	0	69	0
Lane Group Flow (vph)	120	359	0	264	317	55	419	0	8	270	0	0
Turn Type	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt	pm-pt
Protected Phases	7	4	3	8	5	2	1	6				
Permitted Phases	7	4	3	8	5	2	1	6				
Actuated Green, G (s)	49.0	33.0	49.0	33.0	33.0	25.0	20.0	25.0	20.0			
Effective Green, g (s)	51.8	34.4	51.8	34.4	34.4	29.0	22.0	29.0	22.0			
Actuated g/C Ratio	0.58	0.38	0.58	0.38	0.38	0.32	0.24	0.32	0.24			
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	3.0	5.0	3.0	5.0			
Lane Grp Cap (vph)	649	779	605	712	686	341	851	296	825			
v/s Ratio Prot	0.04	0.16	0.08	0.17	0.00	0.12	0.00	0.00	0.08			
v/s Ratio Perm	0.07		0.17		0.03	0.01		0.01				
v/g Ratio	0.18	0.46	0.44	0.45	0.08	0.06	0.49	0.03	0.33			
Uniform Delay, d1	9.1	20.8	10.4	20.7	17.7	21.0	29.2	21.0	27.9			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.12	1.00	1.00	1.00			
Incremental Delay, d2	0.6	2.0	2.3	2.0	0.2	0.3	1.9	0.2	1.1			
Delay (s)	9.8	22.8	12.7	22.7	18.0	23.9	31.2	21.2	29.0			
Level of Service	A	C	B	C	B	C	C	C	C			
Approach Delay (s)	19.6		18.1		30.9		29.8					
Approach LOS	B		B		C		C					
<b>Intersection Summary</b>												
HCM Average Control Delay	23.1				HCM Level of Service				C			
HCM Volume to Capacity ratio	0.42											
Actuated Cycle Length (s)	90.0				Sum of lost time (s)				9.2			
Intersection Capacity Utilization	55.6%				ICU Level of Service				B			
Analysis Period (min)	15											
Critical Lane Group												



HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & McMichael Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			↑
Volume (veh/h)	0	392	496	37	0	5
Sign Control		Free	Free		Stop	
Grade (%)	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.77	0.77	0.87	0.87	0.70	0.70
Hourly flow rate (vph)	0	509	570	43	0	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	123	419				
pX, platoon unblocked				0.94		
vC, conflicting volume	613			1100	306	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	613			1076	306	
IC, single (s)	4.1			6.8	6.9	
IC, 2 stage (s)						
IF (s)	2.2			3.5	3.3	
p0 queue free %	100			100	99	
cM capacity (veh/h)	963			202	690	

Direction	Lane #	EB	EB	WB	WB	SB	SB
Volume Total		509	380	233	7		
Volume Left		0	0	0	0		
Volume Right		0	0	43	7		
cSH		1700	1700	1700	690		
Volume to Capacity		0.30	0.22	0.14	0.01		
Queue Length 95th (ft)		0	0	0	1		
Control Delay (s)		0.0	0.0	0.0	10.3		
Lane LOS					B		
Approach Delay (s)		0.0	0.0		10.3		
Approach LOS					B		

Intersection Summary	
Average Delay	0.1
Intersection Capacity Utilization	24.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & WIssahickon Ave



Movement	EBL	EBR	WBL	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑↑	↑↑	↑↑
Volume (veh/h)	0	20	10	637	306	0
Sign Control		Stop		Free	Free	
Grade (%)	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.87	0.87	0.88	0.88	0.83	0.83
Hourly flow rate (vph)	0	23	10	724	369	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)					1046	
pX, platoon unblocked		0.98				
vC, conflicting volume	731	184	369			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	695	184	369			
IC, single (s)	6.8	6.9	2.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	375	633	1201			

Direction	Lane #	EB	EB	WB	WB	SB	SB
Volume Total		23	362	362	184	184	
Volume Left		0	0	0	0	0	
Volume Right		23	0	0	0	0	
cSH		833	1700	1700	1700	1700	
Volume to Capacity		0.03	0.21	0.21	0.11	0.11	
Queue Length 95th (ft)		2	0	0	0	0	
Control Delay (s)		9.4	0.0	0.0	0.0	0.0	
Lane LOS		A					
Approach Delay (s)		9.4	0.0	0.0	0.0	0.0	
Approach LOS		A					

Intersection Summary	
Average Delay	0.2
Intersection Capacity Utilization	20.9%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	EBL	EBT	EWB	EWB	WBL	WBT	WBR	WBR	WBL	WBT	WBR	WBR	WBL	WBT	WBR	WBR	WBL	WBT	WBR
Lane Configurations	EBL	EBT	EWB	EWB	WBL	WBT	WBR	WBR	WBL	WBT	WBR	WBR	WBL	WBT	WBR	WBR	WBL	WBT	WBR
Volume (vph)	370	245	241	44	93	76	224	118	44	105	5	39							
Lane Group Flow (vph)	414	289	262	95	124	83	286	0	68	173	0	47							
Turn Type	Prot	Prot	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm							
Protected Phases	5	2	6			4				14		14							
Permitted Phases	12	12	6	6	7	7	14	14	14	14	10	10							
Minimum Split (s)	12.5	12.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5							
Total Split (s)	41.0	64.0	23.0	23.0	30.0	30.0	26.0	26.0	26.0	26.0	26.0	26.0							
Total Split (%)	34.2%	53.3%	19.2%	19.2%	25.0%	25.0%	21.7%	21.7%	21.7%	21.7%	21.7%	21.7%							
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5							
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0							
Lost Time Adjust (s)	0.0	2.3	2.3	2.3	0.4	0.4	1.4	1.4	1.4	1.4	0.0	0.0							
Total Lost Time (s)	6.9	4.2	4.2	4.2	6.9	5.1	5.1	5.1	5.1	5.1	6.5	6.5							
Lead/Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lead							
Lead-Lag Optimize?	Yes																		
v/c Ratio	0.48	0.38	0.56	0.40	0.39	0.23	0.54		0.34	0.55		0.35							
Control Delay	37.8	20.0	51.9	34.6	46.6	41.6	44.6		48.9	52.3		52.3							
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0							
Total Delay	37.8	20.0	51.9	34.6	46.6	41.6	44.6		48.9	52.3		52.3							
Queue Length 50th (ft)	137	132	100	142	85	54	127		73	61		84							
Queue Length 95th (ft)	186	198	145	96	145	101	157		93	198		73							
Internal Link Dist (ft)	450	658	1975		1653		1387												
Turn Bay Length (ft)	450		250	150		415	135					115							
Base Capacity (vph)	866	911	470	240	917	959	532		202	313		133							
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0		0							
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0		0							
Storage Cap Reductn	0	0	0	0	0	0	0		0	0		0							
Reduced v/c Ratio	0.48	0.36	0.56	0.40	0.39	0.23	0.54		0.34	0.55		0.35							

Splits and Phases: 10: Hunting Park Ave & Henry Ave

→ e2	↓ e4	↘ e10
64	80	26
↙ e5	← e6	↗ e14
41	23	26

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	NW	NW
Lane Configurations	NW	NW
Volume (vph)	82	105
Lane Group Flow (vph)	89	118
Turn Type	Perm	Perm
Protected Phases	10	
Permitted Phases	12	10
Minimum Split (s)	11.5	11.5
Total Split (s)	26.0	26.0
Total Split (%)	21.7%	21.7%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	3.0	3.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.1	6.5
Lead/Lag	Lead	Lag
Lead-Lag Optimize?		
v/c Ratio	0.30	0.54
Control Delay	46.5	55.7
Queue Delay	0.0	0.0
Total Delay	46.5	55.7
Queue Length 50th (ft)	61	84
Queue Length 95th (ft)	112	148
Internal Link Dist (ft)	1698	
Turn Bay Length (ft)	100	
Base Capacity (vph)	294	220
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.54

Intersection Summary

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBL	WBR	NB	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	191	163	331	239	165	273
Lane Group Flow (vph)	193	165	341	245	176	290
Turn Type	Perm	Perm	Perm	Perm	pm-pt	SBT
Protected Phases	8		2		1	6
Permitted Phases	8	8	2	2	6	6
Minimum Split (s)	33.0	33.0	10.3	10.3	8.0	10.3
Total Split (s)	35.0	35.0	43.0	43.0	12.0	55.0
Total Split (%)	38.9%	38.9%	47.8%	47.8%	13.3%	61.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	2.3	0.0	2.3	2.3	2.3	2.3
Total Lost Time (s)	2.7	5.0	2.7	2.7	0.7	2.7
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
v/c Ratio	0.28	0.26	0.21	0.29	0.26	0.14
Control Delay	22.0	4.7	15.5	3.0	9.2	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	4.7	15.5	3.0	9.2	8.4
Queue Length 50th (ft)	77	77	60	60	37	34
Queue Length 95th (ft)	130	42	88	40	60	49
Internal Link Dist (ft)	420	1653				767
Turn Bay Length (ft)		200	250	200		
Base Capacity (vph)	684	643	1654	851	667	2057
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.26	0.21	0.29	0.26	0.14
<b>Intersection Summary</b>						
Cycle Length: 90						
Actuated Cycle Length: 90						
Offset: 0 (0%) Referenced to phase 2(NB) and 6(SBT) Start of Green						
Natural Cycle: 55						
Control Type: Pre timed						

Splits and Phases: 20: Roberts Ave & Henry Ave

e1	e2	e3	e6
12	43	95	95

Lanes, Volumes, Timings  
30: Abbotsford Ave & Henry Ave

Lane Group	EB	SB	SBT
Lane Configurations			
Volume (vph)	384	190	390
Lane Group Flow (vph)	453	196	392
Turn Type	Custom	Custom	Custom
Protected Phases	2	3	6
Permitted Phases	2	3	6
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	59.0	31.0	59.0
Total Split (%)	65.6%	34.4%	65.6%
Yellow Time (s)	3.9	3.9	3.9
All-Red Time (s)	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
v/c Ratio	0.22	0.40	0.19
Control Delay	5.2	29.7	9.0
Queue Delay	0.0	0.0	0.0
Total Delay	5.2	29.7	9.0
Queue Length 50th (ft)	23	19	50
Queue Length 95th (ft)	47	154	72
Internal Link Dist (ft)	767	576	
Turn Bay Length (ft)		200	
Base Capacity (vph)	2055	1496	2072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.40	0.19
<b>Intersection Summary</b>			
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%) Referenced to phase 2(NB) and 6(SBT) Start of Green			
Natural Cycle: 40			
Control Type: Pre timed			

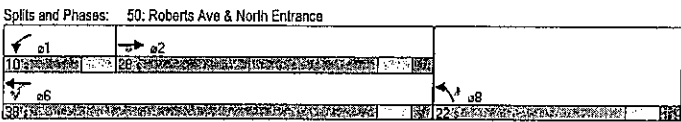
Splits and Phases: 30: Abbotsford Ave & Henry Ave

e2	e3	e6
59	31	59

Lanes, Volumes, Timings  
50: Roberts Ave & North Entrance

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	154	62	81	426	170	249
Lane Group Flow (vph)	187	67	89	463	185	271
Turn Type	Perm	Perm	pm+pl	Perm	Perm	Perm
Protected Phases	2	1	6	8		
Permitted Phases	2	2			8	
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	28.0	28.0	10.0	38.0	22.0	22.0
Total Split (%)	46.7%	46.7%	16.7%	63.3%	36.7%	36.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	3.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes			
V/C Ratio	0.23	0.10	0.13	0.45	0.37	0.42
Control Delay	13.7	4.2	3.8	5.6	19.8	4.9
Queue Delay	10.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	4.2	3.8	5.6	19.8	4.9
Queue Length 50th (ft)	40	0	0	49	53	0
Queue Length 95th (ft)	77	20	13	75	101	46
Internal Link Dist (ft)	347			43	255	
Turn Bay Length (ft)		150				
Base Capacity (vph)	714	648	684	1025	502	643
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.10	0.13	0.45	0.37	0.42

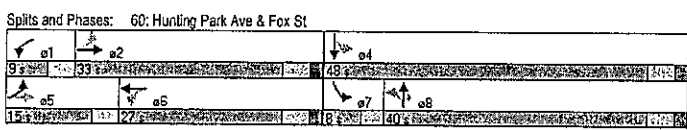
**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 29 (48%) Referenced to phase 2:EBT and 6:WBT. Start of Green  
 Natural Cycle: 65  
 Control Type: Pre-timed  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St

Lane Group	EBT	EBT	WBT	WBT	NBT	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	94	492	124	418	174	173	158	80	330
Lane Group Flow (vph)	104	482	129	566	4	405	172	109	550
Turn Type	pm+pl	pm+pl	pm+pl	Perm	Perm	Perm	pm+pl	pm+pl	pm+pl
Protected Phases	5	2	11	6			8		4
Permitted Phases	5	2			8			7	4
Minimum Split (s)	7.6	9.4	8.0	9.4	20.0	20.0	8.0	20.0	20.0
Total Split (s)	15.0	33.0	9.0	27.0	40.0	40.0	8.0	48.0	48.0
Total Split (%)	16.7%	36.7%	10.0%	30.0%	44.4%	44.4%	8.9%	53.3%	53.3%
Yellow Time (s)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
All-Red Time (s)	0.0	1.8	0.0	1.8	1.8	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Lost Time (s)	4.0	4.0	2.1	4.0	4.0	4.0	4.0	1.6	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
V/C Ratio	0.32	0.33	0.35	0.65	0.02	0.47	0.24	0.27	0.61
Control Delay	18.9	18.3	19.2	34.2	16.8	22.3	5.6	13.0	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	18.3	19.2	34.2	16.8	22.3	5.6	13.0	19.5
Queue Length 50th (ft)	35	94	64	162	10	167	10	30	207
Queue Length 95th (ft)	68	132	115	218	8	249	49	51	264
Internal Link Dist (ft)		1975		164		899		540	
Turn Bay Length (ft)		200		100		100		105	
Base Capacity (vph)	322	1441	365	667	266	855	725	410	898
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.33	0.35	0.65	0.02	0.47	0.24	0.27	0.61

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2:EBT and 6:WBT. Start of Green  
 Natural Cycle: 55  
 Control Type: Pre-timed  
 I Phase conflict between lane groups.



Lanes, Volumes, Timings  
70: East Entrance & Fox St

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↓	↑	↓	↑	↓
Volume (vph)	207	127	118	458	404	215
Lane Group Flow (vph)	225	138	128	498	439	234
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4			2	6	
Permitted Phases	4	4	2	2	6	6
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	21.0	21.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimizer?						
W/C Ratio	0.48	0.26	0.27	0.47	0.42	0.23
Control Delay	22.5	5.4	8.5	9.6	7.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	5.4	8.5	9.6	7.7	1.0
Queue Length 50th (ft)	68	0	21	94	59	0
Queue Length 95th (ft)	125	35	48	157	78	4
Internal Link Dist (ft)	304			540	1098	
Turn Bay Length (ft)		200				
Base Capacity (vph)	472	523	482	1056	1056	998
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced W/C Ratio	0.48	0.26	0.27	0.47	0.42	0.23

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 11 (18%), Referenced to phase 2: NBL and 6: SBT; Start of Green  
 Natural Cycle: 45  
 Control Type: Pre-timed

Splits and Phases: 70: East Entrance & Fox St

↑ e2	↓ e4
↓ e6	

Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↓	↑	↓	↑	↑	↓	↑	↓
Volume (vph)	192	159	222	393	70	166	414	335	452
Lane Group Flow (vph)	202	229	258	457	81	0	674	0	452
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	7	4	3	8		5	2		6
Permitted Phases	7	4	3	8	8	2	6	6	6
Detector Phase		4	3		8		6		
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	9.0	8.0	9.0	9.0	8.0	10.0	10.0	10.0
Total Split (s)	9.0	26.0	9.0	26.0	26.0	8.0	25.0	17.0	17.0
Total Split (%)	15.0%	43.3%	15.0%	43.3%	43.3%	13.3%	41.7%	28.3%	28.3%
Yellow Time (s)	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	3.0	0.0	3.0	0.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	2.0	4.0	5.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimizer?									
Recall Mode	None	Max	None	Max	Max	None	C-Max	C-Max	C-Max
W/C Ratio	0.47	0.34	0.40	0.62	0.13	0.58	0.37	0.37	0.37
Control Delay	14.9	20.0	8.4	17.3	5.4	13.8	18.0	18.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	20.0	8.4	17.3	5.4	13.8	18.0	18.0	18.0
Queue Length 50th (ft)	46	62	37	69	1	40	52	52	52
Queue Length 95th (ft)	78	125	m73	201	m10	128	78	78	78
Internal Link Dist (ft)			339	455		1098	332		
Turn Bay Length (ft)			200		100				
Base Capacity (vph)	428	577	646	743	618	1172	1216	1216	1216
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced W/C Ratio	0.47	0.34	0.40	0.62	0.13	0.58	0.37	0.37	0.37

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 53 (88%), Referenced to phase 2: NBL and 6: SBT; Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 80: Roberts Ave & Fox St

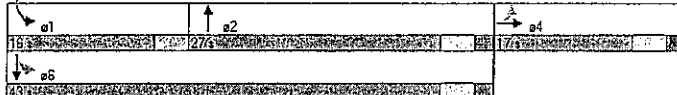
↑ e2	↓ e3	↓ e4
↓ e5	↓ e6	↓ e7
	↓ e8	

Lanes, Volumes, Timings  
90: Abbottsford Ave & Fox St

Lane Group	EBT	NBT	SBL	SBL
Lane Configurations	↑↑	↑↑	↓	↓
Volume (vph)	264	427	277	410
Lane Group Flow (vph)	384	794	0	731
Turn Type	Perm	Perm	Thru	Thru
Protected Phases	4	2	1	6
Permitted Phases				
Minimum Split (s)	9.4	9.4	7.5	9.4
Total Split (s)	17.0	27.0	16.0	43.0
Total Split (%)	28.3%	45.0%	26.7%	71.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	1.4	1.4	0.4	1.4
Total Lost Time (s)	3.4	3.4	3.4	3.4
Lead/Lag (s)		Lag	Lead	
Lead-Lag Optimize?				
v/c Ratio	0.46	0.62	0.46	0.46
Control Delay	21.8	15.7	3.5	3.5
Queue Delay	0.0	0.1	0.9	0.9
Total Delay	21.8	15.8	4.4	4.4
Queue Length 50th (ft)	92	91	57	57
Queue Length 95th (ft)	94	151	m51	m51
Internal Link Dist (ft)	1415	932		119
Turn Bay Length (ft)				
Base Capacity (vph)	638	1280	1588	1588
Starvation Cap Reductn	0	0	547	547
Spillback Cap Reductn	0	43	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.64	0.70	0.70

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 52 (87%), Referenced to phase 2:NBT and 6:SBL, Start of Green  
 Natural Cycle: 40  
 Control Type: Pretimed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 90: Abbottsford Ave & Fox St

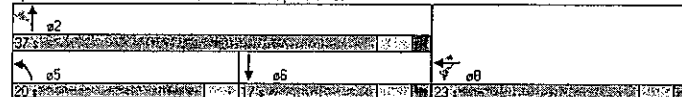


Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St

Lane Group	WBL	WBT	WBR	NBL	NBT	SBL
Lane Configurations	↑	↑	↑	↓	↓	↓
Volume (vph)	411	215	270	390	132	269
Lane Group Flow (vph)	428	224	281	347	139	405
Turn Type	Perm	Perm	Perm	Thru	Thru	Thru
Protected Phases		8		5	2	6
Permitted Phases						
Minimum Split (s)	8.8	8.8	8.8	8.8	8.8	8.8
Total Split (s)	23.0	23.0	23.0	20.0	37.0	17.0
Total Split (%)	38.3%	38.3%	38.3%	33.3%	61.7%	28.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	1.8	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	0.8	0.0	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.8	4.0	4.0	4.0
Lead/Lag (s)				Lead	Lag	
Lead-Lag Optimize?				Yes		
v/c Ratio	0.76	0.38	0.41	0.57	0.14	0.57
Control Delay	29.4	18.1	4.7	6.3	1.9	24.7
Queue Delay	0.0	0.0	0.0	1.4	0.8	0.0
Total Delay	29.4	18.1	4.7	7.7	2.8	24.7
Queue Length 50th (ft)	198	58	59	19	13	59
Queue Length 95th (ft)	#274	101	49	33	m4	108
Internal Link Dist (ft)		932			119	792
Turn Bay Length (ft)			300			
Base Capacity (vph)	566	596	681	609	99	709
Starvation Cap Reductn	0	0	0	117	631	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.38	0.41	0.71	0.39	0.57

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 23 (38%), Referenced to phase 2:NBT and 6:SBL, Start of Green  
 Natural Cycle: 40  
 Control Type: Pretimed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 100: SB Route 1 On Ramp & Fox St



Lanes, Volumes, Timings  
110: Roberts Ave & Stokley St

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑
Volume (vph)	333	511	82	318	
Lane Group Flow (vph)	406	532	137	530	
Turn Type	Perm	Perm	Perm	Perm	
Protected Phases	2	6	4		
Permitted Phases					
Detector Phase	2	6	4	4	
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.5	21.5	21.5	21.5	
Total Split (s)	30.0	30.0	30.0	30.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	
v/c Ratio	0.61	0.80	0.16	0.61	
Control Delay	18.7	26.9	11.0	11.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	18.7	26.9	11.0	11.5	
Queue Length 50th (ft)	134	164	27	76	
Queue Length 95th (ft)	130	250	38	72	
Internal Link Dist (ft)	455	1436	792		
Turn Bay Length (ft)					
Base Capacity (vph)	777	777	845	863	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.52	0.68	0.15	0.61	
<b>Intersection Summary</b>					
Cycle Length: 60					
Actuated Cycle Length: 60					
Offset: 49 (82%); Referenced to phase 4: SBL and 8: Start of Green					
Natural Cycle: 60					
Control Type: Actuated - Coordinated					

Splits and Phases: 110: Roberts Ave & Stokley St

Phase	Duration (s)	Offset (s)
e2	30	30
e4	30	30
e5	30	30

Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	96	537	554	22	134	240	218	70
Lane Group Flow (vph)	120	671	746	0	197	253	229	74
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6			8	7	4
Permitted Phases								
Minimum Split (s)	7.6	9.4	9.4	9.4	9.4	7.6	9.4	9.4
Total Split (s)	14.0	16.0	16.0	21.0	21.0	19.0	40.0	40.0
Total Split (%)	15.6%	55.6%	40.0%	23.3%	23.3%	21.1%	44.4%	44.4%
Yellow Time (s)	3.6	1.8	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?								
v/c Ratio	0.36	0.36	0.54	0.34	0.51	0.31	0.31	0.11
Control Delay	15.4	10.2	23.2	33.6	23.8	20.8	7.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	10.2	23.2	33.6	23.8	20.8	7.1	
Queue Length 50th (ft)	225	75	63	51	100	89	5	
Queue Length 95th (ft)	48	91	219	80	152	137	28	
Internal Link Dist (ft)	1584	1151	1484	2048				
Turn Bay Length (ft)	85						275	
Base Capacity (vph)	1336	1784	1389	581	597	735	669	
Starvation Cap Reductn	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.36	0.39	0.54	0.34	0.51	0.31	0.11	
<b>Intersection Summary</b>								
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 0 (0%); Referenced to phase 2: EBL; Start of Green								
Natural Cycle: 40								
Control Type: Pretime								

Splits and Phases: 160: Hunting Park Ave & Wissahickon Ave

Phase	Duration (s)	Offset (s)
e2	40	40
e4	40	40
e5	36	36
e6	15	15
e7	15	15
e8	21	21

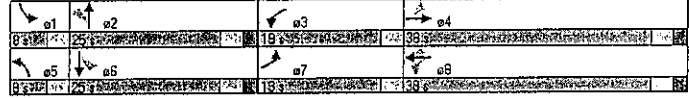
Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave



Lane Group	EB	WB	NB	SB	EB	WB	NB	SB
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	108	256	243	292	133	18	364	199
Lane Group Flow (vph)	120	371	264	317	145	19	430	8
Turn Type	pm+pl	pm+pl	pm+pl	pm+pl	pm+pl	pm+pl	pm+pl	pm+pl
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	7	4	3	8	5	2	1	6
Minimum Split (s)	8.0	9.4	8.0	9.4	9.4	8.0	10.0	8.0
Total Split (s)	19.0	38.0	19.0	38.0	38.0	8.0	25.0	8.0
Total Split (%)	21.1%	42.2%	21.1%	42.2%	42.2%	8.9%	27.8%	8.9%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
Lost Time Adjust (s)	4.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	1.6	3.6	1.6	3.6	3.6	1.0	3.0	1.0
Lead/Lag	Lead	Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.18	0.47	0.43	0.45	0.19	0.05	0.50	0.37
Control Delay	7.9	22.1	10.1	23.2	4.0	21.8	30.6	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	22.1	10.1	23.2	4.0	21.8	30.6	19.1
Queue Length 50th (ft)	26	147	62	132	7	0	87	3
Queue Length 95th (ft)	48	227	99	206	36	m19	120	12
Internal Link Dist (ft)	1436	1436	740	740	2048	0	968	0
Turn Bay Length (ft)	100	300	100	100	100	65	310	683
Base Capacity (vph)	607	79	62	712	77	350	662	310
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.42	0.43	0.45	0.19	0.05	0.50	0.37

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 22 (24%) Referenced to phase 2, NBT, and 6, SBT, Start of Green  
 Natural Cycle: 50  
 Control Type: Prelimed  
 m - Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 170: Roberts Ave & Wissahickon Ave







**2019 NO BUILD: SAT PEAK**



HCM Signalized Intersection Capacity Analysis  
 10: Hunting Park Ave & Henry Ave



Movement	NW	W	SW	NR	W	SR
Lane Configurations	P					
Volume (vph)	86	63	74	0	0	0
Ideal Flow (vphpl)	1900	1900	1900			
Lane Width	13	12	12			
Total Lost time (s)	5.1					
Lane Util. Factor	1.00					
Frt	0.93					
Flt Protected	1.00					
Satd. Flow (prot)	1699					
Flt Permitted	1.00					
Satd. Flow (perm)	1699					
Peak-hour factor, PHF	0.87	0.87	0.87			
Adj. Flow (vph)	99	72	5			
RTOR Reduction (vph)	0	0	0			
Lane Group Flow (vph)	175	0	0			
Heavy Vehicles (%)	8%	6%	0%			
Turn Type						
Protected Phases	13					
Permitted Phases						
Actuated Green, G (s)	25.5					
Effective Green, g (s)	26.9					
Actuated g/C Ratio	0.22					
Clearance Time (s)	6.5					
Lane Grp Cap (vph)	1381					
v/s Ratio Prot	0.10					
v/s Ratio Perm						
v/c Ratio	0.46					
Uniform Delay, d1	40.3					
Progression Factor	1.00					
Incremental Delay, d2	4.0					
Delay (s)	44.2					
Level of Service	D					
Approach Delay (s)	43.6					
Approach LOS	D					
Intersection Summary						



HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	NWB	NWR	NWR2
Lane Configurations	1		
Volume (vph)	86	63	4
Ideal Flow (vphpl)	1900	1900	1900
Lane Width (ft)	13	12	12
Total Lost time (s)	5.1		
Lane Util. Factor	1.00		
Frt	0.93		
Flt Protected	1.00		
Satd. Flow (prot)	1699		
Flt Permitted	1.00		
Satd. Flow (perm)	1699		
Peak-hour factor, PHF	0.87	0.87	0.87
Adj. Flow (vph)	99	72	5
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	175	0	0
Heavy Vehicles (%)	8%	6%	6%
Turn Type			
Protected Phases			
Permitted Phases			
Actuated Green, G (s)	25.5		
Effective Green, g (s)	28.9		
Actuated g/C Ratio	0.22		
Clearance Time (s)	6.5		
Lane Grp Cap (vph)	1381		
v/s Ratio Prot	c0.10		
v/s Ratio Perm			
vc Ratio	0.46		
Uniform Delay, d1 (s)	40.9		
Progression Factor	1.00		
Incremental Delay, d2 (s)	4.0		
Delay (s)	44.2		
Level of Service	D		
Approach Delay (s)	43.6		
Approach LOS	D		
Intersection Summary			

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave



Movement	WBR	WBR2	NBT	NBR	SBL	SBT
Lane Configurations	1		1	1	1	1
Volume (vph)	141	52	347	131	30	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	12	13	12	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		0.95	0.70	1.00	0.95
Frt	0.86		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1865		3693	1599	1770	3539
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1865		3693	1599	941	3539
Peak-hour factor, PHF	0.88	0.88	0.88	0.86	0.92	0.92
Adj. Flow (vph)	160	59	403	152	33	311
RTOR Reduction (vph)	15	0	93	63	0	0
Lane Group Flow (vph)	204	0	403	89	33	311
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type			Perm	Perm		
Protected Phases	8				16	
Permitted Phases			2	6		
Actuated Green, G (s)	27.0		50.4	50.4	50.4	
Effective Green, g (s)	29.3		52.7	52.7	52.7	
Actuated g/C Ratio	0.33		0.59	0.59	0.59	
Clearance Time (s)	8.3		6.3	6.3	6.3	
Lane Grp Cap (vph)	1621		1936	1551	1072	
v/s Ratio Prot	c0.11		c0.11		0.09	
v/s Ratio Perm			0.06	0.04		
vc Ratio	0.34		0.19	0.10	0.06	0.15
Uniform Delay, d1 (s)	23.0		8.7	6.2	8.0	6.5
Progression Factor	1.00		1.00	1.00	0.59	0.58
Incremental Delay, d2 (s)	1.5		0.2	0.2	0.2	0.2
Delay (s)	24.5		8.9	8.4	4.9	5.1
Level of Service	C		A	A	A	A
Approach Delay (s)	24.5		8.7		5.1	
Approach LOS	C		A		A	
Intersection Summary						
HCM Average Control Delay	10.7					HCM Level of Service
HCM Volume to Capacity ratio			0.24			
Actuated Cycle Length (s)	90.0					Sum of lost time (s)
Intersection Capacity Utilization	43.3%					ICU Level of Service
Analysis Period (min)						A
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NB	NBR	SB	SBR
Lane Configurations		↑↑			↑↑	
Volume (vph)	0	0	283	35	200	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.3		6.3	
Lane Util. Factor		0.95	1.00		0.95	
Frt Protected		1.00			0.95	1.00
Satd. Flow (prot)		3481			1770	3539
Flt Permitted		1.00			0.95	1.00
Satd. Flow (perm)		3481			1770	3539
Peak-hour factor, PHF	0.92	0.92	0.85	0.85	0.95	0.95
Adj. Flow (vph)	0	0	333	41	211	269
RTOR Reduction (vph)	0	0	11	0	0	0
Lane Group Flow (vph)	0	0	363	0	211	269
Turn Type			custom			
Protected Phases			3		16	
Permitted Phases						
Actuated Green, G (s)			44.7		32.7	44.7
Effective Green, g (s)			44.7		32.7	44.7
Actuated g/C Ratio			0.50		0.36	0.50
Clearance Time (s)			6.3		6.3	6.3
Lane Grp Cap (vph)			1729		1643	1758
w/s Ratio Prot			c0.10		c0.12	0.08
w/s Ratio Perm						
w/c Ratio			0.21		0.33	0.15
Uniform Delay, d1 (s)			12.7		20.7	12.3
Progression Factor			1.06		1.00	1.00
Incremental Delay, d2 (s)			0.3		1.4	0.2
Delay (s)			13.6		22.1	12.5
Level of Service			B		C	B
Approach Delay (s)			13.8		16.7	
Approach LOS			B		B	
Intersection Summary						
HCM Average Control Delay			15.4		20.4	15.4
HCM Volume to Capacity ratio			0.25		0.11	0.14
Actuated Cycle Length (s)			90.0		90.0	90.0
Intersection Capacity Utilization			30.5%		10.9%	12.6%
Analysis Period (min)			15		15	15
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EB	EBL	EBR	WB	WBL	WBR	NB	NBL	NBR	SB	SBL	SBR
Lane Configurations		↑↑			↑↑			↑↑		↑↑		
Volume (vph)	0	0	0	0	0	0	166	3	13	306	63	63
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
Lane Util. Factor		0.95			0.95		1.00		1.00	0.95		1.00
Frt Protected		1.00			1.00		1.00		1.00	0.85		1.00
Satd. Flow (prot)		1711			1711		1881		1881	1599		1881
Flt Permitted		0.95			0.95		1.00		1.00	0.95		1.00
Satd. Flow (perm)		1604			1604		1881		1881	1599		1881
Peak-hour factor, PHF	0.88	0.88	0.88	0.84	0.84	0.84	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	85	515	2	155	523	45	4	373	180	15	348	72
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	85	517	0	155	561	0	4	373	83	15	412	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	1%	1%	1%	1%
Turn Type		pm+pt			Perm		Perm		Perm		Perm	
Protected Phases		5			6		8		8		4	
Permitted Phases		2			5		6		8		4	
Actuated Green, G (s)		48.6			48.6		30.6		30.6		30.6	
Effective Green, g (s)		48.2			48.2		32.0		32.0		32.0	
Actuated g/C Ratio		0.54			0.56		0.36		0.36		0.36	
Clearance Time (s)		3.6			5.4		5.4		5.4		5.4	
Lane Grp Cap (vph)		396			1699		1492		1492		1569	
w/s Ratio Prot		0.01			c0.15		0.17		0.20		c0.22	
w/s Ratio Perm		0.10			0.19		0.01		0.05		0.02	
w/c Ratio		0.21			0.27		0.42		0.56		0.06	
Uniform Delay, d1 (s)		10.8			10.5		17.1		18.8		23.3	
Progression Factor		1.00			1.00		1.15		1.00		1.00	
Incremental Delay, d2 (s)		1.2			0.4		0.74		0.2		0.3	
Delay (s)		12.1			10.8		23.0		19.0		26.6	
Level of Service		B			C		B		B		C	
Approach Delay (s)					11.0		20.3		24.5		28.4	
Approach LOS					B		C		C		C	
Intersection Summary												
HCM Average Control Delay					20.4		20.4		20.4		20.4	
HCM Volume to Capacity ratio					0.50		0.11		0.11		0.14	
Actuated Cycle Length (s)					90.0		90.0		90.0		90.0	
Intersection Capacity Utilization					49.7%		10.9%		10.9%		12.6%	
Analysis Period (min)					15		15		15		15	
c Critical Lane Group												



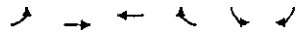




HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave

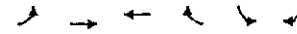
Movement	EBL	EBT	EBRT	WBL	WBT	WBRT	NBL	NBT	NBR	SBL	SBR
Lane Configurations											
Volume (vph)	209	24	24	77	259	139	119	362	47	33	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Flt. Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1834	1770	1863	1863	1583	1770	1682	1770	1682	1834
Flt. Permitted	0.50	1.00	0.56	1.00	1.00	0.39	1.00	0.47	1.00	0.47	1.00
Satd. Flow (perm)	929	834	1052	1863	1863	583	726	348	875	3413	834
Peak-hour factor, PHF	0.95	0.95	0.95	0.88	0.88	0.88	0.92	0.92	0.92	0.98	0.98
Adj. Flow (vph)	179	215	179	168	224	158	217	415	51	34	453
RTOR Reduction (vph)	0	7	0	0	0	97	0	16	0	0	50
Lane Group Flow (vph)	78	233	20	68	294	61	212	450	0	34	545
Turn Type	Perm		Perm		Perm	Perm		Perm		Perm	
Protected Phases											
Permitted Phases	4		8		8	2		6		6	
Actuated Green, G (s)	21.6	21.0	21.6	21.6	21.6	27.0	27.0	27.0	27.0	27.0	27.0
Effective Green, g (s)	23.0	23.0	23.0	23.0	23.0	29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.48	0.48	0.48	0.48	0.48	0.48
Clearance Time (s)	5.4	5.4	5.4	5.4	5.4	6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	356	703	403	714	607	351	1682	423	1650		
v/s Ratio Prot		0.13		c0.16			0.13		c0.16		
v/s Ratio Perm	0.08		0.08		0.04	0.03		0.04		0.04	
v/c Ratio	0.22	0.33	0.22	0.41	0.10	0.06	0.27	0.08	0.33		
Uniform Delay (s)	12.5	13.1	12.5	13.5	11.9	8.2	19.2	6.3	19.5		
Progression Factor	1.23	1.25	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay (s)	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5		
Delay (s)	16.6	17.5	13.7	15.3	12.2	8.6	9.6	6.7	10.1		
Level of Service	B	B	B	B	B	A	A	B	B		
Approach Delay (s)		17.3			14.1			9.5		10.0	
Approach LOS		B			B			A		B	
<b>Intersection Summary</b>											
HCM Average Control Delay (s)	2.2										
HCM Volume to Capacity ratio	0.37										
Actuated Cycle Length (s)	60.0										
Intersection Capacity Utilization	51.1%										
ICU Level of Service	A										
Analysis Period (min)	15										
c Critical Lane Group											

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & McMichael Street



Movement	EB	WB	WB	WB	SB	SB
Lane Configurations						
Volume (veh/h)	149	182	39	20	0	0
Sign Control	Free	Free		Stop		
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.84	0.84	0.91	0.91	0.82	0.82
Hourly flow rate (vph)	177	200	43	24	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	1050	419				
pX, platoon unblocked	1.00			1.00	1.00	
vC, conflicting volume	243			413	221	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	243			413	221	
IC, single (s)	4.1			6.4	6.2	
IC, 2 stage (s)						
IF (s)	2.2			3.5	3.3	
p0 queue free %	99			96	99	
cM capacity (veh/h)	1324			818	592	
Direction Lane #						
Volume Total	189	243	32	157	0	0
Volume Left	7	0	24			
Volume Right	0	0	43	157	0	0
cSH	1324	1700	633			
Volume to Capacity	0.01	0.14	0.05			
Queue Length 95th (ft)	0	0	4			
Control Delay (s)	0.3	0.0	11.0			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		22.7%				
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EB	WB	WB	WB	SB	SB
Lane Configurations						
Volume (veh/h)	269	365	15	2	4	4
Sign Control	Free	Free		Stop		
Grade	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.91	0.91	0.90	0.90	0.80	0.80
Hourly flow rate (vph)	296	406	17	2	5	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	535					
pX, platoon unblocked						
vC, conflicting volume	422			716	414	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	422			716	414	
IC, single (s)	4.1			6.4	6.2	
IC, 2 stage (s)						
IF (s)	2.2			3.5	3.3	
p0 queue free %	100			99	99	
cM capacity (veh/h)	1137			396	638	
Direction Lane #						
Volume Total	299	422	8	17	5	5
Volume Left	3	0	2			
Volume Right	0	0	17	15	5	5
cSH	1137	1700	530			
Volume to Capacity	0.00	0.25	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	0.1	0.0	11.9			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	11.9			
Approach LOS			B			
Intersection Summary						
Average Delay		0.2				
Intersection Capacity Utilization		30.1%				
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
120: Abbottsford Ave & Stokley St

Movement	EBL	EBR	WBL	WBR	NBL	NBR
Lane Configurations	1		0		1	
Volume (veh/h)	636	0	0	0	0	15
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.88	0.88	0.92	0.92	0.83	0.83
Hourly flow rate (vph)	723	0	0	0	0	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	542					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			727		725	725
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			570		567	567
IC, single (s)			4.1		6.4	6.2
IC, 2 stage (s)						
IC (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
CM capacity (veh/h)			833		403	434
Direction/Lane #						
Volume Total	1727	0	18	0	0	18
Volume Left	0	0				
Volume Right	1727	0	18	0	0	18
cSH	1700	434				
Volume to Capacity	0.43	0.04				
Queue Length 95th (ft)	0	3				
Control Delay (s)	0.0	3.6				
Lane LOS	B					
Approach Delay (s)	0.0	3.6				
Approach LOS	B					
Intersection Summary						
Average Delay	0.3					
Intersection Capacity Utilization	43.7%					
Analysis Period (min)	15					
	ICU Level of Service: A					

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave

Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	0		1		1	
Volume (veh/h)	0	374	0	0	628	274
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	0	402	0	0	668	290
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)			1046			
pX, platoon unblocked						
vC, conflicting volume			632		149	298
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			632		149	298
IC, single (s)			6.8		6.9	4.1
IC, 2 stage (s)						
IC (s)			4.5		3.3	2.2
p0 queue free %			100		54	100
CM capacity (veh/h)			1417		877	1275
Direction/Lane #						
Volume Total	0	402	334	334	149	274
Volume Left	0	0	0	0	0	0
Volume Right	0	402	334	334	149	274
cSH		877	1700	1700	1700	1700
Volume to Capacity		0.46	0.20	0.20	0.09	0.09
Queue Length 95th (ft)		61	0	0	0	0
Control Delay (s)		12.5	0.0	0.0	0.0	0.0
Lane LOS		B				
Approach Delay (s)		12.5	0.0	0.0	0.0	0.0
Approach LOS		B				
Intersection Summary						
Average Delay	3.7					
Intersection Capacity Utilization	37.4%					
Analysis Period (min)	15					
	ICU Level of Service: A					

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	EBL2	EBL1	EBT	WBL2	WBL1	WBT	NBL2	NBL1	NBT	SBL2	SBL1	SBT	SBR	
Lane Configurations	A		A		A		A		A		A		A	
Volume (vph)	250	290	233	213	46	166	22	77	80	195				
Lane Group Flow (vph)	0	179	406	237	101	0	0	120	0	112	90	265		
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	
Protected Phases	5	5	2	6			8	7	7	4				
Permitted Phases	9		13		13		13		13		13		13	
Minimum Split (s)	7.6	7.8	11.5	11.5	11.5	10.5	10.5	10.5	9.4	9.4	10.5	10.5		
Total Split (s)	29.0	28.0	53.0	25.0	25.0	20.0	20.0	20.0	15.0	15.0	35.0	35.0		
Total Split (%)	23.3%	23.3%	44.2%	20.8%	20.8%	16.7%	16.7%	16.7%	12.5%	12.5%	29.2%	29.2%		
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		
All-Red Time (s)	0.0	0.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0		
Last Time Adjust (s)	0.4	0.4	2.3	2.3	2.3	0.0	0.0	0.0	0.4	0.4	1.4	1.4		
Total Lost Time (s)	3.9	3.9	5.2	5.2	5.2	6.5	6.5	6.5	5.1	5.1	9.9	9.9		
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead		
Lead-Lag Optimize?														
w/c Ratio	0.38	0.31	0.43	0.37			0.54	0.38	0.19	0.37				
Control Delay	26.4	25.7	47.8	33.5			58.5	39.3	36.8	36.5				
Queue Delay	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0				
Total Delay	26.4	25.7	47.8	33.5			58.5	39.3	36.8	36.5				
Queue Length 50th (ft)	100	117	87	45			69	55	55	90				
Queue Length 95th (ft)	161	159	129	100			127	118	99	132				
Internal Link Dist (ft)		658	1875				407		1653					
Turn Bay Length (ft)	450		250				150		105	415				
Base Capacity (vph)	468	1296	650	275			221	292	380	708				
Starvation Cap Reductn	0	0	0	0			0	0	0	0				
Spillback Cap Reductn	0	0	0	0			0	0	0	0				
Storage Cap Reductn	0	0	0	0			0	0	0	0				
Reduced w/c Ratio	0.38	0.31	0.43	0.37			0.54	0.38	0.19	0.37				

Splits and Phases: 10: Hunting Park Ave & Henry Ave

e2	e4	e5
e5	e7	e13
e5	e6	e8

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	SE1	SE2	SE3	NW1	NW2	NW3
Lane Configurations	A		A		A	
Volume (vph)	19	46	110	40	88	88
Lane Group Flow (vph)	0	74	188	0	53	176
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases			9			13
Permitted Phases	9		13		13	
Minimum Split (s)	10.5	10.5	10.5	10.5	10.5	10.5
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Last Time Adjust (s)	1.4	1.4	1.4	1.4	1.4	1.4
Total Lost Time (s)	5.1	5.1	5.1	6.5	5.1	5.1
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?						
w/c Ratio	0.34	0.48	0.26	0.26	0.46	0.46
Control Delay	44.4	44.2	42.7	44.7		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	44.4	44.2	42.7	44.7		
Queue Length 50th (ft)	49	125	34	118		
Queue Length 95th (ft)	94	195	71	183		
Internal Link Dist (ft)		1387		1698		
Turn Bay Length (ft)	105		105			
Base Capacity (vph)	217	468	200	387		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced w/c Ratio	0.34	0.48	0.27	0.46		

Intersection Summary

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	191	347	191	230	299
Lane Group Flow (vph)	219	403	152	33	311
Turn Type	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	2			6
Permitted Phases	3	3	3	3	3
Minimum Split (s)	33.3	10.3	10.3	10.3	10.3
Total Split (s)	133.3	66.7	66.7	66.7	66.7
Total Split (%)	37.0%	63.0%	63.0%	63.0%	63.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7
Lost Time/Adjust (s)	2.3	2.3	2.3	2.3	2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
v/c Ratio	0.35	0.19	0.15	0.06	0.15
Control Delay	22.6	8.9	1.8	5.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	8.9	1.8	5.1	5.1
Queue Length 50th (ft)	84	51	20	4	18
Queue Length 95th (ft)	140	70	21	9	26
Internal Link Dist (ft)	970	653	250	130	767
Turn Bay Length (ft)			250	130	
Base Capacity (vph)	523	2162	999	551	2072
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.19	0.15	0.06	0.15

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%): Referenced to phase 2: NBT and 6: SBT. Start of Green  
 Natural Cycle: 45  
 Control Type: Pre-timed

Splits and Phases: 20: Roberts Ave & Henry Ave

↑ a2	
567	333
↓ a5	
567	333

Lanes, Volumes, Timings  
30: Abbottsford Ave & Henry Ave

Lane Group	NBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑
Volume (vph)	283	200	266
Lane Group Flow (vph)	374	211	269
Turn Type	custom		
Protected Phases	2	3	6
Permitted Phases	3	3	3
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	51.0	39.0	51.0
Total Split (%)	56.7%	43.3%	56.7%
Yellow Time (s)	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7
Lost Time/Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
v/c Ratio	0.21	0.33	0.15
Control Delay	13.1	22.5	12.6
Queue Delay	0.0	0.0	0.0
Total Delay	13.1	22.5	12.6
Queue Length 50th (ft)	61	85	42
Queue Length 95th (ft)	70	143	64
Internal Link Dist (ft)	767	576	576
Turn Bay Length (ft)		200	
Base Capacity (vph)	1740	643	1758
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.33	0.15

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%): Referenced to phase 2: NBT and 6: SBT. Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed

Splits and Phases: 30: Abbottsford Ave & Henry Ave

↑ a2	
514	390
↓ a6	
514	390

Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	←	↑	←	↑	←	↑	←	↑	↓
Volume (vph)	75	433	130	439	4	343	166	13	306
Lane Group Flow (vph)	85	517	155	568	4	373	180	15	420
Turn Type	Prm	Prm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	6	8	8	8	4	4
Permitted Phases	5	5	6	6	8	8	8	4	4
Minimum Split (s)	7.5	9.4	9.4	9.4	20.0	20.0	20.0	20.0	20.0
Total Split (s)	27.0	27.0	27.0	27.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	11.0%	60.0%	49.0%	49.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
W/Ratio	0.21	0.27	0.42	0.38	0.02	0.56	0.27	0.06	0.64
Control Delay	10.7	10.9	24.1	19.3	19.2	27.2	6.5	20.2	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	10.9	24.1	19.3	19.2	27.2	6.5	20.2	28.6
Queue Length 50th (ft)	21	75	80	47	168	11	16	190	190
Queue Length 95th (ft)	41	102	131	181	9	257	55	19	282
Internal Link Dist (ft)	1975	1975	584	584	899	899	1718	1718	1718
Turn Bay Length (ft)	100	100	100	100	100	100	105	105	105
Base Capacity (vph)	409	1899	366	1498	199	669	665	235	660
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced W/Ratio	0.21	0.27	0.42	0.38	0.02	0.56	0.27	0.06	0.64

Spills and Phases: 60: Hunting Park Ave & Fox St

← p2	→ p4
54	53
← p5	→ p6
53	54

Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑	←	↑	←	↑	←	↓
Volume (vph)	21	190	149	163	28	257	6	209
Lane Group Flow (vph)	26	184	160	237	0	489	0	293
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	4	8	8	2	2	6	6
Permitted Phases	4	4	8	8	2	2	6	6
Minimum Split (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
W/Ratio	0.06	0.26	0.35	0.31	0.50	0.30	0.30	0.30
Control Delay	12.4	13.0	11.2	8.3	11.5	12.0	12.0	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	13.0	11.2	8.3	11.5	12.0	12.0	12.0
Queue Length 50th (ft)	6	41	25	29	197	50	50	50
Queue Length 95th (ft)	17	69	49	56	157	85	85	85
Internal Link Dist (ft)	1339	1339	455	455	1718	1718	1718	1718
Turn Bay Length (ft)	105	105	105	105	105	105	105	105
Base Capacity (vph)	405	709	463	768	972	993	993	993
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced W/Ratio	0.06	0.26	0.35	0.31	0.50	0.30	0.30	0.30

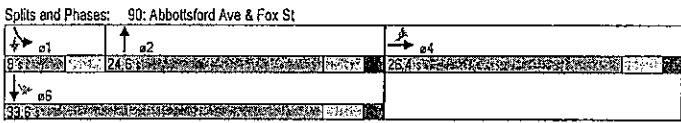
Spills and Phases: 80: Roberts Ave & Fox St

← p2	→ p4
33	27
← p5	→ p6
33	27

Lanes, Volumes, Timings  
90: Abbotsford Ave & Fox St

Lane Group	EB	NBT	SBL	SB
Lane Configurations	←↑	↑↑	↓	↑
Volume (vph)	277	261	291	240
Lane Group Flow (vph)	392	420	316	251
Turn Type			pm-p	
Protected Phases	4	2	1	6
Permitted Phases				
Minimum Split (s)	9.4	9.4	7.6	9.4
Total Split (s)	26.4	24.6	19.0	33.6
Total Split (%)	44.0%	41.0%	15.0%	56.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	1.4	1.4	0.2	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lag	Lag	
Lead-Lag Optimize?				
v/c Ratio	0.29	0.37	0.73	0.29
Control Delay	13.6	23.9	22.4	8.7
Queue Delay	0.0	0.0	3.3	1.1
Total Delay	13.6	23.9	25.7	9.8
Queue Length 50th (ft)	49	77	54	44
Queue Length 95th (ft)	77	110	115	78
Internal Link Dist (ft)	146	932		119
Turn Bay Length (ft)				
Base Capacity (vph)	1378	1132	1434	1906
Starvation Cap Reductn	0	0	55	426
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.37	0.83	0.55

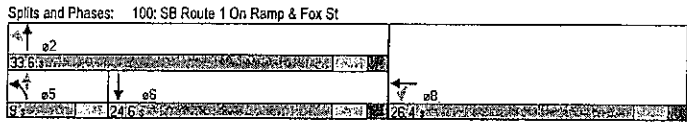
**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%); Referenced to phase 2 NBT and 6 SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Prelimed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 \* Queue shown is maximum after two cycles



Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St

Lane Group	WB	NBL	NBT	SB
Lane Configurations	←↑	↑	↑	↑
Volume (vph)	228	149	138	282
Lane Group Flow (vph)	766	201	186	426
Turn Type				
Protected Phases	8	5	2	6
Permitted Phases				
Minimum Split (s)	8.8	7.0	8.8	8.8
Total Split (s)	26.4	9.0	33.6	24.6
Total Split (%)	44.0%	15.0%	56.0%	41.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
v/c Ratio	0.51	0.48	0.21	0.38
Control Delay	11.0	13.2	4.4	16.1
Queue Delay	0.1	0.6	0.6	0.0
Total Delay	11.1	13.8	5.0	16.1
Queue Length 50th (ft)	70	17	16	60
Queue Length 95th (ft)	114	38	22	93
Internal Link Dist (ft)	377		119	792
Turn Bay Length (ft)				
Base Capacity (vph)	1514	423	880	1123
Starvation Cap Reductn	0	55	411	0
Spillback Cap Reductn	118	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.55	0.39	0.38

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%); Referenced to phase 2 NBT and 6 SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Prelimed



Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	106	509	683	0	201	276	252	80	
Lane Group Flow (vph)	106	509	683	0	201	276	252	80	
Turn Type	Perm	Perm	Perm		Perm	Perm	Perm	Perm	
Protected Phases	5	2	6		8	7	4		
Permitted Phases	EB	EB	WB	WB	NB	NB	SB	SB	
Minimum Split (s)	7.6	9.4	9.4	9.4	9.4	7.5	9.4	9.4	
Total Split (s)	10.8	21.0	21.0	21.0	21.6	17.4	19.0	19.0	
Total Spilt (%)	12.0%	55.7%	44.7%	24.0%	24.0%	19.3%	43.3%	43.3%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8	1.8	
Lost Time Adjust (s)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes			
v/c Ratio	0.31	0.28	0.43	0.34	0.58	0.35	0.12		
Control Delay	10.9	8.5	18.5	3.0	25.8	21.3	4.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	10.9	8.5	18.5	3.0	25.8	21.3	4.9		
Queue Length 50th (ft)	17	14	130	0	62	12	0		
Queue Length 95th (ft)	36	67	177	0	82	179	27		
Internal Link Dist (ft)	584	1151	484	2048	2048	2048	2048		
Turn Bay Length (ft)	85					275			
Base Capacity (vph)	341	1023	1573	0	598	473	714	656	
Starvation Cap Reductn	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.31	0.28	0.43	0.34	0.58	0.35	0.12		
<b>Intersection Summary</b>									
Cycle Length: 90									
Actuated Cycle Length: 90									
Offset: 16.7 (19%) Referenced to phase 2:EBTL Start of Green									
Natural Cycle: 40									
Control Type: Pre-timed									

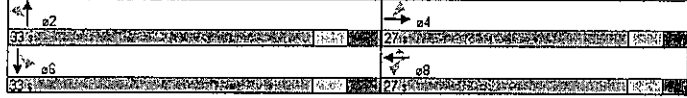
Splits and Phases: 160: Hunting Park Ave & Wissahickon Ave



Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	78	240	88	294	158	21	466	34	595
Lane Group Flow (vph)	78	240	88	294	158	21	466	34	595
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4		8			2		6	
Permitted Phases	EB	EB	WB	WB	WB	NB	NB	SB	SB
Minimum Split (s)	9.4	9.4	9.4	9.4	9.4	10.0	10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	
Total Spilt (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	
Lost Time Adjust (s)	1.4	1.4	1.4	1.4	1.4	2.0	2.0	2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag									
Lead-Lag Optimize?									
v/c Ratio	0.22	0.34	0.22	0.41	0.22	0.06	0.27	0.08	0.35
Control Delay	17.4	17.3	14.3	15.8	3.5	8.9	9.1	9.1	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	17.3	14.3	15.8	3.5	8.9	9.1	9.1	8.7
Queue Length 50th (ft)	20	16	21	21	0	4	4	4	3
Queue Length 95th (ft)	46	115	48	128	28	14	71	19	83
Internal Link Dist (ft)	1436	1436	1740	1740	1740	2048	2048	2048	2048
Turn Bay Length (ft)	100		150			100		65	
Base Capacity (vph)	357	709	409	714	704	351	699	423	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.34	0.22	0.41	0.22	0.06	0.27	0.08	0.35
<b>Intersection Summary</b>									
Cycle Length: 60									
Actuated Cycle Length: 60									
Offset: 20 (33%) Referenced to phase 2:NBT and SBTL Start of Green									
Natural Cycle: 40									
Control Type: Pre-timed									
m Volume for 95th percentile queue is metered by upstream signal.									

Splits and Phases: 170: Roberts Ave & Wasahickon Ave



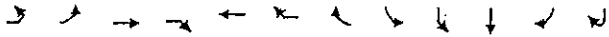






**2019 BUILD W/ MITIGATION: SAT PEAK**

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	SEB	EBB	SEB	EBB	WBR	WBR	SBB	SBB	SBR	SBR		
Lane Configurations												
Volume (vph)	25	384	256	30	251	46	45	22	96	80	233	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	10	12	12	13	13	12	12
Total Lost time (s)	6.9	4.2		4.2	4.2		6.9	5.1	5.1			
Lane Util. Factor	0.97	1.00		0.95	1.00		1.00	1.00	0.88			
Fit	1.00	0.98		1.00	0.85		1.00	1.00	0.85			
Fit Protected	1.00	1.00		1.00	1.00		1.00	1.00	1.00			
Satd. Flow (prot)	3046	1627		3002	1343		1646	1732	2508			
Fit Permitted	0.95	1.00		1.00	1.00		0.95	1.00	1.00			
Satd. Flow (perm)	3046	1627		3002	1343		1646	1732	2508			
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	404	269	32	273	50	49	24	104	87	253	45
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	430	301	0	273	69	0	0	128	87	288	0
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%	2%	2%
Turn Type	Prot	Prot			Perm	Perm	Perm	Perm	Perm			
Protected Phases	5	5		6								
Permitted Phases					6		4	4	4	4		
Activated Green, G (s)	34.5	57.5		16.5	16.5		23.5	23.5	23.5			
Effective Green, g (s)	34.1	59.8		18.8	18.8		23.1	24.9	24.9			
Activated g/C Ratio	0.28	0.50		0.16	0.16		0.19	0.21	0.21			
Clearance Time (s)	6.5	6.5		6.5	6.5		6.5	6.5	6.5			
Lane Grp Cap (vph)	866	811		470	210		317	359	520			
v/s Ratio Prot	c0.14	0.19		c0.09				0.05				
v/s Ratio Perm					0.05			0.08				c0.11
v/c Ratio	0.50	0.37		0.58	0.33		0.40	0.24	0.55			
Uniform Delay, d1	35.8	18.5		46.9	45.0		42.4	39.7	42.6			
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00			
Incremental Delay, d2	32.0	11.3		5.2	4.2		3.8	1.8	4.2			
Delay (s)	37.8	19.8		52.1	49.2		46.2	41.3	46.8			
Level of Service	D	B		D	D		D	D	D			
Approach Delay (s)	30.4		51.3					45.7				
Approach LOS	C		D					D				
<b>Intersection Summary</b>												
HCM Average Control Delay	42.9				HCM Level of Service				D			
HCM Volume to Capacity ratio	0.54											
Actual Cycle Length (s)	120.0				Sum of lost time (s)				21.3			
Intersection Capacity Utilization	66.9%				ICU Level of Service				C			
Analysis Period (min)	7.15											

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	SEB	EBB	SEB	EBB	WBR	WBR	SBB	SBB	SBR	SBR	
Lane Configurations											
Volume (vph)	19	46	110	47	219	6	40	86	7	109	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	14	12	12	
Total Lost time (s)							5.1	5.1			
Lane Util. Factor	1.00	0.95			1.00		1.00	1.00			
Fit	1.00	0.95			1.00		1.00	1.00			
Fit Protected	0.95	1.00			1.00		1.00	1.00			
Satd. Flow (prot)	1577	1787			1516		1689	1346			
Fit Permitted	0.69	1.00			0.46		1.00	1.00			
Satd. Flow (perm)	1140	1787			733		1689	1346			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	21	50	120	51	10	7	43	93	117	4	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	71	179	0	0	0	50	93	120	0	
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	8%	8%	8%	8%	
Turn Type		Perm	Perm				Perm	Perm		Perm	
Protected Phases		14	14				14			10	
Permitted Phases							10	10		10	
Activated Green, G (s)		19.5	19.5				19.5	19.5		19.5	
Effective Green, g (s)		20.9	20.9				20.9	20.9		19.5	
Activated g/C Ratio		0.17	0.17				0.17	0.17		0.16	
Clearance Time (s)		6.5	6.5				6.5	6.5		6.5	
Lane Grp Cap (vph)		199	311				128	294		219	
v/s Ratio Prot		c0.10						0.06			
v/s Ratio Perm		0.06					0.07	0.07		0.09	
v/c Ratio		0.35	0.58				0.39	0.32		0.55	
Uniform Delay, d1		43.6	45.5				43.9	43.3		46.2	
Progression Factor		1.00	1.00				1.00	1.00		1.00	
Incremental Delay, d2		4.9	7.6				6.7	2.8		9.5	
Delay (s)		48.6	53.1				52.6	46.1		55.7	
Level of Service		D	D				D	D		E	
Approach Delay (s)		51.8					51.8				
Approach LOS		D	D				D	D		D	
<b>Intersection Summary</b>											

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑↑	↑↑	↑	↑	↑↑
Volume (vph)	199	166	347	244	166	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	12	13	12	12	12
Total Lost time (s)	2.7	5.0	2.7	2.7	0.7	2.7
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fr	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1906	1599	3693	1599	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.49	1.00
Satd. Flow (perm)	1906	1599	3693	1599	909	3539
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94
Adj. Flow (vph)	200	168	358	252	177	304
RTOR Reduction (vph)	0	112	0	139	0	0
Lane Group Flow (vph)	200	56	358	113	177	304
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	Perm	Perm	Perm	pm+pt		
Protected Phases					6	
Permitted Phases	8		2	6		
Actuated Green, G (s)	30.0	30.0	38.0	38.0	50.0	50.0
Effective Green, g (s)	32.3	30.0	40.3	40.3	52.3	52.3
Actuated g/C Ratio	0.36	0.33	0.45	0.45	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	684	533	1654	216	636	2057
v/s Ratio Prot	c0.10	c0.10			c0.03	0.09
v/s Ratio Perm	0.29	0.11	0.22	0.16	0.13	0.15
w/c Ratio	0.29	0.11	0.22	0.16	0.28	0.15
Uniform Delay, d1	20.7	20.7	15.2	14.8	8.9	8.6
Progression Factor	1.00	1.00	1.00	1.00	1.03	0.95
Incremental Delay, d2	1.1	0.4	0.3	0.3	1.1	0.2
Delay (s)	21.7	21.1	15.5	15.2	10.2	8.4
Level of Service	C	C	B	B	B	A
Approach Delay (s)	21.5	15.4			9.0	
Approach LOS	C	B			A	
Intersection Summary						
HCM Average Control Delay	14.8					HCM Level of Service B
HCM Volume to Capacity ratio	0.25					
Actuated Cycle Length (s)	90.0					Sum of lost time (s) 16.1
Intersection Capacity Utilization	49.2%					ICU Level of Service A
Analysis Period (min)	15					

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
30: Abbotsford Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑		↑	↑↑
Volume (vph)	0	0	397	335	200	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)			13		12	12
Total Lost time (s)			6.3		6.3	6.3
Lane Util. Factor			0.95		1.00	0.95
Fr			1.00		1.00	1.00
Flt Protected			1.00		0.95	1.00
Satd. Flow (prot)			3496		1770	3539
Flt Permitted			1.00		0.95	1.00
Satd. Flow (perm)			3496		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	0	0	432	338	206	404
RTOR Reduction (vph)	0	0	7	0	0	0
Lane Group Flow (vph)	0	0	463	0	206	404
Turn Type	custom					
Protected Phases	2					
Permitted Phases	3					
Actuated Green, G (s)	52.7					
Effective Green, g (s)	24.7					
Actuated g/C Ratio	0.59					
Clearance Time (s)	6.3					
Lane Grp Cap (vph)	2047					
v/s Ratio Prot	c0.13					
v/s Ratio Perm	c0.12					
w/c Ratio	0.23					
Uniform Delay, d1	16.9					
Progression Factor	0.57					
Incremental Delay, d2	2.7					
Delay (s)	5.3					
Level of Service	A					
Approach Delay (s)	0.0					
Approach LOS	A					
Intersection Summary						
HCM Average Control Delay	11.3					
HCM Volume to Capacity ratio	0.29					
Actuated Cycle Length (s)	90.0					
Intersection Capacity Utilization	33.7%					
Analysis Period (min)	15					
ICU Level of Service	A					

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
50: Roberts Ave & North Entrance

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	162	62	61	435	170	249	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	11	12	12	12	
Total Lost time (s)	5.0	5.0	3.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Fr	1.00	0.85	1.00	1.00	1.00	0.85	
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1863	1583	1711	1863	1770	1583	
Flt Permitted	1.00	1.00	0.57	1.00	0.95	1.00	
Satd. Flow (perm)	1863	1583	1029	1863	1770	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	176	67	88	473	185	271	
RTOR Reduction (vph)	0	0	0	0	0	194	
Lane Group Flow (vph)	176	26	88	473	185	77	
Turn Type	Perm	pm-pt	pm-pt	Perm	Perm	Perm	
Protected Phases	2		1	6	8		
Permitted Phases						8	
Actuated Green, G (s)	23.0	2.0	17.6	33.0	17.0	17.0	
Effective Green, g (s)	23.0	2.0	33.0	33.0	17.0	17.0	
Actuated g/C Ratio	0.38	0.38	0.55	0.55	0.28	0.28	
Clearance Time (s)	5.0	5.0	3.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	714	607	646	1025	502	449	
v/s Ratio Prot	0.09	0.02	0.02	0.25	0.10		
v/s Ratio Perm	0.02	0.05			0.05		
v/c Ratio	0.25	0.04	0.14	0.46	0.37	0.17	
Uniform Delay, d1	12.5	11.0	6.5	8.1	17.2	16.2	
Progression Factor	1.00	1.00	0.62	0.52	1.00	1.00	
Incremental Delay, d2	0.8	0.1	0.4	1.2	2.1	0.8	
Delay (s)	13.4	11.7	7.4	10.5	19.3	17.0	
Level of Service	B	B	A	A	B	B	
Approach Delay (s)	13.0			5.3	17.9		
Approach LOS	B			A	B		
<b>Intersection Summary</b>							
HCM Average Control Delay	11.3			HCM Level of Service			B
HCM Volume to Capacity ratio	0.43			Sum of lost time (s)			10.0
Actuated Cycle Length (s)	60.0			ICU Level of Service			A
Intersection Capacity Utilization	40.6%			Analysis Period (min)			15
Analysis Period (min)	15			Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
Volume (vph)	198	453	72	130	439	128	14	1389	166	189	343	119	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	11	11	11	11	11	12	12	12	16	12	12	12	
Total Lost time (s)	4.0	4.0		2.1	4.0		4.0	4.0	4.0	1.5	4.0		
Lane Util. Factor	1.00	0.99		1.00	0.95		1.00	1.00	1.00	1.00	1.00		
Fr	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1711	3419		1694	3273		1787	2132	1599	1787	1809		
Flt Permitted	0.19	1.00		0.47	1.00		0.33	1.00	1.00	0.92	1.00		
Satd. Flow (perm)	345	3419		832	3273		624	2132	1599	604	1809		
Peak-hour factor, PHF	0.90	0.90		0.90	0.96		0.92	0.92	0.92	0.81	0.81		
Adj. Flow (vph)	109	503		135	457		133	4	423	180	110	425	
RTOR Reduction (vph)	0	0		0	0		0	0	0	0	0	0	
Lane Group Flow (vph)	109	504		135	560		0	4	423	95	110	558	
Heavy Vehicles (%)	29%	2%		2%	3%		3%	1%	1%	1%	1%	1%	
Turn Type	pm-pt	pm-pt		pm-pt	Perm		Perm	Perm	pm-pt	pm-pt	pm-pt		
Protected Phases	2	5		6	6		8	8	8	4	4		
Permitted Phases													
Actuated Green, G (s)	36.6	36.6		27.1	21.6		34.6	34.6	34.6	42.6	42.6		
Effective Green, g (s)	36.2	38.0		29.9	23.0		36.0	36.0	36.0	44.0	44.0		
Actuated g/C Ratio	0.40	0.42		0.33	0.26		0.40	0.40	0.40	0.49	0.49		
Clearance Time (s)	3.6	5.4		3.5	5.4		5.4	5.4	5.4	3.0	5.4		
Lane Grp Cap (vph)	306	1444		342	836		250	853	640	379	488		
v/s Ratio Prot	0.04	0.11		0.03	0.17		0.20	0.20	0.20	0.02	0.31		
v/s Ratio Perm	0.10	0.03		0.10	0.10		0.06	0.12	0.12	0.02	0.12		
v/c Ratio	0.35	0.35		0.39	0.67		0.02	0.50	0.15	0.29	0.63		
Uniform Delay, d1	18.4	17.6		21.8	30.1		16.3	20.2	17.2	13.8	17.0		
Progression Factor	1.00	1.00		1.06	1.10		1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	3.2	0.7		3.0	3.8		0.1	2.1	0.5	1.9	3.4		
Delay (s)	21.7	18.3		26.0	36.9		16.4	22.3	17.7	15.7	20.4		
Level of Service	C	B		D	D		B	C	B	B	B		
Approach Delay (s)	18.9			34.8			20.9			19.7			
Approach LOS	B			D			C			B			
<b>Intersection Summary</b>													
HCM Average Control Delay	23.9			HCM Level of Service			C						
HCM Volume to Capacity ratio	0.60			Sum of lost time (s)			10.0						
Actuated Cycle Length (s)	90.0			ICU Level of Service			A						
Intersection Capacity Utilization	63.7%			Analysis Period (min)			15						
Analysis Period (min)	15			Phase conflict between lane groups									
Analysis Period (min)	15			Critical Lane Group									


HCM Signalized Intersection Capacity Analysis  
70: East Entrance & Fox St

Movement	EBL	EBR	NBL	NBR	SBL	SBR
Lane Configurations	T	T	T	T	T	T
Volume (vph)	2073	1273	1138	1478	422	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.85
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.44	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	822	1863	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	138	128	520	459	234
RTOR Reduction (vph)	0	101	0	0	0	101
Lane Group Flow (vph)	225	137	128	520	459	133
Turn Type	Perm	Perm			Perm	
Protected Phases					6	
Permitted Phases	4	2			6	
Actuated Green, G (s)	16.0	16.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	16.0	16.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.27	0.27	0.57	0.57	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	472	422	465	1056	1056	897
v/s Ratio Prot	c0.13			c0.26	0.25	
v/s Ratio Perm	0.02	0.16			0.08	
w/c Ratio	0.48	0.09	0.27	0.49	0.43	0.15
Uniform Delay, d1	18.5	16.5	6.7	7.8	7.5	6.1
Progression Factor	1.00	1.00	1.00	1.00	0.85	0.46
Incremental Delay, d2	3.4	1.0	1.5	1.6	1.2	0.3
Delay (s)	21.9	16.9	8.1	9.5	7.6	3.1
Level of Service	B	B	A	A	A	A
Approach Delay (s)	20.0		9.2	6.1		
Approach LOS	C		A	A		
<b>Intersection Summary</b>						
HCM Average Control Delay	10.2			HCM Level of Service		
HCM Volume to Capacity ratio	0.49			B		
Actuated Cycle Length (s)	60.0			Sum of lost time (s)		
Intersection Capacity Utilization	52.7%			ICU Level of Service		
Analysis Period (min)	15			A		
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St


Movement	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	T	T	T	T	T	T	T	T	T
Volume (vph)	193	165	228	400	73	167	426	173	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12
Total Lost Time (s)	2.0	4.0	2.0	4.0	5.0	3.0	2.0	4.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.97
Flt Protected	1.00	0.96	1.00	1.00	0.85	0.96	1.00	0.96	0.97
Satd. Flow (prot)	1770	1788	1805	2027	1615	3384	1863	3429	1863
Flt Permitted	0.29	1.00	0.56	1.00	1.00	0.86	1.00	0.94	1.00
Satd. Flow (perm)	536	1788	1068	2027	1615	2935	1863	3235	1863
Peak-hour factor, PHF	0.95	0.95	0.95	0.86	0.86	0.86	0.96	0.96	0.95
Adj. Flow (vph)	203	174	63	265	465	85	70	444	180
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	203	215	0	265	465	30	0	636	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases						6			
Permitted Phases	4		8			8	2		6
Actuated Green, G (s)	27.0	21.0	27.0	21.0	21.0	20.0	20.0	20.0	20.0
Effective Green, g (s)	29.0	22.0	29.0	22.0	21.0	22.0	22.0	22.0	22.0
Actuated g/C Ratio	0.48	0.37	0.48	0.37	0.35	0.35	0.35	0.37	0.37
Clearance Time (s)	3.0	5.0	3.0	5.0	5.0	5.0	5.0	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
Lane Grp Cap (vph)	403	856	602	743	565	1076		1186	
v/s Ratio Prot	0.06	0.12	0.05	0.03	0.02	0.05		0.03	
v/s Ratio Perm	0.18		0.16		0.02	c0.22		0.13	
w/c Ratio	0.60	0.33	0.44	0.63	0.05	0.59		0.37	
Uniform Delay, d1	10.0	13.7	9.4	15.6	12.9	15.4		13.9	
Progression Factor	1.57	1.55	0.96	0.90	1.26	0.99		1.35	
Incremental Delay, d2	1.0	1.3	0.4	2.9	0.1	0.8		0.8	
Delay (s)	16.6	22.5	9.4	17.0	16.5	14.5		19.5	
Level of Service	B	C	A	B	B	B		B	
Approach Delay (s)	19.8		14.5			19.5			
Approach LOS	B		B			B			
<b>Intersection Summary</b>									
HCM Average Control Delay	16.4			HCM Level of Service			B		
HCM Volume to Capacity ratio	0.59			Sum of lost time (s)			9.0		
Actuated Cycle Length (s)	60.0			ICU Level of Service			A		
Intersection Capacity Utilization	76.9%			Analysis Period (min)			15		
c Critical Lane Group									

HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St



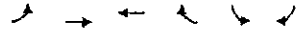
Movement	EBC	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T
Volume (vph)	59	277	13	0	0	0	0	439	279	29	42	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	11	12	11	12
Total Lost Time (s)	3.4			3.4			3.4			3.4		
Lane Util. Factor	0.95			0.95			0.95			0.95		
Frt	0.99			0.94			1.00			0.95		
Flt Protected	3678			3254			3420			3269		
Flt Permitted	0.99			1.00			0.56			1.00		
Satd. Flow (perm)	3678			3254			1941			3269		
Peak-hour factor, PHF	0.87			0.87			0.92			0.92		
Adj. Flow (vph)	68	318	15	0	0	0	0	499	316	310	448	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	396	0	0	0	0	0	815	0	0	758	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	1%	1%	4%	0%	0%
Turn Type	Perm			pm+pl			pm+pl			pm+pl		
Protected Phases	4			6			6			6		
Permitted Phases	4			6			6			6		
Actuated Green, G (s)	12.2			22.2			18.2			32.2		
Effective Green, g (s)	13.6			23.6			19.6			33.6		
Actuated g/C Ratio	0.23			0.39			0.32			0.55		
Clearance Time (s)	4.8			4.8			4.8			4.8		
Lane Grp. Cap. (vph)	934			1290			1036			1636		
w/s Ratio Prot	0.11			0.19			0.12			0.13		
w/s Ratio Perm	0.48			0.64			0.46			0.60		
w/c Ratio	20.1			14.7			15.0			21.0		
Uniform Delay, d1 (s)	1.00			0.93			0.62			1.00		
Progression Factor	1.9			2.2			0.7			1.6		
Incremental Delay, d2 (s)	22.0			15.9			3.8			24.9		
Delay (s)	22.0			15.9			3.8			24.9		
Level of Service	C			B			A			C		
Approach Delay (s)	22.0			0.0			15.9			3.8		
Approach LOS	C			A			B			A		
<b>Intersection Summary</b>												
HCM Average Control Delay (s)	12.5			8.1			8.1			10.2		
HCM Volume to Capacity ratio	0.55			0.2			0.2			0.2		
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0		
Intersection Capacity Utilization	60.9%			60.9%			60.9%			60.9%		
Analysis Period (min)	5			5			5			5		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St



Movement	EBC	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T	1T
Volume (vph)	0	0	0	422	226	293	337	198	0	0	282	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost Time (s)	4.0			4.0			4.8			4.0		
Lane Util. Factor	1.00			1.00			0.85			1.00		
Frt	1.00			1.00			0.85			1.00		
Flt Protected	1787			1881			1599			1711		
Flt Permitted	0.95			1.00			0.28			1.00		
Satd. Flow (perm)	1787			1881			1599			1801		
Peak-hour factor, PHF	0.92			0.92			0.96			0.95		
Adj. Flow (vph)	0	0	0	440	235	285	355	145	0	0	300	126
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	440	235	89	355	145	0	0	426	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	2%	2%	2%	2%
Turn Type	Perm			Perm			pm+pl			pm+pl		
Protected Phases	8			8			2			2		
Permitted Phases	8			8			2			2		
Actuated Green, G (s)	18.2			18.2			32.2			12.2		
Effective Green, g (s)	19.0			18.2			31.2			13.0		
Actuated g/C Ratio	0.32			0.32			0.52			0.22		
Clearance Time (s)	4.8			4.8			3.0			4.8		
Lane Grp. Cap. (vph)	566			485			585			997		
w/s Ratio Prot	0.25			0.12			0.16			0.08		
w/s Ratio Perm	0.78			0.39			0.61			0.15		
w/c Ratio	19.6			16.0			9.3			11.6		
Uniform Delay, d1 (s)	1.00			0.99			1.04			0.25		
Progression Factor	2.0			2.0			0.8			0.7		
Incremental Delay, d2 (s)	28.7			17.8			16.9			7.3		
Delay (s)	28.7			17.8			16.9			7.3		
Level of Service	C			B			B			A		
Approach Delay (s)	0.0			22.5			5.7			24.9		
Approach LOS	A			C			A			A		
<b>Intersection Summary</b>												
HCM Average Control Delay (s)	18.8			10.8			10.8			10.2		
HCM Volume to Capacity ratio	0.64			0.2			0.2			0.2		
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0		
Intersection Capacity Utilization	63.5%			63.5%			63.5%			63.5%		
Analysis Period (min)	5			5			5			5		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EB	WB	NB	SB	WB	SB
Lane Configurations	↑	↑		↑	↑	↑
Volume (vph)	346	532	0	86	322	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Flt	1.00	1.00		1.00	0.85	
Flt Protected	1.00	1.00		0.95	1.00	
Satd. Flow (prot)	1863	1863		1770	1583	
Flt Permitted	1.00	1.00		0.95	1.00	
Satd. Flow (perm)	1863	1863		1770	1583	
Peak-hour factor, PHF	0.82	0.82		0.96	0.60	
Adj. Flow (vph)	422	554		143	537	
RTOR Reduction (vph)	0	0		0	102	
Lane Group Flow (vph)	422	554		143	435	
Turn Type	Perm					
Protected Phases	2	6		7		
Permitted Phases	4					
Actuated Green, G (s)	21.9	21.9		28.1	28.1	
Effective Green, g (s)	21.9	21.9		28.1	28.1	
Actuated G/C Ratio	0.36	0.36		0.47	0.47	
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)	680	680		829	741	
v/s Ratio Prot	0.23	0.30		0.09		
v/s Ratio Perm				0.28		
w/c Ratio	0.62	0.81		0.17	0.59	
Uniform Delay, d1	15.6	17.2		9.2	11.7	
Progression Factor	0.94	1.00		1.00	1.00	
Incremental Delay, d2	1.6	7.4		0.5	3.4	
Delay (s)	16.4	24.7		9.7	15.1	
Level of Service	B	C		A	B	
Approach Delay (s)	16.4	24.7		14.0		
Approach LOS	B	C		B		
<b>Intersection Summary</b>						
HCM Average Control Delay	18.1		HCM Level of Service		B	
HCM Volume to Capacity ratio	0.69		Sum of lost time (s)		10.0	
Actuated Cycle Length (s)	60.0		ICU Level of Service		B	
Intersection Capacity Utilization	55.3%		Analysis Period (min)		15	
Analysis Period (min)	15		Critical Lane Group		c	

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave



Movement	EB	WB	NB	SB	WB	SB
Lane Configurations	↑	↑		↑	↑	↑
Volume (vph)	101	559	0	577	169	24
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	1.00	0.95		0.95	1.00	0.95
Flt	1.00	1.00		0.97	0.99	1.00
Flt Protected	0.95	1.00		1.00	0.99	1.00
Satd. Flow (prot)	1745	3490		3836	3428	1745
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	329	3490		3836	3056	865
Peak-hour factor, PHF	0.80	0.80		0.96	0.96	0.86
Adj. Flow (vph)	128	699		601	175	28
RTOR Reduction (vph)	0	0		0	0	0
Lane Group Flow (vph)	128	699		747	0	206
Heavy Vehicles (%)	0%	0%		0%	0%	0%
Turn Type	pm-pl					Perm
Protected Phases	2	5		8		
Permitted Phases	4					
Actuated Green, G (s)	44.6	44.6		30.6	15.6	
Effective Green, g (s)	44.2	46.0		32.0	17.0	
Actuated G/C Ratio	0.49	0.51		0.36	0.19	
Clearance Time (s)	3.6	5.4		5.4	5.4	
Lane Grp Cap (vph)	319	1764		1364	577	
v/s Ratio Prot	0.04	0.20		0.19	0.09	0.13
v/s Ratio Perm	0.16	1.00		0.07	0.12	0.02
w/c Ratio	0.39	0.39		0.55	0.38	0.56
Uniform Delay, d1	14.6	13.4		23.2	31.7	20.5
Progression Factor	1.21	0.71		1.00	1.00	1.02
Incremental Delay, d2	3.5	0.9		1.6	1.7	0.1
Delay (s)	21.1	10.2		24.8	33.5	25.2
Level of Service	C	B		C	C	B
Approach Delay (s)	11.8			24.8	33.5	22.9
Approach LOS	B			C	C	B
<b>Intersection Summary</b>						
HCM Average Control Delay	20.6		HCM Level of Service		C	
HCM Volume to Capacity ratio	0.52		Sum of lost time (s)		12.0	
Actuated Cycle Length (s)	90.0		ICU Level of Service		B	
Intersection Capacity Utilization	59.2%		Analysis Period (min)		15	
Analysis Period (min)	15		Critical Lane Group		c	



HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	124	297	91	277	332	58	20	440	0	10	303	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)	1.6	3.6		1.6	3.6	3.6	1.0	3.0		1.0	3.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.88		1.00	0.95		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	2037		1770	1863	1794	1770	3482		1770	3377		
Flt Permitted	0.41	1.00		0.35	1.00	1.00	0.42	1.00		0.33	1.00		
Satd. Flow (perm)	772	2037		655	1863	1794	774	3482		611	3377		
Peak-hour Factor	0.80	0.90		0.92	0.92	0.92	0.95	0.95		0.88	0.88		
Adj. Flow (vph)	124	297		277	332	58	20	440		10	249		
RTOR Reduction (vph)	0	12		0	0	93	0	11		0	58		
Lane Group Flow (vph)	124	376	0	277	332	58	20	440	0	10	303	0	
Turn Type	pm+pt	pm+pt		pm+pt	pm+pt	Perm	pm+pt	pm+pt		pm+pt	pm+pt		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases													
Actuated Green, G (s)	49.0	33.0		49.0	33.0	33.0	25.0	20.0		25.0	20.0		
Effective Green, g (s)	51.8	54.4		51.8	54.4	54.4	29.0	22.0		29.0	22.0		
Actuated g/C Ratio	0.58	0.38		0.58	0.38	0.38	0.32	0.24		0.32	0.24		
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	3.0	5.0		3.0	5.0		
Lane Grp Cap (vph)	637	779		593	712	686	327	851		287	825		
V/s Ratio Prot	0.04	0.18		0.09	0.18		0.00	0.13		0.00	0.09		
V/s Ratio Perm	0.07			0.18		0.03	0.01			0.01			
V/C Ratio	0.19	0.48		0.47	0.47	0.09	0.06	0.52		0.03	0.37		
Uniform Delay, d1	9.2	21.1		10.7	20.9	17.7	21.0	29.4		21.1	28.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.15	1.00		1.00	1.00		
Incremental Delay, d2	0.7	2.1		2.6	2.2	0.2	0.3	2.1		0.2	1.3		
Delay (s)	9.9	23.2		13.3	23.1	18.0	24.5	31.6		21.3	29.5		
Level of Service	A	C		B	C	B	C	C		C	C		
Approach Delay (s)		20.0			18.5						29.3		
Approach LOS		B			B			C			C		
<b>Intersection Summary</b>													
HCM Average Control Delay	23.6					HCM Level of Service			C				
HCM Volume to Capacity Ratio	0.45												
Actuated Cycle Length (s)	90.0					Sum of lost time (s)			9.2				
Intersection Capacity Utilization	59.0%					ICU Level of Service			B				
Analysis Period (min)	15												
Critical Lane Group	EBL												

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & McMichael Street

Movement	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑	↑↑			
Volume (veh/h)	0	399	504	39	20	0	0
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor		0.77	0.77	0.87	0.87	0.70	0.70
Hourly flow rate (vph)		518	579	45	29	0	0
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage (veh)							
Upstream signal (ft)		123	419				
pX, platoon unblocked					0.94		
vC, conflicting volume		624			1135	312	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol		624			1112	312	
IC, single (s)		4.1			6.8	6.9	
IC, 2 stage (s)							
IF (s)		2.2			3.5	3.3	
p0 queue free %		99			85	99	
cM capacity (veh/h)		953			1893	684	
Direction Lane #	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Volume Total	0	399	504	39	20	0	0
Volume Left	0	0	0	0	0	0	0
Volume Right	0	399	504	39	20	0	0
cSH	953	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.23	0.29	0.23	0.14	0.11	0.11
Queue Length 95th (ft)	1	0	0	0	1	0	0
Control Delay (s)	0.2	0.0	0.0	0.0	10.3	0.0	0.0
Lane LOS	A				B		
Approach Delay (s)	0.2	0.0	0.0	0.0	Err	0.0	0.0
Approach LOS					F		
Intersection Summary							
Average Delay	Err						
Intersection Capacity Utilization	21.7%						
Analysis Period (min)	15						
ICU Level of Service	A						

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave

Movement	EBL	EBR	WBL	WBR	SBL	SBR
Lane Configurations			↑↑	↑↑		
Volume (veh/h)	0	0	666	319	0	0
Sign Control		Stop	Free	Free		
Grade		0%	0%	0%		
Peak Hour Factor		0.87	0.87	0.88	0.88	0.83
Hourly flow rate (vph)		0	774	401	377	384
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				1046		
pX, platoon unblocked			0.97			
vC, conflicting volume		763	192	384	384	384
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		705	192	384	384	384
IC, single (s)		6.8	6.9	4.1	4.1	4.1
IC, 2 stage (s)						
IF (s)		3.5	3.3	2.2	2.2	2.2
p0 queue free %		100	95	100	100	100
cM capacity (veh/h)		366	1823	1185	1185	1185
Direction Lane #	EBL	EBR	WBL	WBR	SBL	SBR
Volume Total	0	0	666	319	0	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	666	319	0	0
cSH	823	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.22	0.22	0.19	0.11	0.11
Queue Length 95th (ft)	4	0	0	0	0	0
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0
Approach LOS	A					
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	21.7%					
Analysis Period (min)	15					
ICU Level of Service	A					

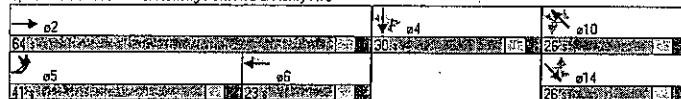
Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave



Lane Group	EBL	EBT	WBT	WBR	SBL	SBT	SBR	SEL2	SEL	SET	NW2	NW
Lane Configurations	3	3	3	3	3	3	3	3	3	3	3	3
Volume (vph)	384	256	251	463	196	80	233	19	46	110	6	40
Lane Group Flow (vph)	430	301	273	99	128	87	299	0	71	181	0	50
Turn Type	Prot	Prot	Prot	Rein	Rein	Rein	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6			4				14		
Permitted Phases	2	2	2	2	2	2	2	2	2	2	2	2
Minimum Split (s)	12.5	12.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Total Split (s)	41.0	64.0	23.0	23.0	30.0	30.0	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (%)	34.2%	53.3%	19.2%	19.2%	25.0%	25.0%	25.0%	21.7%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.9	4.2	4.2	4.2	6.9	5.1	5.1	5.1	5.1	5.1	6.5	5.1
Lead/Lag	Lead	Lead	Lag	Lag								
Lead-Lag Optimize?	Yes											
v/c Ratio	0.50	0.37	0.58	0.41	0.40	0.24	0.56	0.03	0.36	0.56	0.00	0.39
Control Delay	38.2	20.2	52.5	35.6	46.9	41.8	45.3		49.6	53.3		54.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	38.2	20.2	52.5	35.6	46.9	41.8	45.3		49.6	53.3		54.4
Queue Length 50th (ft)	143	64	139	104	145	113	113		129	129		35
Queue Length 95th (ft)	194	207	151	101	150	105	165		96	206		78
Internal Link Dist (ft)	1197	658	1975			1653			1387			
Turn Bay Length (ft)	450			250	150		415		135			115
Base Capacity (vph)	666	811	470	240	317	359	532		199	313		127
Starvation Cap Reductn	0	0	0	0	0	0	0		0	0		0
Spillback Cap Reductn	0	0	0	0	0	0	0		0	0		0
Storage Cap Reductn	0	0	0	0	0	0	0		0	0		0
Reduced v/c Ratio	0.50	0.37	0.58	0.41	0.40	0.24	0.56		0.36	0.56		0.39

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2 (EBT) Start of Green  
 Natural Cycle: 60  
 Control Type: Prtimed

Splits and Phases: 10: Hunting Park Ave & Henry Ave



Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave



Lane Group	NW2	NW
Lane Configurations	3	3
Volume (vph)	89	108
Lane Group Flow (vph)	93	121
Turn Type	Rein	Rein
Protected Phases	10	
Permitted Phases	2	2
Minimum Split (s)	11.5	11.5
Total Split (s)	26.0	26.0
Total Split (%)	21.7%	21.7%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	3.0	3.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.1	6.5
Lead/Lag		
Lead-Lag Optimize?		
v/c Ratio	0.37	0.55
Control Delay	46.8	56.3
Queue Delay	0.0	0.0
Total Delay	46.8	56.3
Queue Length 50th (ft)	64	86
Queue Length 95th (ft)	116	152
Internal Link Dist (ft)	699	
Turn Bay Length (ft)		100
Base Capacity (vph)	294	220
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.55

Intersection Summary

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBL	WBR	NB	NBR	SBL	SB
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	198	166	347	244	166	285
Lane Group Flow (vph)	200	168	358	252	177	304
Turn Type	Per	Per	Per	Per	Per	Per
Protected Phases	8	2	1	6		
Permitted Phases	12	8	2	6		
Minimum Split (s)	33.0	33.0	10.3	10.3	8.0	10.3
Total Split (s)	55.0	95.0	43.0	43.0	12.0	55.0
Total Split (%)	39.9%	38.9%	47.8%	47.8%	13.3%	61.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.0
Lost Time Adjust (s)	2.3	0.0	2.3	2.3	2.3	2.3
Total Lost Time (s)	2.7	5.0	2.7	2.7	0.7	2.7
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	Yes		
v/c Ratio	0.29	0.26	0.22	0.29	0.27	0.15
Control Delay	22.2	4.7	15.6	3.0	9.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	4.7	15.6	3.0	9.3	8.4
Queue Length 50th (ft)	80	0	83	0	37	35
Queue Length 95th (ft)	134	42	92	40	60	51
Internal Link Dist (ft)	420	1653			767	
Turn Bay Length (ft)		200		250	200	
Base Capacity (vph)	684	645	1654	655	657	2057
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.26	0.22	0.29	0.27	0.15

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to Phase 2: NBT and 6: SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Prelimed

Splits and Phases: 20: Roberts Ave & Henry Ave



Lanes, Volumes, Timings  
30: Abbotsford Ave & Henry Ave


Lane Group	NBT	SBL	SB
Lane Configurations	↑↑	↑↑	↑↑
Volume (vph)	397	200	392
Lane Group Flow (vph)	470	206	404
Turn Type	Custom	Custom	Custom
Protected Phases	2	3	6
Permitted Phases			
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	59.0	31.0	59.0
Total Split (%)	65.6%	34.4%	65.6%
Yellow Time (s)	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
v/c Ratio	0.23	0.42	0.19
Control Delay	5.2	30.1	9.0
Queue Delay	0.0	0.0	0.0
Total Delay	5.2	30.1	9.0
Queue Length 50th (ft)	24	99	52
Queue Length 95th (ft)	48	161	74
Internal Link Dist (ft)	67	576	
Turn Bay Length (ft)		200	
Base Capacity (vph)	2055	488	2072
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.42	0.19

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2: NBT and 6: SBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Prelimed

Splits and Phases: 30: Abbotsford Ave & Henry Ave



Lanes, Volumes, Timings  
50: Roberts Ave & North Entrance




Lane Group	EBT	EBN	WBT	WBN	NBT	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	162	62	81	35	170	249
Lane Group Flow (vph)	176	67	88	473	165	271
Turn Type	Perm	pm	pm	pm	Perm	Perm
Protected Phases	2	1	6	8		
Permitted Phases	2	2	2	2	2	2
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	28.0	28.0	10.0	39.0	22.0	22.0
Total Split (%)	45.7%	46.7%	16.7%	53.3%	36.7%	36.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	3.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			
v/c Ratio	0.25	0.10	0.13	0.46	0.37	0.42
Control Delay	13.8	4.2	3.8	5.7	19.8	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	4.2	3.8	5.7	19.8	4.9
Queue Length 50th (ft)	42	0	0	50	53	0
Queue Length 95th (ft)	80	20	13	77	101	46
Internal Link Dist (ft)	347		43	255		
Turn Bay Length (ft)	150					
Base Capacity (vph)	714	648	690	1025	502	643
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.10	0.13	0.46	0.37	0.42

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 29 (48%) Referenced to phase 2 (EBT) and 6 (WBT). Start of Green:  
 Natural Cycle: 65  
 Control Type: Prelimed  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 50: Roberts Ave & North Entrance



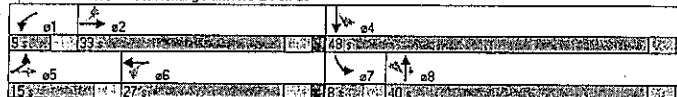
Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	799	493	130	439	9	389	166	89	344
Lane Group Flow (vph)	109	505	135	590	4	423	180	110	572
Turn Type	pm	pm	pm	pm	Perm	Perm	Perm	pm	pm
Protected Phases	5	2	11	6		8		7	4
Permitted Phases	2	2	2	2	2	2	2	2	2
Minimum Split (s)	7.6	9.4	8.0	9.4	20.0	20.0	20.0	8.0	20.0
Total Split (s)	15.0	33.0	9.0	27.0	40.0	40.0	40.0	8.0	48.0
Total Split (%)	16.7%	36.7%	10.0%	30.0%	44.4%	44.4%	44.4%	8.9%	53.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.0	3.6
All-Red Time (s)	0.0	1.8	0.0	1.8	1.8	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	0.4	1.4	0.4	1.4	0.4	0.4	0.4	0.4	1.4
Total Lost Time (s)	4.0	4.0	2.1	4.0	4.0	4.0	4.0	1.6	4.0
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.32	0.35	0.38	0.68	0.02	0.50	0.25	0.28	0.64
Control Delay	19.4	18.5	19.7	35.0	16.8	22.7	6.0	13.2	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	18.5	19.7	35.0	16.8	22.7	6.0	13.2	20.2
Queue Length 50th (ft)	37	99	67	170	0	176	13	31	120
Queue Length 95th (ft)	71	138	120	227	8	261	54	51	278
Internal Link Dist (ft)	1975		1884		899		540		
Turn Bay Length (ft)	200		200		100		100		
Base Capacity (vph)	312	444	360	696	250	653	728	398	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.35	0.38	0.68	0.02	0.50	0.25	0.28	0.64

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2 (EBT) and 6 (WBT). Start of Green:  
 Natural Cycle: 55  
 Control Type: Prelimed  
 ! Phase conflict between lane groups.

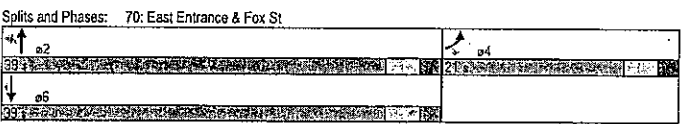
Splits and Phases: 60: Hunting Park Ave & Fox St



Lanes, Volumes, Timings  
70: East Entrance & Fox St

Lane Group	EBL	EBR	NBL	NBT	SBL	SBR
Lane Configurations	↔	↔	↕	↕	↔	↔
Volume (vph)	207	127	118	478	422	215
Lane Group Flow (vph)	225	138	128	520	459	234
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4			2	6	
Permitted Phases	4	4	2	2	6	6
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0	21.0
Total Split (s)	21.0	21.0	39.0	39.0	39.0	39.0
Total Split (%)	35.0%	35.0%	65.0%	65.0%	65.0%	65.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
v/c Ratio	0.49	0.26	0.28	0.49	0.43	0.23
Control Delay	22.5	5.4	8.7	9.8	7.9	1.0
Queue Delay	20.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.5	5.4	8.7	9.8	7.9	1.0
Queue Length 50th (ft)	68	0	0	119	61	1
Queue Length 95th (ft)	125	35	49	167	82	3
Internal Link Dist (ft)	304			540	1098	
Turn Bay Length (ft)		200				
Base Capacity (vph)	472	523	465	1056	1056	998
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.26	0.28	0.49	0.43	0.23

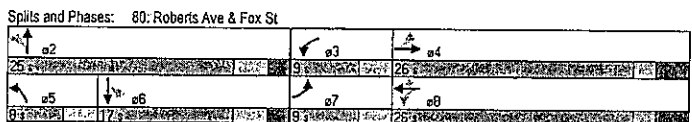
**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 11 (18%), Referenced to phase 2:NBT and 6:SBL; Start of Green  
 Natural Cycle: 45  
 Control Type: Pre-timed



Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane Group	EBL	EBT	NBL	NBT	SBL	SBR
Lane Configurations	↔	↔	↕	↕	↔	↔
Volume (vph)	193	165	228	490	67	426
Lane Group Flow (vph)	203	237	265	465	85	694
Turn Type	pm+pl	pm+pl	pm+pl	Perm	pm+pl	Perm
Protected Phases	7	4	3	8	5	2
Permitted Phases	7	4	3	8	5	2
Detector Phase	7	4	3	8	5	2
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	26.0	9.0	26.0	6.0	25.0
Total Split (s)	9.0	26.0	9.0	26.0	6.0	25.0
Total Split (%)	15.0%	43.3%	15.0%	43.3%	13.3%	41.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.0	3.0	0.0	3.0	0.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	0.0	-2.0
Total Lost Time (s)	2.0	2.0	2.0	2.0	0.0	0.0
Lead/Lag						
Lead-Lag Optimize?						
v/c Ratio	0.48	0.35	0.42	0.63	0.14	0.59
Control Delay	15.1	20.1	8.6	17.5	5.5	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	20.1	8.6	17.5	5.5	13.8
Queue Length 50th (ft)	46	64	39	93	10	53
Queue Length 95th (ft)	79	128	174	205	128	80
Internal Link Dist (ft)	339			455		1098
Turn Bay Length (ft)	200		200		100	
Base Capacity (vph)	421	677	638	743	620	1172
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.35	0.42	0.63	0.14	0.59

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 53 (88%), Referenced to phase 2:NBT and 6:SBL; Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 m Volume for 95th percentile queue is metered by upstream signal.

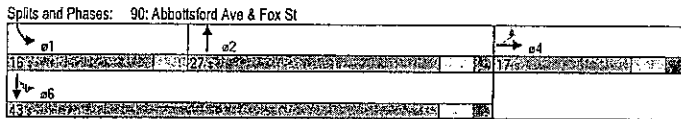


Lanes, Volumes, Timings  
90: Abbottsford Ave & Fox St



Lane Group	EBB	NBT	SB	SBT
Lane Configurations	←	↑	→	↑
Volume (vph)	277	439	291	421
Lane Group Flow (vph)	401	815	0	758
Turn Type				
Protected Phases	4	2	1	6
Permitted Phases				
Minimum Split (s)	9.4	9.4	7.6	9.4
Total Split (s)	17.0	27.0	16.0	43.0
Total Split (%)	28.3%	45.0%	26.7%	71.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	1.4
Total Lost Time (s)	3.4	3.4	3.4	3.4
Lead/Lag				
Lead-Lag Optimize?				
v/c Ratio	0.46	0.64	0.48	0.60
Control Delay	22.1	16.2	3.6	25.3
Queue Delay	0.0	0.1	1.1	0.0
Total Delay	22.1	16.3	4.8	25.3
Queue Length 50th (ft)	65	95	61	73
Queue Length 95th (ft)	98	155	m50	m50
Internal Link Dist (ft)	1415	932	119	792
Turn Bay Length (ft)				300
Base Capacity (vph)	636	1280	1591	1700
Starvation Cap Reductn	0	0	550	0
Spillback Cap Reductn	0	43	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	0.66	0.73	0.60

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 52 (87%), Referenced to phase 2: NBT and 6: SBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Volume for 95th percentile queue is metered by upstream signal.

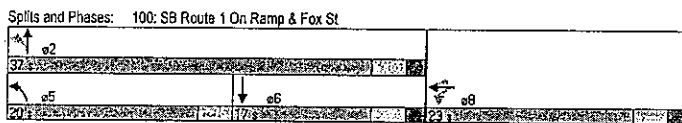


Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St

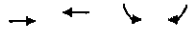


Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations	←	↑	→	←	↑	↑
Volume (vph)	422	226	283	337	138	282
Lane Group Flow (vph)	440	235	295	355	145	426
Turn Type						
Protected Phases		8		5	2	6
Permitted Phases						
Minimum Split (s)	8.8	8.8	8.8	8.8	8.8	8.8
Total Split (s)	23.0	23.0	23.0	20.0	37.0	47.0
Total Split (%)	38.3%	38.3%	38.3%	33.3%	61.7%	28.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	1.8	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	0.8	0.0	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.8	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
v/c Ratio	0.78	0.39	0.43	0.59	0.15	0.60
Control Delay	30.8	18.3	4.7	8.6	1.9	25.3
Queue Delay	0.0	0.0	0.0	0.5	0.9	0.0
Total Delay	30.8	18.3	4.7	8.1	2.8	25.3
Queue Length 50th (ft)	145	51	20	20	7	73
Queue Length 95th (ft)	m289	101	50	34	m4	114
Internal Link Dist (ft)	932			119	792	
Turn Bay Length (ft)						300
Base Capacity (vph)	566	580	691	600	99	700
Starvation Cap Reductn	0	0	0	108	629	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.39	0.43	0.72	0.40	0.60

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 23 (38%), Referenced to phase 2: NBT and 6: SBT, Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
110: Roberts Ave & Stokley St



Lane Group	EB	WB	SB	SB
Lane Configurations	↑	↑	↑	↑
Volume (vph)	346	532	186	322
Lane Group Flow (vph)	422	554	143	537
Turn Type	Thru	Thru	Perm	Perm
Protected Phases	2	6	4	4
Permitted Phases	2	6	4	4
Detector Phase	2	6	4	4
Switch Phase	2	6	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.5	21.5	21.5	21.5
Total Split (s)	30.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag				
Lead-Lag Optimized?				
Recall Mode	None	None	C-Min	C-Min
v/c Ratio	0.62	0.81	0.17	0.64
Control Delay	18.3	27.5	11.2	12.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.3	27.5	11.2	12.6
Queue Length 50th (ft)	129	219	29	86
Queue Length 95th (ft)	134	264	40	79
Internal Link Dist (ft)	456	436	792	
Turn Bay Length (ft)				
Base Capacity (vph)	780	780	333	846
Starvation Cap Reductn	0	0	0	0
Spillover Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.71	0.17	0.63

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 49 (82%) - Referenced to phase 4: SB - end of Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated - Coordinated

Splits and Phases: 110: Roberts Ave & Stokley St



Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave



Lane Group	EB	EB	WB	NB	NB	SB	SB
Lane Configurations	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	101	559	577	24	140	251	229
Lane Group Flow (vph)	126	659	777	0	206	264	241
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Protected Phases	5	2	6	8	7	4	4
Permitted Phases	5	2	6	8	7	4	4
Minimum Split (s)	7.6	9.4	9.4	9.4	9.4	7.6	9.4
Total Split (s)	4.0	50.0	136.0	21.0	19.0	140.0	40.0
Total Split (%)	15.6%	55.6%	40.0%	23.3%	23.3%	21.1%	44.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	0.0	1.4	1.4	1.4	1.4	0.0	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							
Lead-Lag Optimized?							
v/c Ratio	0.39	0.39	0.56	0.36	0.54	0.33	0.11
Control Delay	17.6	10.3	23.6	33.8	23.7	20.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	10.3	23.6	33.8	23.7	20.4	6.7
Queue Length 50th (ft)	26	78	172	54	102	92	28
Queue Length 95th (ft)	57	94	233	83	155	142	28
Internal Link Dist (ft)		159	115	484	204	204	
Turn Bay Length (ft)	65					275	
Base Capacity (vph)	325	1784	1394	577	1497	735	671
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillover Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.39	0.56	0.36	0.54	0.33	0.11

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) - Referenced to phase 2: EB - Start of Green  
 Natural Cycle: 45  
 Control Type: Pre-timed

Splits and Phases: 160: Hunting Park Ave & Wissahickon Ave





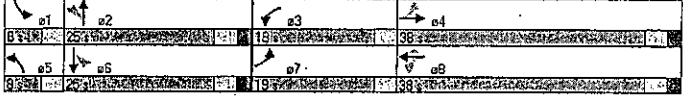
Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	←	↑	←	↑	↑	↑	↑	↑	↑
Volume (vph)	124	388	277	332	151	20	451	10	359
Lane Group Flow (vph)	124	388	277	332	151	20	451	10	359
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases	1	2	1	2	1	2	1	2	1
Minimum Split (s)	8.0	9.4	8.0	9.4	8.0	10.0	8.0	10.0	
Total Split (s)	19.0	38.0	19.0	38.0	19.0	25.0	18.0	25.0	
Total Split (%)	21.1%	42.2%	21.1%	42.2%	42.2%	8.9%	27.8%	8.9%	27.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	0.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	2.0
Lost Time Adjust (s)	1.4	1.4	1.4	1.4	1.4	2.0	2.0	2.0	
Total Lost Time (s)	1.6	3.6	1.6	3.6	3.6	1.0	3.0	1.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.19	0.49	0.46	0.47	0.19	0.06	0.52	0.03	0.41
Control Delay	7.9	22.6	10.5	23.6	3.9	22.3	31.0	19.2	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	22.6	10.5	23.6	3.9	22.3	31.0	19.2	24.0
Queue Length 50th (ft)	27	156	65	139	0	8	92	4	170
Queue Length 95th (ft)	49	239	105	217	37	19	125	14	107
Internal Link Dist (ft)	436	436	2740	2740	2740	2048	2740	966	2740
Turn Bay Length (ft)	100		300			100		65	
Base Capacity (vph)	654	791	608	712	779	344	862	301	861
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillover Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.49	0.46	0.47	0.19	0.06	0.52	0.03	0.41

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 22 (24%) Referenced to phase 2, NBT, and 6, SBT, Start of Green  
 Natural Cycle: 50  
 Control Type: Preempted  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 170: Roberts Ave & Wissahickon Ave

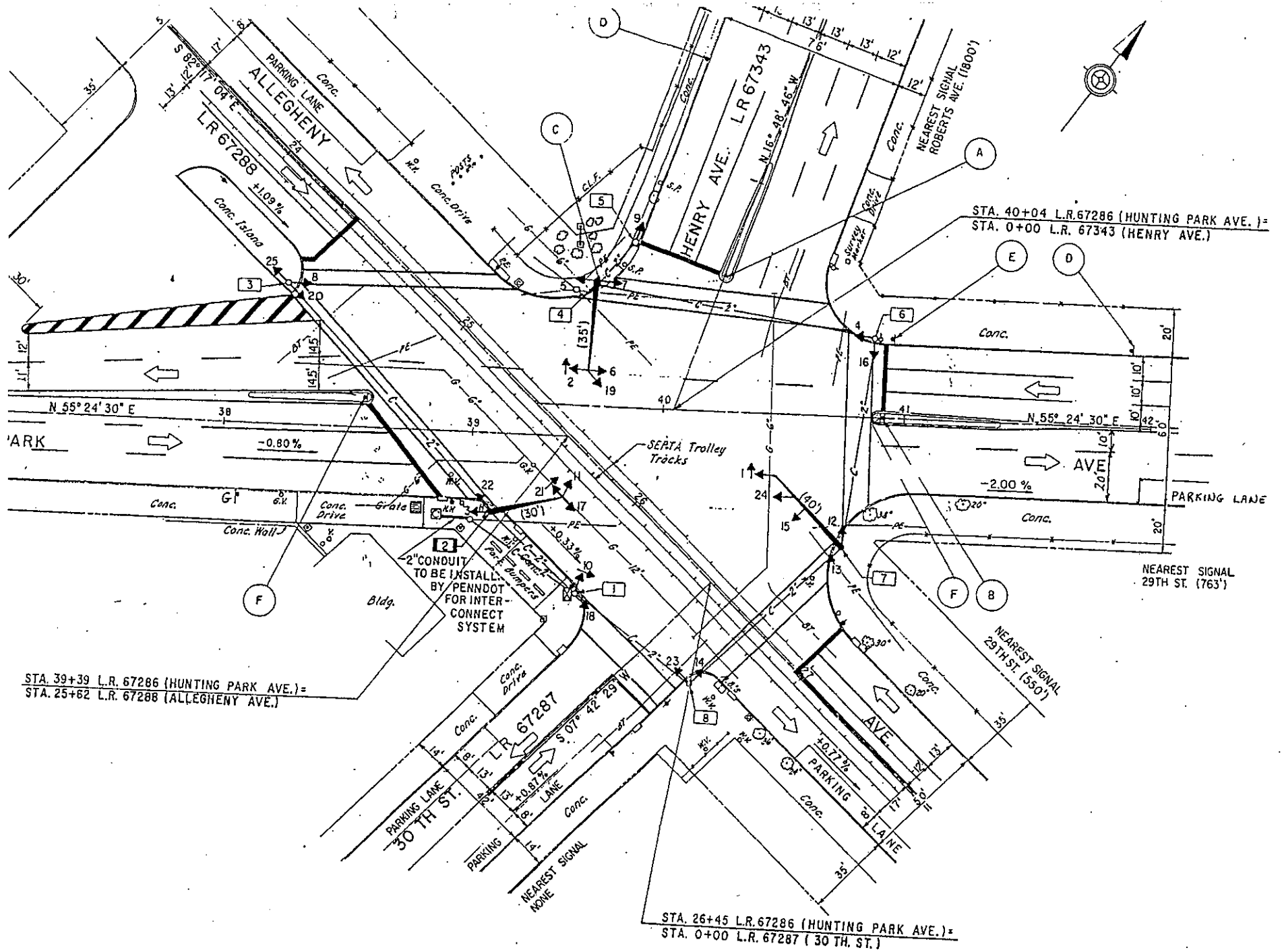


## APPENDIX F

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### Existing Signal Timings



STA. 39+39 L.R. 67286 (HUNTING PARK AVE.) =  
 STA. 25+62 L.R. 67288 (ALLEGHENY AVE.)

STA. 40+04 L.R. 67286 (HUNTING PARK AVE.) =  
 STA. 0+00 L.R. 67343 (HENRY AVE.)

NEAREST SIGNAL  
 29TH ST. (763')

STA. 26+45 L.R. 67286 (HUNTING PARK AVE.) =  
 STA. 0+00 L.R. 67287 (30TH ST.)

SEE SHEET NO. 30 OF 98 FOR TABULATIONS.

**Prescribed Timing Sequence**  
**30th St., Allegheny, Henry & Hunting Park**  
 90 Second Cycle  
 Established 9/6/91  
 Still in Effect.

9:30 AM to 3:00 PM  
 6:30 PM to 6:30 AM

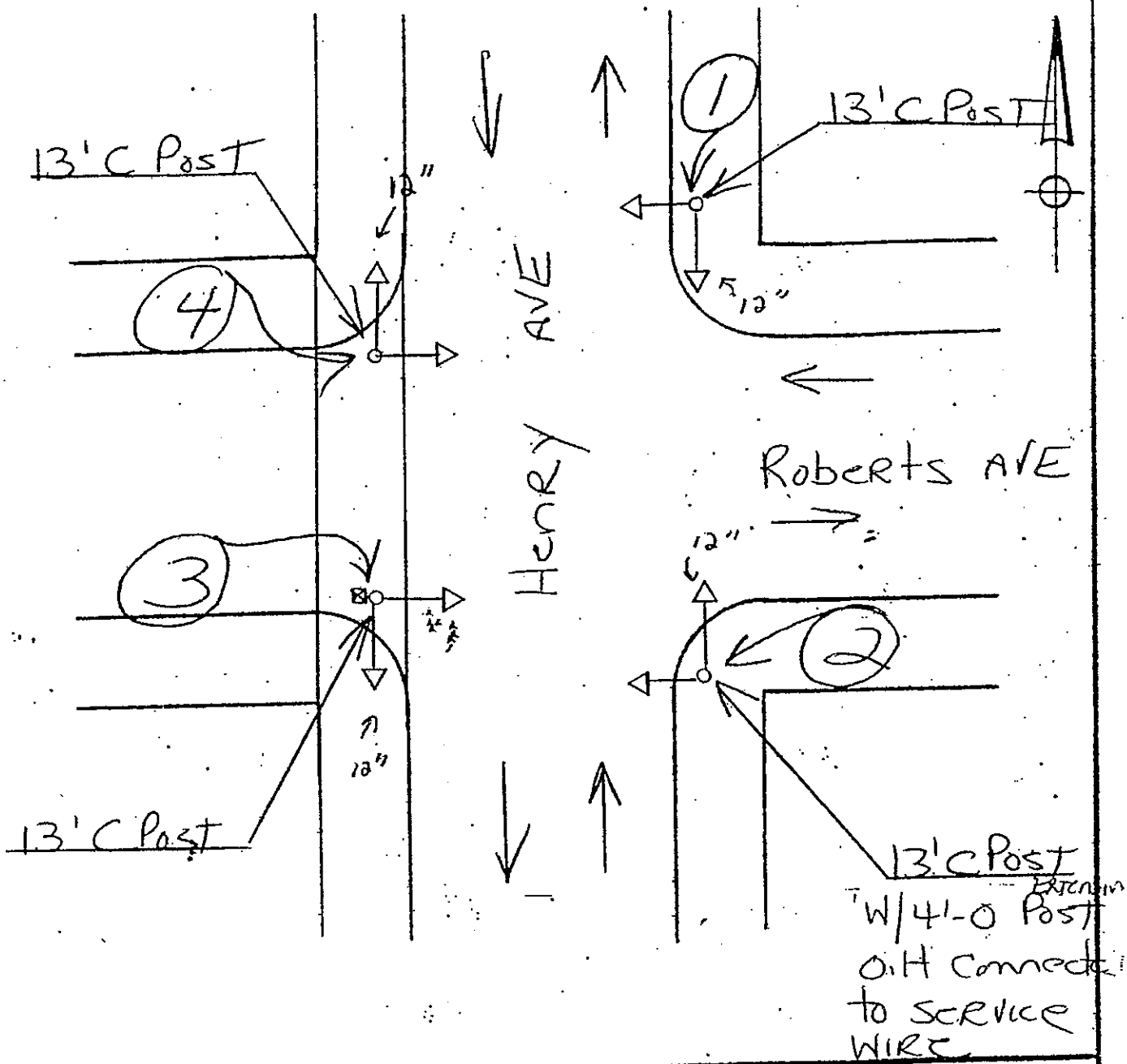
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Hunting Park NE Bound	G												
	<G	G	G	Y	R	R	R	R	R	R	R	R	R
Hunting Park SW Bound	R	R	G	Y	R	R	R	R	R	R	R	R	R
Henry Avenue	R	R	R	R	R	G							
	<G	G	G	Y	R	R	R	R	R	R	R	R	R
30th Street	R	R	R	R	R	R	R	G	Y	R	R	R	R
Allegheny Ave.	R	R	R	R	R	R	R	R	R	R	G	Y	R
Seconds	10.8	3.6	20.7	3.6	2.7	8.1	3.6	12.6	3.6	1.8	13.5	3.6	1.8
%	12	4	23	4	3	9	4	14	4	2	15	4	2

0  
 116  
 134  
 116  
 89  
 3.6  
 20.8  
 144  
 27  
 414

63  
 20.7  
 270  
 8.1

WN



# Henry AND Roberts

TRAFFIC ENGINEERING DIVISION  
DEPARTMENT OF STREETS  
CITY OF PHILADELPHIA

DRAWN BY	SCALE NONE		
CHECKED BY	REVISIONS	DRAWING NO.	
DATE		A	

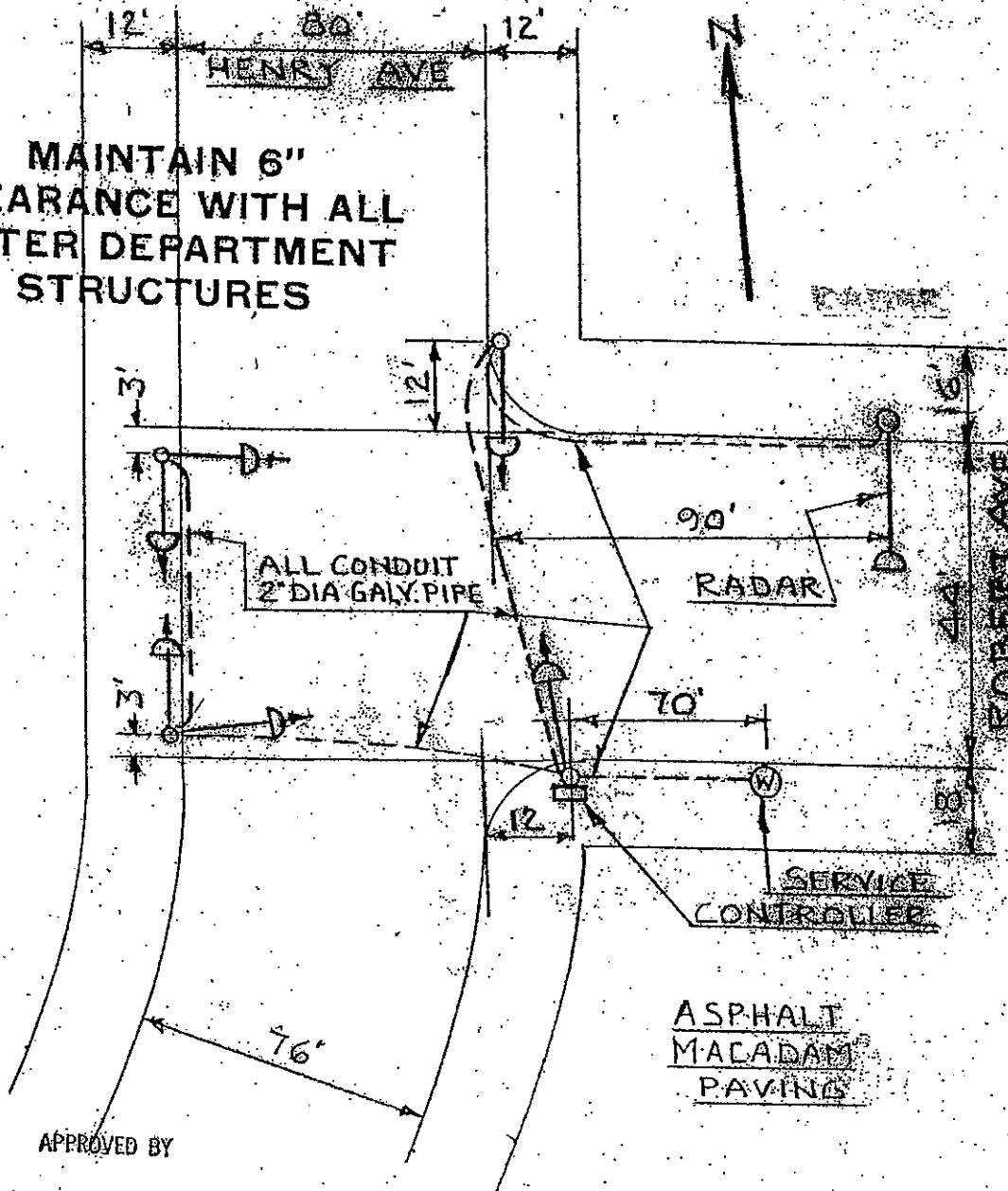
APPROVED \_\_\_\_\_

APPROVED \_\_\_\_\_

WORK ORDER S30014		HENRY & ROBERTS														District TD# 3							
SIGNAL		Prepared by Jabulani Moyo		Date 01/04/2003		WORK COMPLETED by <i>R. Moore</i>		Date 1-9-03								Release date							
		Approved by Charles Denny		<i>Charles Denny 1/4/03</i>		INSPECTED by		Date															
																Minimums		Max					
#	PHASE	intervals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	flash	G	M	FH	
2	NB Henry		G	Y	R		R	R	R										Y				
5																							
6	SB Henry		G	Y	R		R	R	R										Y				
1																							
4																							
7																							
8	WB Roberts		R	R	R		G	Y	R										R	24.5			
3																							
P2																							
P6																							
P4																							
P8																							
	Time (sec)		50.4	3.6	2.7		27	3.6	2.7										90 sec	Time of Day Plan			
	Percent %		58	4	3		28	4	3										100%	Plan Time Integral Day			
	Pin Setting		0	58	62	65		93	97	0													
	Instructions		OFFSETS		R1	58	R2	0	R3	0													
			Install timings and offsets as shown.																				

HENRY & ROBERTS AVES

MAINTAIN 6" CLEARANCE WITH ALL WATER DEPARTMENT STRUCTURES



APPROVED BY

WATER	12/3/58	G.M.Z.
ENG. SUR.	12/1/58	W.F. [Signature]
ELECTRICAL		
HWY. BUR.	12/4/58	[Signature]

#A-12/12/58

W.N.B.

APPROVED

APPROVED

HENRY & ROBERTS AVE  
SIGNAL CONTROL

BUREAU OF TRAFFIC ENGINEERING  
DEPARTMENT OF STREETS  
CITY OF PHILADELPHIA

DRAWN BY GILFERT	SCALE N.T.S.		
CHECKED BY	REVISIONS	DRAWING NO.	
DATE 12-1-58		A-210-766A	

<b>WORK ORDER</b> 07506		LOCATION Henry Ave AND Roberts Ave				INVESTIGATION DIST. 3D.
TYPE SIGNAL	INVESTIGATED BY Thomas Buck	DATE 9-3-97	WORK COMPLETED BY Mali Sattelle	DATE 9 Sept 97	INVESTIGATION NUMBER TO 12 CONCRETE	
	APPROVED BY Vincent DeGlarin	DATE 9-3-97	WORK INSPECTED BY Thomas Buck	DATE 10-2-97		
#	CORNER	Mount	EXISTING	Change to	12" FACE	8" FACE
①	N.E	13' C Post	8x8 Two-WAY	8x12 Two-WAY	SOUTH	WEST
②	S.E	13' C Post	8x8 Two-WAY with 4'-0" Extension w/o H Connector	8x12 Two-WAY with 4'-0" Extension with O.H Connector	NORTH	WEST
③	S.W	13' C Post	8x8 Two-WAY	8x12 Two-WAY	SOUTH	EAST
④	N.W	13' C Post	8x8 Two-WAY	8x12 Two-WAY	NORTH	EAST
<u>NEEDED</u>		(3)	8x12	TWO-WAY	FOR	13' C Post
		(1)	8x12	TWO-WAY	WITH	4'-0" EXTENSION
			WITH	O.H	CONNECTOR	



WORK ORDER No 1178	LOCATION HENRY AV & ROBERTS AV			INVESTIGATION DIST.
	INVESTIGATED BY J. Kramor	DATE 12/8/87	WORK COMPLETED BY HEINKELS & McCoy	DATE
TYPE SIGNAL	APPROVED BY [Signature]	DATE 1/12/88	WORK INSPECTED BY	DATE
INVESTIGATION NO.				

THE TRAFFIC SIGNALS AT THE ABOVE LOCATION HAVE BEEN MODIFIED BY PENN DOT & ITS CONTRACTOR. THE SIGNALS HAVE COMPLETED THE 30 DAY TEST & HAVE BEEN ACCEPTED BY THE CITY OF PHILA.

PHASING & TIMING AS FOLLOWS:

HENRY AV	G	Y	R	R	FLASH Y
ROBERTS AV	R	G	Y	R	R

\* = DUMMY KEYS      DIAL 1 = 80 SEC CYCLE

SECONDS	48.0	3.2	2.4	20.8	3.2	2.4	R1 = 60
PERCENT	60	4	3	26	4	3	
PIN SETTING	0 * * (60)	64	67	93	97	0	

DIALS 2 & 3 = 90 SEC CYCLE

SECONDS	54.0	3.6	2.7	23.4	3.6	2.7	R1 = 60
PERCENT	60	4	3	26	4	3	
PIN SETTING	0 * * (60)	64	67	93	97	0	

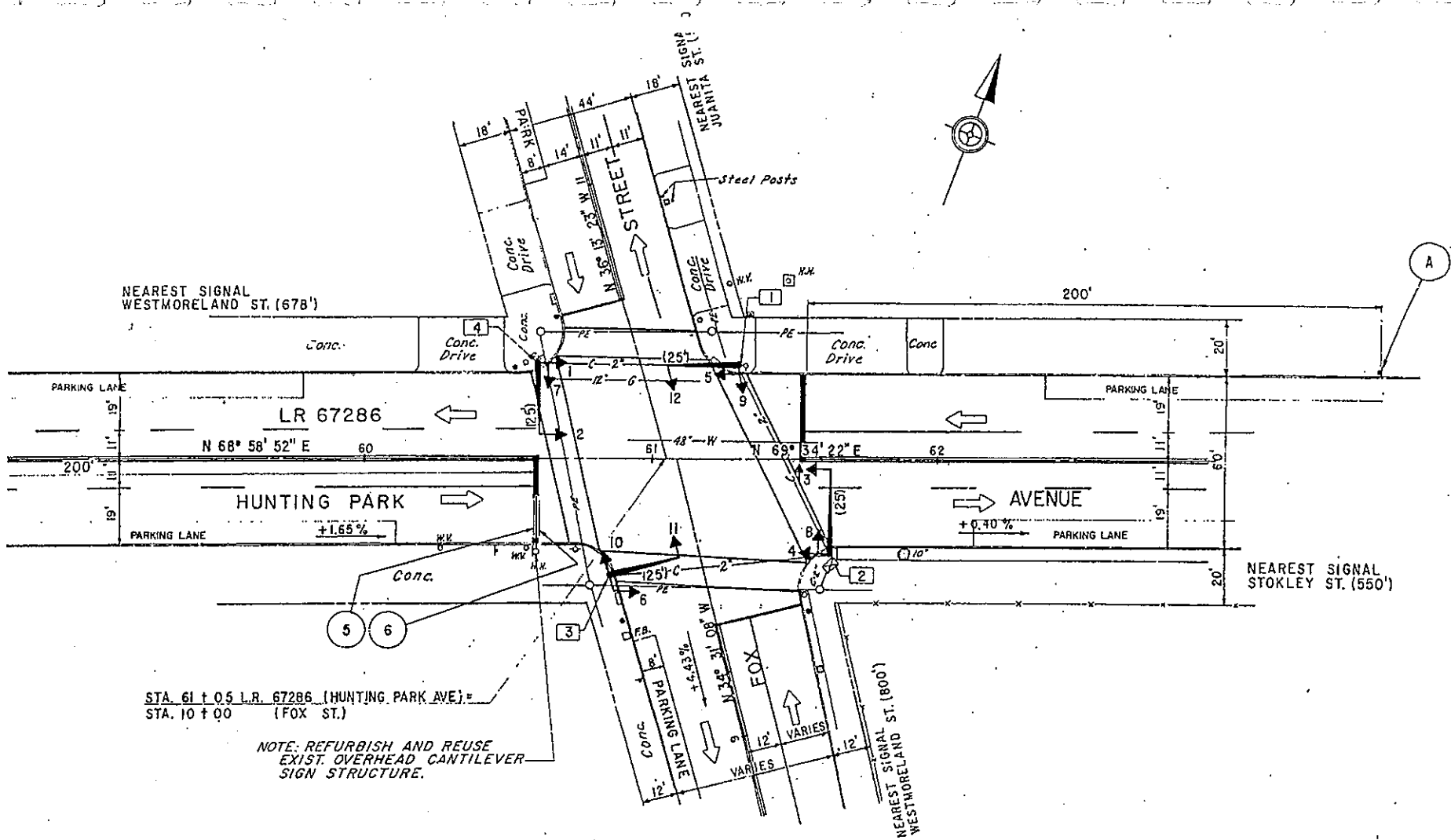
START OF WORK (INTERCONNECT) - 2/12/87  
 NEW OPERATION (CONTROLLER) - 6/1/87  
 ACCEPTED - 12/2/87 ; CONTROLLER WARRANTY - 6/2/88

MARBELITE TIMER  
 EAGLE BACK PANEL

WORK ORDER S30013		ABBOTTSFORD & HENRY														District		TD# 3						
SIGNAL		Prepared by Jabulani Moyo				Date 01/04/2003				WORK COMPLETED by <i>JM</i>				Date 1-9-03				Release date						
		Approved by Charles Denny <i>CD</i>				Date 1/4/03				INSPECTED by <i>RM</i>				Date										
#	PHASE	intervals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	flash	G	M	FH	Min	Max
2	NB Henry		G	Y	R		R	R	R										Y					
5																								
1	SB Henry Left-turn		G	Y	R		<G/R	<Y/R	R										Out					
6	SB Henry		G	Y	R		R	R	R										Y					
7																								
4	EB Abbottsford		R	R	R		G	Y	R										R	23				
8																								
3																								
P2																								
P6																								
P4																								
P8																								
	Time (sec)		54	3.6	2.7		23.4	3.6	2.7										90 sec	Time of Day Plan				
	Percent (%)		60	4	3		26	4	3										100%	Plan Time Program Day				
	Pin Setting		0	60	64	67		93	97	0														
	Instructions		Install timings and offsets as shown.																					

APPROVI

APPROVI



STA. 61 + 05 L.R. 67286 (HUNTING PARK AVE) =  
STA. 10 + 00 (FOX ST.)

NOTE: REFURBISH AND REUSE  
EXIST. OVERHEAD CANTILEVER  
SIGN STRUCTURE.

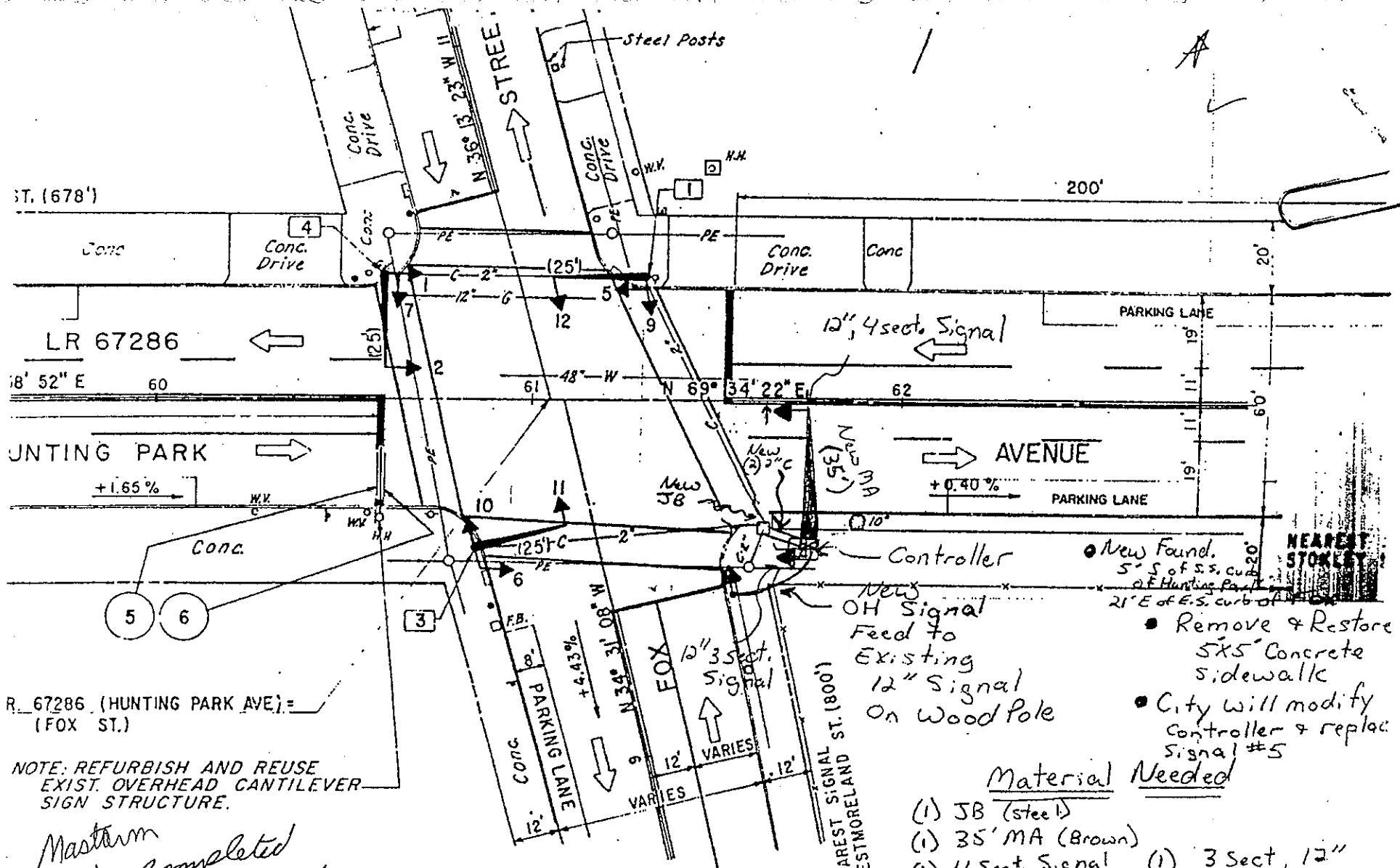
SEE SHEET NO. 36 OF 98 FOR TABULATIONS

SEE SIGNING SHEETS 5 OF 20  
ALSO INCLUDED, FOR DETAILS OF  
SIGNS AND SIGNS STRUCTURES

**Prescribed Timing Sequence**  
**Fox Street & Hunting Park Ave.**  
**Timing Established 6/1/84**  
**Still in Effect**  
**90 Second Cycle**



Hunting Park Eastbound	G<G	G	G	Y	R	R	R	R
Hunting Park Westbound	R	R	G	Y	R	R	R	R
Fox Street	R	R	R	R	R	G	Y	R
Seconds	6.3	3.6	38.7	3.6	1.8	30.6	3.6	1.8
%	7	4	43	4	2	34	4	2



ST. (678')

200'

LR 67286

18' 52" E 60

HUNTING PARK

+1.65%

5 6

R. 67286 (HUNTING PARK AVE) = (FOX ST.)

NOTE: REFURBISH AND REUSE EXIST. OVERHEAD CANTILEVER SIGN STRUCTURE.

*Master work completed in 9/97*

SEE SHEET NO. 36 OF 98 FOR TABULATIONS

SEE SIGNING SHEETS 5 OF 20 ALSO INCLUDED, FOR DETAILS OF SIGNS AND SIGNS STRUCTURES

Controller  
New OH Signal Feed to Existing 12" Signal On Wood Pole

- New Found. 5' S of S.S. curb of Hunting Park 21' E of E.S. curb of ...
- Remove & Restore 5x5" Concrete sidewalk
- City will modify controller & replace signal #5

Material Needed

- (1) JB (steel)
- (1) 35' MA (Brown)
- (1) 4 Sect. Signal (1) 3 Sect, 12"
- (LF) 5 cond. (City will supply)
- (LF) 7 cond.
- (LF) 15 cond.
- (LF) 2" Conduit
- (LF) 2" Elbows
- (LF) Service

NEAREST SIGNAL ST. (1800')

WORK ORDER

16733

LOCATION

Fox St AND Hunting Park Ave

INVESTIGATION DIST.

3

INVESTIGATED BY

Thomas Buck

DATE

4-6-98

WORK COMPLETED BY

Tom Simmons

DATE

4-13-98

TYPE

SIGNAL

APPROVED BY

Vincent D'Alvino

DATE

4-7-98

WORK INSPECTED BY

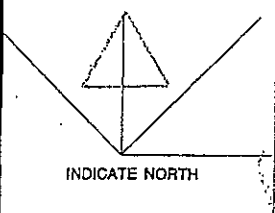
Thomas Buck

DATE

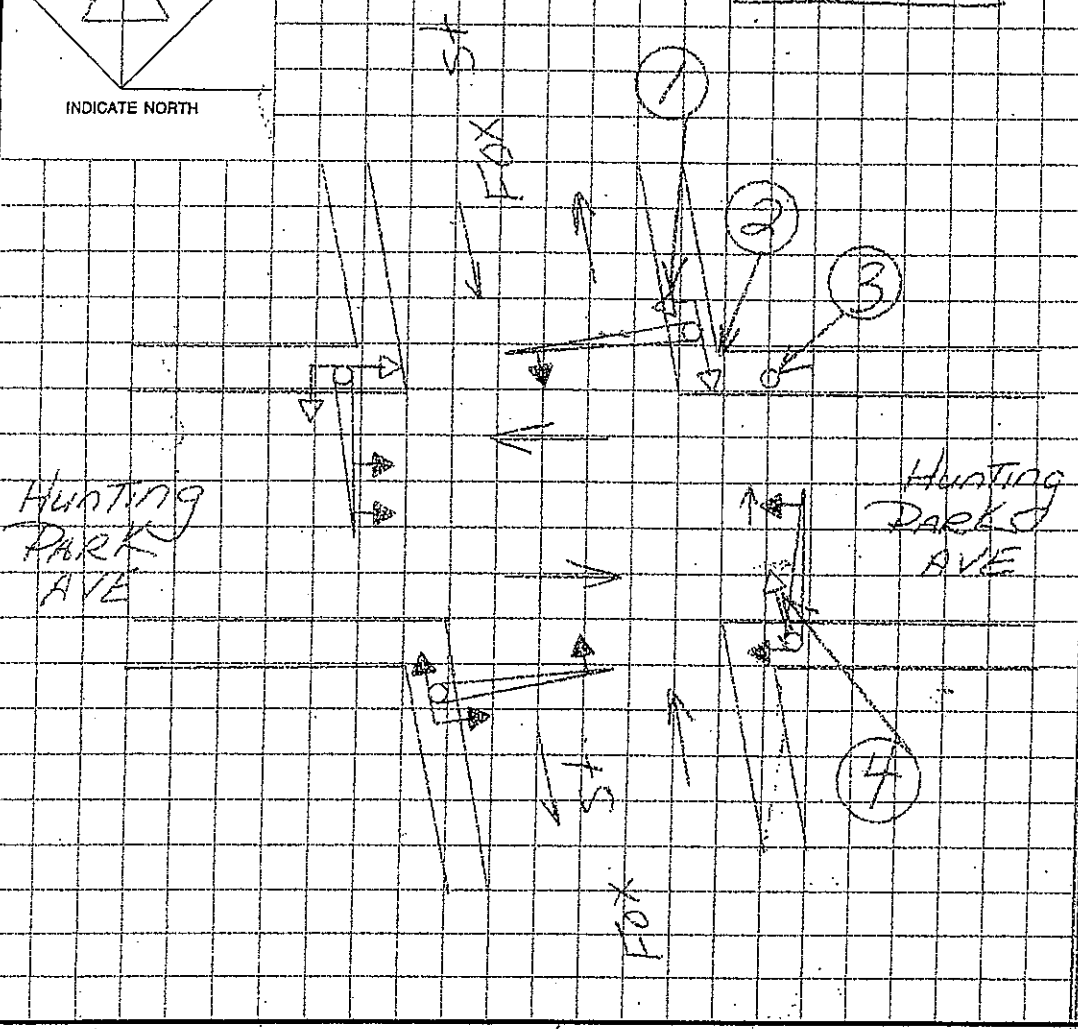
4-25-98

INVESTIGATION NUMBER

MISSING PED HEAD



L.E.D. INTERSECTION



- ① Remove 12' 4" SECTION HEAD WITH L.E.D. FROM SIDE OF M.A. PLACE 8" ONEWAY SIDEMOUNT ON M.A. FACE 8" SIGNAL WEST
  - ② PLACE 8" VISORS ON 8" SIGNALS FOR RED AND GREEN
  - ③ Remove 8" ONEWAY WITH L.E.D. FROM ALUMINUM PEDS SIDE
  - ④ PLACE 8" ONEWAY SIDEMOUNT ON M.A. FACE 8" SIGNAL NORTH FOR PEDS
- NOTE: A HOLE MUST BE DRILLED IN M.A. UPRIGHT TO ACCOMMODATE NEW 8" SIGNAL

77-164 (Rev 8/93)

NEEDED: (2) 8" ONEWAYS FOR M.A. SIDEMOUNT. (2) 8" SIGNAL HEAD VISORS

WORK ORDER

55841

LOCATION

FOX ST AND HUNTING PARK AVE

INVESTIGATION DIST.

3

INVESTIGATED BY

Thomas Bud

DATE

11-15-00

WORK COMPLETED BY

Thomas Bud 2-5-01

DATE

11-24-00

INVESTIGATION NUMBER

UPGRADE  
8702, 10780

TYPE

SIGNAL

APPROVED BY

g4 - [Signature]

DATE

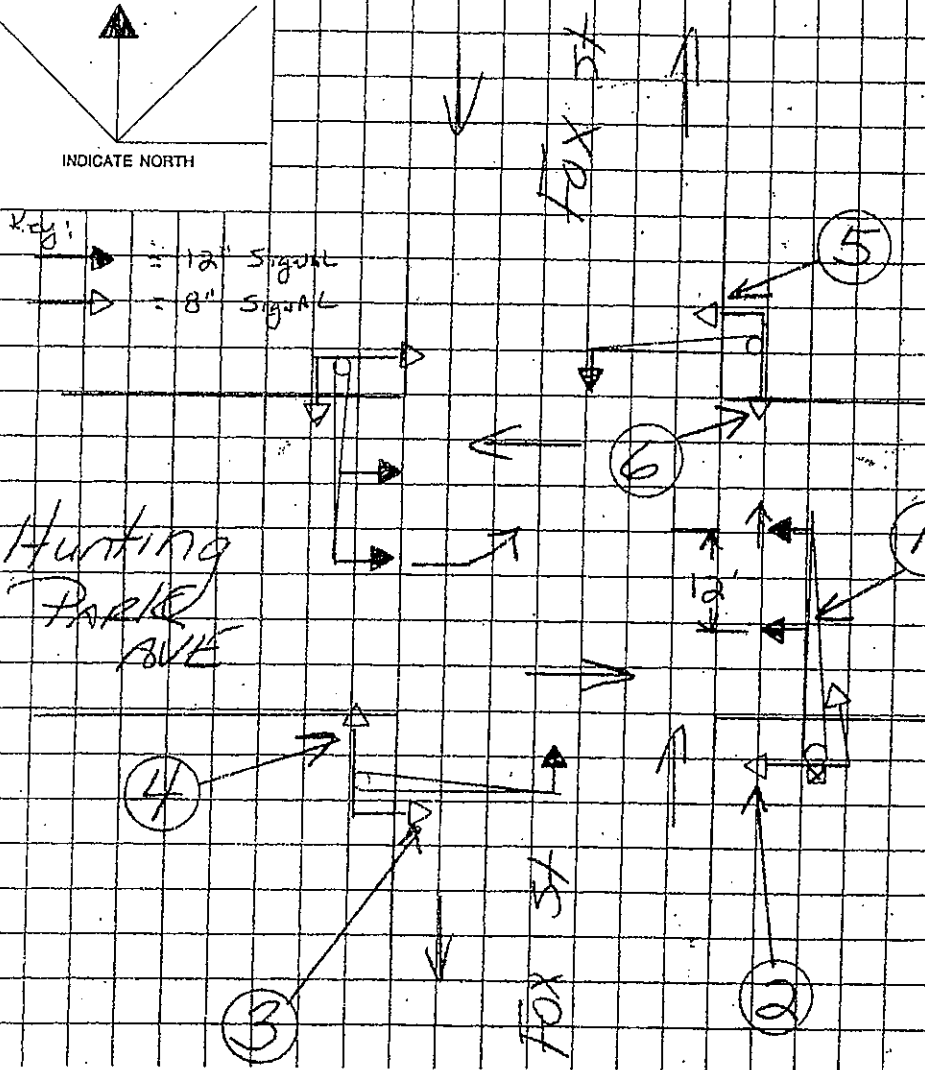
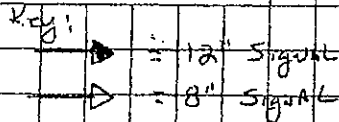
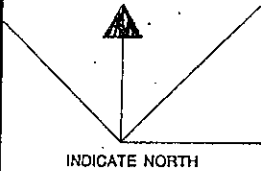
11/16/00

WORK INSPECTED BY

Thomas Bud 2-5-01

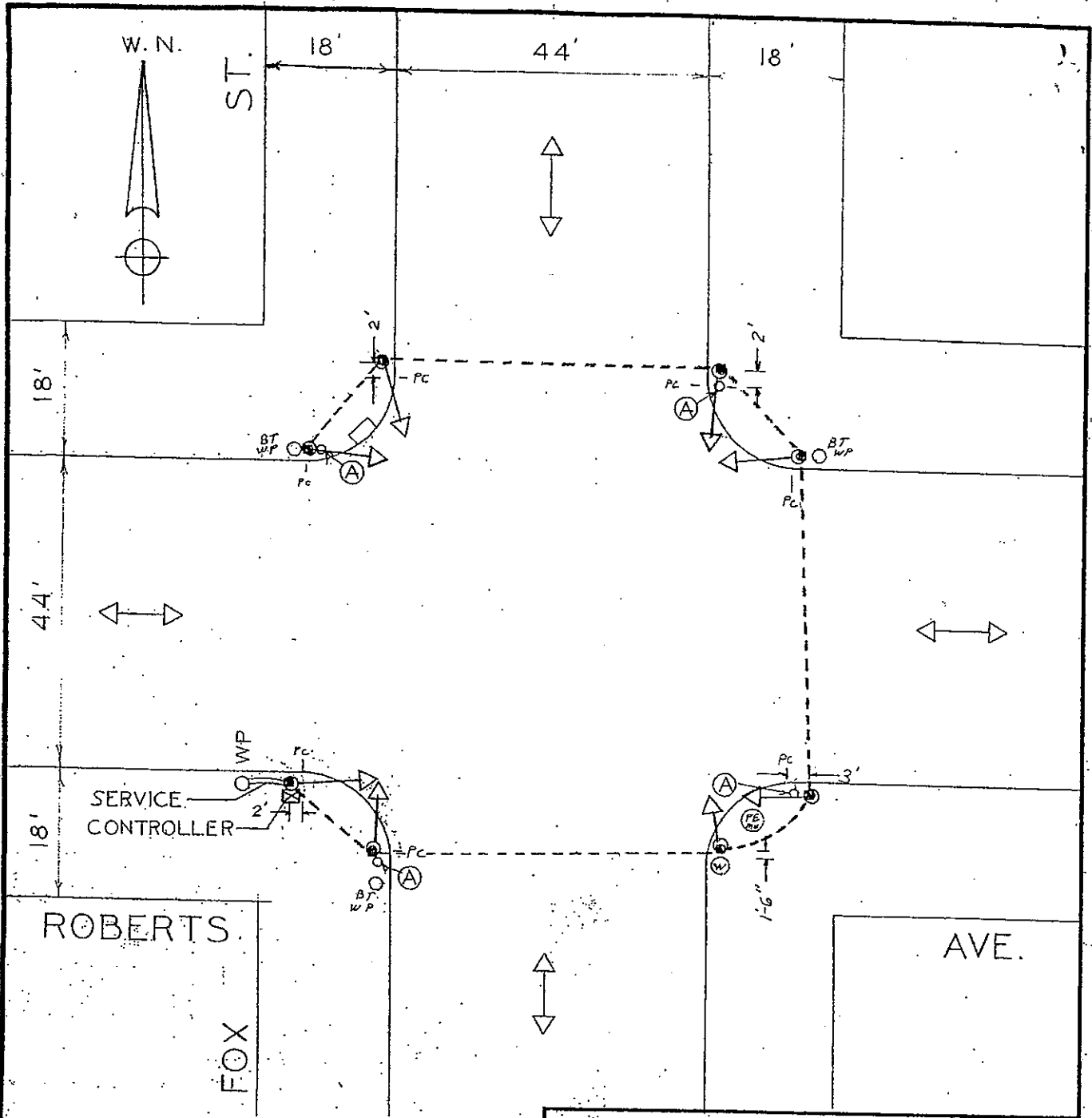
DATE

11-24-00



- ① INSTALL 12" O.H. TRAFFIC SIGNAL W/BACKPLATES FACE 12" O.H. WEST
- ② REMOVE 12" ONEWAY FROM MA UPRIGHT FACING WEST  
INSTALL 8" ONEWAY ON MA UPRIGHT FACE WEST
- ③ REMOVE 12" ONEWAY FROM MA UPRIGHT FACING EAST  
INSTALL 8" ONEWAY ON MA UPRIGHT FACE EAST
- ④ REMOVE 12" ONEWAY FROM MA UPRIGHT FACING NORTH  
INSTALL 8" ONEWAY ON MA UPRIGHT FACE NORTH
- ⑤ ⑥ INSTALL VISORS OVER GREEN INDICATIONS (MISSING)

NEED (1) 12" O.H. W/BACKPLATES  
 (3) 8" ONEWAYS FOR MA UPRIGHTS (2) 8" VISORS



- (A) REMOVE EXISTING EQUIPMENT
- (●) NEW C-POST
- EXISTING 2" DIA. GALV. TRAFFIC CONDUIT

**FOX ST & ROBERTS AVE.**  
**SIGNAL CONDUIT**

TRAFFIC ENGINEERING DIVISION  
DEPARTMENT OF STREETS  
CITY OF PHILADELPHIA

DRAWN BY <i>R. U.</i>	SCALE 1" = 20'		
CHECKED BY <i>JOHNSTON</i>	REVISIONS 8-8-74 <i>LSJ</i>	DRAWING NO.	
DATE 12-8-72		<b>A 210-172 B</b>	

APPROVED *[Signature]*  
TRAFFIC ENGINEER

APPROVED \_\_\_\_\_  
CITY TRAFFIC ENGINEER

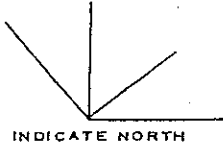


NO PE

3-163

<b>WORK ORDER</b> 332 (37)	LOCATION Fox St & Roberts Ave			INVESTIGATION DIST.
	INVESTIGATED BY	DATE	WORK COMPLETED BY	
TYPE SIGNAL	APPROVED BY J. J. Marshall	DATE 8/27/74	WORK INSPECTED BY MARANO-WADEL J. B. L.	DATE 10-22-74
				INVESTIGATION NO.

Loveland Sep 5



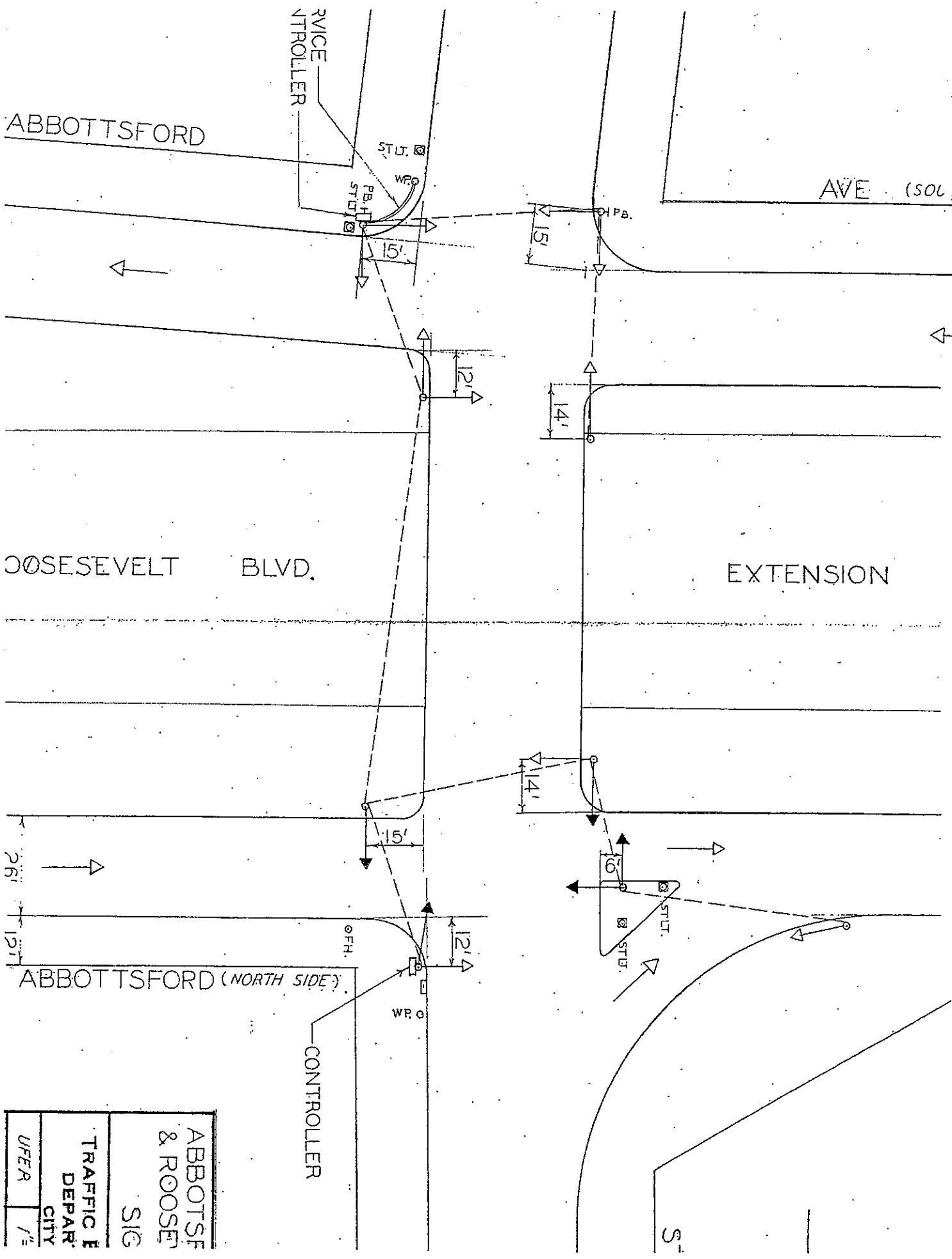
PLEASE MAKE UP TRAFFIC SIGNAL EQUIPMENT TO BE  
 INSTALLED BY THE CONTRACTOR UNDER THE CITY WIRE CONTRACT  
 P.O. #5-01653

- 8-13' C-POST
- 7-1WAY 8" HEADS
- 1-1WAY 8" HEAD WITH SERVICE ATTACHMENT.

SEE TE P.O. A-210-172-B

	60 SECOND CYCLE			FL
FOX	30-G	3	R	47
ROBERTS	R		24-G	3 R

SUPERSEDED BY W.O. 4219  
 ECONOLITE B-3L -9-3-74



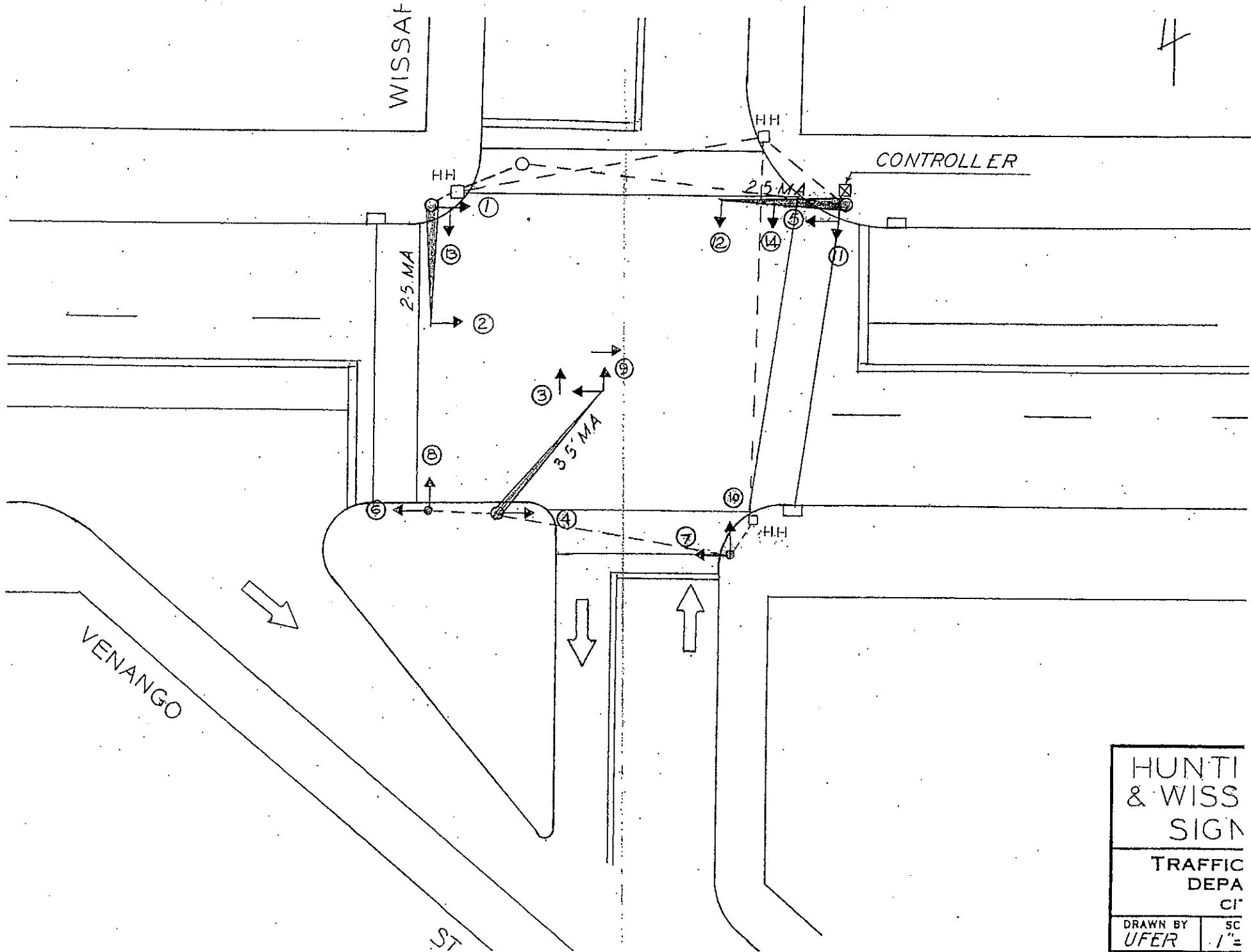
ABBOTSFORD & ROOSEVELT	
SIG	
TRAFFIC ENGINEER	
DEPARTMENT	
CITY	
DATE	1/2

\* ✓

Prescribed Timing Sequence  
Fox & Westbound Abbotsford Ave( expressway ramps)  
Timing Established 11/28/83  
Timing Changed 1992  
60 second Cycle

Fox Northbound	<GG	G	G	Y	R	R	R	R
Fox Southbound	R	R	G	Y	R	R	R	R
Abbotsford Avenue	R	R	R	R	R	G	Y	R
Seconds	6.0	3.0	19.8	3.0	1.8	21.6	3.0	1.8
%	10	5	33	5	3	36	5	3

4



HUNTI & WISS SIGN	
TRAFFIC DEPA CI'	
DRAWN BY UFER	SC .1" =

A

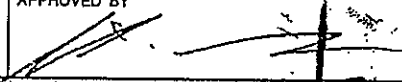
PRESCRIBED TIMING SEQUENCE

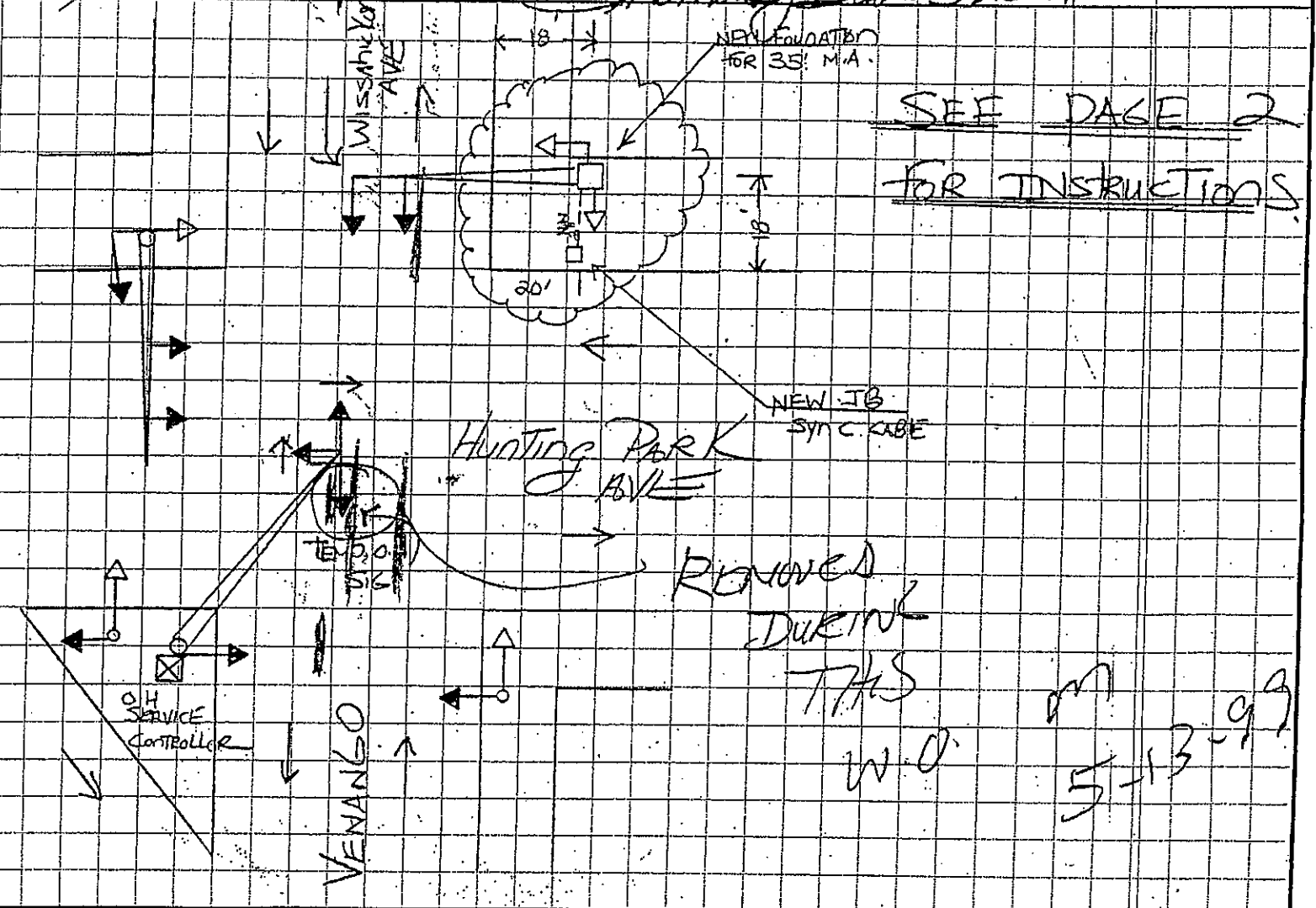
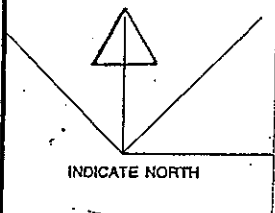
HUNTING PARK & WISSAHICKON

Hunting Park EB	G* G	G	G	Y	R	R	R	R	R	R
Hunting Park WB	R	R	G	Y	R	R	R	R	R	R
Wissahickon SB	R	R	R	R	R	G* G	G	G	Y	R
Wissahickon NB	R	R	R	R	R	R	R	G	Y	R
Seconds	7.2	3.6	37.8	3.6 ✓	1.8 ✓	10.8	3.6	16.2	3.6 ✓	1.8 ✓
%	8	4	42	4	2	12	4	18	4	2

90 Cycle

mm/2:6

<b>WORK ORDER</b> 397.97  <b>SIGNAL</b>	LOCATION Hunting Park Ave and Wissahickon Ave	INVESTIGATION DIST. 30		
	INVESTIGATED BY Thomas Buck	DATE 3-29-99	WORK COMPLETED BY Carr + Duff	DATE 5-25-99
	APPROVED BY 	DATE 3/30/99	WORK INSPECTED BY Thomas Duff	DATE 5-25-99
			INVESTIGATION NUMBER	

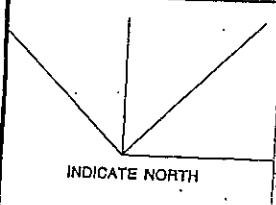


WORK ORDER  
39799

ALC 2 of 2

LOCATION Hunting Park Ave and Wissahickon (Northeast)	INVESTIGATION DIST. 30
INVESTIGATED BY THOMAS BUCK	DATE 3-29-99
APPROVED BY 	DATE 3-30-99
WORK COMPLETED BY CARR + DUFF	DATE 5-25-99
WORK INSPECTED BY Thomas Buck	DATE 5-25-99
INVESTIGATION NUMBER	

TYPE  
SIGNAL



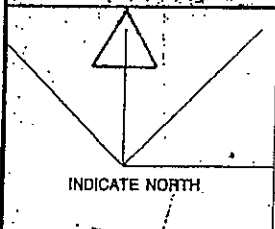
- CONSTRUCT MASTARM FOUNDATION ON N/E. CORNER FOR 35' MASTARM
- INSTALL 35' MASTARM
- REMOVE 13' C-POST / PEDIESTAL POLE
- REMOVE 8x8 TWO-WAY SIGNAL ASSEMBLY
- MODIFY EXISTING FOUNDATION FOR JUNCTION BOX
- FURNISH AND INSTALL JUNCTION BOX
- FURNISH AND INSTALL 2" GALV. CONDUIT FROM NEW J.B. TO NEW FOUNDATION
- FURNISH AND INSTALL 2" ELBOW AS NEEDED
- FURNISH AND INSTALL (2) 12" O.H. TRAFFIC SIGNALS
- FURNISH AND INSTALL (2) 8" TRAFFIC SIGNALS
- FURNISH AND INSTALL NEW 15 CONDUCTOR IN ENTIRE INTERSECTION
- FURNISH AND INSTALL NEW SYNC CABLE FROM NEW FOUNDATION TO JUNCTION BOX TO S.W. CORNER CONTROLLER THROUGH EXISTING 2" CONDUIT
- USE SPLICE KIT ON SYNC CABLE IN J.B.
- RESTORE CONCRETE SIDEWALK

APPROX. QUANTITIES	(1) FOUNDATION	(1) SPLICE KIT 3M.	(1) 5x CONCRETE (125')	(200') 15' CONDUCTOR
	(1) INSTALL M.A.	(1) REMOVE SIG POST	(2) 2" ELBOW	(2) 8" T.S.
	(10') 2" CONDUIT	(1) REMOVE SIG ASSEMBLY	(1) FIT J.B.	(2) 12" O.H.
		(1) MODIFY FOUNDATION	(2) 12" O.H.	(100') SYNC CABLE

77-164 (Rev/8/93)

FILE TO W/O 3, 20's

WORK ORDER 39219 SIGNAL	LOCATION HUNTING PARK AV, VENANGO ST, WISSAHICKON	INVESTIGATION DIST. 3D	
	INVESTIGATED BY Thomas Buck	DATE 11-10-98	WORK COMPLETED BY M. Rowe
	APPROVED BY NCO	DATE 11-16-98	WORK INSPECTED BY Thomas Buck
		DATE 12-16-98	INVESTIGATION NUMBER 60009000000000000000



Hunting Park Ave

WISSAHICKON AVE

VENANGO ST

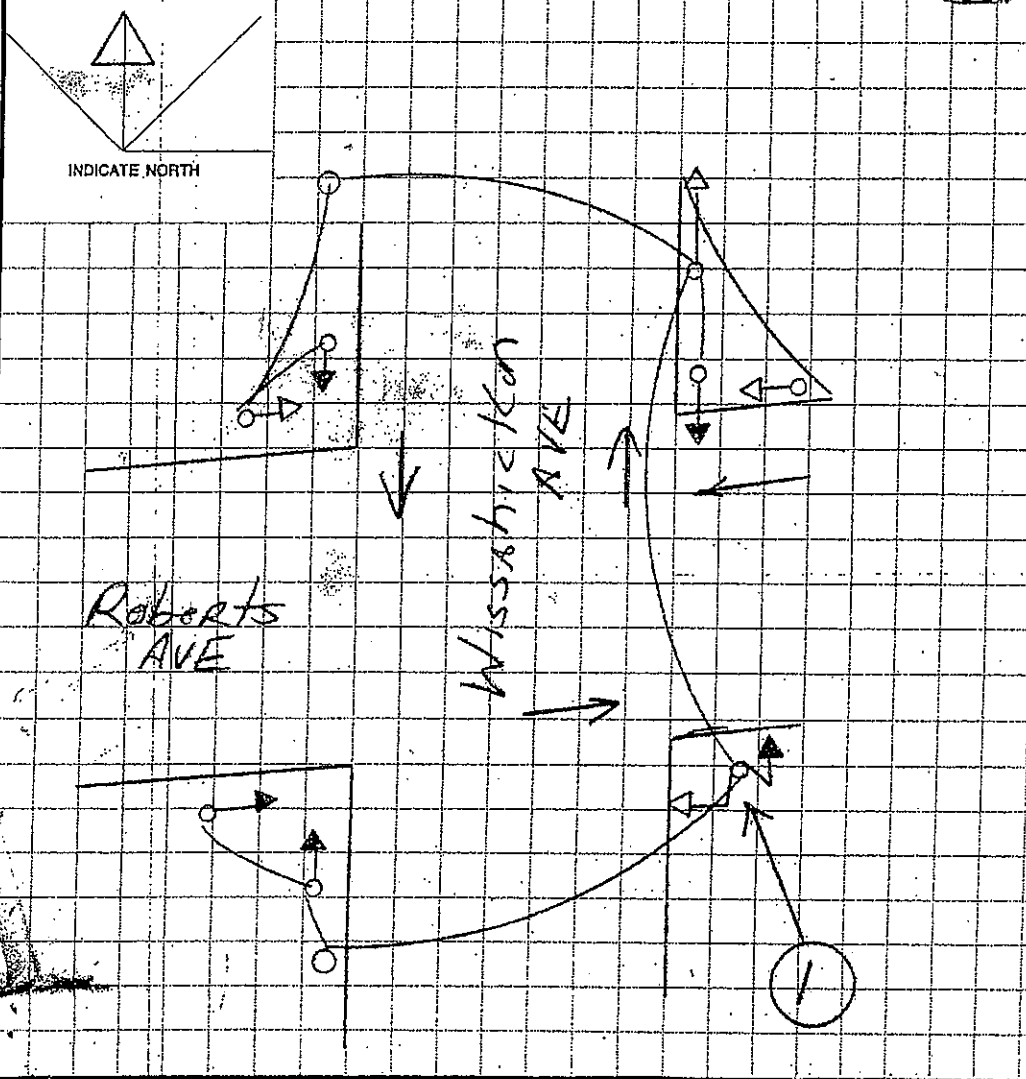
- ① - REMOVE 12" ONEWAY FACING EAST FROM 20' E-POST.  
- PLACE 8" ONEWAY ON 20' C-POST FACE SIGNAL SOUTH TOWARD VENANGO ST.
- REMOVE 12" ONEWAY FACING SOUTH FROM 20' E-POST.
- NOTE: LEAVE BOTTOM U-BOLT BRACKET AND PLACE AN ORNAMENT CAP TO PLUG HOLE.
- ② PLACE 12" O.H SIGNAL ON MASTORM.  
FACE 12" SIGNAL SOUTHWEST FOR VENANGO ST

77-164 (Rev/ 8/93)

NEEDED: (1) 12" O.H SIGNAL, (1) ORNAMENT CAP  
 (1) 8" ONEWAY, 7 CONDUCTOR WIRE, RUBBER CONDUIT



WORK ORDER 34219	LOCATION ROBERTS AVE AND WISSAHICKON AVE			INVESTIGATION DIST. 3
	INVESTIGATED BY Thomas Buck 7-20-99	DATE 8-12-99	WORK COMPLETED BY George Bell	
TYPE SIGNAL	APPROVED BY [Signature]	DATE 8/17/99	WORK INSPECTED BY Thomas Buck 8-20-99	DATE 8-20-99
	INVESTIGATION NUMBER HARRIS List 2ND DEC 99			



① REMOVE 8x12 TWO-WAY WITH O.H. CONNECTOR FROM 13' C POST

PLACE 12x8 TWO-WAY WITH O.H. CONNECTOR (SETBACK) ON 13' C POST

FACE 12" SIGNAL NORTH TOWARDS WISSAHICKON

FACE 8" SIGNAL WEST TOWARDS ROBERTS

NOTE: REMOVE EXISTING L.E.D. AND DURATEST BULBS AND PLACE IN NEW SIGNALS

→ = 12" SIGNAL  
 ↘ = 8" SIGNAL

REMOVED: (1) 12x8 TWO-WAY (SETBACK)

CITY OF PHILADELPHIA  
TRAFFIC ENGINEERING  
DISTRICT 3

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Roberts and Wissahickon  
Timing Sequence  
As of 5/6/96  
60 Sec cycle

Wissahickon	G	Y	R	R	R	R
Roberts	R	R	R	G	Y	R
Seconds	27	3	3	21:6	3	2.4
Percentage	45	5	5	36	5	4

FILE COPY

*Ready to go 5-1-03 NEED FILE*

<b>WORK ORDER # 2001</b>	<b>Wissahickon &amp; Charter School</b> (400' north of Roberts)	District 3
Prepared by:	Completed by: <i>Percey P. Duane</i> 5-1-03	Investigation #
Approved by: <i>M. P. 4/30/03</i>	Inspected by:	

Please modify create an Electro-mechanical Controller for a mast arm as follows:

								Flash
Wissahickon	G	Y	R	R	R	R	R	Y
Charter School Driveway*	R	R	R	G	G	Y	R	R
Pedestrian Crossing*	Hand	Hand	Hand	Man	F. Hand	Hand	Hand	Off

Seconds	53.1	3.6	1.8	7.2	18.9	3.6	1.8	
Percentage	59.00%	4.00%	2.00%	8.00%	21.00%	4.00%	2.00%	90

100.00%

*53-57-60-78-93-98-0*

**90 Second Cycle**

- NOTE:**
- Interconnected to Roberts (to come up with Wissahickon Green at Roberts)
  - \* Turns green for Charter School when loop is actuated
  - \* Hand Man operates when push button is pressed

*Mark*

*10/5/06, It is working fixed time*

*Steve*

## APPENDIX G

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### Preliminary Roadway Improvement Plans



Existing Route 1 Northbound Off-Ramp



Proposed Route 1 Northbound Off-Ramp

Printed 10-09-08 08:22am By: shw4

HOP	DISTRICT	COUNTY	TOWNSHIP	ROUTE	TOTAL SHEETS
	6-0	PHILADELPHIA	CITY OF PHILADELPHIA	0001	19

SR 0001 PREVIOUSLY KNOWN AS LR 67058

# Trump Street HIGHWAY IMPROVEMENT PLANS

FOR

STATE ROUTE 0001  
IN PHILADELPHIA COUNTY

RAMP 1  
RAMP 2  
RAMP 3

AND

ABBOTTSFORD AVENUE NB

FROM STA. 20+00.00 TO STA. 28+80.00 LENGTH 880.00 FT. 0.167 MI.

AND

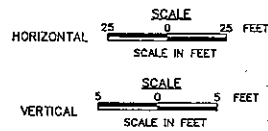
ABBOTTSFORD AVENUE SB

FROM STA. 30+00.00 TO STA. 49+12.65 LENGTH 1912.65 FT. 0.362 MI.

AND

STOKLEY STREET

FROM STA. 60+00.00 TO STA. 64+50.00 LENGTH 450.00 FT. 0.085 MI.



### SHEET INDEX

DESCRIPTION	SHEET(S)
TITLE SHEET	1
OVERALL PLAN	2
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PLAN SHEET RAMP 3	7 & 10
PROFILE SHEET RAMP 1 AND ABBOTTSFORD AVE	11-13
PROFILE SHEET STOKLEY STREET	14
PAVEMENT MARKING PLAN	15-16
CONCEPTUAL STAGING PLAN	17-18



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425 McFarlan Road, Suite 205  
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Tel: 610.444.6522  
Fax: 610.444.1698

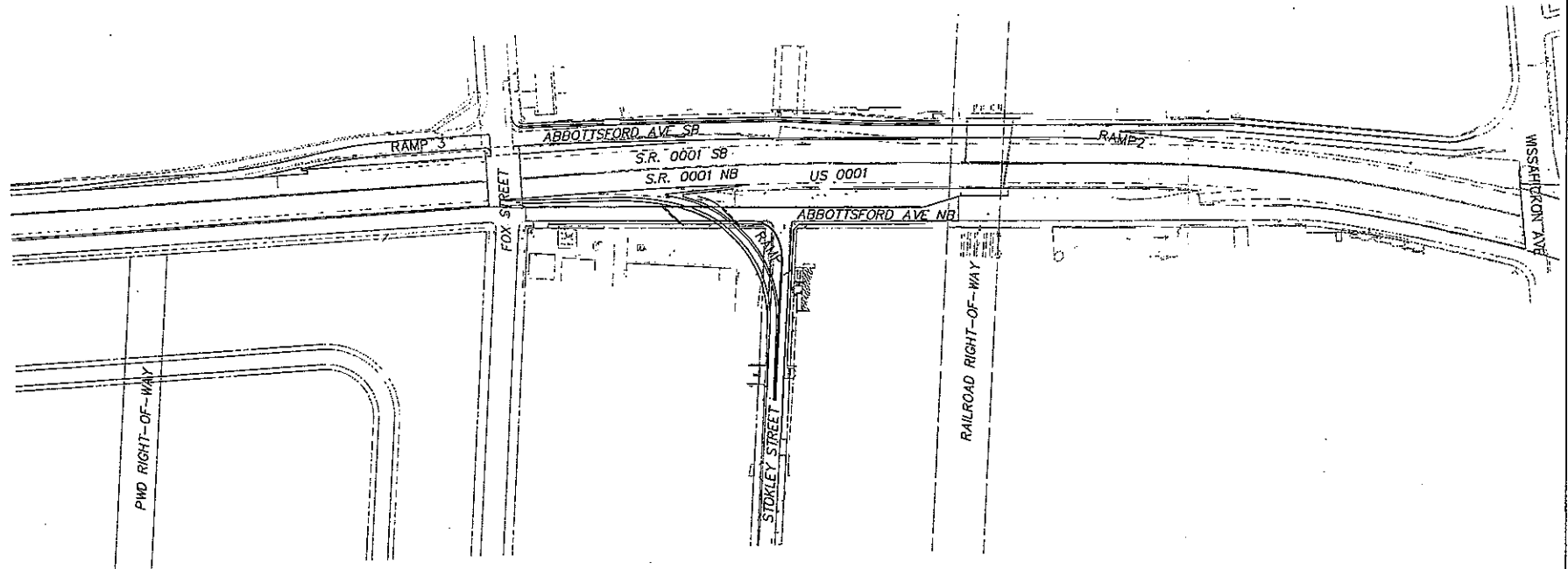
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PLOTID: 0-06-06 02:34pm Bjt 0044

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FILE NAME:



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CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

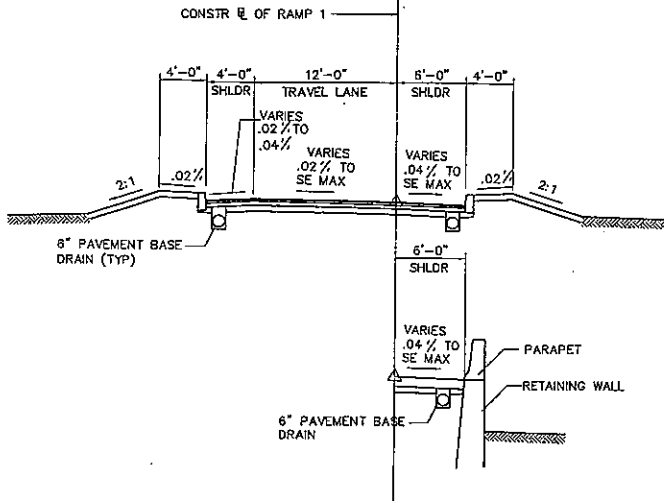


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SCALE IN FEET

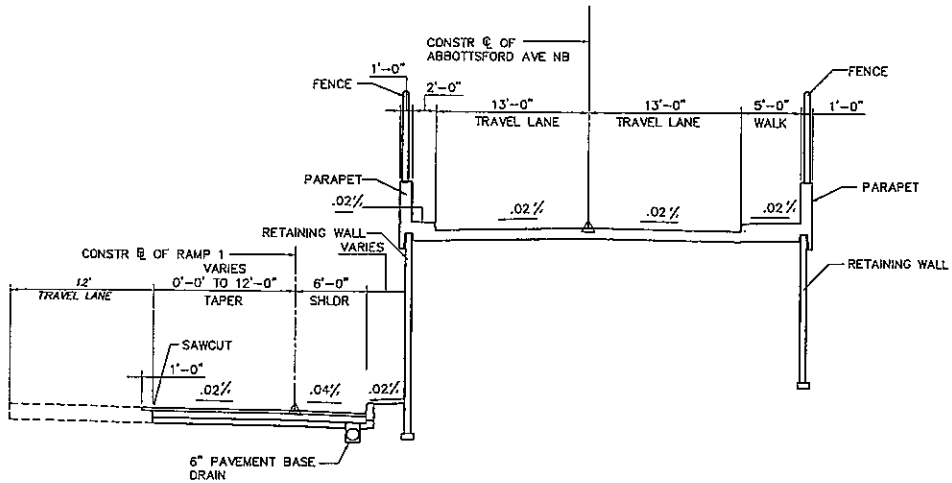




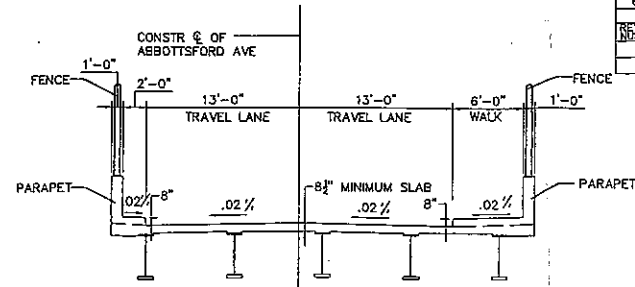
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		3 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



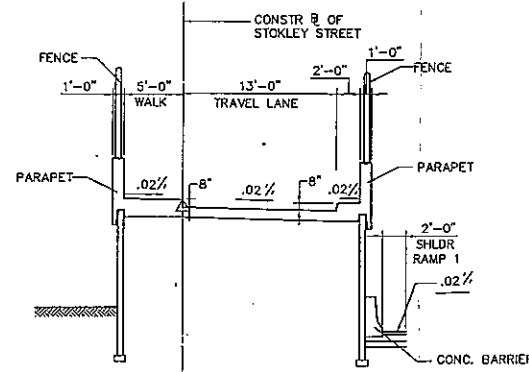
**RAMP 1 TYPICAL SECTION**



**ABBOTTSFORD AVE NB TYPICAL SECTION**



**ABBOTTSFORD AVE NB BRIDGE SECTION**



**SUPPLEMENTAL SECTION**

**STOKLEY STREET TYPICAL SECTION**

NOT TO SCALE

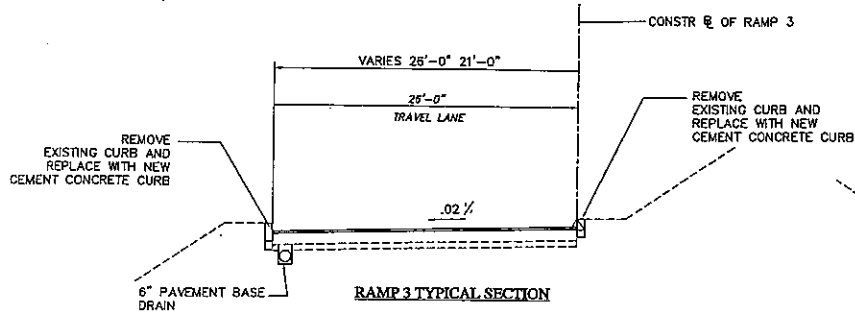
TYPICAL SECTIONS



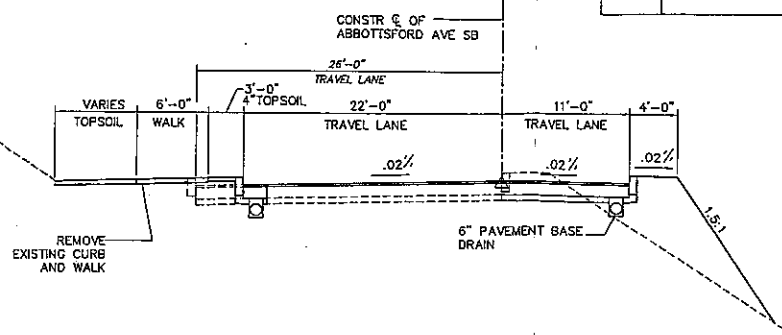
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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		4 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

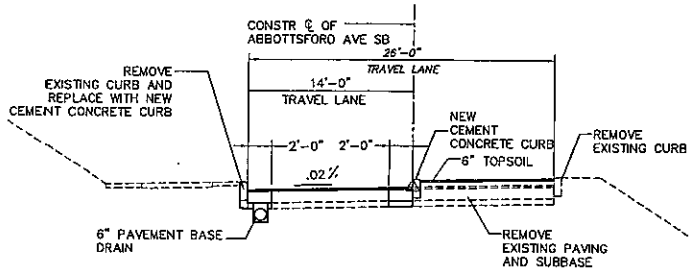
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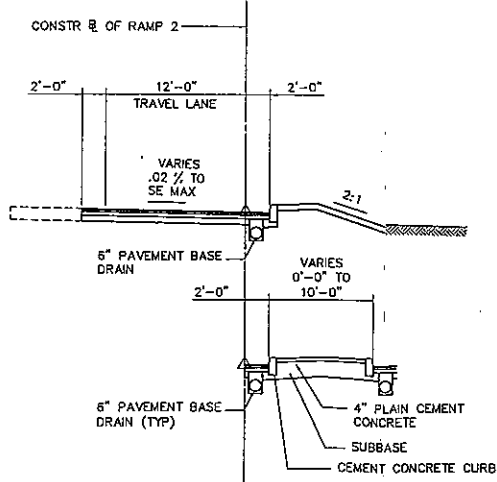
**RAMP 3 TYPICAL SECTION**



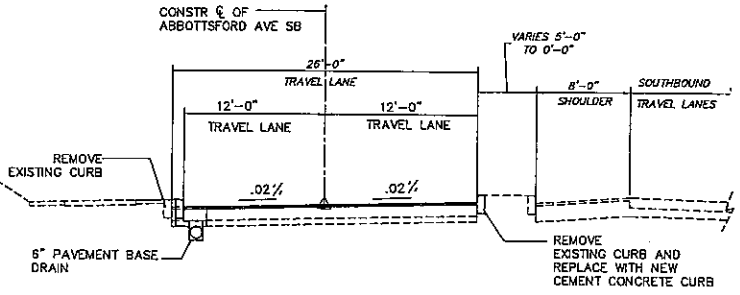
**ABBOTTSFORD AVE SB TYPICAL SECTION**



**ABBOTTSFORD AVE SB TYPICAL SECTION**



**SUPPLEMENTAL SECTION**



**ABBOTTSFORD AVE SB TYPICAL SECTION**

**RAMP 2 TYPICAL SECTION**

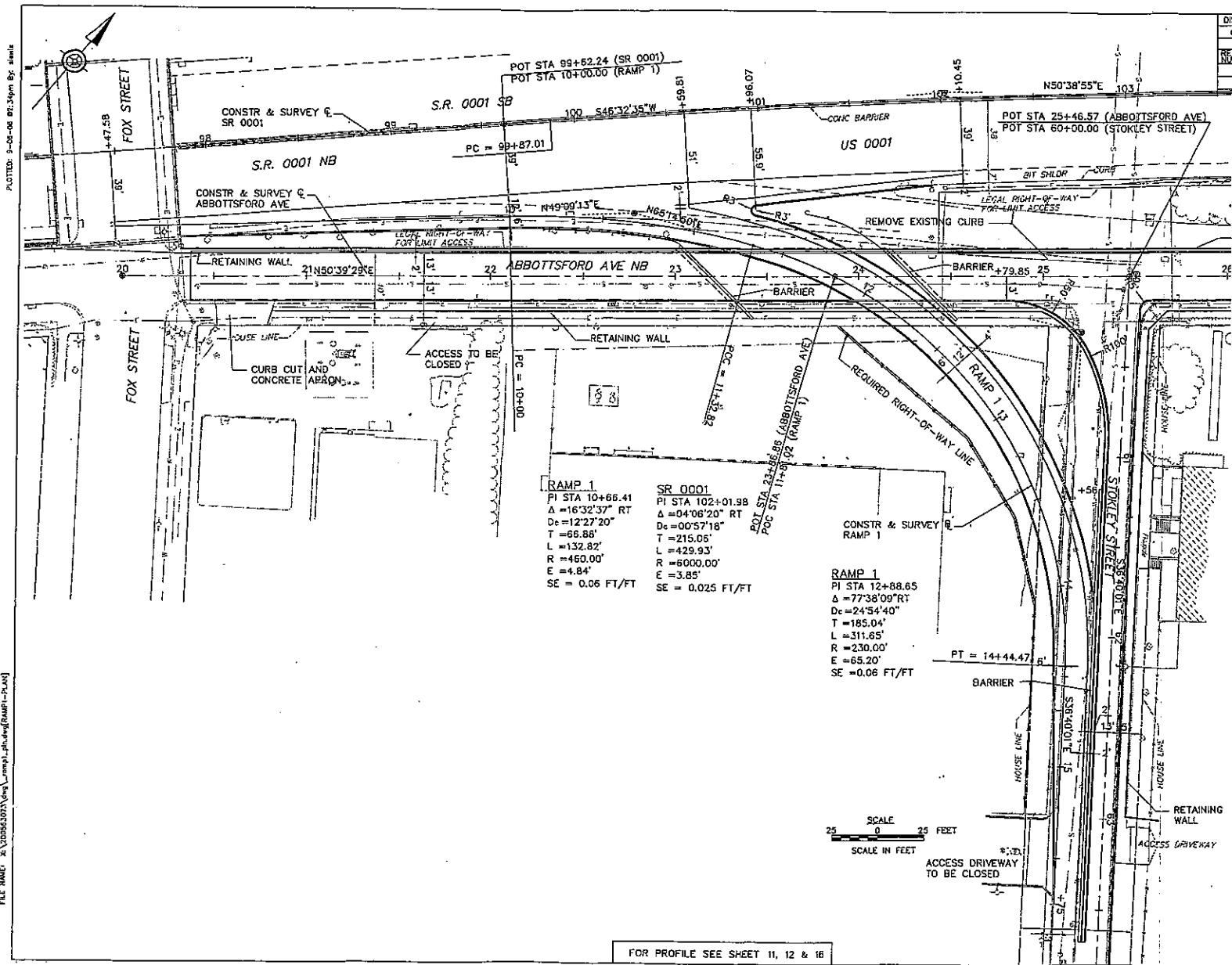
NOT TO SCALE

TYPICAL SECTIONS

OPERATOR: FILE NAME: z:\2005\3073\dwg\typical.dwg (TYPICALS)



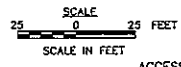
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		5 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



**RAMP 1**  
 PI STA 10+66.41  
 $\Delta = 16^{\circ}32'37''$  RT  
 $Dc = 1227.20'$   
 $T = 69.68'$   
 $L = 132.82'$   
 $R = 450.00'$   
 $E = 4.84'$   
 $SE = 0.06$  FT/FT

**SR 0001**  
 PI STA 102+01.98  
 $\Delta = 04^{\circ}06'20''$  RT  
 $Dc = 0057.18'$   
 $T = 215.06'$   
 $L = 429.93'$   
 $R = 6000.00'$   
 $E = 3.85'$   
 $SE = 0.025$  FT/FT

**RAMP 1**  
 PI STA 12+68.65  
 $\Delta = 77^{\circ}38'09''$  RT  
 $Dc = 2434.40'$   
 $T = 185.04'$   
 $L = 311.65'$   
 $R = 230.00'$   
 $E = 65.20'$   
 $SE = 0.06$  FT/FT



FOR PROFILE SEE SHEET 11, 12 & 16

CONTINUED ON SHEET NO. 6

PLOTED: 9-20-06 02:30pm By: alima

OPERATOR: FILE NAME: x:\y2006\07\1\proj\plan\p10.dwg (RAMP-1).pl

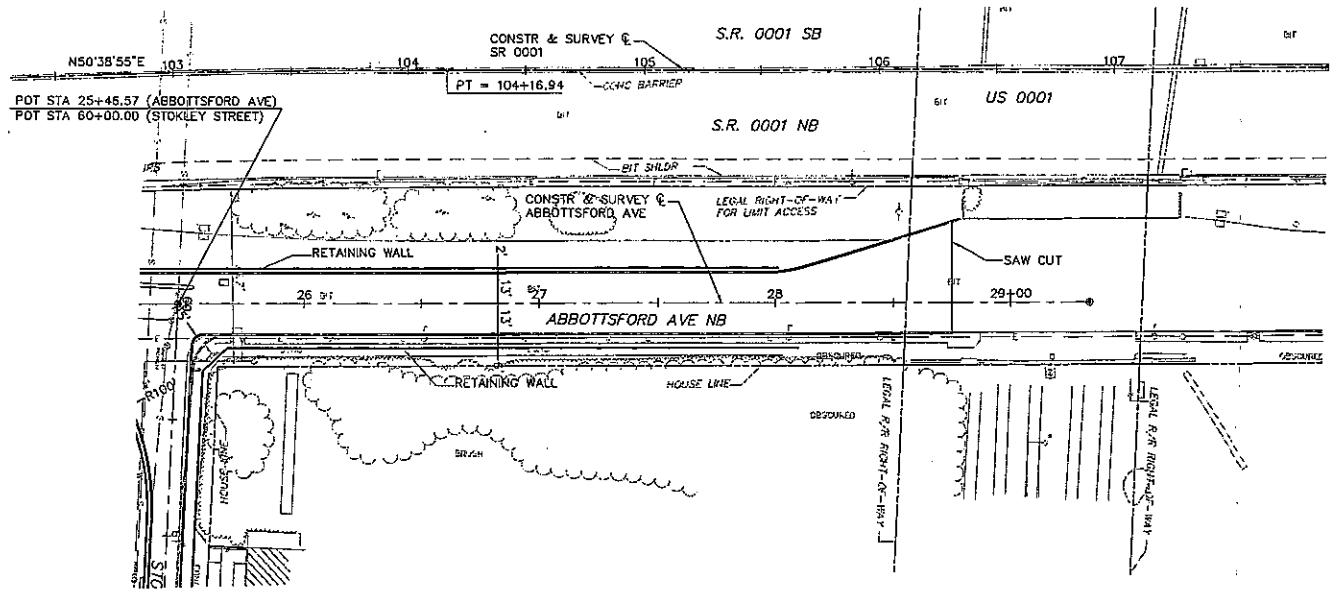


PLOTTED: 9-06-06 09:30pm By: shen

CONTINUED ON SHEET NO. 5

OPERATOR: X:\20061013\veg\_mop\_1\shen\plan-PLAN (2)

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-D	PHILADELPHIA	0001		6 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



FOR PROFILE SEE SHEET 12 & 13

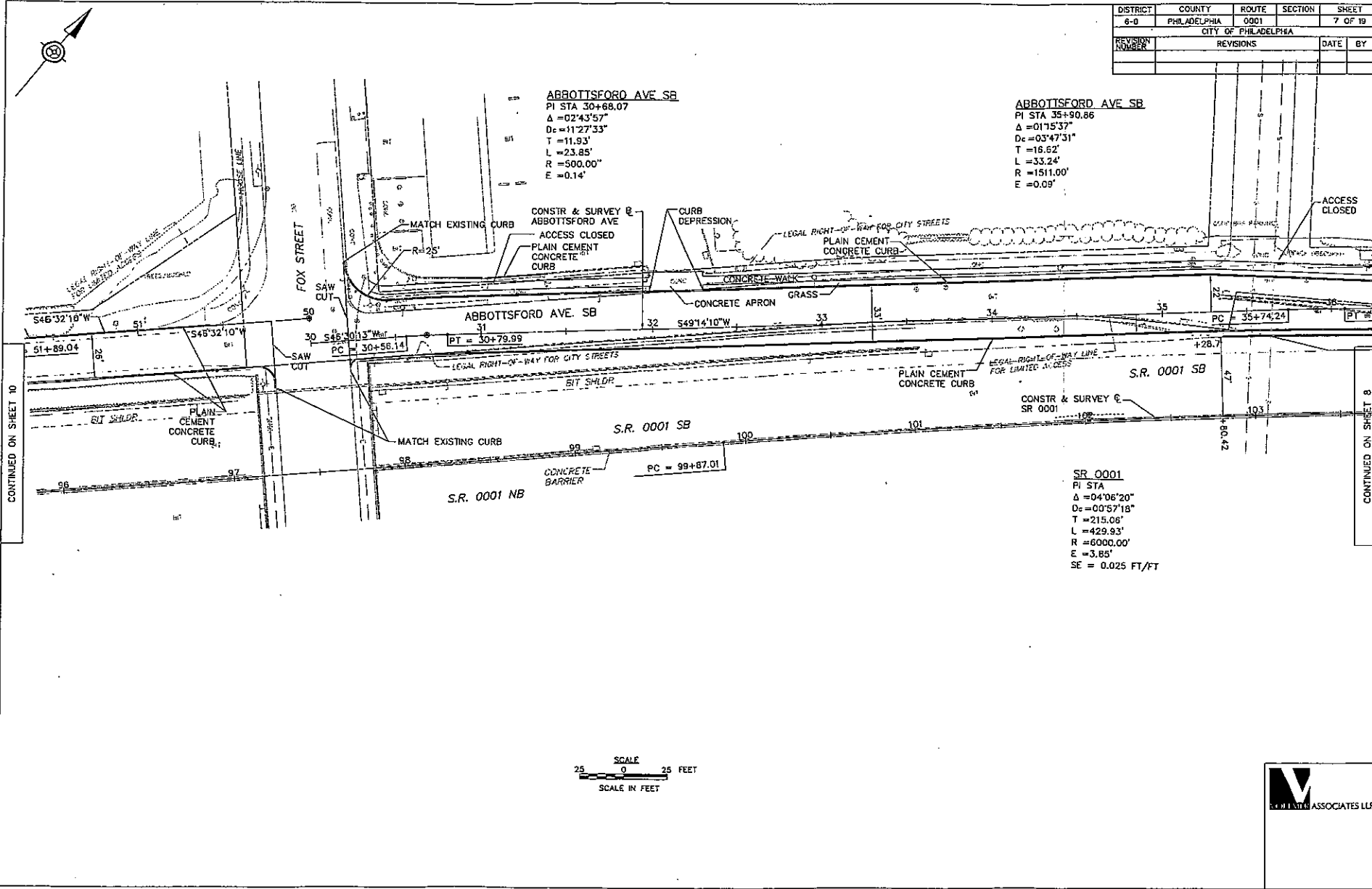


DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		7 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

**ABBOTTSFORD AVE SB**  
 PI STA 30+88.07  
 $\Delta = 02^{\circ}43'57''$   
 $D_c = 11^{\circ}27'33''$   
 $T = 11.93'$   
 $L = 23.85'$   
 $R = 500.00'$   
 $E = 0.14'$

**ABBOTTSFORD AVE SB**  
 PI STA 35+90.86  
 $\Delta = 01^{\circ}15'37''$   
 $D_c = 03^{\circ}47'31''$   
 $T = 16.62'$   
 $L = 33.24'$   
 $R = 1511.00'$   
 $E = 0.09'$

**SR 0001**  
 PI STA  
 $\Delta = 04^{\circ}06'20''$   
 $D_c = 00^{\circ}57'18''$   
 $T = 215.06'$   
 $L = 429.93'$   
 $R = 6000.00'$   
 $E = 3.85'$   
 $SE = 0.025 \text{ FT/FT}$



SCALE  
 25 0 25 FEET  
 SCALE IN FEET



PLOTTED: 9-05-08 02:34m By: a141

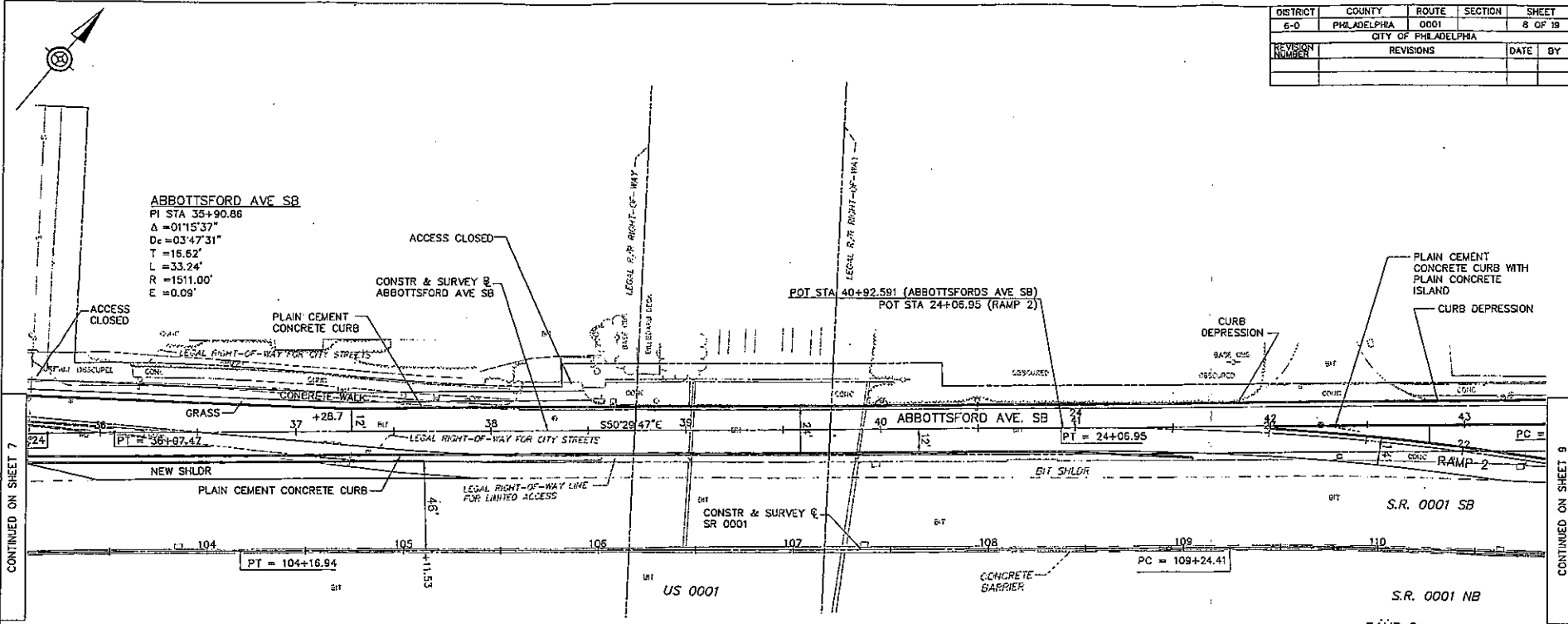
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CONTINUED ON SHEET 10

CONTINUED ON SHEET 8

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		8 OF 18
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

PLOTED: 9-05-08 02:34pm By: stmk



**ABBOTSFORD AVE SB**  
 PI STA 35+90.86  
 $\Delta = 01^{\circ}15'37''$   
 $D_c = 03^{\circ}47'31''$   
 $T = 16.62'$   
 $L = 33.24'$   
 $R = 1511.00'$   
 $E = 0.09'$

POT STA 40+92.581 (ABBOTSFORDS AVE SB)  
 POT STA 24+05.95 (RAMP 2)

**RAMP 2**  
 PI STA 22+73.74  
 $\Delta = 10^{\circ}10'35''$  LT  
 $D_c = 03^{\circ}49'11''$   
 $T = 133.58'$   
 $L = 268.42'$   
 $R = 1500.00'$   
 $E = 5.93'$   
 $SE = 0.02$  FT/FT



CONTINUED ON SHEET 7

CONTINUED ON SHEET 9

OPERATOR: K:\2008\DOT\Map\comp2\_dwg.dwg [RAMP-2]  
 FILE NAME:



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		9 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

PLOTED: 9-06-08 02:39pm By: sheld

CONTINUED ON SHEET 8

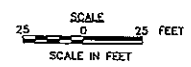
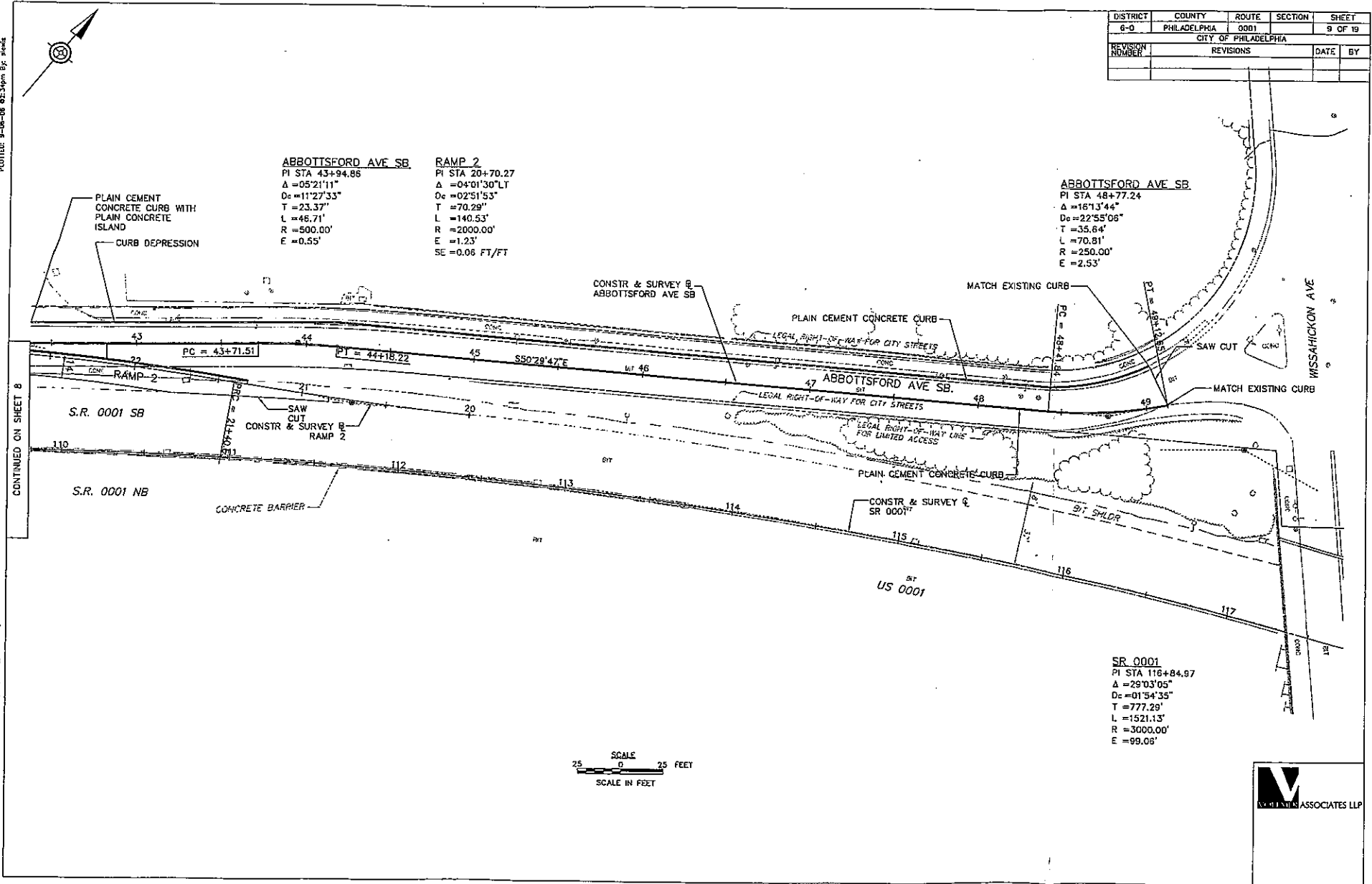
OPERATOR: K:\20050303\sheld\temp2\_pn.dwg (RAMP2-3)

**ABBOTTSFORD AVE SB**  
 PI STA 43+94.86  
 $\Delta = 05^{\circ}21'11''$   
 $D_c = 11^{\circ}27'33''$   
 $T = 23.37'$   
 $L = 46.71'$   
 $R = 500.00'$   
 $E = 0.55'$

**RAMP 2**  
 PI STA 20+70.27  
 $\Delta = 04^{\circ}01'30''$   
 $D_c = 02^{\circ}51'53''$   
 $T = 70.29'$   
 $L = 140.53'$   
 $R = 2000.00'$   
 $E = 1.23'$   
 $SE = 0.06$  FT/FT

**ABBOTTSFORD AVE SB**  
 PI STA 48+77.24  
 $\Delta = 16^{\circ}13'44''$   
 $D_c = 22^{\circ}55'06''$   
 $T = 35.64'$   
 $L = 70.81'$   
 $R = 250.00'$   
 $E = 2.53'$

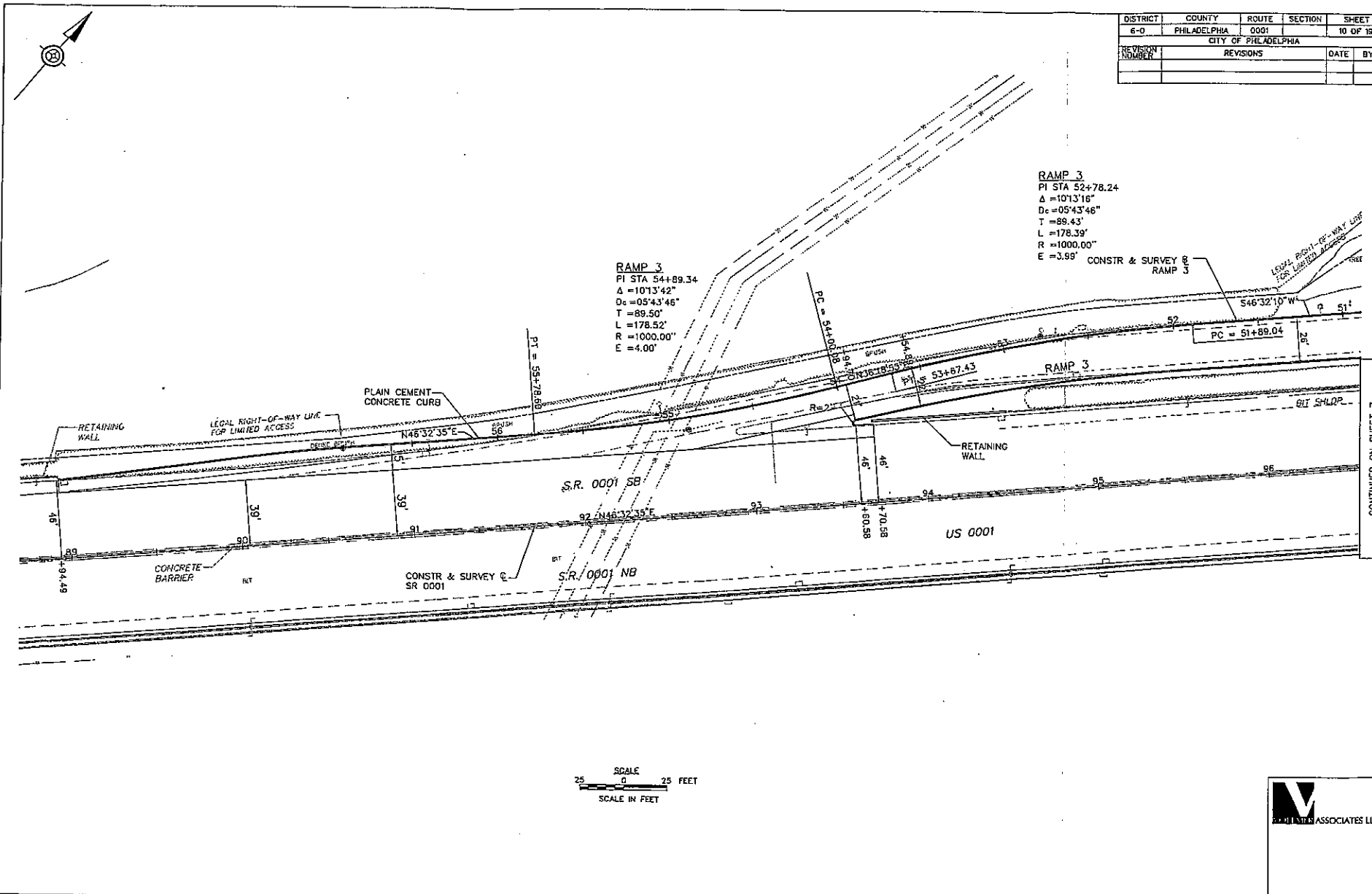
**SR 0001**  
 PI STA 116+84.97  
 $\Delta = 29^{\circ}03'05''$   
 $D_c = 01^{\circ}54'35''$   
 $T = 777.29'$   
 $L = 1521.13'$   
 $R = 3000.00'$   
 $E = 99.06'$



PLOTTED: 9-08-06 00:34pm By: atank

OPERATOR: x:\200563071\img\comp2.dwg (RAMP 3)

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		10 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



SCALE  
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SCALE IN FEET

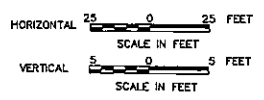
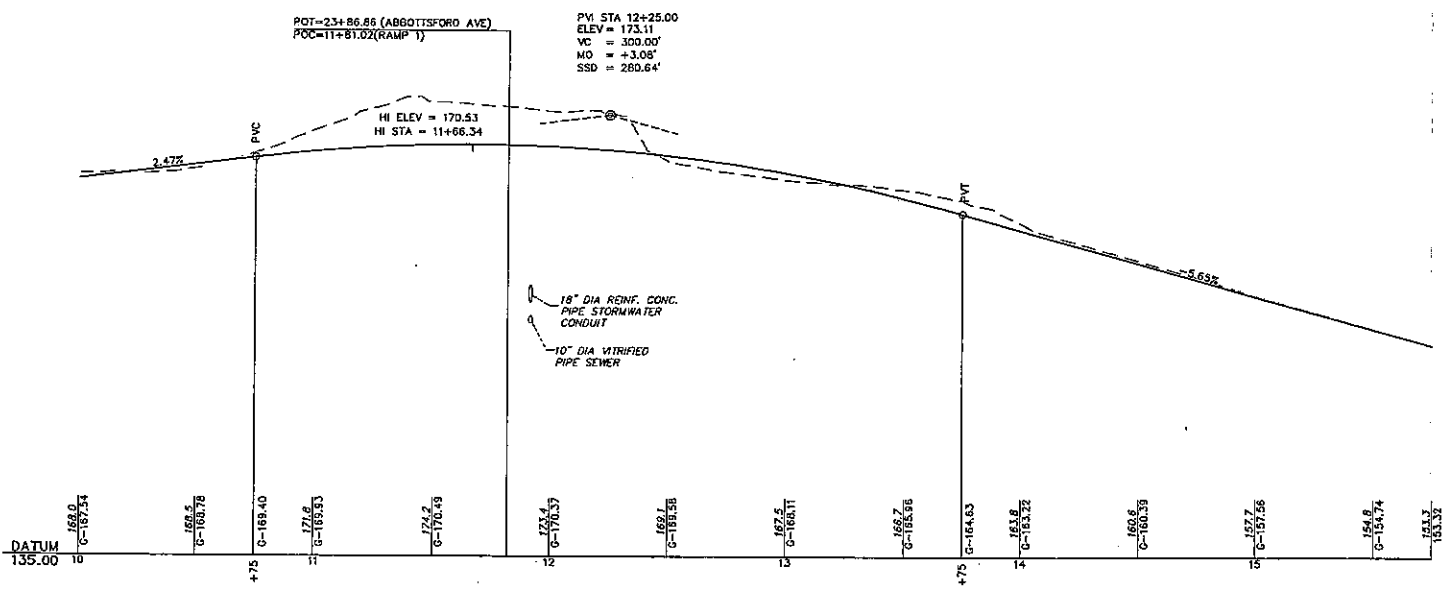
CONTINUED ON SHEET 7





PROFILE-RAMP 1

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		11 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



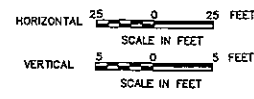
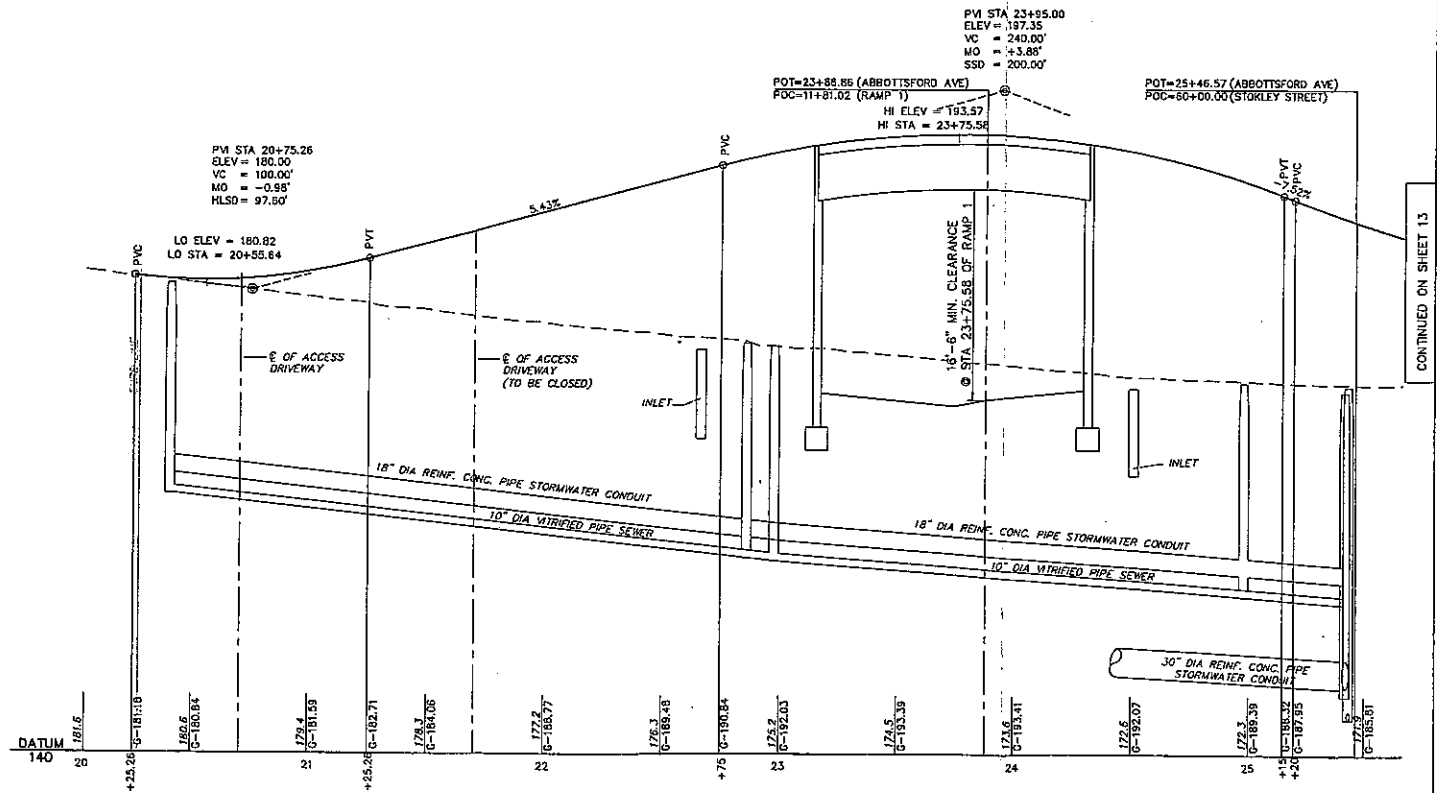
FOR PLAN SEE SHEET 5



OPERATOR: N:\000551073\veg\comp1-prj.dwg (RAMP1-PLAN)  
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 PLOTID: 9-06-06 02:21pm Bp. ahmhs

PROFILE-ABBOTTSFORD AVE. NB

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-D	PHILADELPHIA	0001		12 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



FOR PLAN SEE SHEETS 5-6

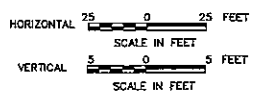
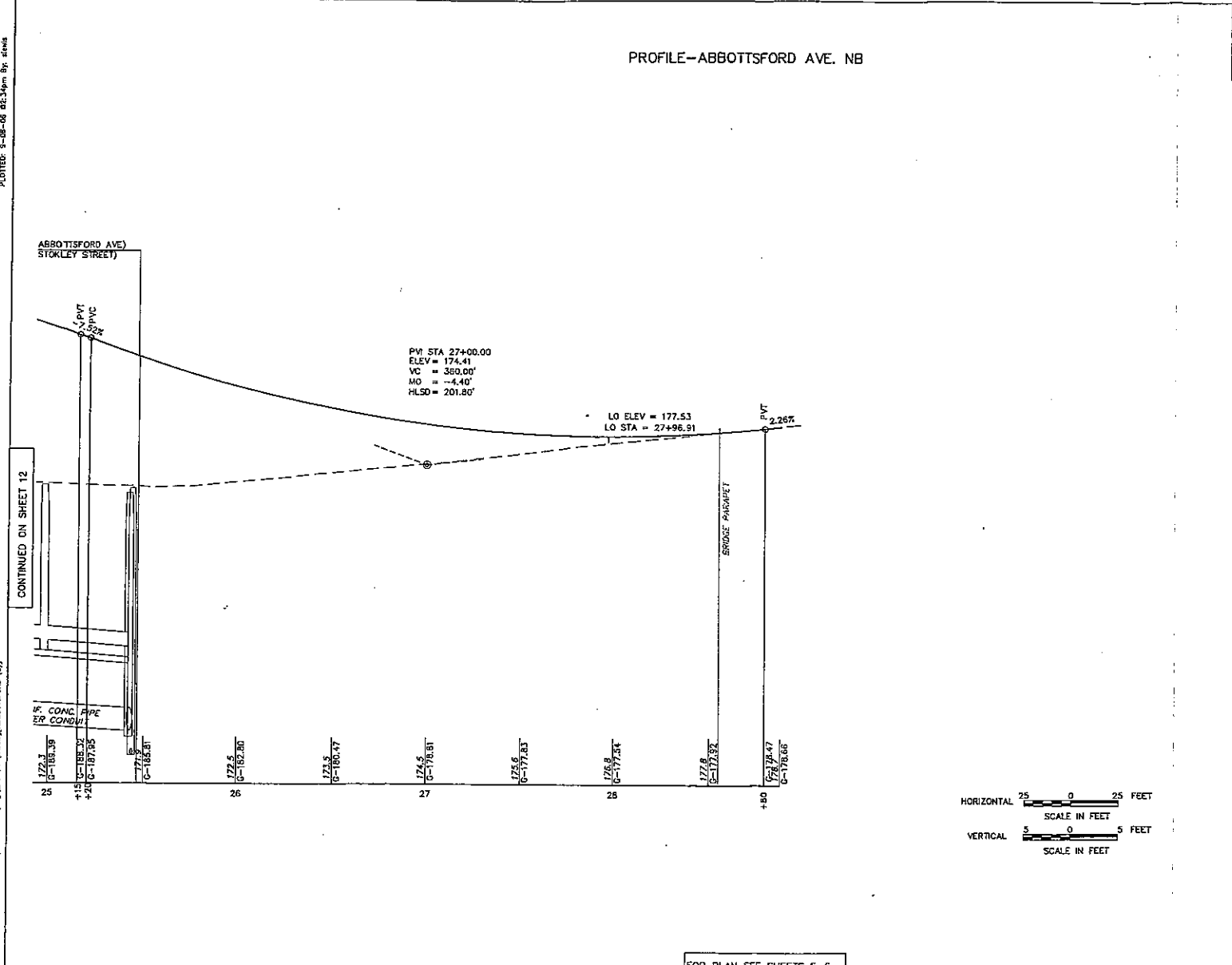
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OPERATOR: X:\2005\3303\dwg\comp1-pl.dwg(ABBOTTSFORD)  
 PLOTTED: 8-05-08 09:24pm By: shank

PROFILE--ABBOTTSFORD AVE. NB

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		13 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



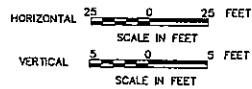
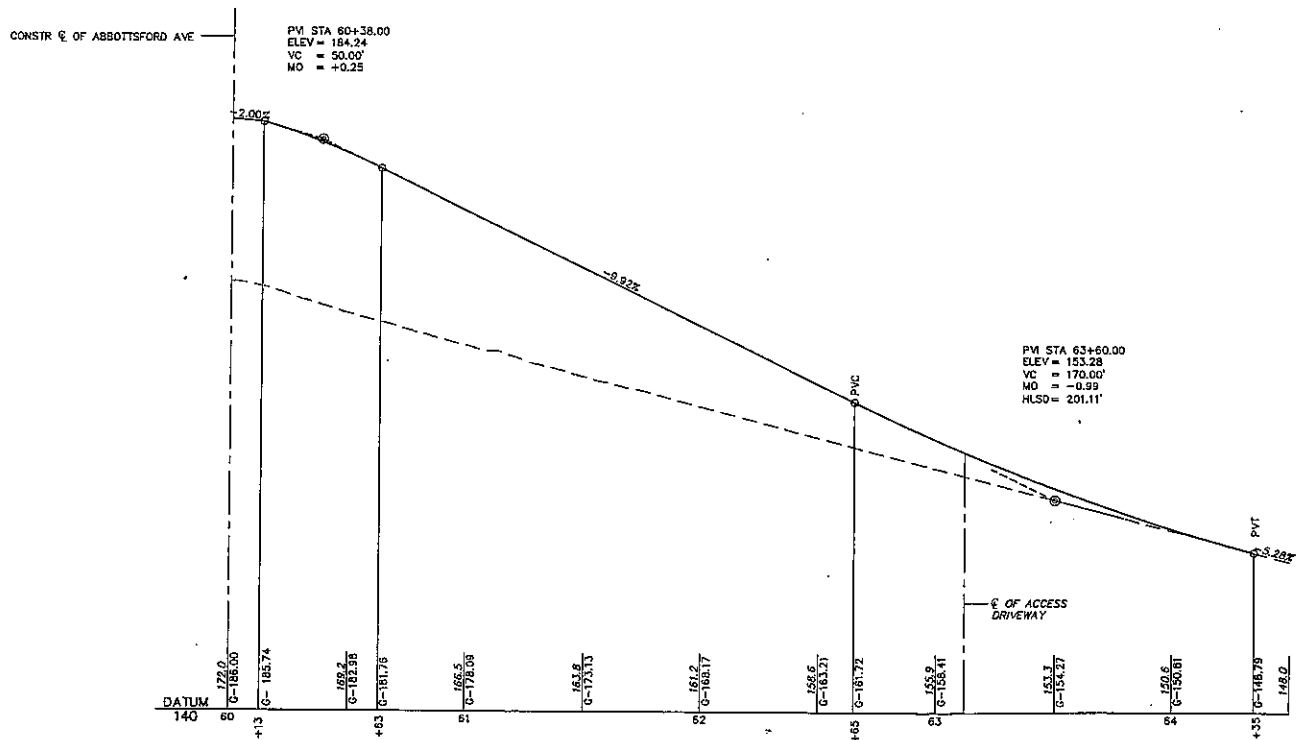
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FOR PLAN SEE SHEETS 5-6



PROFILE-STOKLEY STREET

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
S-0	PHILADELPHIA	0001		14 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

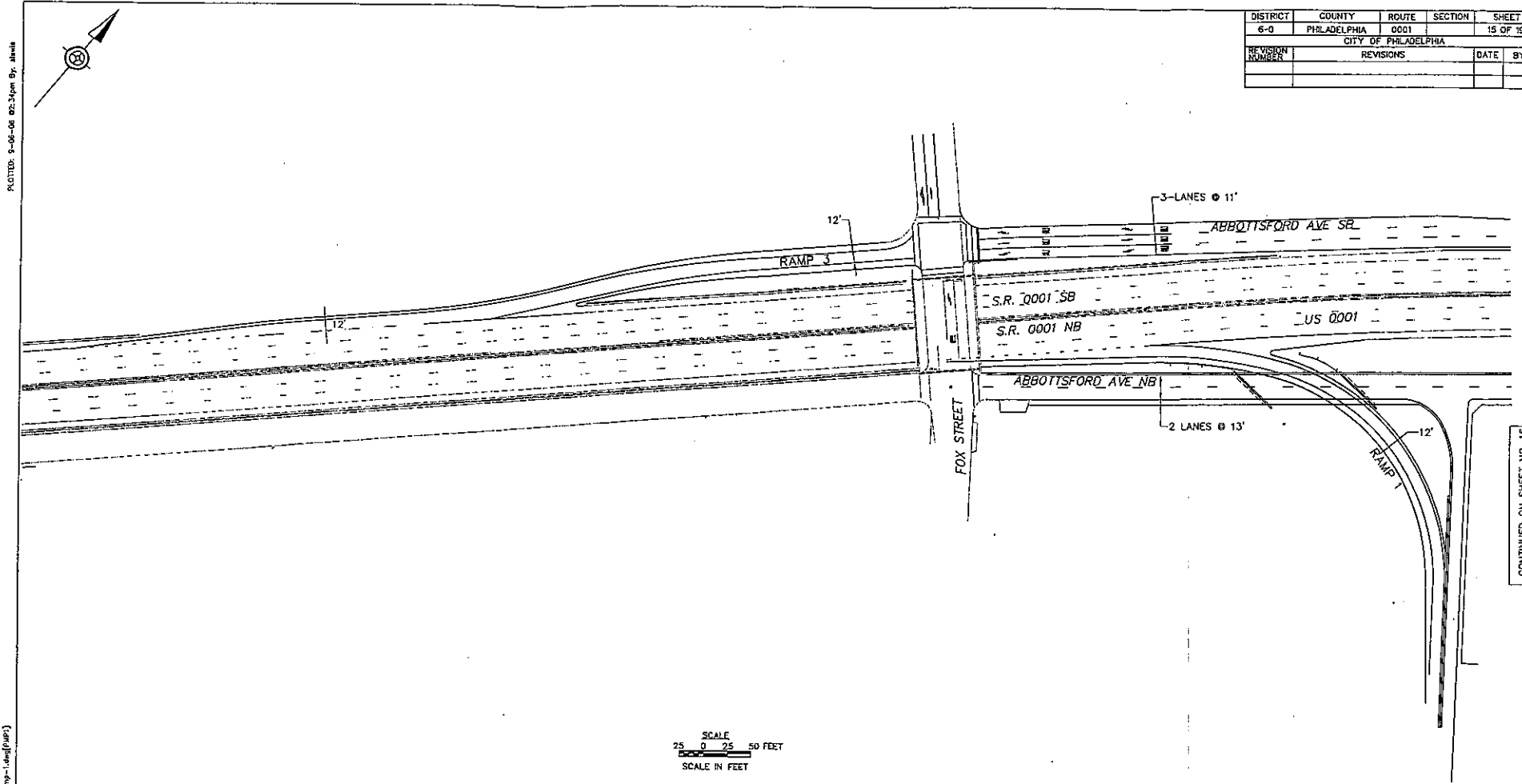


FOR PLAN SEE SHEET 5



OPERATOR: FILE NAME: X:\2005\07\01\Comp\Profile\Stokley.rvt  
 PLOTTED: 5-05-06 09:34am By: akh

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		15 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



PLOTED: 9-06-06 02:34pm By: Javis

OPERATOR: K:\2006\03\03\06\1\map-1.dwg (p15)

CONTINUED ON SHEET NO. 16



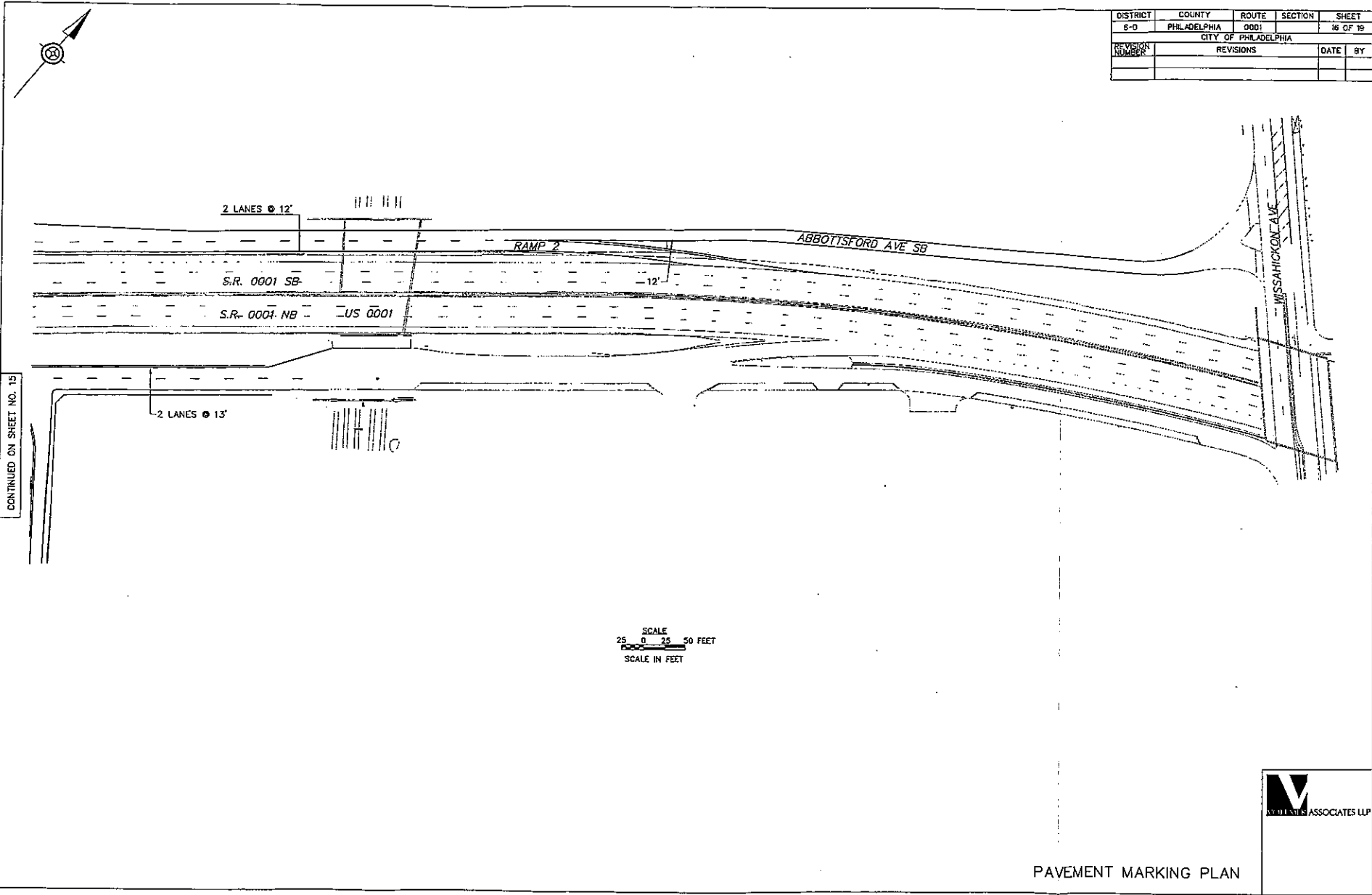
PAVEMENT MARKING PLAN

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	PHILADELPHIA	0001		16 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

PLOTTED: 9-08-06 02:34pm By: h444

CONTINUED ON SHEET NO. 15

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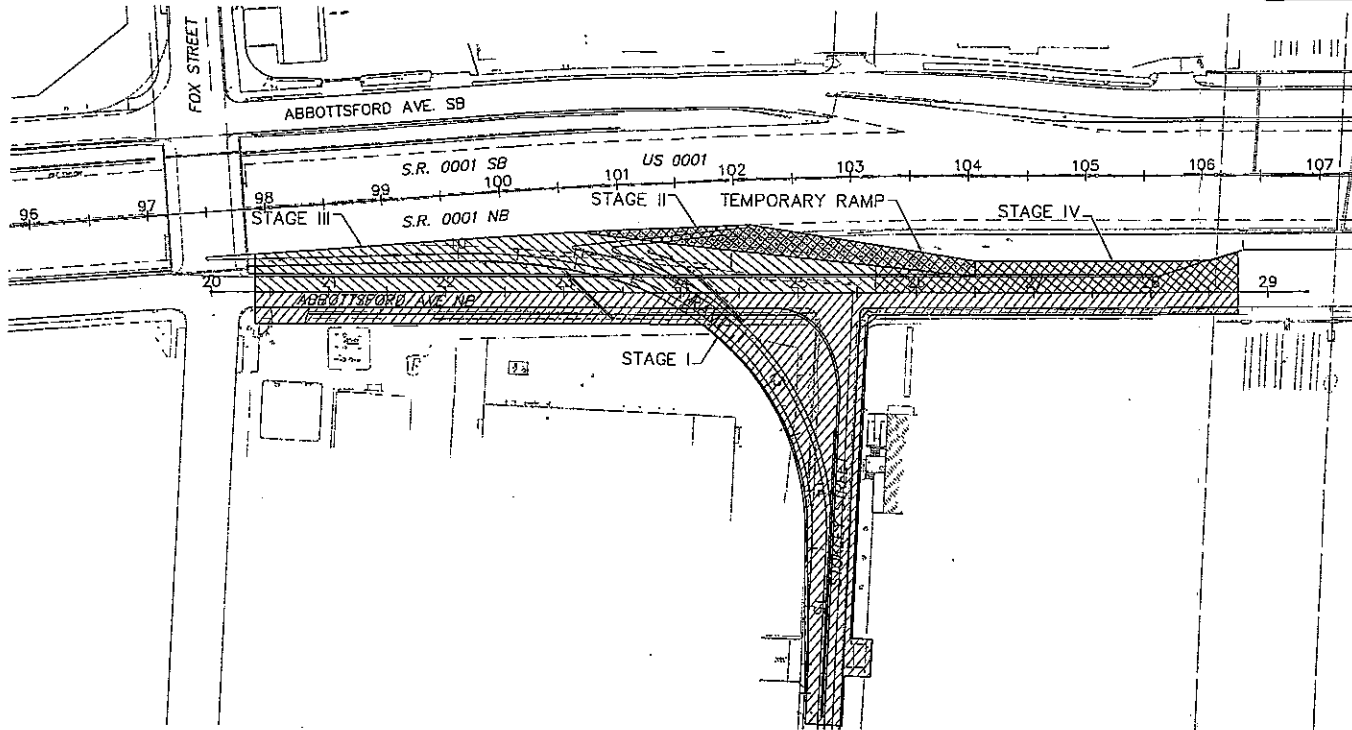


SCALE  
25 0 25 50 FEET  
SCALE IN FEET



PAVEMENT MARKING PLAN

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
S-0	PHILADELPHIA	0001		17 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



**STAGE I**

- CONSTRUCT EAST HALF OF ABBOTSFORD AVENUE INCLUDING PROPOSED BRIDGE, RETAINING WALLS, UTILITIES, DRAINAGE, ETC. CONSTRUCT NEW CONNECTION TO STOKELY STREET AND EAST SECTION OF RAMP 1.
- PROVIDE FOR SINGLE LANE ON WEST HALF OF ABBOTSFORD AVENUE, CLOSE STOKELY STREET BETWEEN ABBOTSFORD AVENUE AND DRIVEWAYS AT STA. 83+00, AND PROVIDE DETOUR USING WISSAHICKON AVENUE, ROBERTS AVENUE, AND FOX STREET. MAINTAIN ACCESS TO PROPERTIES AT ALL TIMES.

**STAGE II**

- CONSTRUCT TEMPORARY EXIT RAMP FROM ROUTE 1 NORTHBOUND TO ABBOTSFORD AVENUE.
- DETOUR ROUTE 1 NORTHBOUND OFF RAMP TRAFFIC TO WISSAHICKON AVENUE EXIT AND BACK TO ABBOTSFORD AVENUE VIA ROBERTS AVENUE AND FOX STREET.

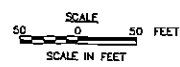
**STAGE III**

- CONSTRUCT WEST HALF OF ABBOTSFORD AVENUE BETWEEN FOX STREET AND TEMPORARY RAMP INCLUDING PROPOSED BRIDGE, RETAINING WALLS AND WEST SECTION OF PROPOSED RAMP 1.
- TRAFFIC TO UTILIZE TEMPORARY RAMP, EAST HALF OF ABBOTSFORD AVENUE AND NEW STOKELY STREET CONNECTION. STOKELY STREET TO BE PERMANENT ONE-WAY OPERATION TO EAST FROM ABBOTSFORD AVENUE TO ROBERTS AVENUE.

**STAGE IV**

- CONSTRUCT REMAINING ROADWAY AND RETAINING WALL ON ABBOTSFORD AVENUE. REMOVE TEMPORARY RAMP.
- SINGLE LANE OPERATION ON ABBOTSFORD AVENUE TO CONTINUE UNTIL CONSTRUCTION COMPLETED. TRAFFIC TO UTILIZE NEW ROUTE 1 RAMP AND STOKELY STREET.

**RAMP 1**  
ROUTE 1 NORTHBOUND OFF RAMP AND ABBOTSFORD AVENUE  
BETWEEN FOX STREET AND WISSAHICKON AVENUE



**LEGEND**

- STAGE I
- STAGE II
- STAGE III
- STAGE IV

CONCEPTUAL STAGING PLAN



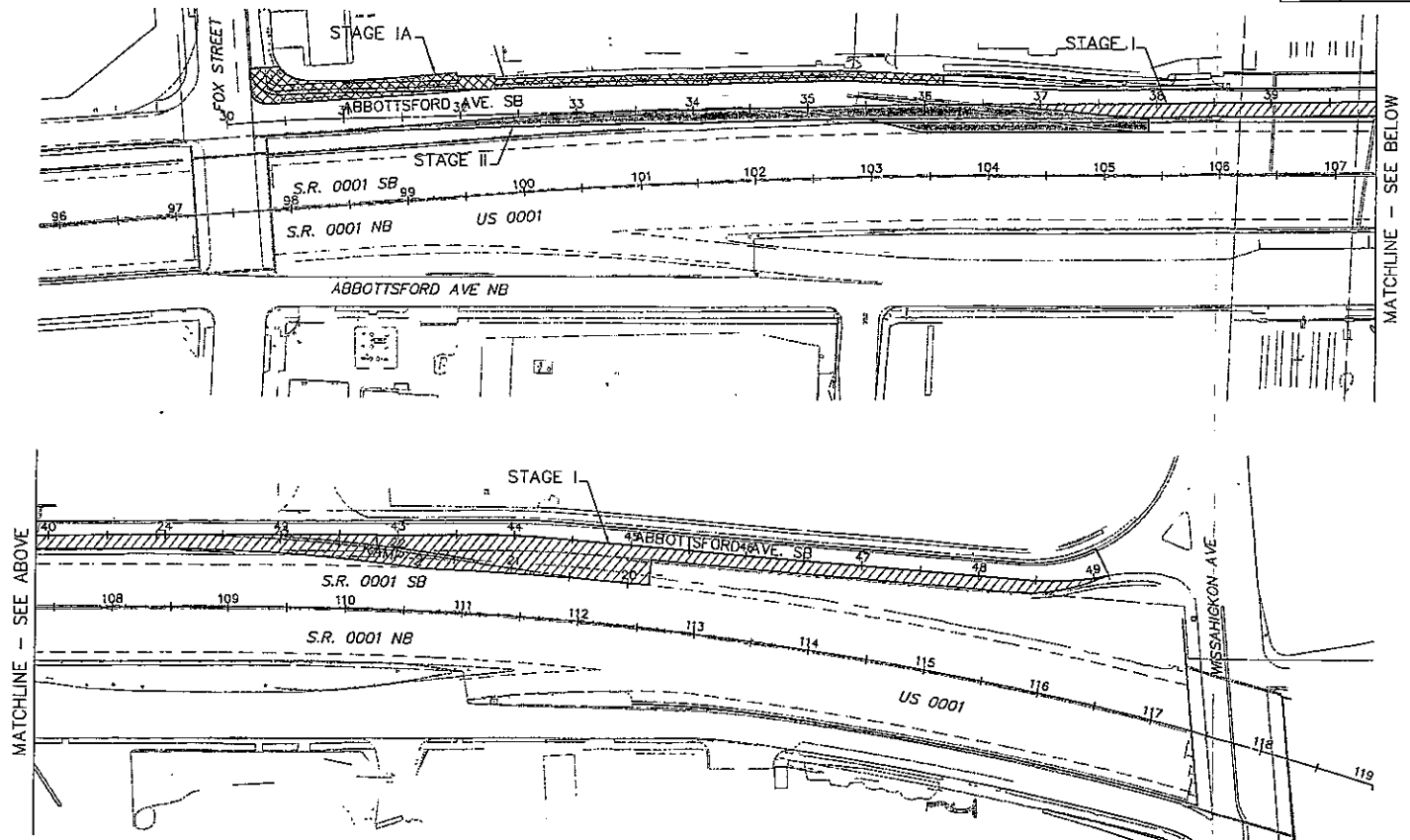
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PLOTTER: 9-26-08 8:23:48pm By: dawa

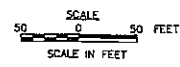
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DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		18 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	



- STAGE I**
- CONSTRUCT NEW RAMP FROM ROUTE 1 SB. REDUCE WIDTH OF NORTHERN SECTION OF SERVICE ROAD.
  - MAINTAIN EXISTING RAMP AND SERVICE ROAD; TRAFFIC OPERATIONS (DEDICATED LANE FOR RAMP AND SERVICE ROAD; TWO LANES AT INTERSECTION WITH FOX STREET).
- STAGE IA (CONCURRENT WITH STAGE I)**
- CONSTRUCT WIDENED SECTION OF RAMP, RELOCATE SIDEWALK AND LIGHTING.
- STAGE II**
- CONSTRUCT REALIGNED RAMP SECTION AND RETAINING WALL. REMOVE EXISTING RAMP CONNECTION AND CONSTRUCT CURB ALONG ROUTE 1 TO SEPARATE ROADWAYS.
  - UTILIZE NEW RAMP FROM ROUTE 1 AND PROVIDE TEMPORARY MERGE WITH SERVICE ROAD. PROVIDE SINGLE LANE RAMP OPERATION, WIDENING TO TWO LANES AT THE INTERSECTION WITH FOX STREET.

**RAMP 2**  
ROUTE 1 SOUTHBOUND OFF RAMP AND SERVICE ROAD BETWEEN  
MISSAHICKON AVENUE AND FOX STREET



**LEGEND**

	STAGE I
	STAGE IA
	STAGE II

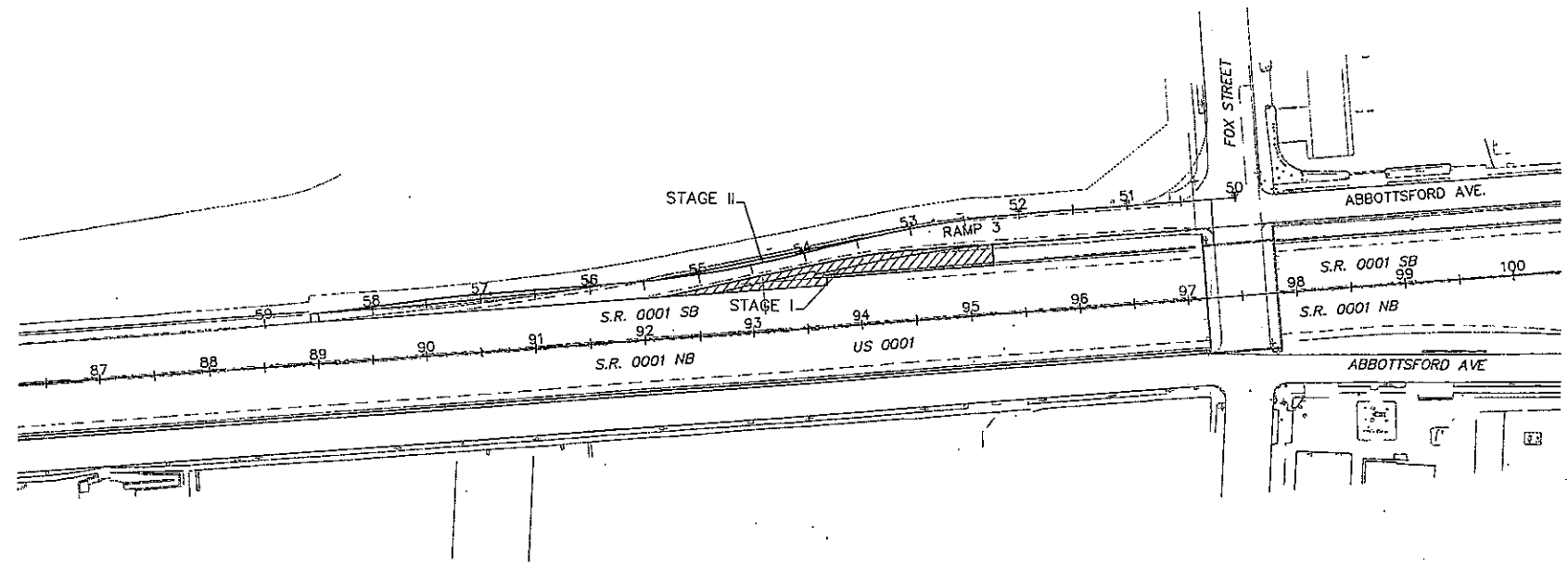
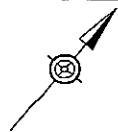
CONCEPTUAL STAGING PLAN





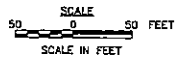
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	PHILADELPHIA	0001		19 OF 19
CITY OF PHILADELPHIA				
REVISION NUMBER	REVISIONS	DATE	BY	

PLOTED: 9-05-09 02:14pm By: [unreadable]



- STAGE I**
- MAINTAIN TRAFFIC ON EXISTING RAMP CONFIGURATION. (SINGLE LANE OPERATION)
  - CONSTRUCT REALIGNED RAMP AND RETAINING WALL EXTENSIONS.
- STAGE II**
- MAINTAIN TRAFFIC ON EXISTING NORTHERN SECTION OF RAMP AND SHIFT ONTO NEWLY CONSTRUCTED SOUTHERN SECTION. (SINGLE LANE OPERATION)
  - CONSTRUCT WIDENED AND REALIGNED SECTIONS OF RAMP.

**RAMP 3**

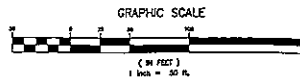
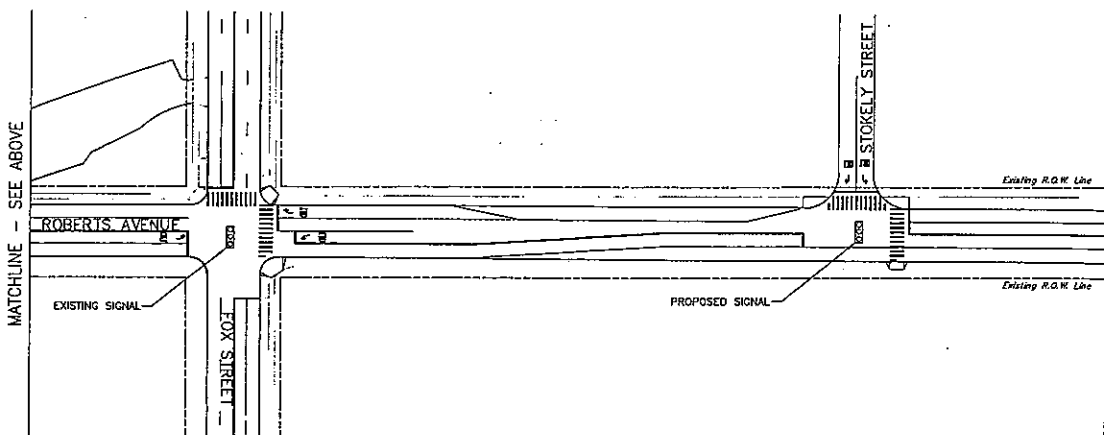
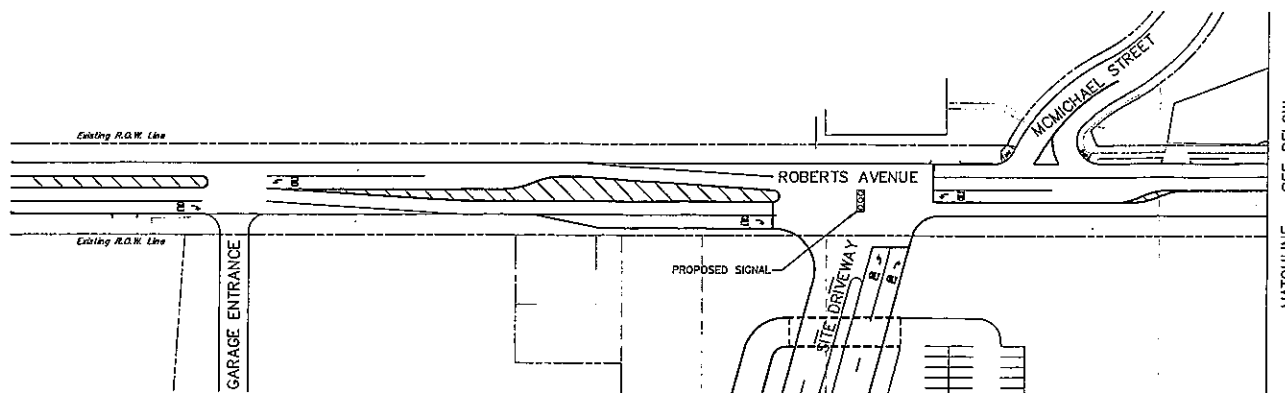
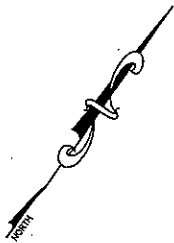


- LEGEND**
- STAGE I
  - STAGE II

OPERATOR: [unreadable]  
FILE NAME: x:\projects\07\07\1\stage3.dwg([unreadable])



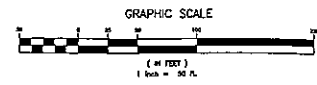
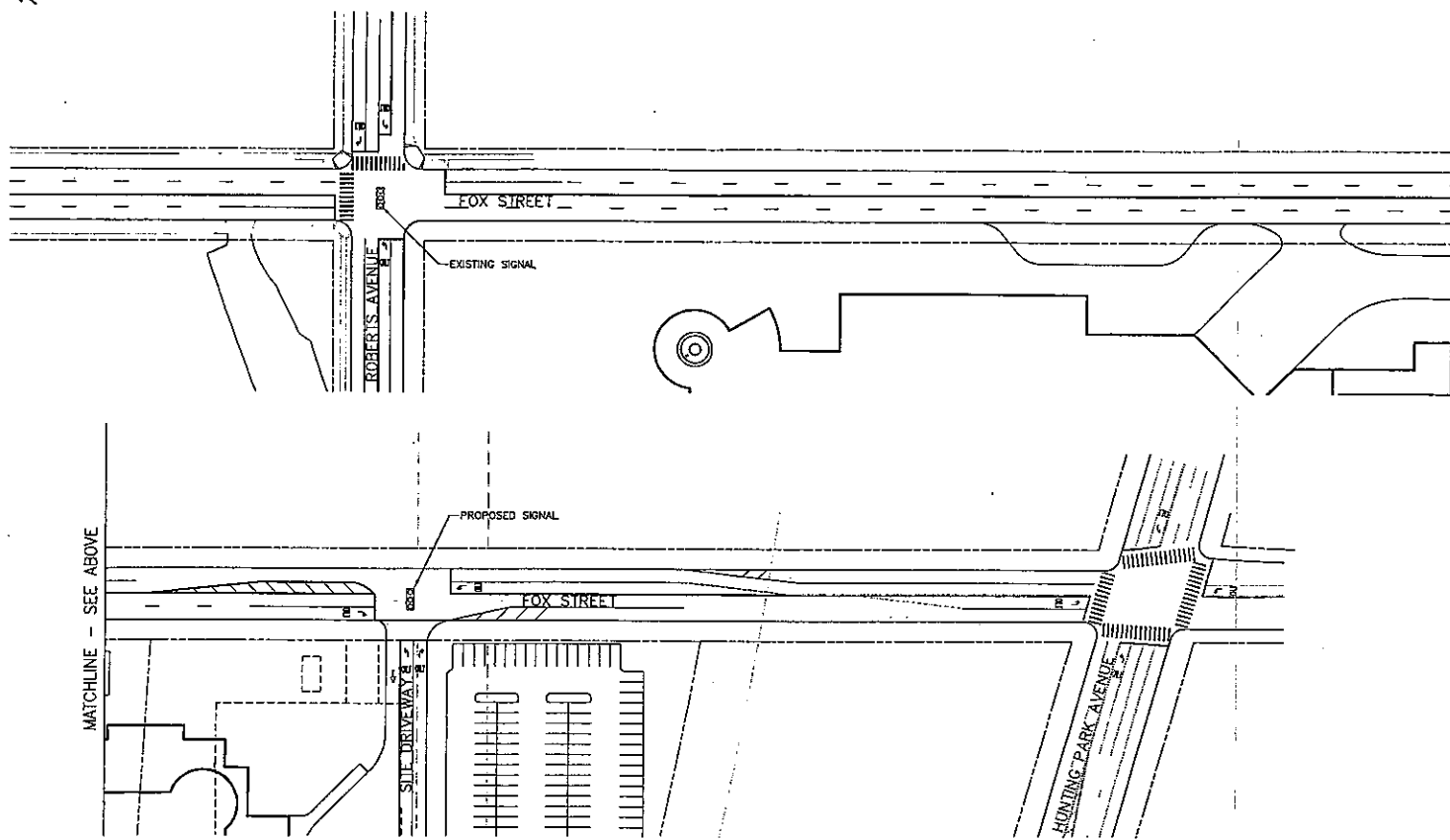
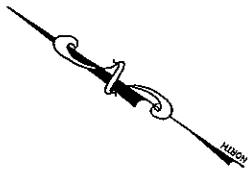
**CONCEPTUAL STAGING PLAN**



SITE STRIPING PLAN  
TRUMPSTREET CASINO  
ROADWAY IMPROVEMENTS  
OCTOBER 2005



Prepared at East Gate  
161 Collier Drive, Suite 105  
Mount Laurel, NJ 08054-1746  
Tel: 856.234.0600  
Fax: 856.234.9338



SITE STRIPING PLAN  
TRUMPSTREET CASINO  
ROADWAY IMPROVEMENTS  
OCTOBER 2006



Controlled by Gas Gate  
151 Collier Drive, Suite 105  
Abingdon, VA 24014-1740  
Tel: 854.234.0200  
Fax: 854.234.5915



Wissahickon Ave. South  
Exit Ramp from U.S. 1

Roberts Ave.

Roberts Ave.

Wissahickon Ave.

**TRUMPSTREET CASINO  
ROBERTS AVE. & WISSAHICKON AVE.  
ROADWAY IMPROVEMENTS  
OCTOBER 2006**





Hunting Park Ave  
Henry Ave  
EXIT 1/2 MILE

~~Wissahickon Ave  
SOUTH  
Hunting Park Ave  
EXIT 1/2 MILE~~

Hunting Park Ave  
Henry Ave

~~Wissahickon Ave  
SOUTH  
Hunting Park Ave~~

Proposed  
Exit Ramp

Route 1

CITY AVE

FOX STREET

PROPOSED ROUTE 1 SIGNAGE  
TRUMP STREET CASINO  
ROADWAY IMPROVEMENTS  
OCTOBER 2006

 VILLAGE ASSOCIATES LLP  
Corporation of New Jersey  
141 Collins Drive, Suite 105  
Morris Laurel, NJ 08854-1748  
Tel: 908.234.9800  
Fax: 908.234.9188



**PROPOSED ROUTE 1 SIGNAGE**  
**TRUMP STREET CASINO**  
**ROADWAY IMPROVEMENTS**  
 OCTOBER 2006

Continuation of East Gate  
 181 Collier Drive, Suite 105  
 Mount Laurel, NJ 08054-1740  
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PHOTO: GOOGLE EARTH

PHOTO: GOOGLE EARTH